



MEASURING SUSTAINABLE DEVELOPMENT

APPLICATION OF THE GENUINE PROGRESS INDEX TO NOVA SCOTIA

THE GPI SOILS AND AGRICULTURE ACCOUNTS

TOWARDS A HEALTHY FARM AND FOOD SYSTEM:
INDICATORS OF GENUINE PROGRESS

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EXECUTIVE SUMMARY

In today's conditions and circumstances—perhaps more than ever before—the necessity for a healthy and vibrant farm and food system is apparent. The increasing cost of fuel and transportation, and a global food system vulnerable to contamination and even unscrupulous meddling (as in the Chinese melamine scandal), is refocusing society's attention on where food comes from and on the need for greater food security.

And yet, at the same time, our dependence on food imported from distant places has grown enormously while our local food system has started to unravel. Indeed, the social and economic fabric that sustains local agriculture, that nurtures and teaches new farmers, that maintains the resilience and viability of agriculture communities, and that makes barter and co-operative arrangements possible, has begun to tear.

Ironically, just as local farming is unravelling, Canadians and Maritimers are becoming more interested in buying locally grown food. This raises the challenging question: Do we have the capacity to meet the demand and to produce the local food that people want? To do so, we need the resource base—the land, the soil, the biodiversity. We need the economic capacity. But we also need the human capacity and willingness to farm; the relationships among farmers and between farmers and consumers that make production and distribution of food possible; and the community infrastructure that makes farming viable.

In this final component of the GPI Soils and Agriculture Accounts, we therefore focus on the human and social aspects of agriculture in Nova Scotia and Prince Edward Island. Stewardship is covered in the first chapter; human capital is addressed in the second chapter; and social capital in the third. The final chapter examines the viability of farming communities as a whole.

The research for this report based in part on extensive and wide-ranging interviews with Nova Scotia and PEI farmers using an 'appreciative approach', in which farming people were asked to explain 'what works'. In this engagement, the stories flooded out and our team of six interviewers tried to capture the essence of what was said both in order to identify potential indicators of progress in this largely uncharted area of the social and human dimension of agriculture, and so that the two provinces can begin to chart a way forward towards a healthier and more vibrant farm and food system.

Ecological Wellbeing

Ecological wellbeing is a two-way street. If we are good stewards of farms, soils, and rural communities in the present generation, the rewards of productivity and environmental quality will be returned not only in the short term but also over time for the benefit of future generations. *The practical policy challenge is that the connection between stewardship and rewards may not*

always be direct and immediate. The stewardship of one generation (especially in building soil quality and restoring previously degraded land) may pay off in the form of benefits accruing to the next and future generations. Taking care not to pollute water on one farm may produce clean water downstream for the benefit of other farmers and rural communities.

This chapter provides examples of how this challenge has been met in Europe, the U.S., and recently in Canada through payments to farmers for the provision of ecological goods and services—indicating that society is beginning to recognize farmers’ contributions to ecological wellbeing.

In the meantime, the evidence examined for this study points clearly to the remarkably high level of stewardship practiced by many farmers in Nova Scotia and PEI towards their land, environs, and natural resource wealth, regardless of the existence of such payments, and in the face of often daunting financial challenges that may tempt them to take short-cuts at the expense of ecological wellbeing.

Indicators of ecological wellbeing recommended in this chapter include:

- Soil and water quality
- Healthy and productive livestock
- Ecological efficiency
- Biodiversity

Human Capital

Human capital (which is sometimes more colloquially called human wealth or human wellbeing) refers to the skills, health, values, leadership, and education of people. Analysts have noted that it refers both to *what human beings can contribute* (human resources) and to *how well human beings are* (human health, in the broadest sense). Evidence also points to a positive feedback loop between these two components of human capital: the more meaningfully we can contribute, the healthier we are, and the healthier we are, the more we can contribute.

Based on these two linked dimensions of human capital, a key social goal in enhancing human capital is to have happy, healthy people fulfilling their potential by contributing to life and society in meaningful ways. While the value of human capital is not systematically assessed in conventional accounting mechanisms, the Genuine Progress Index does give high priority to measuring and tracking progress towards these social goals.

Indicators of human capital recommended in this chapter include:

- Employment
- Efficiency
- Satisfaction
- Renewal

Farming Contributes to Employment Generation

Agriculture is an important employment generator with a significant multiplier effect. In particular, agriculture creates employment in rural areas where unemployment is generally higher than in urban areas. The evidence examined indicates that agriculture not only creates direct employment on farms, but also generates jobs in a wide range of farm-related upstream businesses (veterinarians, equipment dealers, mechanics, feed and crop supply businesses, etc.) and downstream businesses (food processors, transportation, retailers, etc). As well, farms provide on-the-job training in a wide range of skills that contribute significant benefits both in the workplace and beyond (such as practical problem-solving skills applicable in many spheres of daily life).

When unemployment and supplementary unemployment statistics (that include discouraged workers and underemployment estimates) are added together, the average unemployment rates for the years 1997 to 2006 were 10.7% for Canada, 17.1% for PEI, and 14.3% for Nova Scotia. But in the rural areas of both Nova Scotia and PEI, the total unemployment and supplementary unemployment rates were several percentage points higher than the provincial averages and than the rates in urban centres. Employment generation in rural areas is therefore considered to be particularly desirable, since the needs are greatest there, particularly if such employment simultaneously achieves broader genuine progress goals that enhance social, economic, and environmental sustainability.

The total amount farms spend on wages, adjusted for inflation, has increased substantially over the 35-year period between 1971 and 2006—more than doubling in both provinces—despite a decline in the number of farms and a decline in overall farm economic viability. The amount spent on wages *per farm* also increased steadily between 1980 and 2005 in Canada, Nova Scotia, and PEI, with the sharpest increase in PEI, where the average farm now spends considerably more on wages and salaries (\$60,000/year) than the national average (\$45,000/year).

According to Statistics Canada's Labour Force Survey, most jobs in agriculture are full-time. In Nova Scotia there are now about 3,600 full-time and 1,100 part-time jobs in agriculture—the lowest number ever recorded, and down sharply by 40% from a total of 7,800 jobs 30 years earlier. Interestingly, however, the decline in farm jobs has not been steady over this period of time. As recently as 2001, there were 7,500 jobs in agriculture in Nova Scotia compared to 4,700 in 2006, so the most dramatic loss in jobs in Nova Scotia's agriculture sector has occurred just in the last few years.

In Prince Edward Island, there are about 3,600 full-time and 300 part-time jobs in agriculture. The number of farm jobs in PEI has declined significantly since the mid-1980s. The sharpest loss of jobs in PEI occurred in the late 1980s and early 1990s, when the number of jobs in agriculture fell by 41% from more than 6,100 in 1986 to 3,600 in 1994—holding fairly steady since then.

There are other important benefits and costs associated with farm employment that also remain invisible in conventional accounting systems, but that should be measured in more comprehensive assessments like the GPI. For example, the value of unpaid farm work by family members often remains uncounted, as do indirect economic benefits of farm employment like opportunities for family members to earn spending money and to learn business and other work skills. One largely uncounted cost associated with farm employment is the lack of pay equity between what farmers and farm workers earn and what workers earn in other sectors requiring comparable skills—resulting in an opportunity cost to the agriculture sector, as skilled labour is drained away to other sectors that offer higher pay.

The evidence examined indicates that one of the most important ways to attract new entrants into farming is to keep the farms we have. Thus, studies have shown that most of those who enter farming and who stick with it have grown up on farms. As well, qualitative analyses, including those based on the 2003 GPI farm interviews, indicate that the best and most skilled farm workers, and those with the best farming ‘instincts’, are often those who grew up on farms and who have farming ‘in their blood’. Thus losing a farm sets off a spiral of losses: direct and indirect loss of employment in a rural area, loss of training opportunities, loss of an important way to grow up and acquire farming knowledge and skills, loss of potential farmers, and loss of potential farm workers.

In order to maintain a positive relationship with farm employees and thus retain skilled workers, farmers in the 2003 GPI farm interviews (Scott et al. 2003) gave the following advice:

- maintain good communication
- provide health plans and workers compensation packages (possibly through the Federations of Agriculture)
- allow employees to share in farm benefits
- respect employees and involve them in the business and in strategic and planning decisions
- have parties and celebrations
- allow for flexible work arrangements

Efficiency of Farm Work

The ratio of farm receipts to wages—the amount of revenue generated on farms relative to the amount spent on wages—has declined in both Nova Scotia and PEI over the past 30 years. This can mean either that farm revenues are stagnant, or that farm wages are rising relative to farm revenues, or that the efficiency of farm workers drawing wages is declining, or a combination if

these factors. To understand this dynamic better, several wage-related and efficiency indicators were examined.

Thus, the ratio of the amount spent on wages relative to total farm expenses declined in both Nova Scotia and PEI between the 1920s and the early 1980s, but since that time has been climbing—indicating a climbing wage-intensity in the last two to three decades relative to the previous 60 years. In other words, wages have been occupying an ever-larger chunk of the farm expense pie over the last 25 years. Prince Edward Island, and Nova Scotia in particular, have a higher wage intensity than the national average.

While these results may indicate lower labour ‘efficiency’, they could also indicate a shift in agriculture towards more labour-intensive horticulture-type operations and away from field crop types of farming operations. While it is likely that a combination of factors has led to the increase in the wage-intensity of farms, it must be acknowledged that if a key social goal is to increase wage earnings in rural areas, then this goal is apparently being achieved. That goal of improved wages, however, must be balanced with the goal of farm economic viability to ensure that the increased wage burden is not undermining viability to the extent that jobs might eventually be threatened.

Productivity or efficiency measures for farm work must take into consideration not only how much revenue each hour of work generates, but other employment-related goals and objectives, including:

- the quality of the job (including quality of output and outcome and whether the job is satisfying, safe, and a good learning opportunity for the employee);
- the goals of the community (for example, whether more employment is needed, and if so, of what kind);
- whether the employment outcomes and benefits engendered by farm work (such as profits generated, workers trained, etc.) are staying close to home or leaving the region.

To complicate matters further, the evidence examined also shows that increasing efficiency has not necessarily benefited Nova Scotia and PEI farms in the long run, because downstream and upstream businesses have generally been better positioned in the marketplace to capture and absorb the benefits of these efficiencies. In other words, improved efficiency has not necessarily increased farm profit margins, farm gate prices, or farm economic viability. It remains to be seen whether recent trends in direct marketing and on-farm processing will help farms capture the benefits of increased efficiencies more effectively and prevent those benefits from leaking to other components of the food supply chain.

Satisfaction

As a measure of wellbeing, the Genuine Progress Index is concerned not only with the quantity of jobs, but also with their quality. It is widely acknowledged that some types of jobs are more meaningful, creative, challenging, and satisfying than others.

It appears from preliminary interviews that farming provides participants with the opportunity for creative, interesting, and challenging work that allows people to be outdoors and to develop meaningful relationships both with growing things and with the natural world. Farming also requires participants to learn a wide range of different skills and talents. The GPI interviews indicated that farmers apparently enjoy the challenges they face, and that they often put everything they have in time, energy, and resources into making their farm business work.

As the 2003 GPI farm interviews made clear, farming in the Maritimes is often characterized by celebrations of many kinds, including kitchen parties, barn dances, community suppers, exhibitions, and the activities of folk schools. Many interviewees reflected that farming is more than an occupation, but reflects a sense of place associated in their minds with recreation, memories of childhood adventures on the farm, and enjoyment.

Examples of creative energy expressed through farming cited by farmer interviewees included creating a business, building things, growing food, raising animals, starting a project and seeing it through, problem-solving in day to day tasks, meeting challenges, and having a wide range and variety of creative outlets. Some interview respondents also remarked that farming operations by their nature make people of all ages feel genuinely needed. According to Richard Layard (2003), feeling needed and being able to express creative energy are two key determinants of happiness.

A very significant proportion of farmers reacted positively to the suggestion that ‘lack of franticness’ be measured as a way to assess satisfaction with farming as an occupation. Many commented that they heartily related to the need for more leisure time and craved a reduction in work hours. This chapter of the report references a Canadian survey which found that farm families work longer (paid and non-paid) hours, and also volunteer more hours, than their non-farming peers.

Renewal of Farms and Farmers

From the perspective of ‘renewal’ and building human capital over the long term, the limited results that do exist for farm operators are troubling. Census of Agriculture figures point to an aging farm population and a decline in the proportion of younger farmers. Only 7% of Nova Scotian farmers and 9% of PEI farmers are today under 35. The departure of young people from the farm is a significant source of stress for those who remain, who worry about the continuation of farming traditions and family legacy over time.

While farm renewal is certainly related to and dependent upon factors like commitment, maintaining tradition, sharing information, and skilfully passing on the value of farming to future generations, the other side of the tradition and continuity coin is the fostering of entrepreneurial energy and innovation as key agricultural resources. A safe and healthy working environment, as well as the availability of subsidized day care, were also noted as critical elements to farm renewal.

Having the next generation effectively take over farms has been identified in this study as one of the most important issues affecting long-term farm viability and the future of agriculture in the Maritimes altogether. The economic barriers to this inter-generational transfer have been shown to be daunting: How, for example, does a young person take over a farm when economically viable farms are over-capitalized, thus making them too expensive to buy, and when most other farms are having trouble making ends meet?

Despite the mounting challenges identified, the 2003 GPI conversations with farmers in Nova Scotia and PEI did produce inspiring stories of young people taking over farms, and effectively joining innovation and entrepreneurial skills with respect for tradition and heritage to improve their viability.

Social Capital

Networks of social relationships—sometimes referred to as social capital—are shown in this chapter of the report to ‘grease the inner workings’ of agriculture in the Maritimes, and even, in some instances, to explain the survival of farming in the face of declining economic viability. This chapter of the study therefore examines how farmers co-operate (both with each other and with consumers and farm-related businesses), what is needed for that co-operation to be effective, and also how effective webs of relationships have practically helped to improve farm viability in PEI and Nova Scotia.

Spending Time, Saving Money

Like human and cultural capital, social capital is an infinitely renewable resource that tends to increase in value and availability the more it is used.

Analysts have made note, however, of a trade-off in terms of time, since it takes time and attention to develop and nurture the relationships of trust and understanding that form the bedrock of social capital. Developing the valued, trusted, and effective social networks that comprise social capital also requires maturity, experience, and courage.

The GPI farm interviews confirmed that ‘investing’ in the social networks and relationships that comprise social capital requires time and effort. However, the many examples of farmer co-operatives, commodity associations, sharing equipment, and trading land examined in this chapter clearly demonstrate that an investment of time spent building social capital is highly likely to save money and produce very tangible economic benefits.

Benefits of Building Social Capital

In addition to the more obvious benefits of social capital, such as saving money, learning, enjoyment, and building something meaningful, there are less obvious benefits that have been alluded to in many of the farmer comments cited in the report. These benefits include reduced isolation, the satisfaction that comes from feeling needed, wanting to stay in and have connection to a place, challenging narrow assumptions and prejudices through ‘bridging’ social capital (relations with non-farmers and across generations for example), improved personal health, personal development, and enhanced wellbeing.

For example, evidence from the social capital literature—further explored in the GPI farm interviews cited in this chapter—indicates that when older community members are more thoroughly integrated into activities and families, the benefits of community relationships are (quite obviously) more likely to be passed to the next generation through stories and advice than when older people are more isolated or confined to institutions. The benefits of building and maintaining social capital can often be found in the stories of ancient cultures, which are passed down from generation to generation.

Today, observers have noted, social capital itself and the benefits that flow from it tend to be taken considerably more for granted than in these ancient cultures, with the skills required to build social capital taught less frequently and less systematically, and the benefits that derive from them rarely spelled out clearly and explicitly. In many cases, little respect remains for knowledge in this vital area accrued by previous generations. As a result, the skills required to build social capital are often in short supply, the investment of time and effort is frequently not made, and social capital itself is inadequately recognized and valued. As a result, even tangible potential benefits, like the money that can be saved through co-operation and collaboration, may not be realized to the extent possible.

Farmers Have Found Ways to Work with Others

The GPI farm interviews referenced in this chapter indicate that farm people in Nova Scotia and PEI have no shortage of stories about how they work together. They share observations, equipment, fields, workers, marketing channels, and much more. These sharing arrangements require trust, which takes time to build, as in the case of land trading and sharing arrangements that are gradually extended and amplified over time as trust is built. Farmers also co-operate with their customers and with their communities.

Largely through the accounts given by farmers of such co-operative relations, this chapter on social capital as a whole draws attention to the sharing, co-operation, and supportive relationships that are common in healthy farm communities. While conventional accounting mechanisms do not make entries in account books called ‘trust’, or ‘friendship’, or ‘barter’, or ‘working together’, sufficient qualitative and anecdotal evidence has been presented to indicate that the challenges in quantifying such relations do not diminish their real and actual value and the tangible and practical benefits that they generate.

The aspiration to value these factors points to the eventual possibility of estimating the full value of social capital, so that it might one day be included properly in national and provincial balance sheets, alongside other forms of capital, to denote its genuine contribution to the nation's real wealth. In the meantime, it is possible to draw attention to the value of social capital simply by imagining what farming would be like if each farmer had to work completely on his or her own, and without the benefit of close co-operation with other farmers, consumers, and the community. The GPI farm interviews indicate quite clearly that such a scenario would be impossible.

Farm Contributions to Social Capital

Among the many contributions that farmers make to social capital in rural Nova Scotia and Prince Edward Island, *leadership* has emerged as a key one. The interview comments cited point, for example, to the vast amounts of unpaid hours allocated by farm families to developing and maintaining community organizations.

In addition, a significant contribution has been detailed in the form of *heritage* and continuity, since farmers are very often the ones in rural communities most likely to stay in one place, often for generations. In an increasingly mobile world with less connection to place, farmers' connection to land provides their community with 'anchors': people who know the history; who understand the dynamics of their particular community's relations and its strengths and weaknesses; and who stick around and make the community 'tick' so to speak. This 'anchoring' quality can be extraordinarily and practically useful when a community needs to manage resources (either individual or common), because the knowledge of a community's heritage that comes with continuity helps to avoid mistakes, and helps build effectively on what has been accomplished in the past.

In the introduction to the chapter on social capital, it is noted that inadequate interaction and understanding between people may produce irrational fears and feelings of isolation, depression, insecurity, and prejudice. In fact, sufficient evidence certainly exists to justify classifying as a decline in social capital a trend towards individuals basing their self-worth on what they buy rather than on their craft, vocation, and quality and diversity of relationships. Despite troubling trends and danger signals, the 2003 GPI interviews with farm people revealed a group of people who do still base their self-worth on their craft, vocation, and the quality of their relationships. Indeed, an argument can be made that one of the main contributions of farm people to social capital is a 'cultural memory' that might help prevent or at least ameliorate the unravelling of social fabric in the larger society.

The Nature of Relationships

Social capital is all about relationships, but the GPI farm interviews made clear that it is not only about the *extent* of such relationships, but also about their *quality*. It is not enough simply to document the existence of social networks in purely quantitative terms (e.g., numbers of

community organizations and memberships) without also examining the nature and quality of those relationships which, ideally, will be characterized by equity, trust, and understanding.

As a society, therefore, we must extend the analysis of social capital to these qualitative dimensions to assess whether we are actually ‘good at’ relating with each other, and whether our relations are becoming more or less equitable, trusting, and understanding. Such qualitative factors should also be tracked over time to the extent possible to ensure that we are not losing our capacity to ‘get along’ and to make farming communities work optimally.

A review of this chapter—and particularly of the comments made by farmers in the 2003 GPI farm interviews—may leave the reader with the impression that social capital is alive and well in the farm communities of Prince Edward Island and Nova Scotia. That is very likely true in important respects. But one also gets the impression from many interview comments and from available evidence on declining economic viability, increasing concentration and more, that there has been a depreciation of social capital over time in many rural communities in Nova Scotia and PEI.

As noted several times in the chapter on social capital in this report, investigation of this relatively new area is still in its infancy, with present efforts, as in this study, devoted primarily to the identification of potential indicators of social capital in agriculture—for most of which data do not yet exist, but which are certainly amenable to the future collection of appropriate survey data.

Indicators and Potential Measures of Social Capital

Indicator	Factors amenable to measurement
Supportive Relationships	Co-operation among farmers Co-operation between producers and consumers Relationships between producers and community
Quality Relationships (that promote equity, trust and understanding)	Number of farmers relative to the rest of the population Equitable relationships <ul style="list-style-type: none"> - income disparity - concentration of assets - size of farms Inter-generational equity Opportunities for developing mutual understanding (bridging social capital) Opportunities for people in rural communities to interact (eating together, working together, active cultural activities such as story-telling, barn dances, singing) Opportunities for interaction with and learning with other communities

Preliminary evidence in this field indicates that key minimum conditions required to protect, maintain, and enhance the quality of social capital in rural PEI and Nova Scotia include at least the following:

- a certain minimum threshold of farmers in the community;
- a certain minimum threshold of people who stay in the community over time;
- relatively equitable income levels both among farmers and between farmers and other community members (i.e., certainly not perfectly equal, but also not excessively polarized);
- ample opportunities for ‘bridging’ social capital (i.e., meeting and working with people with whom one would not normally socialize; and reaching out to people of different ages, abilities, races, life experience, occupations, and agricultural sectors).

Farm Community Viability

Agricultural community viability refers to the capacity of these communities to survive shocks and stresses, and to thrive in the long term. In other words, the communities are ‘resilient’. They can ‘bounce back’ from shocks and disturbances. This notion of resilience applies both to ecological systems, in which genuine progress is assessed by the capacity of an ecosystem to maintain its ‘health’ over time, and to human systems in which socioeconomic structures and communities are able to recover from dramatic changes in the natural resource base or in the overall economic system.

Profiles of particularly viable farm communities identified in the GPI farm interviews—as well as examples of struggling communities in the two provinces—indicate characteristics that are important to maintain as well as those that are important to avoid.

Among the many characteristics of viable communities, the following seem to stand out:

- The presence of community members who provide an ‘anchor’ or a living memory of the heritage of a place.
- Pride both of place and of the particular contribution that each community member can offer, which makes them want to share what they know, have learned, and are doing.
- Public places and events are important, so that community members can meet by chance and by common interest.
- As noted in the social capital chapter of this report, it is also critical for individuals of different generations, backgrounds, and interests to meet and work together. Collaboration based on such diversity weaves a strong social fabric and challenges community members to extend themselves beyond their usual way of thinking.
- A well-integrated diversity of farms and farm businesses, linked through a strong local food web, can create a healthy local food system that strengthens farm community viability.
- A vibrant community also focuses on its assets rather than its deficits.

Characteristics of rural communities identified in the interviews as lacking resilience and viability include:

- Loss of a significant number of independent farms, and of the business they generated
- Loss of community activities
- People don't work together to share equipment or make hay
- Grudges among community members stifle community spirit and prevent co-operative efforts to improve matters
- No community activities or events take place to bring people together
- People do not rally to provide assistance at a time of crisis, such as when a barn burns
- It is difficult to circulate money in the community because many of the businesses and services that used to be there are gone
- There are too few employers
- There is little age diversity and there are hardly any children.

Based on both the GPI farm interviews and other research in the area, the following indicators were recommended in this chapter to assess farm community viability:

Potential Indicators of Viable Communities

Indicator	Measure
Bioregional food self-reliance	% of locally grown food in <ul style="list-style-type: none"> - grocery stores - institutions like schools and hospitals - restaurants
	% of food dollar that goes to local farmers
	% of consumer food basket comprised of local food
	Local procurement policies of large retailers and institutions
	Food imports as a percentage of net food supply
	Farmers Markets: number; % of farm vendors; attendance; economic impact
	Diversity of farm sector
	Economic self-reliance
	Integration of farm businesses with other businesses
Resilience—durable economies	Participation and self-determination
	Community vision
	Locally controlled business
Community culture	Number of farms in each community
	Level of activity in the community
	Degree to which community is perceived as friendly and welcoming
	Level of volunteer activity
	Degree of reliance of community members on each other
	Trust
	Social diversity

A Warning and a Recommendation

Farm and rural communities in other parts of Canada like Saskatchewan, for example, are described in a way that provides an important contrast to the descriptions of farm communities in Nova Scotia and PEI derived from the GPI farm interviews:

The most keenly felt losses in farming communities are the absence of neighbours and communal life. Although this aspect is not quantifiable, and hence seldom taken into account, the restructuring of agriculture has led to a radical change in the culture of farming communities. With fewer people, and with the exodus of most of the young people, community activities are necessarily reduced. In many villages, the centres of community social life—the churches, halls, arenas, clubs, and schools—have disappeared altogether. The loss of cultural diversity and vigour in the countryside parallels the loss of biological diversity, and may pose similar inherent dangers to the long-term sustainability of human survival. (Qualman and Wiebe 2002)

This description may be taken as a warning. Based on all the evidence presented in this present report, Nova Scotia and PEI farm communities appear to remain much more vital, resilient, and viable than those depicted in the Saskatchewan description above, and with much stronger networks, bonds, institutions, farm diversity, and other key elements of social capital than apparently exist today in the Prairie Provinces. However, several PEI and Nova Scotia interviewees did describe signs of potential disintegration and adverse comparisons with earlier times that they recalled, which together might possibly constitute the beginning of the process described by Qualman and Wiebe (2002) above.

If the rather grim scenario portrayed for rural Saskatchewan is to be avoided in Nova Scotia and Prince Edward Island, and if the strong social capital that has traditionally characterized rural regions in the Maritimes is to be maintained, urgent steps must clearly be taken to strengthen farm economic viability.

The indicators, measures, and actions described in the chapter on farm community viability relating to strengthening local food webs, including local food procurement policies and support for direct marketing, constitute one of the most practical and cost-effective paths *both* to improving farm economic viability in particular *and* to strengthening social capital and farm community viability in general.

Opportunities for Building Bridges between Farm and Non-Farm Populations

Abundant evidence now indicates that farmers' markets:

- are excellent incubators for starting and testing farm businesses;
- are excellent tools to connect producers and consumers; and

- build bridges between farming and non-farm populations.

The evidence also indicates that, in general, bridge building between farm and non-farm populations requires a certain threshold level of farm people relative to total population. If farms diminish in number and are replaced by a few large industrial farming enterprises, that threshold may no longer exist, and the population may increasingly lose direct contact with its food sources.

Proximity of farms to towns was also found to be important so that farms are not isolated, and so that the general population has the opportunity to develop some kind of understanding of farming through access to Open Farm Days, agricultural fairs, and other farm-related activities and contacts.

Self-Reliance, and Reliance on Each Other

Much of the discussion in the Farm Community Viability chapter of this report is about ‘reliance’—and on the importance of assessing levels both of community and food self-reliance on the one hand, and of mutual reliance among the members of farm and rural communities on the other hand. Questions raised in this chapter include the following:

- On whom and on what do farm community members rely?
- To what extent do farm community members rely on each other and on the services they can provide for each other?
- Or do they rely more on earnings and spending money to meet most of their needs?
- In terms of farm products, do farmers rely primarily on local or foreign markets, and on local or foreign inputs? And how do such alternative forms of reliance affect their viability?
- Do farmers rely primarily on other farmers and people in their community for materials, services, advice, and support, or do they rely on external consultants and agriculture companies?
- Do consumers buy mostly local or foreign food?
- Do farm communities have a healthy combination and balance of self-reliance and other-reliance?
- Among all the self-reliance and mutual reliance options available, what strategy or strategies are most likely to keep Maritime agricultural economies and farms durable and resilient in the long run?
- And which strategy or strategies will most effectively promote the healthy functioning and development of ecological, human, and social capital, so that all these capitals reinforce and strengthen each other optimally?

Conventional economists measure prosperity by the number and market value of the things we buy and sell. But this study raises the possibility that prosperity may also be highly dependent on both the number and quality of *connections* that we have and make with each other—including both barter and banter; social support networks; sharing of equipment, services, time, and effort;

co-operation on many levels—from economic activities to working together on community projects; and the creation and maintenance of a ‘community of care’.

As energy sources have become increasingly expensive and are likely to become more so—raising the costs of transportation and imported food—bioregional self-reliance will become an ever-greater priority. The production of most food in a defined bioregion close to population centres would likely mean that a smaller percentage of the food dollar would be spent on transportation, packaging, preservatives, and warehousing. Since farmers are currently experiencing very low net returns, a food system that increases the portion of the food dollar going back to the farm also has the potential to increase farm economic viability.

The evidence both in this report and in the accompanying report on farm economic viability has examined a number of options tried and tested by farmers to improve both economic and community viability. A growing portion of the farm population, for example, has benefited considerably from direct marketing its food products and thus fetching higher prices for farm products by eliminating the middle man, while others rely on a healthy selection and diversity of processors and distributors to buy and market their products—thus reducing their exposure and vulnerability to purchasing shifts in the highly concentrated retail sector.

Consideration of bioregional self-reliance raises the inevitable question of why we import food that we can grow here. Generally the reason is price, which prompts food distributors and retail chains to source goods from wherever they can be obtained most cheaply and where farm labour is cheapest, even if there is a wide range of hidden costs associated with those imports and hidden benefits in local production that are not recognized or accounted for in conventional accounting mechanisms. Recent food safety concerns related to food imports from China have amplified awareness of these hidden costs.

Efficiency is often cited as a key reason for increasingly high levels of food imports. Thus, it is conventionally considered more efficient to grow and process particular foods in large quantities where the factors of production are cheapest and then to transport them long distances, than to rely on smaller and more diverse production units domestically.

This points to the key challenge in this area, which is to create a food system that is both efficient and also fulfils the ‘genuine progress’ goals of enhanced food self-reliance and security, vital community life, and viable farms and farm communities. Such an efficient locally based food system might be organized on a ‘foodshed’ basis—similar to the concept of a watershed, but based on efficient webs and networks of food production, processing, and consumption. Such thinking and planning might well prepare the Maritimes for a post-cheap oil world that will require greater reliance both on local partners and on local food production abilities, instead of on a food system that may become increasingly vulnerable to price and supply shocks. Enhancing food self-reliance through a new food web that meets the region’s most important needs may help stem the erosion of food sovereignty that evidence indicates is already under way.

To that end, the chapter on Farm Community Viability includes a detailed description of proposed local food indicators, as well as specific recommendations on how these indicators can be tracked and measured quantitatively and what data must be collected for this purpose.

Historical accounts of agriculture in the Maritimes indicate that, through the intersection of key social and economic initiatives, Nova Scotia did have greater food self-reliance than it has today. Walsh (1976), for example, notes that the Nova Scotia government in the past sometimes resisted “big business” attempts to undermine government agricultural policies that were designed to enhance food self-reliance and diversity through creating supportive infrastructure such as slaughter facilities and affordable livestock feed.

Walsh (1976) also describes the importance in the past of co-operatives, 4-H, and the original ‘production clubs’ to farming and to enhancing local food self-reliance and farm viability in Nova Scotia. In this description, he acknowledges the human capital component of farming in Nova Scotia by praising the ‘fine people’ who came from the province’s farms and recognizing them as anchors for their rural communities. His seminal book, profiled in this report, also acknowledges the value of social capital in agriculture in describing the attention, care, time, and great efforts required by farmers and others to build beneficial institutions and relationships conducive to effective farming in Nova Scotia.

In her book, *It all Started with Daisy* (1987), former Peninsula Farms CEO, Sonia Jones makes several observations of direct relevance to local food producers and suppliers today. Indeed, the company’s own hard experience provides some important lessons for today’s producers. Jones notes that independently owned stores were very important to help Nova Scotia businesses like Peninsula Farms Yoghurt get their start. However, she also observes that quality suffers with a ‘bottom line’ approach, and that conventional thinking about price has to be revisited if we care about quality.

In comments that well describe the hurdles facing small and medium sized farmers today, Jones remarks that distribution in a place like Nova Scotia is one of the major hurdles that small, local food businesses face. And she strongly acknowledges the value of social capital—and particularly of co-operation between producers and consumers—in repeatedly stressing the importance of the direct contact with customers that provided the feedback and energy that kept her company going.

Resilience and Community Culture

Finally, this GPI study indicates that the farm communities in Nova Scotia and PEI that exhibit the greatest resilience tend to be those that have a strong community culture. This particularly means:

- that the population is pro-active rather than reactive to outside stresses;
- that the community has created a vision for itself and put that vision into practice;

- that it has a culture in which community members rely on each other and work and celebrate together in a wide range of community activities;
- and perhaps most importantly of all, that the community has an effective local food web that supports local production, distribution, and consumption.

These summary remarks are by no means intended to be a comprehensive summary of all major issues raised in this important subject area. But they do highlight some key issues examined in this particular GPI report, and they also point to areas for further investigation in efforts to assess farm and rural community viability in the Maritimes.

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Needless to say, any errors or misinterpretations, and all viewpoints expressed, are the sole responsibility of the author and GPI Atlantic. Due to time and resource constraints, this report was not fully edited.

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LIST OF ABBREVIATIONS

4-H	4-H is a well-known rural / farm youth group
AB	Alberta
AVC	Atlantic Veterinary College, PEI
BBEMA	Bedeque Bay Environmental Management Association, PEI
BC	British Columbia
BSE	Bovine Spongiform Encephalopathy
CA	Canada
CALL	Canadian Agricultural Lifetime Leadership program
CBC	Canadian Broadcasting Corporation
CFIA	Canadian Food Inspection Agency
CO ₂	Carbon dioxide
CPI	Consumer Price Index
CSA	Community Supported Agriculture
EG&S	Ecological Goods and Services
FCC	Farm Credit Corporation
FMAP	Farm Management Analysis Project
FTE	Full Time Equivalent
g	grams
GDP	Gross Domestic Product
GPI	Genuine Progress Index; GPI Atlantic
ha	Hectare (2.47 acres)
HACCP	Hazard Analysis and Critical Control Points
kg	kilogram
km	kilometres
MN	Manitoba
NAICS	North American Industry Classification System
NB	New Brunswick
NF	Newfoundland and Labrador
NFU	National Farmer's Union
NS	Nova Scotia
NSAC	Nova Scotia Agriculture College, Truro, Nova Scotia
NSDAF*	Nova Scotia Department of Agriculture and Fisheries, changed to N.S Department of Agriculture in 2006
NSDAM*	Nova Scotia Department of Agriculture and Marketing (until 2000)
NSFA	Nova Scotia Federation of Agriculture
NSFGA	Nova Scotia Fruit Growers' Association
ON	Ontario
PE or PEI	Prince Edward Island
PEIDAFF*	Prince Edward Island Department of Agriculture, Fisheries, Aquaculture, and Forestry
PYE	Person Year of Employment (equivalent to 40 hours per week x 50 weeks = 2,000 hours/year)
QC	Quebec
PRRS	Porcine Reproductive and Respiratory Syndrome, a disease of hogs
RCIP	Rural Communities Impacting Policy
RST	Rural and Small Town (see Glossary)
SEA	Self Employment Assistance
SK	Saskatchewan
US	United States
WI	Women's Institute
WWOOF	Willing Workers On Organic Farms
WWII	World War II

* Note the agriculture departments' name-changes in the last decade. For PEI: Dept. of Agriculture and Forestry until 2002; Dept. of Agriculture, Fisheries, and Aquaculture until 2004; currently, Dept. of Agriculture.

1. Introduction: Towards a Healthy Farm and Food System

In today's conditions and circumstances—perhaps more than ever before—the necessity for a healthy and vibrant farm and food system is becoming apparent. The increasing cost of fuel and transportation, and a global food system vulnerable to contamination and even unscrupulous meddling (as in the Chinese melamine scandal), is refocusing society's attention on where food comes from and on the need for greater food security.

And yet, at the same time, our dependence on food imported from distant places has grown enormously while our local food system has started to unravel. Indeed, the social and economic fabric that sustains local agriculture, that nurtures and teaches new farmers, that maintains the resilience and viability of agriculture communities, and that makes barter and co-operative arrangements possible, has begun to tear. For example, as earlier GPI reports on farm economic viability have demonstrated, few young Canadians or Maritimers will willingly enter a sector mired in debt or engage in an occupation where expenses exceed income.

Ironically, just as local farming is unravelling, Canadians and Maritimers are becoming increasingly interested in buying locally grown food. This raises the challenging question: Do we have the capacity to meet the demand and to produce the local food that people want? To do so, we need the resource base—the land, the soil, the biodiversity.¹ We need the economic capacity.² But we also need the human capacity and willingness to farm; the relationships among farmers and between farmers and consumers that make production and distribution of food possible; and the community infrastructure that makes farming viable.

All three dimensions—resources, economic viability, and human and social capacity—are necessary. If, for example, the best agricultural land is turned over to industrial, commercial, and residential development, if soil quality deteriorates, and if the micro-organisms essential for soil productivity are lost, effective food production is imperilled. And farming simply cannot survive if it ceases to be economically viable. But it is the third dimension—the web of human and social relations on which farming depends—that has perhaps received the least attention and yet is no less important than economic and resource constraints in ensuring farm and rural viability and effective food production.

¹ These issues are addressed in the GPI Soils and Agriculture reports: *Land Capacity* (Scott 2008); *Soil Capacity and Productivity* (Scott and Cooper 2002); and *The Value of Agricultural Biodiversity* (Scott 2002)—all available on the GPIAtlantic website at www.gpiatlantic.org.

² This is addressed in *Farm Economic Viability in Nova Scotia and Prince Edward Island* (Scott and Colman 2008), available at: <http://www.gpiatlantic.org/pdf/agriculture/farmviability08.pdf>.

In this final component of the GPI Soils and Agriculture Accounts,³ we therefore focus on the human and social aspects of agriculture in Nova Scotia and Prince Edward Island, and on their intimate connections with the ecological and economic underpinnings of farming and with the viability of rural communities. Stewardship is covered in the first chapter; human capital is addressed in the second chapter; and social capital in the third. The final chapter examines the viability of farming communities as a whole.

The research for this report was not purely academic. The report is equally based on extensive and wide-ranging interviews with Nova Scotia and PEI farmers using an ‘appreciative approach’, in which farming people were asked to explain ‘what works’. In this engagement, the stories flooded out and our team of six interviewers tried to capture the essence of what was said both in order to identify potential indicators of progress in this largely uncharted area of the social and human dimension of agriculture, and so that the two provinces can begin to chart a way forward towards a healthier and more vibrant farm and food system.

The first and most basic question this study has sought to address is: What benefits to society are provided by the farms of Nova Scotia and Prince Edward Island? In-depth interviews with 107 farmers and others in the farm sector produced a listing of such societal benefits, not all of which are easily quantifiable. A small sampling of responses to this question includes the following:

- the contributions of “farm culture” (as defined and explicated in the body of this report);
- the existence of people in a natural resource sector who have a practical, working knowledge of the natural world and of the human and societal place in that world;
- the farm knowledge base (practical knowledge—often passed through generations—of how to produce food essential to existence);
- employment and business generation in rural areas;
- farmers’ markets that enable consumers to purchase food directly from producers;
- land stewardship;
- active contribution to rural organizations and services;
- contribution to food security;
- contribution to social events like church dinners, exhibitions, and country dances, which in turn typify vibrant and resilient rural communities;
- contribution to tourism.

These benefits, and many more, can collectively be considered part of the “social contribution” of farming—the stock of social wealth produced by farming that goes beyond the economic benefits provided by agriculture as a sector of the economy.

³ The GPI Soils and Agriculture Accounts (under development for the past eleven years) consist of three basic components—economic viability, resource capacity and use, and human and social capital. The first two components were developed from 1997 to 2002, with a recent update of the economic viability component (2008). This particular report, under development since 2003, completes the third and final component of the GPI Soils and Agriculture Accounts. In the longer term, it is hoped to expand the resource capacity and use component of the GPI Soils and Agriculture Accounts (which currently includes reports on soil quality and productivity and on biodiversity) through the production of three additional reports—on water use, livestock, and input use efficiency. Extensive research has been undertaken in all these areas but resources have not been available for completion of these studies.

The accompanying report, *Farm Economic Viability in Nova Scotia and Prince Edward Island* (Scott and Colman 2008), shows that key indicators of farm economic viability are in very serious decline. The adverse trends in these indicators have inevitably produced a second key research question: If farm viability indicators have been in fairly continuous decline for over 35 years, with particularly grave results in the last decade and net farm income now below zero, why do farmers continue to farm? This question cannot be satisfactorily answered in terms of simple economics, since the current economics of farming simply do not support continued farming.

Extensive GPI interviews with farmers both in Nova Scotia and Prince Edward Island (PEI) indicate that the question can only be satisfactorily answered in social (rather than purely economic) terms, and in ways that point to a key facet of “social capital.” For example, the interviews revealed a tenacious resistance among farmers and in farming communities against simply letting the farm sector fade away—despite the extraordinary economic challenges faced by the sector. Conversations in 2003 pointed to a myriad of uncounted social, human, environmental, and community benefits associated with farms that have somehow kept farming alive in the region against all financial and economic odds.

Although we are accustomed to thinking of ‘wealth’ in material terms, the research on which this report is based reveals that there is substantial human and social capital associated with farms and with farming, without which both our rural communities and society at large would be much ‘poorer’—in ecological, human, social, and even economic terms.

For more than a decade, GPI Atlantic’s focus and mandate have been to ask what *genuine progress* in society looks like, and to attempt to assess whether we are achieving such progress. Thus a set of genuine progress *indicators* has been developed in a wide range of social, economic, and environmental areas, in an attempt to assess how well we are doing as a society. From the GPI perspective, human, social, and natural capital are as integral components of our national and provincial wealth as the produced, material, and financial capital that are regularly tracked in our standard economic accounts and measures of progress. Not only does the GPI therefore explicitly value human, social, and natural capital, but it also recognizes that they are as subject to depreciation as produced capital, and thus equally require re-investment to restore and enhance their value.

All the indicators in the GPI Soils and Agriculture series—i.e., in all six studies produced to date, including economic viability (two reports), soil quality and productivity, biodiversity, land capacity, and this final one—are in fact indicators of genuine progress towards a healthy food and farm system. However, this particular report is given the omnibus title *Towards a Healthy Food and Farm System: Indicators of Genuine Progress*, because of its particular comprehensiveness, its inclusion of major new sections on ecological wellbeing, human capital, social capital, and farm community viability, and its attempt to link farm viability with rural community viability in general and with a healthy societal food system. More explicitly than in any other component of the GPI Soils and Agriculture Accounts developed to date, therefore, agriculture in this particular report is directly tied to wider issues of societal food security and

rural vitality. Nevertheless, it is necessary to indicate here that this report title actually describes the entire GPI Soils and Agriculture Accounts and all its progress indicators and valuations.

The concern to account for social and human capital in agriculture is not simply an attempt to assess the “softer” and less tangible components of social progress and wellbeing. Instead, this dimension of agriculture has been acknowledged as essential to livelihood and even survival. Thus, food security has long been recognized as an essential component of national and regional security (Gardner, 1996)—with the capacity of a society to feed itself in times of insecurity, crisis, or conflict potentially more important and essential to survival than military might. Particularly in an era of volatile and unpredictable global markets, in which vulnerability is enhanced by increased dependence on foreign sources of supply, analysts have remarked that it may be more essential than ever for communities to be able to rely on a secure, local source of food and nutrition. For this reason too, maintaining and enhancing the potential capacity, productivity, and health of agricultural resources and rural communities in the Maritimes is an essential indicator of *genuine progress* in the Nova Scotia Genuine Progress Index (GPI).

All measures of progress are, by definition, normative, since they must always answer the question ‘progress towards what?’ This question necessarily involves value choices. In the Genuine Progress Index, those values are explicit. For example, there is a broad social consensus that adequate livelihood security, peaceful and secure communities, a healthy population, clean air and water, healthy natural resources, and an educated populace are essential components of wellbeing. Therefore, these values can be considered a suitable basis for indicators of progress.

Similarly, food security for this and future generations can be considered a fundamental social objective that in turn depends on a healthy farm sector. For this reason, the health and economic viability of agriculture go beyond an assessment of one among many economic sectors, but represent a core social value that in turn defines an explicit goal in the GPI against which progress can be assessed. In each section of this report, therefore, the potential goals or thresholds against which progress can be measured will be suggested and made explicit at the outset.

In economic growth-based measures of progress, ‘more’ is always implicitly considered ‘better’. So long as the economy is growing, politicians, economists, and experts therefore consider us ‘better off.’ By contrast, the inclusion in the Genuine Progress Index (GPI) of social and environmental values and objectives not considered in standard economic growth measures means that *less* may sometimes be *better* in the GPI. For example, less crime, less sickness, less pollution, less waste, and fewer greenhouse gas emissions are all indications of genuine progress in the GPI. By contrast, burning more fossil fuels, spending more money on war, and paying for the effects of crime, sickness, and pollution, make the economy grow simply because money is being spent, and are therefore misleadingly interpreted as signs of progress and prosperity in measures based on the GDP.

This attempt to distinguish between benefits and costs, and to account properly for both, extends to these GPI Soils and Agriculture Accounts. From the more comprehensive capital accounting perspective of the GPI, progress is indicated by optimum *net* gains that account for a full range

of social, economic, and environmental benefits and costs, rather than by maximum *gross* gains like farm revenues or outputs, as in the GDP. Unlike conventional accounting practices, therefore, we attempt to include *uncounted* costs and benefits, including those incurred outside the market economy, in our determination of net gains (or losses).

Because the GPI (and indeed any set of sustainable development measures and any capital accounting approach that includes asset depreciation and returns on investment) requires a long-term perspective by definition, we also try to incorporate this long time frame into the following analysis of social and human capital in agriculture. Thus, genuine progress includes optimal levels of quality food production, thriving farms, and resilient farm communities *in the long term*.

Because indicators of farming viability have been in decline for so long, progress towards a thriving and healthy agricultural sector and agricultural communities may require more than just ‘sustaining’ what we have at this point in time. A long-term perspective therefore requires both a retrospective analysis that ensures current levels are not blindly taken as the “base” or “threshold” for progress, and also a forward-looking analysis that attempts to assess current actions in light of their long-term impact on future generations. Thus, producers in agricultural communities who conserve and enhance soil quality, water resources, and the many other components of natural and social capital in agriculture, can be seen as making a significant long-term social contribution to rural communities, to the common good of society as a whole (given its dependence on agricultural communities for its food security, health, and wellbeing), to future generations, and to ‘genuine progress’ in agriculture and society.

By tracking the state of natural, social, and produced resource stocks, the GPI capital accounting system is also intended to provide early warnings of potential asset depletion and degradation. Thus, real progress may require a shift to *preventing* farm and infrastructure loss rather than attempting to fix the problem after losses and damage have occurred. In the following analysis, we have therefore attempted to show where preventive investments may offer opportunities for long-term savings.

In short, ‘genuine progress’ in the GPI is seen as the product of *balance* between the various capitals and *efficiency* in resource use, rather than of simple gross quantitative growth, as indicated by measures that rely on GDP.

Report Contents

There are three aspects to this broader analysis of the viability of farms and farm communities in Nova Scotia and Prince Edward Island.

The first is based on a set of interviews and discussions with farmers and people in farm-related occupations in Nova Scotia and Prince Edward Island (PEI). A key purpose of those conversations was to identify appropriate indicators of farm and farm community viability; to

ascertain the conditions that lead to viability; and to ensure that the conclusions of this study and the recommended indicators were in line with actual lived experiences. The details of those interviews and discussions are recorded in the accompanying report *Farm and Community Viability: Report on Interview Results* (Scott et al 2003).⁴

The second aspect of the study records the trends associated with the indicators of viability identified in the interviews, wherever such data are presently available. For example, farm employment over time was documented.

Finally, an effort was made to begin putting a value on the wide-ranging contributions that farms and farmers make to society—many of which contributions have long been invisible in the conventional economic accounts and in the standard economic growth-based indicators of progress. This valuation work is particularly important at this point in time, in light of warnings by some interviewees that Maritime farms will not last long. Both the interviews and the objective indicator trends recorded reveal quite clearly that Nova Scotia and Prince Edward Island stand at a critical point in farming history, and that there is therefore an increasingly urgent need for an understanding of the true value that farms provide.

The colloquial saying that ‘you don’t know what you’ve got till it’s gone’ may be quite literally true in this case. If society does not indeed understand and appreciate the value of what we have, it will be unlikely to react when a viable dairy farm is purchased in order to build a Wal-Mart. The valuation work undertaken in this study is therefore an attempt to start ‘knowing what we’ve got’ *before* it’s gone, which in turn may give rise to policy measures designed to protect the region’s farming resources.

Note: Except when numbers are cited from other secondary sources as specified, all figures in this report (in all graphs and tables) are in 2007 constant dollars. Thus the (\$2007) notation is used to signify that the numbers in a graph or table have been converted to 2007 dollars to account for inflation and thus to allow direct comparison of real dollar values over time. Whenever numbers are quoted directly from other secondary sources and not converted to 2007 dollars, this will be specified in the text.

⁴ This report is available on the GPI Atlantic website at: <http://www.gpiatlantic.org/pdf/agriculture/farmviab.pdf>

2. Ecological Wellbeing

Ecological wellbeing is a concept that essentially relates stocks and flows. It implies that stocks of natural capital are sufficiently robust, plentiful, and healthy to provide the flows of ecological goods and services required to sustain life effectively and in optimum condition. In practical terms, for example, it means that water resources are sufficiently plentiful and water quality sufficiently good to provide ample drinking water that can be consumed without adverse health effects. It means soil quality is sufficient to produce nutritious food, and is also hopefully improving or building over time to ensure that soil productivity is sustained in the long term. Healthy livestock also figure prominently in an ecological farm system because ruminants consume soil-building forages, and produce manure to enhance productivity. In short, ecological wellbeing in agriculture means that key natural capital assets are sufficient in both quantity and quality to ensure effective farm productivity and healthy food production over time.

From that perspective, ecological ‘efficiency’ ensures that natural resources are used in a way that does not cause depletion or degradation over time. This includes the maintenance of sufficient biodiversity in the landscape to help even out the impact of pests, temperature fluctuations, and other natural occurrences. To take an example from the forestry industry—mixed hardwood-softwood forests with a high degree of biodiversity and a varied species and age structure, were much better able to withstand the spruce budworm infestation of the late 1970s in the Maritimes with far lower rates of defoliation, than single species, single-aged softwood plantations that were devastated by the pestilence. In that sense, biodiversity has been described as acting like insurance—to “avoid foreclosing future options” (Charles et al 2002)—and has important economic benefits.

Ultimately, therefore, ecological wellbeing means having a robust enough farm and community environment that future options for production, discovery, and healthy living for all organisms are possible. In relating current stocks with future as well as present flows, ecological wellbeing is inseparable from the notion of ‘sustainability’ and is essentially a long-term view that incorporates future as well as current wellbeing. It therefore directly and practically affects choices in farming methods, to ensure that farming is conducted in such a way as to provide ample and nutritious food for the present generation without compromising the ability of the soil, water, and other natural resources to provide ample and nutritious food for future generations.

Ecological wellbeing is a two-way street. If we are good stewards of farms, soils, and rural communities in the present generation, the rewards of productivity and environmental quality will be returned not only in the short term but also over time for the benefit of future generations. *The challenge is that the connection between stewardship and rewards may not always be direct.* The stewardship of one generation (especially in building soil quality and restoring previously degraded land) may pay off in the form of benefits accruing to the next and future generations. Taking care not to pollute water on one farm may produce clean water downstream for the benefit of other farmers and rural communities.

With awareness and education, these interconnections and feedback loops can be discerned and explained, and can support good farming methods. But, to enhance the incentive to be good stewards—especially in light of the serious economic challenges faced by many Maritime farmers as outlined in the report on Economic Viability—several payment schemes are being developed and tested in order to put a dollar value on stewardship. Without such schemes, even the most well-intentioned and ecologically minded farmers may argue that they cannot afford to give up short-term gains for the sake of long-term stewardship and benefits that will be reaped by others.

Although there is a strong case in this day and age, in which economic and financial concerns so often trump all other considerations, for rewarding stewardship economically, it remains to be seen whether such payments for environmental goods and services will be effective. In the meantime, the evidence examined for this study indicates clearly that many farmers in Nova Scotia and PEI are remarkably good stewards of their land, environs, and natural resource wealth, regardless of the existence of such payments, and in the face of often daunting financial challenges that often tempt them to take short cuts at the expense of ecological wellbeing.

This section of the report is quite short relative to the other sections, largely because ecological wellbeing indicators for Nova Scotia have been explored and are being explored much more thoroughly in other GPI Atlantic reports that are part of this *GPI Soils and Agricultural Accounts* series.⁵ These include:

- *Soil Quality and Productivity* (Scott and Cooper 2002),
- *The Value of Agricultural Biodiversity* (Scott 2002), and
- *Land Capacity* (Scott 2008).

The largely objective and scientific evidence in these GPI Atlantic reports is complemented by the extensive round of GPI interviews held in 2003 with Nova Scotia and PEI farmers and farm community members. Those conversations, which included a wide-ranging discussion of ecological wellbeing on PEI and NS farms and in farm communities, are documented in the report *Farm and Community Viability: Report on Interview Results* (Scott et al 2003)⁶. These interviews not only provide good background for and help in selecting the ecological wellbeing indicators chosen for discussion here, but also serve as important testimonials on the degree of understanding, commitment, and action manifested by local farmers in their role as stewards of farmland, water, biodiversity, and other resources.

Since Nova Scotia indicators of soil quality, agricultural biodiversity, and other ecological indicators have been covered extensively in other GPI Atlantic Soils and Agricultural Accounts reports—see particularly *Soil Quality and Productivity* (Scott and Cooper 2002), and *The Value of Agricultural Biodiversity* (Scott 2002)—the focus of this section will be primarily on PEI results.

⁵ The already published GPI Soils and Agriculture reports are available at <http://www.gpiatlantic.org/publications/naturalcapital.htm>

⁶ This report is available on the GPI Atlantic website at: <http://www.gpiatlantic.org/pdf/agriculture/farmviab.pdf>

Farm Contributions to Ecological Wellbeing

Many farmers are providing a valuable service to society by taking care of a piece of the earth. As the GPI Accounts explicitly acknowledge the value of natural (as well as social, human, and produced) capital, the stewardship and protection of natural capital must be correspondingly acknowledged and valued. Indeed, economic valuation is not merely an academic exercise, but reflects actual financial realities on the ground. Thus, stewardship of a farm is not only a significant responsibility, but also costs money and requires an investment of both financial and human resources. The comprehensive GPI accounting system is designed to elucidate such connections.

A key issue, therefore, is that ecological wellbeing and economic wellbeing are intimately linked, and that the former is dependent on the latter to a significant degree. As noted in the Economic Viability report, farm economic viability is in serious decline (if not free fall), even though farms make a significant economic contribution to rural communities in direct, indirect, and induced benefits. Declining net income and increasing debt and input costs have therefore made it increasingly challenging for Maritime farmers to invest in proper farm stewardship to the degree that they themselves acknowledge is necessary. On the other hand, the 2003 GPI farm interviews indicate clearly that farm stewardship remains a major source of pride for many farmers, and that it is their ‘connection to the land’ that has kept many of them farming even when economic returns are lacking. In that sense, farm stewardship can also be considered a component of ‘social capital’ in agriculture.

Ecological Goods and Services

According to the PEI Department of Agriculture, ecological goods and services (EG&S) are “the positive environmental benefits that Canadians derive from healthy ecosystems, including clean air and water, enhanced biodiversity and other benefits including recreation and an attractive rural landscape.” The Department rightly points out that “agriculture is both a beneficiary and a provider of ecological goods and services.” Thus, it notes that the sustainability of the industry “depends on ecosystem processes such as soil renewal, climate regulation and precipitation. At the same time, well-managed agricultural lands provide benefits to the broader society like fish and wildlife habitat, scenic views and purification of air and water through natural processes.”⁷

Farm contributions to ecological wellbeing are beginning to be recognized and encouraged in many countries in the form of actual payments for ecological goods and services. Table 1 below provides several examples, including very recent (August and December 2007) initiatives in PEI and Nova Scotia, respectively:

⁷ PEI Department of Agriculture website: <http://www.gov.pe.ca/af/agweb/index.php3?number=1019634> (Accessed August 2007)

Table 1: Payments for Farm Contributions to Ecological Wellbeing

Place	Program	Payment (Cdn)
United Kingdom ⁸	Annual payment for agri-environmental support (in addition to other programs related to rural maintenance)	\$30–64/ha/yr ⁹
All EU countries ¹⁰	Average annual payment to support conversion to organic agriculture	\$275/ha/yr
Switzerland ¹¹	Annual payments for conversion to organic farming <ul style="list-style-type: none"> - special crops (fruit, vegetables, vineyards) - arable crops - rest of farmland 	\$1808/ha/yr ¹² \$1406/ha/yr \$530/ha/yr
EU countries from 2007 onward ¹³	Maximum amount of support per holding for meeting agri-environmental standards PLUS Various annual payments per ha for making agri-environmental commitments (with payments calculated according to income loss and costs associated with particular commitments)	\$16,067 \$64–803/ha/yr
MN ¹⁴	Alternative Land Use Services (ALUS) ¹⁵ average annual payments for beneficial land management practices on qualifying land	\$20/acre/yr

⁸ Roberts et al. 2005

⁹ On 31 Aug 2007, UK Pounds sterling are converted to Canadian dollars, at an exchange rate of 2.1303 (using nominal rate.). Bank of Canada Currency Converter: <http://www.bank-banque-canada.ca/en/rates/converter.html>

¹⁰ Roberts et al. 2005

¹¹ Roberts et al. 2005

¹² European Euros converted to Canadian dollars, 8 Aug 2008, at an exchange rate of 1.6067 (using nominal rate.). Bank of Canada Currency Converter: <http://www.bank-banque-canada.ca/en/rates/converter.html>

¹³ European Communities 2006.

¹⁴ Rance 2007

¹⁵ ALUS is a voluntary, incentive-based environmental program that compensates farmers for beneficial land management practices on qualifying land. The first pilot project was launched in Manitoba in November, 2005, and is scheduled to run for three years. Over 20,000 acres of farmland, 70% of eligible land, have been enrolled in the project to date. Compensation under the Manitoba project varies, depending on the type of land enrolled, and on the level of management stipulated in the particular contract with the landowner. Managed grazing areas are worth 5 dollars an acre. Natural areas, riparian areas, and wetlands that are taken out of agricultural production pay up to 15 dollars an acre. Partial use contracts on these lands allow activities such as managed use of wood or haying, and pay \$7.50 /acre. Ecologically sensitive lands can receive up to 25 dollars an acre. Qualifying ecologically sensitive lands must have been cultivated within the past 20 years, and be at risk for erosion, flooding, leaching, etc. A landowner may enrol 20% of his or her ecologically sensitive land, and must have permanent cover in place prior to enrolling the land. From Angella MacEwen, Assistant Development Economist, Business Development & Economics, Nova Scotia Department of Agriculture (phone: 902.424.2512). Source: Keystone Agricultural Producers website: <http://www.kap.mb.ca/alus.htm>. Accessed August 2007.

Place	Program	Payment (Cdn)
New York State ¹⁶	One-time incentive payment for farmers to put land in a riparian buffer, filter strip, or grassed waterway, PLUS Payment for about 90% of eligible costs incurred in establishing the above protected land use, PLUS Annual payment equivalent to about 125% of the average rental rate in the county in which this particular protected land is located	Approx \$125/acre
PEI ¹⁷	Annual payments for farm practices that contribute ecological goods and services (EG&S) to society	Approx \$100/acre
NS ¹⁸	Pilot project to determine a value for environmental activities and assign a potential payment for farmers undertaking these activities	Not yet determined

In two agricultural watersheds in PEI, a new EG&S partnership program has been developed to compensate farmers for soil and water stewardship.¹⁹ Agriculture Canada and the Souris and Area Branch of the PEI Wildlife Federation established an EG&S pilot project for the Founds River and Souris River Watersheds in the spring of 2007. The purpose of the project is to mitigate and prevent environmental problems associated with agricultural production (particularly soil erosion), and to improve water quality and biodiversity within the two watersheds. Table 2 outlines in more detail some of the payments for which farmers in these two watersheds will be eligible.

¹⁶ From United States Department of Agriculture website: www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=cep. Accessed August 2007.

¹⁷ CBC Radio, August 24, 2007.

¹⁸ News & Events of the The Sustainable Island Community Economic Development Investment Fund: Government of Canada Announces \$740,000 for Nova Scotia Biofuels and Ecological Projects. Available at: <http://islandscedif.com/index.php?mact=News,cntnt01,detail,0&cntnt01articleid=3&cntnt01returnid=53>

¹⁹Souris and Area Branch of the PEI Wildlife Federation website: <http://www.souriswl.ca/EGS.html>. Accessed November 2007

Table 2: PEI Watershed Ecological Goods and Services Incentives

Practice	Incentive	Expected Result
Erosion prevention practices on sloped land	Diversion Terraces - \$100/acre/year Farmable Berms - \$95/acre/year Grassed Waterways - \$105/acre/year	Reduce soil erosion
Maintain fences adjoining a watercourse/wetland	Fence with stream crossing and alternate water source: Electric fence - \$135/year + \$0.059/ft Barb wire fence - \$135/year + \$0.124/ft Fence with stream crossing or alternate water source: Electric fence - \$70/year + \$0.059/ft Barb wire fence - \$70/year + \$0.124/ft Fence <u>without</u> stream crossing or alternate water source: Electric fence -\$0.059/ft Barb wire fence - \$0.124/ft	Keep cattle out of watercourses, improve water quality
Take sensitive, high sloped land (>9%) out of annual crop production	Sensitive, high sloped land retirement: \$40/acre/year	Reduce soil erosion
Keep soil covered	Spring plow (as opposed to fall plow) \$8/acre Cover crop only - \$8/acre Mulch only - \$16/acre Spring plow and cover crop - \$20/acre Spring plow and mulch - \$30/acre	Reduce soil erosion
Enhanced buffer	Sensitive land retirement adjoining legislated buffers - \$75/acre/year	Reduce runoff from fields into watercourses
Hedgerows (at least 20 ft wide)	In crop field - \$95/acre/year In pasture field w/one-sided electric fence - \$90/acre/year + \$0.012/ft/year In pasture field w/one-sided barb wire fence - \$90/acre/year + \$0.027/ft/year In pasture field w/two-sided electric fence - \$90/acre/year + \$0.024/ft/year In pasture field w/two-sided barb wire fence - \$90/acre/year + \$0.0055/ft/year In pasture field without fence - \$95/acre/year	Shade for livestock, reduce soil erosion, provide habitat for wildlife
Grassed headland	Grassed headland - \$65/acre/year	Filters field runoff before it enters a water body

Source: Adapted from information posted on the Souris and Area Branch of the PEI Wildlife Federation website <http://www.souriswl.ca/EGS.html>.

Payments for EG&S are an example of placing a monetary value on the positive externalities flowing from farm stewardship actions. They are an attempt to incorporate a more full-cost, full-benefit accounting system into policy making and to provide incentives for actions that do in fact carry long-term economic as well as environmental and social benefits. Thus, reduced soil erosion, for example, can reasonably be expected to maintain long-term productivity more effectively than a business-as-usual scenario that sees soil erosion progress at present rates, while improved water quality can be expected to avoid potentially expensive mitigation, filtration, and other engineering costs.

The results of these kinds of EG&S initiatives and payments to farmers should be carefully monitored in order to assess whether they are creating the intended benefits in terms of both physical results and improved productivity, avoided costs, and other expected economic benefits. Full-cost, full-benefit accounting analyses can also be used to help set the appropriate dollar amounts of incentive payments in accord with the benefits anticipated.

Maintaining Land in Working Farms

Pressures such as residential, golf course, or highway development, or poor financial returns on farming, make conservation of farmland for farming very challenging. But if the maintenance of working farms is seen as a *service* provided to society, yielding significant economic, social, and environmental benefits, then adequate regulatory and zoning mechanisms, as well as financial incentives, can potentially be put in place to meet these challenges effectively. In recognition of the services provided by farms, for example, most municipalities do in fact charge a lower property tax rate for farms than for residential development.

On the other hand, in the face of accumulating farm debt, low product prices, and declining farm net income, regulatory mechanisms designed to protect working farmland may potentially undermine farm viability. Thus, some farmers in Nova Scotia have suggested that restrictive regulations on land development could impinge on the viability of their operations by preventing them from selling off part of their land to support the maintenance of production on the rest. In the absence of adequate returns on farming itself, land is in some cases the only source of wealth accumulation and financial security for farmers, so that restrictions on its development or sale also reduce the ability of farmers to leave the business advantageously and to retire (ATi Consulting 2002: 56).

As prime farmland becomes scarcer, and as land prices rise, the time to revisit working farmland tax breaks and other incentives appears to be long overdue. Any such reconsideration must clearly occur within the context of the market failures that have depressed farm product prices, shifted profit-taking to other parts of the food industry, and undermined farm viability, as indicated by the evidence in the Farm Viability report (Scott and Colman 2008).

Comments from farmers (Scott et al 2003) show both that it is presently a major struggle to keep land in working farms, and that potential regulatory and zoning reforms allowing easier conversion of farmland to residential and other development are no substitute for market reforms that provide adequate returns on farming. Some sample comments from the 2003 interviews follow:

Farmers in PEI

- One PEI farmer remarked that he wants to be able to take his grandchildren to show them where he grew up, where his roots are, and where his father before him worked the land, not just show them a photograph of where he walked as a boy. The farmer referred to values like a sense of belonging, the longevity of family lineage, and connection to nature, all of which are now increasingly dependent on continued economic viability. In his words: “Dirt and clay under the nails is a powerful connection to nature.” And he recognized that the importance and significance of owning land will be even more vital in the future, as land becomes increasingly valuable.
- Another PEI farmer acknowledged that the family is tempted by considerable, generous financial offers for the sale of its land (e.g., for a golf course), but the family is choosing to focus on a future as farmers on its land. He noted that, as land and quota prices rise, it is tougher for farms to expand, and more tempting for farmers to ‘sell out’ and stop farming. This is a particular challenge for this family because it has a water view and proximity to Charlottetown that make its land particularly desirable for non-farm development.
- Yet another PEI farmer pointed to the importance of maintaining economic viability in order to protect the environment for long-term economic, social, and environmental sustainability. She noted that, as more Island farms undertook Environmental Farm Plans (EFP), she was finding that farmers were already naturally doing a lot of the things officially recommended to protect the environment.
- In a similar vein, a fourth PEI farmer said that it’s “great” to see farmers making environmental improvements, and that this proves to him once again that farmers are the truest environmentalists. He noted that he was encouraged to see farm productivity and organization enhanced as a result of these environmental improvements. Personally, he remarked that the beauty of the land itself is one of the key things that gives him energy.

Farmers in Nova Scotia

One Kings County farmer commented that the county has some very progressive zoning that helps to protect farmland for farming, although he noted that this zoning is not consistently applied. Any land that has been deemed agricultural land is presently not permitted to be used for other purposes, *except* under certain conditions. Thus, a farmer is allowed to build a house on his farm for another generation, or for hired help. But agricultural land is not allowed to be re-zoned into building lots. However, in this farmer’s observation, there seem to be significant loopholes

to this present zoning policy: “I keep seeing houses spring up on farmland all over the place. The Kingston / Greenwood area is especially susceptible to that.”

Another Kings County farmer noted that

We’re trying to slow development down and I think it’s most unfortunate to use land of this quality and this climate as residential land. For the municipality the revenue from an individual household is far greater than that from farmland. If the viability of farming is not very good, the farmer will sell off his land to pick up a few dollars. That’s why I think we should have land banks.

A third farmer from further up the Annapolis Valley mentioned that

The county wants to run a highway right through my yard, because they promised Michelin that they would give them an exit off the highway when they put the plant in here. ... We fortunately know the Plant Manager at Michelin, and he’s very much on our side. He buys a great deal of stuff from us. He’s been an extremely good customer and a very good friend and I hope he doesn’t leave until the County builds their highway somewhere else.

A dairy farmer is grateful to the local municipality for making a conscious effort to maintain farmland: “There’s a line around the Milford area that the municipality has drawn. On the Elmsdale side, they are encouraging residential development but on the Shubenacadie side, they are preserving the farming sector and not encouraging residential development.”

Stewardship

Aside from simply maintaining land in working farms (a quantitative resource indicator), it is important to assess the *quality* of care for the land provided by farmers. A comprehensive capital accounting approach like that of the GPI, which attempts to value natural capital, is concerned not only about resource depletion in quantitative terms, but about its potential degradation in qualitative terms. Conversely, the investment and re-investment required to restore and improve land, water, and other resources is very often qualitative in nature (such as building soil quality, for example).

From this qualitative perspective, it is important to acknowledge not only the maintenance of working farmland but the stewardship of that land as a key service provided by farmers to society. Farmers thus not only have to resist development pressures to keep their farms in the first place, but they also have a major responsibility to steward the land with proper care and understanding. In practical terms, they have to protect the water from being polluted; prevent soil degradation; and maintain the land in good shape for future generations. GPI Atlantic’s 2003 farm interviews indicated that Maritime farmers are clearly aware of the weight of that responsibility:

According to one PEI farmer: “Even though farmers own the land, their stewardship (or not) affects all of society. ... Even though water is a common resource, farmers bear the cost of protecting it.... They practice soil conservation, and also maintain wetlands, forested areas, etc.”

Another PEI farmer noted: “The tourism industry benefits from the visual pleasure of the rural landscape that farms contribute to.... The rural landscape is one of the main reasons why tourists come to PEI.... The PEI landscape has a dynamic about it... the land looks alive.”

A Nova Scotia farmer commented: “Whether we acknowledge it or not, we allow people to own land that is really common land—in other words, the land doesn’t just belong to me, it belongs to all of us. With that comes responsibility.”

Indicators of Ecological Wellbeing

The main indicators of farm and farm community ecological wellbeing used in the GPI Atlantic Soils and Agriculture Accounts are outlined in Table 3 below. These indicators and measures were first developed for Nova Scotia in the GPI Atlantic reports *Soil Quality and Productivity* (Scott and Cooper 2002), *The Value of Agricultural Biodiversity* (Scott 2002), and *Land Capacity* (Scott 2008). As well, the author intends to develop further ecological indicators for agriculture in additional reports, titled: *Watershed Health in Agricultural Communities*, *Livestock Health and Productivity*, and *Input Use Efficiency*.

Complementing the scientific and statistical evidence on which those reports are largely based, GPI Atlantic’s 2003 farm and farm community interviews in both PEI and Nova Scotia provide important additional information and discussion on ecological wellbeing in Maritime farming, and point to other potential indicators in this field. Results from these interviews are documented in the report *Farm and Community Viability: Report on Interview Results* (Scott et al 2003). This report, along with the GPI soil quality, biodiversity, and land capacity reports, as well as GPI Atlantic’s initial 2001 report on farm economic viability in Nova Scotia, are all available for free download at the GPI Atlantic website (www.gpiatlantic.org).

Table 3: Current and Potential GPI Indicators and Measures of Ecological Wellbeing²⁰

Indicator	Measure
Soil and water quality	Soil organic matter (SOM) or soil organic carbon (SOC) <ul style="list-style-type: none"> - SOM from soil samples - Return of residues and livestock manure to soil (t/ha) - Portion of farmland in rotation occupied by soil-building crops
	Soil structure <ul style="list-style-type: none"> - Bulk density - Aggregate stability - Porosity - Risk of soil compaction
	Soil erosion and conservation <ul style="list-style-type: none"> - Rate of erosion - Surface crop residue - Cover crop area - Strip cropping and terracing - Use of windbreaks and shelterbelts - Number of soil cover days
	Soil food web health <ul style="list-style-type: none"> - Ratio of fungal to bacterial biomass - Soil organic carbon - Number of earthworms per cubic metre of soil - Microbial biomass carbon - Microbial biomass nitrogen - Area fertilized with manure - Livestock concentration and distribution
	Watershed features <ul style="list-style-type: none"> - Riparian zones - Wetlands - Forested lands - Soil cover - Windbreaks and hedgerows - Mycological life - Sentinels

²⁰ The following indicators include both indicators and measures used in existing GPI Soils and Agriculture Accounts reports produced to date (on soil quality and productivity, biodiversity, and land capacity), and indicators and measures that are suggested for future possible reports on which research is currently in progress (including watershed health, livestock health and productivity, input use efficiency, and updates of earlier reports.)

Indicator	Measure
Healthy and productive livestock (See Table 6 below for a list of measures for each of these indicators)	Productive livestock
	Healthy livestock
	Diversity of livestock
	Even distribution of livestock across provincial agricultural areas
	Humane treatment of livestock
	Quality of food from livestock
Ecological efficiency	Input use efficiency and net productivity
	Self reliance of agricultural systems <ul style="list-style-type: none"> - Nutrient cycling - Circular flow of resources - Food miles (proximity of food production to markets)
	Minimize climate impacts <ul style="list-style-type: none"> - Amount of greenhouse gas emissions from agricultural production
	Minimize waste <ul style="list-style-type: none"> - Amount of waste from agricultural production that ends up in landfills - Amount of potentially useful waste (e.g., manure or bones) that ends up as a pollutant rather than a resource
Biodiversity	Habitat for beneficial organisms on farms <ul style="list-style-type: none"> - Natural, fertilized, and cultivated area - Farm landscape diversity - Organic vs. conventional farming area - Wetland area
	Intensity of synthetic input use
	Health of ecosystem services <ul style="list-style-type: none"> - Ecological services provided by beneficial organisms - Water remediation services

Soil and Water Quality

All the PEI and Nova Scotia farmers interviewed by GPI Atlantic in 2003 (Scott et al 2003) gave examples of specific initiatives they had taken to improve soil and water quality on their own farms, with many revealing a profound knowledge and understanding of the causes and conditions of ecosystem health, and a deep commitment to effective stewardship to that end. Following are a few sample comments on the subject from farm and farm community interviews in PEI:

One PEI farmer noted that it took quite a while to get the humus and fertility of the soil built up on his land. Thus, it took him and his family 7-8 years to achieve the goal of having ‘living soil’ on their farm, and for the ground to really “start working” for them effectively. They now feel

this conversion to soil-building farming methods allows them to farm with fewer input costs. According to this farmer, much more horsepower, and therefore energy inputs, were previously needed for the “tight, hard soil with the life gone out of it. . . .”

As an indicator of soil health and ecological wellbeing on his farm, another farmer looks for earthworms in the soil. Good viable land, he notes, has lots of earthworms. His goal, he says, is to increase the health of the land “to support lots of earthworms.” The farmer remarks that “pulling fields forward” by improving soil quality is part of keeping a farm viable.

Another PEI farmer who operates a large family farm that produces potatoes also tries to do a good job in sustaining the land. For this farm family, that means being more and more careful in growing and management strategies in order to implement remedial actions in the fields, and putting in more structures like berms and waterways (to prevent erosion and protect water courses). The farmer notes that such actions involve capital costs up front, as well as yearly maintenance costs that have to be taken into account in the annual farm budget. In addition, such maintenance must be factored into the farm work schedule. In short, the farmer notes that the farm must have sufficient resources to implement and maintain such ecologically beneficial actions.

In addition, this farmer comments that she and her family also undertake restorative action to take care of water erosion, and they assess the damage that wind and other types of erosion inflict on the land. She expresses appreciation that the PEI Soil and Crop Association gives explicit recognition to good land stewardship, and that such positive actions to improve ecological health matter to the Association and its members.

Another PEI farmer feels strongly that current potato rotation regulations do not take into account his own system of plowing in straw and forages to increase soil organic matter—which experience has taught him is highly effective. The farmer notes that there is absolutely no money to be made in hay or grain, and that plowing it all back into the land is a job that has to be done in order to grow potatoes well and sustainably, and in a way that will ensure soil quality and productivity in the long term. He says that soil tests have demonstrated that his land is increasing in organic matter—which he attributes to his methods.

This same farmer is also proud that his farm had riparian buffer zones for years before the PEI Round Table on Resource Land Use and Stewardship ever met, and long before it recommended the implementation of these buffer zones. He notes that he and his family have two miles of river frontage that they have protected with buffer zones for years, and cites this as an example of the fact that they are continually being proactive to address environmental issues.

Soil Cover Days

Time and resources do not permit a full exploration, investigation, and reporting of all of the indicators listed in Table 3 above. Instead, one highly indicative measure—soil cover days -- has been chosen for discussion here, since the number of soil cover days has been well documented

as an effective measure for indirectly tracking both soil and water quality. The more a soil is covered—either by a crop or sod or mulch—the more likely that the soil will be conserved, and that water quality will be protected. This indicator was explored for Nova Scotia in the GPI Atlantic report *Soil Quality and Productivity* (Scott and Cooper 2002:25-34).

Field tests clearly demonstrate that a soil area that is covered with vegetation will be less likely to suffer erosion problems than a soil area that is bare for parts of the year. Because annual crops in agricultural watersheds are cultivated to produce food, some of the land area will inevitably be bare before the crop is fully established, and it will sometimes be bare after harvest as well. Wind and rainfall will often cause soil on bare or partly bare fields to move into watercourses. This soil, in and of itself, may cause sedimentation problems, but it may compromise water quality in other ways as well by bringing with it pollutants such as nutrients or pesticides.

Crops that cover soil, particularly those that cover soil for the entire year or for several years, are therefore very beneficial for both the soil and for surrounding water quality. Pasture and hay land used in some livestock systems, in particular, are good for keeping soil covered all year, and for preventing erosion or other soil loss. On the other hand, while soil cover is essential to prevent erosion, society does also need food crops to be grown, so some periods of relatively bare soil—particularly as crops become established and immediately after harvest—are virtually unavoidable in most cropping systems. Therefore, sustainability goals that seek to achieve economic objectives within environmental constraints inevitably have to promote a balance between annual crops (like wheat, beans, potatoes, etc) and perennial crops (like hay, pasture, orchards etc) in order to reduce the number of bare soil days in any agricultural watershed.

Services Provided by Soil Cover

Permanent grass cover is considered to be ecologically desirable because it reduces soil erosion, enhances soil productivity (see GPI *Soil Quality and Productivity* report, Scott and Cooper 2002:25-34), reduces sedimentation, improves water quality, and enhances wildlife habitat. These ecological benefits in turn have been shown to produce economic cost savings and benefits.

In the United States, a Conservation Reserve Program (CRP) was initiated in 1985 to retire highly erodible or marginal farmlands to permanent grass cover. According to the Institute for Wetland and Waterfowl Research (IWWR), “Through a series of annual payments, CRP was designed to help landowners and operators conserve and improve soil and water resources on their farms and ranches while still maintaining an economic return” (IWWR 2001:28). The economic return on this restored grassland, of course, comes from livestock raised on the permanent grass cover, hay, and pasture.

The Land Stewardship Project²¹ is an agricultural organization in the U.S. that has done some very detailed monitoring of the effects of good pasture management (management-intensive

²¹ The Land Stewardship Project fosters an ethic of stewardship in relation to farmland, and promotes sustainable agriculture and sustainable communities in the Upper Midwest of the United States. See:

rotational grazing) in southeast Minnesota. Management-intensive rotational grazing is a method of grazing livestock by rotating ruminants through pasture paddocks so that the health of both the land and the animals is optimized. The project found that this technique can significantly reduce the amount of sediment flowing into a waterway (Land Stewardship Project 2004).

Measures and Status

The share of farmland used for cultivated crops gives an indication of how much land might be bare of any cover at certain times of the year (most likely the fall, winter, or spring, as the crop is generally covering the soil in the summer and thus providing some protection against erosion at that time). Table 4 below shows that the proportion of farmland being cultivated has increased in Nova Scotia (from 25% to 29%) and even more notably in PEI (from 57% to 68%) during the quarter century from 1981 to 2006, while the proportion in pasture land fell in both provinces during the same period—from 20% to 14% in Nova Scotia, and from 18% to 13% in PEI. From the perspective of soil cover and consequent ecological benefits like protection against soil erosion, this can be considered a negative trend, since cultivated land tends to have a high proportion of bare soil days while pasture land has none.

Despite the adverse trend signified in Table 4 below, Nova Scotia still compares favourably with the national average, which shows the national share of farmland in cultivation holding steady at 61%, compared to less than half that in Nova Scotia (29%). As well, in the most recent period for which statistics are available (2001-2006), the share of farmland under cultivation in Nova Scotia actually fell for the first time in 20 years—from 32% to 29%. It is too early to tell whether this recent drop signifies a real reversal of the previous 20-year trend and a genuine movement towards greater soil cover, or whether it is an anomaly.

It is also important to break down the three broad categories in Table 4 more finely in order to assess the full implications of these results for soil cover. For example, cultivated land on average certainly produces far more bare soil days than pasture land that is under continuous cover. However, certain types of cultivation produce far more bare soil days than others. Thus, it is noteworthy that forages occupy 64% of the land under cultivation in Nova Scotia and 37% in PEI (compared to a national average of just 19%) (Lefebvre et al. 2005:45, and Statistics Canada 2006 *Census of Agriculture*). Since forages often cover the soil continuously for two or three years before being rotated into another crop, the high proportion of cultivated farmland dedicated to forages in Nova Scotia is a good sign for soil cover in the province.

Table 4: Share of Farmland in Various Land Uses (%), 1981 to 2006, NS and PEI

Survey Year	Nova Scotia			Prince Edward Island		
	Cultivated	Pasture	Other land ²²	Cultivated	Pasture	Other land ²³
1981	25	20	55	57	18	25
1986	27	16	56	58	14	28
1991	27	17	56	60	14	27
1996	29	14	59	64	10	25
2001	32	14	57	67	10	24
2006	29	14	57	68	13	22

Sources: Lefebvre et al. 2005: 44; Statistics Canada, 2006 *Census of Agriculture*.

Another related indicator used to assess the proportion of farmland covered rather than bare is: Average Number of Soil Cover Days (Lefebvre et al 2005: 61-68). This tells us how many days per year on average all farmland is covered with either vegetation or mulch, including pasture, forage, etc. Nova Scotia ranks highest in the nation with 330 days in 2001; while PEI has an average of 291 soil cover days; and the national average is 286 (Lefebvre et al. 2005:62). The estimate for Nova Scotia is high because of the high percentage of land used for pasture and forage.

While Nova Scotia growers are, therefore, on average, minimizing the number of days that soil is left bare, they often have a high proportion of sloped land, and are historically subject to high levels of precipitation, making their soils inherently more vulnerable to erosion and degradation than in most other farming areas in Canada (see the GPI Atlantic *Land Capacity* report: Scott 2008).

Soil Organic Matter

To assess ecological wellbeing in Maritime farming, it would also be useful to track other measures of soil quality, including soil organic matter. Indeed, the PEI Department of Agriculture has adopted soil organic matter content as one of its principle indicators of soil quality following recommendations from the Round Table on Resource Land Use and Stewardship²⁴, and this is also a key recommended indicator of soil quality presented in GPI Atlantic’s *Soil Quality and Productivity* report (Scott and Cooper 2002:3). In 1997, the PEI Round Table on Resource Land Use and Stewardship set a threshold of 3% soil organic matter as the minimum standard for good quality agricultural land²⁵, with this target subsequently adopted by the PEI government. Based on the evidence examined at the time, however, GPI Atlantic’s

²² ‘Other land’ includes forests, windbreaks, marshes, barnyards, and greenhouses.

²³ ‘Other land’ includes forests, windbreaks, marshes, barnyards, and greenhouses.

²⁴ PEI Round Table on Resource Land Use and Stewardship—a report released in 1997. Available at <http://www.gov.pe.ca/roundtable/index.php3?lang=E>. Accessed December 2006.

²⁵ See PEI Round Table on Resource Land Use and Stewardship, “Measuring Progress” <http://www.gov.pe.ca/roundtable/index.php3?number=69418&lang=E>. Accessed December 2006.

2002 *Soil Quality and Productivity* report (Scott and Cooper 2002) set a sustainability goal of 3.8% soil organic matter, which is substantially higher than the 3% threshold set by the PEI Round Table and Department of Agriculture and Forestry.²⁶

Baseline data for soil organic matter was collected, and the first three years of results (between 1998 and 2000) were reported by the Department of Agriculture and Forestry.²⁷ Upwards of 800 sampling points were selected on agricultural land in 237 different locations in PEI, with province-wide results summarized in Table 5 below. According to the PEI Department of Agriculture and Forestry in 2003:

The baseline data from the first round of monitoring has found that 49 percent of the soil samples that were analysed for land in a potato rotation had an organic matter level that was less than the target suggested by the Round Table. Of the samples for other land uses, a total of 31.8 percent had organic matter levels less than the target.²⁸

The PEI Government's objective is to have 90% of soil samples with soil organic matter content above 3% by 2010. In Nova Scotia, it would be desirable to have a similar soil tracking program. It is therefore a key recommendation of this report that the Nova Scotia Government adopt similar thresholds and targets to those adopted in PEI, and that it undertake a systematic monitoring program along the lines of that in PEI.

Table 5: Soil Organic Matter (%) on PEI Farms, 1998–2000

Organic Matter (%)	Percentage of province-wide samples	
1.5–2.0	2.0 %	
2.1–2.5	8.3 %	
2.6–3.0	21.5 %	
3.1–3.5	24.7 %	68% above 3%
3.6–4.0	18.0 %	
> 4.0	25.7 %	

Source: PEI Department of Agriculture and Forestry 2003. Report on Soil Quality. *Corner Post* May 26(4):4

Policy Options and Recommendations

Grazing ruminant (beef, dairy, lamb, and goat) sectors are consumers of perennial forage crops and pastures. As explained above, these land uses are important for maintaining soil and water

²⁶ The 3.8% target set in *GPIAtlantic's Soil Quality and Productivity* report is based on the minimum level required for 'moderate structural stability' according to Greenland et al. 1975.

²⁷ PEI Department of Agriculture and Forestry. 2003. Report on soil quality. *Corner Post* May 26(4):4. http://www.gov.pe.ca/photos/original/af_cpmay03.pdf. Accessed December 2006.

²⁸ PEI Department of Agriculture and Forestry. 2003. Report on soil quality. *Corner Post* May 26(4):4. http://www.gov.pe.ca/photos/original/af_cpmay03.pdf. Accessed December 2006.

quality. Food procurement policies that specifically target these local ruminant products for schools and other institutions therefore have a potential double dividend. Such policies would not only improve the health and economic viability of these particular agricultural sectors, but would also have the additional advantage and potential of improving soil and water quality in Nova Scotia's farmland by supporting the products of soil-building covered pasture and hay land.

PEI has taken some aggressive steps to improve soil and water quality. According to the PEI Department of Agriculture and Forestry:

Mandatory crop rotations have been legislated; buffer zones have been implemented, along with forested riparian zones; access by cattle to streams has been practically eliminated; the majority of producers have completed Environmental Farm Plans; and an ongoing soil monitoring program is in place. Over the past four years, government and industry have invested more than \$12 million in soil conservation and manure management projects.²⁹

While Nova Scotia farmers have also taken steps to improve soil and water quality, many through the province's own Environmental Farm Plan process, the measures in Nova Scotia have been voluntary rather than mandatory as in PEI. A comprehensive soil and water quality tracking programme in both provinces would be very useful in indicating which of the two approaches is more effective for improving soil and water quality.

Healthy and Productive Livestock

Livestock husbandry can be a critical part of ecological farming systems. If livestock are raised on pasture and fed forage from hayfields, the pasture and hay are considered to be 'soil-building' phases of rotations. The combination of grass and legumes adds naturally fixed nitrogen to the soil, covers the soil for long periods (especially during erosion-prone winter and spring run-off periods), and is a good use of land that is sloped or rocky (i.e., less suitable for annual crops). Livestock manure is returned to the land, also building soil organic matter and improving the nutrient status of crops. On the other hand, keeping livestock can be problematic when they are crowded, or when their manure becomes a waste disposal problem rather than a resource.

Comments from farmers (Scott et al 2003) show special efforts being made in many cases to ensure livestock are well cared for. Healthy and productive livestock are a source of particular satisfaction for many Maritime farmers. A few notable samples of comments from the 2003 GPI farm interviews in Nova Scotia follow:

One Nova Scotia farmer notes that she makes 6,000 bales of hay per year and that these all go to her sows for bedding, comfort, and as a supplementary feed. She observes that "it makes the bowels work, and it makes them content."

²⁹ PEI Department of Agriculture and Forestry. 2002. Report of the Round Table—Five Years. *Corner Post*, Sept 25(7):1. http://www.gov.pe.ca/photos/original/af_cp_sep02.pdf. Accessed December 2006.

Another Nova Scotia farmer reports that he built a slaughter facility on his farm so that the animals did not get stressed out by being shipped to a slaughter house: “There’s no pushing or kicking and yelling. The idea of putting them in a truck and shipping them somewhere made me sick. I don’t treat my animals that way.”

This same farmer also takes steps to minimize disease among his animals, and reports on the satisfaction he gets from seeing his livestock healthy, and therefore increasingly productive and also more natural in their behaviour. He notes that “there is a terrific risk in farming, with diseases. That’s why we are not buying animals from the outside.” This farmer was able to rid his sheep flock of parasites without using chemical de-worming agents:

They are so used to chemical treatment, and when you stop, you lose a lot of sheep. Then you start to build up a basic flock that works. It takes some generations. It took me quite a few years with cattle, but it wasn’t so bad as sheep. Sheep are really different. Sheep are very prone to parasites. Now they are great.

Another Nova Scotia farmer converted his hog operation to a more humane Swedish-style system. He reports:

Our youngest daughter was not very impressed with the way we were keeping pigs. She never said so; she just showed this empathy for the animals. I would look at her and say, ‘now, why does she do that? What does she see that I don’t see?’ And after a while I began to see it too.... I didn’t think that I wanted to keep animals that my children felt sorry for.... We began to acknowledge that yes, the animals deserved better than what we were giving them. We made some changes. I went to Sweden and I was quite impressed with what those farmers had been able to do. And so we became aware that our responsibility in terms of the animals was to be taken seriously too, that we couldn’t just use them as a way to make a living or as things. We struggled with that and eventually we found a way to do that and still participate in the marketplace of the pig industry in Nova Scotia. So I felt good about that.

Yet another Nova Scotia farmer notes that the viability of his operation is directly dependent on the health of the Highland cattle herd on the farm. Thus, he notes that his farm can only be viable if his cattle are healthy and if he gives them what they want and need in order to be healthy, and therefore optimally productive. He reports that these animals are slow to reach market size (30 months as opposed to about 15 months for other beef breeds), but that they do well on rough pasture and like to be outside all year. He notes that part of their pasture is in the woods, where the conifers provide good browse, bedding material, and cover in the winter, and that this system is also good for their coats and reduces parasites. As a result of these optimal grazing conditions, the farmer is pleased that his cattle can produce “really delicious and healthy beef from just pasture, instead of doing the grain finishing.” Although he reports that it takes longer to raise the animals in the way he does, he thinks that it is not necessarily more expensive, because he does not need to purchase any grain feed.

When time and resources permit, the author intends to develop a full report on livestock health and productivity in order to explore the issues and measures of genuine progress in livestock husbandry more fully. A preliminary version of the report uses the measures outlined in Table 6 below.

Table 6: Ways to Measure Livestock Health and Productivity

Indicator	Measure of Progress
Productive Livestock	Net product output
	Energy efficiency
	Feed conversion efficiency
Healthy Livestock	Reduced antibiotic use
	Age or mortality
	Reduced veterinary costs
	Frequency of disorders/disease
	Adrenal weight
	Condition of liver
Diversity of Livestock	Diversity of types
	Diversity within type (breeds)
Even Distribution of Livestock	# of livestock/hectare
	# of farms with each type of livestock
	Distribution of abattoirs
Humane Treatment of Livestock	Good environment for livestock and caregivers (including space, comfort, air quality, access to the outdoors)
	Allow for the expression of natural behaviour
Quality of Food	Freshness
	Proximity
	Respectful slaughter
	Use all parts (minimum waste)
	Quality products <ul style="list-style-type: none"> - taste - nutrition - safety

Ecological Efficiency

Ecological efficiency can be measured in a number of different ways, as indicated in Table 7 below. When time and resources permit, the author intends to develop a report on ecological efficiency in order to explore the issues and measures of genuine progress in this field more fully.

Table 7: Ways to Measure Ecological Efficiency

Production efficiency (including net productivity)
Food system efficiency (reduced ‘food-print’)
Minimize climate and other environmental impacts
Minimize waste (including waste of energy)

To remain viable, farms have to be ‘productive.’ Ecological efficiency is the ability to maintain or increase that productivity in the long run, while minimizing synthetic inputs, fossil fuel use, waste, and pollution, and maximizing system cycling of nutrients and other benefits. Here we comment briefly on only the first of the four aspects of ecological efficiency outlined in Table 7 above—production efficiency—with reference to illustrative comments by farmers based on the 2003 GPI Maritime farm interviews (Scott et al. 2003).

Production Efficiency

Conventional GDP-based measures of progress focus on gross production and gross income. But the report on Economic Viability (Scott and Colman 2008) demonstrated that net income (gross income minus expenses) is actually a far more revealing indicator of viability, and produces results quite different from the trends signified by total farm cash receipts. Similarly, there are measures that assess production more comprehensively in terms of the inputs needed to sustain it, with net production calculated as gross yields divided by purchased inputs. Just as net income is an indicator of economic efficiency, net production—from this broader perspective—is an indicator of ecological efficiency.

In the case of both net income and net production, a sustainability perspective requires that the resources upon which production depends (i.e., land, people, soil, water, livestock) must not be compromised. This is recognized in most net income calculations by including a depreciation figure as an expense. Including depreciation of buildings or equipment as an expense, for example, recognizes the need to constantly re-invest in these productive tools in order to maintain and enhance their productive capacity. Likewise, investments in soil quality, water quality, or livestock health (and counting their depreciation when these resources are depleted or degraded) must also be included in net production calculations. Without such careful monitoring, the drive to achieve greater net production can lead to degradation of the resource upon which production is based. Indeed, that is a key criticism of the current over-reliance on GDP-based accounts and measures of progress, since the depletion of natural wealth is mistakenly counted as economic gain when natural capital depreciation is not considered.

In the 2003 GPI Atlantic farm interviews (Scott et al 2003), several respondents revealed a profound understanding of how ecological and economic efficiency intersect, and of how greater ecological efficiency might be achieved. A few illustrative examples of farmer responses follow:

One PEI farmer reports that he and his family are very keen to see good productivity indicators on their farm, citing their satisfaction, for example, in increasing forage production by 50% in

the last 5 years, in having the productivity of their milking herd move to the top 20% of Island herds, and in having a productive team of people working together to bale the hay: “Seeing all these positive steps forward is rewarding in the income, keeps the morale high, and this keeps the family together; social events are possible to attend.”

Another PEI farmer feeds a lot of ground up forage (hay) to 12 hogs each summer. To survive in a hog operation, this farmer recognizes that he has to take feed costs carefully into account in assessing his production efficiency. He has worked out that he can grow three tons of dry alfalfa hay on an acre, while he would only get 1-2 tons/acre of barley. He notes: “There is a lot more return on hay, plus it is not as hard on the ground and you don’t have to replant it each year.”

A Nova Scotia fruit grower says he likes to know that his “pack-out is 95%,”³⁰ and he reports that it is a matter of pride for him “to have really good fruit and keep it that way.”

A Nova Scotia Fruit Growers Association employee reports attempts by fruit growers to lower production costs and pesticide use (a major input cost), while still dealing effectively with orchard pests. She notes that researchers and farmers are investigating use of insect predators like “typhs” (*Typhlodromus pyri*) that can potentially reduce input costs and improve production efficiency.

Another Nova Scotia farmer has worked out that she can improve her income through getting more overall poundage to the acre by grazing several species successively in a pasture. She recognizes that ecological efficiency (which recognizes the value of diversity) is ultimately critical to production efficiency: “Specializing is easy, is making the most out of the capital and the labour that you have available. But it’s not necessarily making the most out of the ecosystem that you have available.”

A Nova Scotia dairy farmer recognizes that farm productivity is based on his milking cows getting a good ration, lots of clean water, and comfortable surroundings, and having a good genetic background.

A Nova Scotia hog farmer expresses considerations of production efficiency in this way:

In the pig industry, the big indicators of success are: How many pigs do you save per litter? And how often can you get that sow bred in a year? We looked at that differently. We said we want healthy pigs. We don’t want to have to intervene with antibiotics. It was also important not to have to feed them feed when they were very small [in a way] that would replace their mother. We left the piglets on the mothers for a lot longer than other people did. Our cost of production at the end was no different than [conventional hog operations]. They had to pay for higher feed costs, for needling and antibiotics. People would wean piglets at two weeks of age so they would have to feed them such complicated feeds at a high cost. I think today we are among the top in Nova Scotia in terms of pigs per sow per litter.

³⁰ This means that 95% of the apples achieve a minimum grade.

All these comments in different ways express a clear understanding of the notion of *net* production, of the dependence of productivity on the type and quality of production inputs, and of the crucial role of ecological efficiency in production efficiency. Further investigation into these factors and into methods of effectively measuring ecological and production efficiency will hopefully supplement this brief introduction with hard data in the future.

Conclusions: Ecological Wellbeing

While a number of important issues on ecological wellbeing are raised in this chapter, the following conclusions stand out as particularly relevant for policy purposes, and are therefore framed partly as policy recommendations.

Make a Direct Connection between Stewardship and Rewards

Stewardship of farmland and other resources is becoming a growing priority both in agricultural practices and in policy making as farmers increasingly see and understand the connection between stewardship and the various tangible benefits it might bring, including increased productivity, reduced costs (e.g., avoided input costs and erosion losses), improved water quality, enhanced personal, family, and ecosystem health.

In some cases, farmers see a direct cause and effect connection between their actions and obvious ecosystem impacts and results, while in other cases, the connection may be less obvious and more indirect. Results of some agricultural practices do not show up in ecosystem impacts for several years, or they may show up downstream in other locations, as for example in the impact of agricultural fertilizer runoff on hypoxic, oxygen-depleted river estuaries.

Conversely, the benefits of good land stewardship may also be felt by society in general, with no special benefit accruing to the farm where good practices are in place. There may also be personal incentives for good stewardship practices, even though these may not necessarily yield obvious results within the lifetime of the farmer committed to those practices. For example, a farmer may wish to build the soil or plant trees for the benefit of offspring who may later take over the farm, or the farmer may simply have a strong ecological ethic.

However, when the connection between stewardship and resulting rewards is not clear or direct, when they are not immediate but long-term, or when the benefits are external to the farm implementing good practices, various jurisdictions have found it very helpful to draw attention to the connection by experimenting with financial incentive programs. Such policies have found to be worthwhile and effective, not only because they reward beneficial practices in general, but because they explicitly acknowledge the additional up-front costs sometimes incurred by farmers in committing themselves to stewardship programs and practices from which society benefits and which produce long-term inter-generational benefits that they themselves may not live to see.

Evidence examined in this study on financial incentive programs designed to compensate farmers for the provision of ecological goods and services clearly points to their applicability and potential benefit to the Maritimes. Analysis of such programs indicates that they should:

- 1) Be monitored based on commonly agreed indicators of progress; and
- 2) Recognize stewardship that has already been ongoing without financial incentives.

The second recommendation is based on comments from farmers in the 2003 GPI farm interviews (Scott et al. 2003) that show farm stewardship is a source of pride for many farmers, for whom the ‘connection to the land’ keeps them farming even when economic returns are not promising and are in some cases negative. Many of these farmers have already incurred considerable personal costs and made substantial investments in the interests of good land stewardship, and the evidence to date indicates that keeping them farming and ‘in business’ is beneficial for society at large. To that end, a system of compensation to farmers for the provision of ecological goods and services has the potential to maintain and enhance existing contributions from many farmers and to bring long-term social benefit.

Needless to say, such a system of payments for ecological goods and services is also entirely consonant with the ‘full-cost accounting’ approach of the Genuine Progress Index as a whole, which explicitly recognizes the value of natural capital and the importance of internalizing ecological benefits and costs that remain external to conventional accounting systems. Internalizing such benefits and costs will also ensure that they receive adequate policy attention.

Encourage Positively Spiralling Action

Ideally, institution of a system of compensation to farmers for provision of ecological goods and services will create a positive feedback loop, with stewardship and its resulting rewards encouraging and stimulating more stewardship. The following example of such positively spiralling action is drawn from actual comments offered by various farmers during the 2003 GPI farm interviews (Scott et al. 2003):

Several years after one farmer replaced synthetic fertilizer with composted manure, he noticed an increase in the number and diversity of birds on his land. He was so encouraged by this success that he continued his composted manure experiment. He asked birding friends to check out the birds on his land, and while at his farm, this group of birders noticed fish in the stream running through the farm, where no fish had been present for a several years. The farmer—even more encouraged by this positive result—told farming friends of the return of birds and fish to his land.

One farmer suggested that if he was interested in keeping and enhancing the fish stocks in his stream, he should try reducing his use of pesticides. So he experimented with cutting back on pesticide use and found that he could do so quite substantially without any adverse effects on his crop yields. He wondered if the apparent resilience of his crops had anything to do with improved soil quality, since he had also noticed less soil erosion and an improvement in soil

organic matter. He had observed these effects through a reduction in red colour on the snow in the winter, and the fact that his ditches were not getting filled up. As well, he had noticed that it was easier to work the fields, which in turn saved money on gas. The gas and pesticide savings in turn went into improving the manure composting system.

In short, this story well illustrates the potential for one positive result of good land stewardship to encourage further actions, leading to a positive spiral of feedback and further actions. From the evidence examined, it appears that a combination of government financial incentives in the form of compensation for ecological goods and services, supported by education, effective communication, and positive examples can focus attention on the linkages between good land stewardship and constructive actions and results, which in turn can stimulate further positive actions that enhance sustainability in agriculture.

Focus on Underlying Causes and Prevention of Ecological Problems

Abundant evidence indicates that identifying the underlying causes of ecological problems, and providing incentives to avoid and resolve such problems, will pay off handsomely in the long run in improved soil quality, agricultural productivity, and even product prices. The 2003 GPI farm interviews (Scott et al. 2003) indicated quite clearly that widespread movement in this direction will require the kind of conversations and information sharing that are illustrated and discussed in the chapters on Human Capital, Social Capital, and Farm Community Viability in this report.

To illustrate the importance of focusing on the underlying causes of ecological problems, it is instructive to return to Table 2 above on PEI Watershed Ecological Goods and Services Incentives. While the reduction of soil erosion is a key goal of this initiative, Table 2 indicates that incentives are offered under the program for grassed waterways, diversion terraces, farmable berms, grassed headlands, and high sloped land retirement. While all these actions are admirable and beneficial, what is important here is that none of them address the underlying causes of soil erosion.

On the other hand, Table 4 above on Share of Farmland in Various Land Uses indicates that nearly 70% of farmland in PEI is cultivated, which may well point to the underlying cause of erosion, and, therefore, towards the strategy needed to prevent it by encouraging more forage and associated livestock production that would provide more adequate soil cover for longer periods. Given that tonnes of potatoes (a row crop associated with bare soil days) are shipped off the Island while tonnes of beef are shipped to the Island, might incentive money to prevent soil erosion go towards local grass-fed beef production, processing, and marketing to replace at least a portion of current beef imports?

In other words, the evidence examined indicates that public money to compensate farmers for provision of ecological goods and services might be most productively spent preventing problems from occurring rather than fixing them after they have occurred. Ways could certainly be found to implement such incentive policies without disrupting trade agreements.

The recommendation above on encouraging spiralling positive actions also applies to the example given here. Beyond helping to prevent soil erosion, increased production of beef would not only shift the mix of land use towards fewer bare soil days, but would also produce an outstanding agricultural resource—manure. If composted and returned to the land, the manure from this beef production would also help improve soil organic matter (Table 5 above), contributing further to a reduction in soil erosion.

Thus incentives for composting manure might be a further excellent use of payments to farmers for ecological goods and services that would accomplish several useful ecological goals and objectives simultaneously, thus again furthering the positive spiral of good stewardship. For example, using composted manure improves farm biodiversity (see GPI Atlantic report on *The Value of Farm Biodiversity* (Scott 2008)), reduces the need for synthetic fertilizer and associated pesticides, reduces nutrient loss, and improves soil quality, organic matter, and productivity. Scientific evidence indicates that the more years composted manure is used, the more residual beneficial effects it has.

Again, this is just one example of the potential use of financial incentives and payments to farmers for ecological goods and services to deal effectively with underlying and root causes, and to prevent ecological problems from arising in the first place rather than fixing them after they have occurred. Obviously, particular solutions and incentives must be appropriate and applicable to existing conditions and circumstances, and need to be site-specific, which in turn requires local farm knowledge. Thus, the example provided here is not intended as a generally applicable panacea for all circumstances, but as a potential model for use of such incentives to address underlying causes.

Voluntary or Mandatory Policies?

The PEI Department of Agriculture has taken some strong steps to improve soil and water quality, including mandating crop rotations, buffer zones, and fencing along waterways to keep out livestock. While Nova Scotia farmers have also taken steps to improve soil and water quality through the Environmental Farm Plan process, the measures in Nova Scotia have been voluntary rather than mandatory as in PEI. A comprehensive soil and water quality tracking and monitoring programme in both provinces would be very useful in indicating which of the two approaches is more effective. It is also noteworthy that PEI is tracking soil organic matter on PEI farms, and it is strongly recommended that Nova Scotia should follow the PEI example and do the same. Based on rigorous monitoring, it can then be decided whether voluntary or mandatory policies to improve ecological wellbeing in agriculture are more effective.

Maintaining Farms

The GPI Soils and Agriculture Accounts as a whole raise a fundamental policy question—namely whether Nova Scotia and Prince Edward Island, as societies, want to maintain farms in rural areas. An accompanying report on the economic viability of farming (Scott and Colman

2008) raises serious questions about the future of farming in the Maritimes in the face of economic circumstances and conditions so adverse that farmers are increasingly being forced out of business. This report, on the other hand, shows that many jurisdictions in the Maritimes do in fact have a real interest in supporting and maintaining farming as a regional institution for several reasons:

- Farmers provide vital ecological goods and services of value to Nova Scotians and Prince Edward Islanders.
- As fuel and transportation costs rise, rendering imported food more expensive, regional farmers are likely to have an increasingly important role in providing food locally and becoming the linchpins of a properly developed local food system.
- Farms make vital contributions to human and social capital in rural communities, and their success is key to rural community viability throughout the Maritimes.

If—for these and other reasons—Nova Scotia and PEI do decide that farms are important to these Provinces, the question arises how they can best be maintained. This chapter indicates that one key way to keep farms functioning and literally to maintain their existence, is to provide incentives for ecological farm practices that contribute to the quality of the region's natural wealth. Another key method of maintaining regional farms, examined in considerable detail in the last chapter of this report, is to foster the development of local food systems.

Another underlying condition for maintenance of Maritime farms, addressed in detail in the accompanying report on land capacity in Nova Scotia (Scott 2008), is the protection of fertile farmland, and the prevention of development on prime agricultural land. Particularly in areas where urban and suburban growth is rapid, it is important not to foreclose future options in areas where land and growing conditions are good.

Other chapters of this report address the broad social conditions necessary for farms to function effectively. The last chapter on Farm Community Viability indicates quite clearly the extent to which farmers need each other and the support of their communities in order to function effectively.

In sum, a wide range of conditions and actions is necessary in order to effectively maintain Maritime farming. In particular, the evidence examined in this study and in the accompanying reports indicates that the conservation of farmland for farming should occur where:

- the growing conditions are good,
- the markets are close,
- the infrastructure is dense (or could be dense through appropriate planning), and
- there are clusters of farms.

The evidence examined particularly in the last chapter of this report indicates that farming is less viable when farmers are isolated, because this makes it too challenging to share equipment, labour, and knowledge, to trade fields, to market goods co-operatively, to barter equipment and services, and to maintain vital organizations that can represent their interests effectively.

The wide range of conditions required to maintain the existence and effective functioning of farms indicates, in turn, that the effective provision of ecological goods and services by farmers will be more challenging if the social and cultural aspects of farming are neglected and if farmland becomes too isolated and fragmented.

Focus on Net Rather Than Gross Effects

Conventional GDP-based measures of progress focus on gross production and gross income. In the case of agriculture, gross farm cash receipts are the conventional measure of financial and economic health. But *net* income (gross income minus expenses) is actually seen—in the accompanying report on Farm Economic Viability—to be a far more revealing indicator of viability, which produces results quite different from the trends signified by total farm cash receipts.

Similarly, there are measures that assess production not only in terms of gross output, but more comprehensively and accurately in terms of the inputs needed to sustain that production. Such measures of *net* production are calculated as gross yields divided by purchased inputs. Just as net income is an indicator of economic efficiency, net production—from this broader perspective—is an indicator of ecological efficiency.

In the case of both net income and net production, a sustainability perspective requires that the resources upon which production depends (i.e., land, people, soil, water, livestock) must not be compromised. This is recognized in most net income calculations by including a depreciation figure as an expense. Including depreciation of buildings or equipment as an expense, for example, recognizes the need to re-invest constantly in these productive tools in order to maintain and enhance their productive capacity.

Likewise, investments in soil quality, water quality, or livestock health (accounting also for their depreciation when these resources are depleted or degraded) must also be included in net production calculations. Without such careful monitoring and assessments of net production, the drive to achieve greater output can potentially lead to degradation of the resource upon which production is based. Indeed, that is a key criticism of the current over-reliance on GDP-based accounts and measures of progress, since such depletion and degradation of natural wealth remains invisible and is even mistakenly counted as economic gain when those resources are sold in the market economy.

By contrast, the Genuine Progress Index does explicitly count and measure natural capital depreciation, it assigns explicit value to the soil, water, and other resources on which productive output depends, and it attempts to assess net productive value by examining yields in relation to the resources and inputs required to sustain that production. In that way, the GPI can provide an effective accounting basis for a system of incentive payments to farmers for the provision of ecological goods and services.

3. Human Capital

Human capital refers to the skills, health, values, leadership, and education of people (Boody et al. 2003). The term is sometimes used synonymously with human wellbeing or human wealth. In its broadest sense, the concept refers both to *what human beings can contribute* (human resources) and *how well human beings are* (human health and wellbeing). Researchers have identified a positive feedback loop between these two aspects of human capital: the more meaningfully and effectively people can contribute to society, the healthier they are, and the healthier they are, the more they can contribute. Measurements of “genuine progress” in relation to human capital therefore attempt to assess the degree to which people are happy, healthy, and fulfilling their potential by contributing to life in meaningful ways.

Human capital is different from natural capital and produced capital because it is not finite. Thus, people can learn, contribute, and develop their potential without depleting the capacity and contribution of others. In fact, the evidence indicates that the more knowledge and discoveries are spread and shared, the better off people and society are in general—with positive human capital thus creating and building social capital. In the next section on social capital, this concept will be explored further and evidence presented to support this thesis.

How is it possible to assess and measure whether human capital is being built up or depleted over time? Assessments of human capital are clearly multi-dimensional. As noted, human capital can be built up without depleting resources, but human capital itself can be depleted if human needs are not met, and if people are not able to fulfil their potential. For example, human capital can be depleted if people are not doing the work they feel called to do or are trained to do, or, conversely, if there is work that needs to be done, but there are not enough people with the requisite skills or availability to do it.

In farming communities, human capital is a critical resource. Intelligent, committed, and skilled people with the knowledge to work creatively with the elements, and who are willing to take risks and work hard, are needed to steward the land and to produce the food that nourishes society. These people are also needed to pass on useful knowledge about farming to the next generation, so that young people can effectively take over their jobs. The availability of these human resources should ideally be inventoried in any assessment of human capital in agriculture.

One classification that can be helpful for the assessment of human capital at the farm community level is offered by Max-Neef (1991), who notes that human capital ‘wealths’ and ‘poverties’ can be identified according to how human needs are satisfied, and the degree to which such satisfaction subsequently leads to a healthy, happy population (Max-Neef 1991). To that end, Max-Neef classifies fundamental human needs as subsistence, protection, affection, understanding, participation, recreation (in the sense of leisure and time to reflect), creation, identity, and freedom (or self-determination). From this list, subsistence, recreation, and creation will form the framework for this section on Human Capital.

Farm Contributions to Human Capital

Farms contribute to the development of human capital in many ways that are not conventionally counted and measured. Interviews conducted by GPI Atlantic in 2003 with farmers in both Nova Scotia and Prince Edward Island (Scott et al. 2003) were replete with examples of ways—both physical and psychological—in which farm life can provide nourishment and satisfaction to individuals, families, and communities. The most obvious way farms contribute to human capital is by growing or raising food for people to eat. Without food, people would die, so—unlike most jobs that, arguably, are not essential to survival—farms provide a core necessity of life. But farms also contribute to human development by providing important opportunities for personal growth. Growing up on a farm can help people gain valuable perspectives, abilities, and skills, as well as a well-rounded work ethic and the knowledge required to work and interact harmoniously and productively with the elements and the forces of nature.

Here we first note some representative comments by Nova Scotia and PEI farmers in relation to three of Max-Neef’s categories of human needs—subsistence, recreation, and creation. We then examine specific indicators and measures of human capital in four areas that are highly relevant to Maritime agriculture—employment, efficiency, satisfaction, and renewal—providing quantitative data wherever such relevant data are available.

Subsistence

Depending on its type, quality, ingredients, and growing methods, food may or may not contribute to human health. But if grown or raised with care, food can—according to at least some observers—provide genuine nourishment for people in ways that potentially extend beyond mere physical survival needs. One farmer near Amherst, for example, shared his vision that farms could raise food for the body, mind, *and* soul (Scott et al.2003). While this may be an ambitious and far-reaching goal, a growing number of farmers and others see this broader function of food as increasingly necessary and even fundamental to life.

As the pace of life becomes faster, for example, health experts, ecologists, and other analysts have noted that vital human needs can easily be overlooked, and they have questioned whether fast food, heavily processed food, and packaged food often imported from distant locations really ‘*nourish*’ us in the full sense of that word. Individuals, communities, and the natural world, they have suggested, might be better and more healthily nourished and supported by greater attention to how food is produced and prepared. The following comments from Nova Scotia and PEI farmers (Scott et al.2003) support this broader view of human ‘subsistence’ and ‘nourishment.’

One PEI farmer described how he and his family sat down to a meal prepared from their farm’s own beef and potatoes, and vegetables out of their own garden, with everything on the plate reflecting something they had produced themselves. “That is a satisfying moment,” he noted.

Another PEI farmer emphasized how important it is to farmers that their vital role as food producers be properly acknowledged and recognized by society. Food, he noted, is a life link that “can easily be as valuable as oil. People don’t like to be hungry.”

One Nova Scotia farmer described the pride he feels in his work and in directly feeding his family: “There was no work [jobs] out there. You had to feed your family, so you start at home. A farmer is rich in land, poor in finances, but he always has food for his table.” His father, listening to the conversation, agreed with his son: “A farmer is important because people have to eat. You feel good; you get all your meals in front of you. That’s one good thing about farming.”

Another Nova Scotia farmer reported that he has a great deal of energy for farming, largely because of his motivation, which he described simply as follows: “I look forward to the food we eat,” he said, including the beef, eggs, pork, and garden produce from his farm, and even the mushrooms growing wild in the surrounding woods, and he equally enjoys “growing really good food for others.”

Yet another Nova Scotia farmer explains that part of her motivation for all the hard work involved in farming is “a love of being able to provide for yourself. The fridge is full of our own dairy products, the freezer is full of our own meat products, the coolers, in the winter, are filled with our own produce, and that’s a sense of empowerment, and accomplishment.”

And another Nova Scotia farmer says that her farm was actually started in order to

feed three growing boys. I had three boys who were very close in age. And the farm was going to feed us all. I can remember times where we would sit at the table and say “you know, we grew everything on this table,” maybe except a few odd things. We all took pride in that. I can even say today: “My kids all have a garden” you know, even when they’re near a city, they’ll have a spot. And they’re all doing it organically.

If farm-fresh food is indeed a positive contribution to human capital that can provide the kind of satisfaction described in these comments, it would be most helpful to collect regular and consistent survey data to determine the extent to which people are actually eating local, farm-fresh food—both on and off the farm—by comparison with processed, packaged, and imported food, and to assess trends over time in this area. The very sparse available evidence in this field is not encouraging. One survey of Canadian farmers, for example, found that tasks that were done in most farm households in 1982, such as care of the garden and canning and freezing for family consumption, were done less often in 2002 (Martz and Brueckner, 2003:35).

Other key questions that flow from the subsistence dimension of human capital, and which bear investigation in future surveys, relate to the health and nutritional implications of the above comments. These questions include: Does the population at large have adequate nutrition, and what are the trends in the nutritional value of food consumed? Is there a demonstrable relationship between access to farm-fresh local food and nutritional status? How is the nutritional status of the farm (and general) population connected to the health of the farm sector? For example, is a decline in farm economic viability reflected in any measurable change in the

nutritional status of farm families and of surrounding rural communities? And—if farm-fresh local food is indeed related to enhanced nutrition—are there ways to increase access to such food?

Recreation

While conventional economic-growth based measures of progress give no value to free time but count only paid work, analysts since ancient times have recognized that ‘recreation’—including leisure, time to reflect, time spent outdoors, and time spent playing, socializing, and exploring without the intent of material gain—is not only a vital contributor to wellbeing but also a basic human need. Indeed Aristotle identified leisure as a fundamental human value, hypothesized that “the first principle of all action is leisure,” and observed that the leisure to learn, reflect, and debate was a prerequisite of good citizenship (*Politics*, Bk VII, 3).³¹ In his seminal 1932 essay, *In Praise of Idleness*, the British philosopher Bertrand Russell suggested that a shorter working day and greater leisure would produce “happiness and joy of life, instead of frayed nerves, weariness, and dyspepsia.”³²

While farms are an important source of ‘work’ and ‘business’ that generally demand very hard work, comments by farmers in Nova Scotia and PEI indicate they can also be recognized as excellent places for people to grow up and learn, or improve their ‘quality of life’.

One PEI farmer relished the way he grew up on the farm, with his beloved grandfather next door, and was saddened that most of his friends had missed out on so many of the valuable experiences he’d been so fortunate to enjoy as a child growing up on a farm. He recounted that his friends regularly come to visit his farm and “have a genuine interest in and longing for life on the farm. Kids from the city love this stuff—love growth, nature, and space.”

A Nova Scotia farmer similarly noted: “The farm was a great way to raise a family, because of the space the kids had, and the things they had to do. They were never bored.”

Earlier GPI Atlantic discussions with farmers in Kings County, Nova Scotia, in 2000, elicited comments to the effect that farm life actually contributes to a person’s character (Scott et al. 2000). In that round of farm interviews, one grower remarked that he farms because it contributes to “quality of life; living close to nature; having space and independence; country way of life. Also, a feeling for the land and your own stewardship of the land.” Another grower spoke about the joy of working closely with nature; the satisfaction of building something he could see; and generating a longer-term view of things, which he felt was nurtured by the farm experience.

³¹ Aristotle, *Politics*, cited in Miller, Michael, “The Leisure Theory of Value.” Available at <http://www.quackgrass.com/leisure.html>. Accessed 5 January, 2008. Harrington, Ralph, “Aristotle and citizenship: the responsibilities of citizenship in the *Politics*.” Available at: <http://www.greycat.org/papers/aristotl.html>. Accessed 5 January, 2008.

³² Russell, Bertrand, *In Praise of Idleness*. 1932. Available at: <http://www.zpub.com/notes/idle.html>. Accessed 5 January, 2008.

Similar experiences are described by Jon and Judy Lien and their children, in a 2003 *Rural Delivery* article about the Lien family farm in Newfoundland.³³ Their farm has greenhouses, gardens, and livestock, and supplies vegetables for about 50 local families and for a store called ‘Food for Thought.’ Their daughter Maren observes that in farming “you learn a lot about life and death... you see it as a greater cycle.” Maren returns to the farm in the summers to introduce her young daughter to farm life so that she can experience the value of fresh food, gain confidence around the animals, and learn that it’s fine to get dirty. Their son Elling remarks that, growing up on the farm, he “felt more in touch with the seasons and the earth, I think, than people I went to school with in the city.”

Another son, OJ, who has a degree in plant science, conducts experiments on the farm in the summer. According to his mother, Judy, OJ treats the farm as his own, so that every experiment is undertaken very well and with great care. Judy Lien raises crops, mentors students, and hosts WWOOFers (Willing Workers On Organic Farms), about whom her husband Jon remarks: “They want to accomplish things.... We eat together each evening, and have very good discussions. That’s added a big dimension to the farm.”

In the section below, we further examine the use of time as a critical and limited resource in farm work and life.

Creation

In Max-Neef’s classification of human needs, which is used as a framework for this exploration of human capital in farming, creativity is recognized as another very basic human need. Examples of creative energy expressed through farming, again as identified in wide-ranging interviews with farmers in Nova Scotia and PEI include creating a business, building things, growing food, raising animals, starting a project and seeing it through, problem-solving in day to day tasks and challenges, and having a variety of creative outlets. The interview results (Scott et al 2003) in fact demonstrated that farms can be ideal settings for expressing such creative energy, with this factor frequently cited as a main reason why the interviewees enjoyed farming.

While it is understood that farms produce food, it is often forgotten that they also produce people—a reality spotlighted by a human capital approach. The interviews undertaken for this study appear to indicate that farms are in fact in a good position to produce people with highly developed creative energy, thus potentially building human capital in society at large.

One PEI farmer interviewed in 2003 remarked that he enjoys making plans and dreaming about what he will grow: “It’s similar to being an artist, especially on a small farm. The beauty of a small farm is important. Agriculture helps to reinvent the imagination.” Another PEI farmer observed that the great thing about agriculture is that “you create something bountiful from something small—a seed grows into a plant. There are not too many other aspects of society

³³ *Rural Delivery*, June 2003, 28(1): 45

where you are really creating things. Something substantial comes from the seed. Growing something adds to the community and helps to build resilience.”

A Nova Scotia farmer saw both his farm and the farm market as a huge opportunity: “You can be doing ten different little projects, right around here, that involve the farm...that I can use the farm for. There’s lots of opportunities to start new things here. And I have a lot of ideas.”

Another Nova Scotia farmer noted that her farm provides an outlet for her creativity:

If I had just been slogging away, growing the produce, it wouldn’t have been enough for me. I enjoyed doing the CSA (community supported agriculture), the newsletter, the potlucks, and with the herb business, creatively and beautifully packaging my product. All of that much more creative dynamic work is the balance that I need with that physical hard labour.

A Nova Scotia dairy farmer remarked that she was grateful to the milk cows and to various farm business ventures for the lessons they taught her girls when they were young, including “to have confidence in themselves; to exercise their authority gently but effectively; to gain experience; and math skills.” Another Nova Scotia farmer remarked that the farm experience was valuable for exchange students whom she had hosted: “These young people have benefited from their exposure to farm life, getting away from the stress of their home environments, and learning new practical skills.”

Observers have noted that the ability to express creative energy is a key determinant and ingredient of happiness. According to Richard Layard (2003) who studies ‘happiness’, empirical evidence from surveys indicates that race for rank is not as satisfying as developing our talents to the highest possible level. The GPI interviews conducted in both 2000 and 2003 seem to indicate that farming does in fact offer people the opportunity to develop their talents in many different areas. This hypothesis could be explored by comparison with other occupations through well-designed surveys.

Layard also points to empirical evidence showing that the greatest contributor to unhappiness is the feeling that one is not needed (Layard, 2003). Abundant evidence also indicates that unemployment increases unhappiness just as much as marriage break-ups do—again very possibly because both the unemployed and those recently separated are more vulnerable to feelings of not being needed.³⁴ By contrast, GPI Atlantic’s 2000 and 2003 farm interviews, as well as ample other evidence, indicates that on farms, there are ample jobs and work to be done for everyone. Providing employment is an economic and social benefit, but a human capital approach reveals that—in addition—farms also have the potential to make people involved in farming feel genuinely needed and useful.

³⁴ See PannoZZo, Linda, GPI Atlantic, *Working Time and the Future of Work in Canada: A Nova Scotia GPI Case Study*, April, 2004. Available at <http://www.gpiatlantic.org/publications/timeuse.htm> for a broad-ranging description of evidence relating employment to social functions and wellbeing, and relating unemployment to poor health, mental distress, and other social ills.

Another key contribution of farming to human capital, which should also be considered in Max-Neef's "creation" category of human needs, is in the learning, skills, and education that are provided by practical activity on farms. For WWOOFers and others who seek farm work as opportunities for learning, there is value in the applied learning opportunities that farmers provide 'for free' and in exchange for productive labour. According to Schuller:

Human capital is not built within formal educational institutions and frameworks alone, or even predominantly. Even more obviously, social capital depends on people being able to participate actively in the relevant spheres of social/technical life. Occupational skills are learned on the job, implicitly as well as consciously. Community competences are acquired through action more than from reading or institutionalized forms of learning. Values as well as competences are only truly learned when they are applied. The question is, what is happening to informal learning opportunities? (Schuller, n.d.)

In addition to training, applied learning opportunities, and sharing of information *on* farms, information flow *between* farms is also common—which further contributes to the stock of knowledge and human capital in society. Anecdotal evidence, including that garnered through GPI Atlantic's 2000 and 2003 farm interviews, seems to indicate that—compared with other professions—farmers appear to share information, including innovations, discoveries, and inventions—quite freely. Such free sharing of information and knowledge seems to run counter to the prevailing trend towards commodification of information that appears increasingly to be the norm in the practice of consulting businesses that charge large sums to gather and develop information. Indeed, there is some evidence that the latter trend has increasingly infiltrated the agricultural sector.

Comparative survey evidence on information sharing in various professions needs to be developed to test this hypothesis quantitatively. In the meantime, a few representative citations from GPI Atlantic's 2000 and 2003 farm interviews point to the learning dimension of human capital formation.

Thus, one farmer in Kings County, Nova Scotia, noted that his own learning has "been a slow and steady progress, a learning curve about organic farming and its application. I've learned from the 'old guys' in the area" (Scott et al. 2000). And what is the trend? Is information being shared as freely over time? The same farmer commented that: "In the past, farmers have had a means of looking within themselves. Some things we don't seem to have any more are problem-solving, critical thinking, self-reliance, and self-worth. Farmers are losing their knowledge of the land. It's all consultants now."

The educational and learning function of farming as a contribution to human capital must also be assessed inter-generationally—a factor that will be examined in more detail in the "renewal" category of the section below. Here, one quotation will suffice to point towards the worrisome trend that fewer 'farm kids' with farm skills are presently being 'produced' than in previous generations, and that farm skills are therefore increasingly in demand and difficult to find—pointing to a possible 'depreciation' in farm human capital. Thus, Nadine Funk, AgraPoint

specialist in Nova Scotia, notes that it is now harder for farmers to find skilled or willing staff at a time when fewer and fewer people have close connections to producers. According to Funk:

This limits the exposure and understanding level of potential workers about farming and agribusiness. Thus, the limited labour pool producers do have access to is virtually completely green when it comes to working on-farm. This contributes to high turnover rates—the job is not what they expected for whatever reason and they leave.³⁵

One reason that the contribution of farming to practical learning has been inadequately assessed and valued to date is undoubtedly that many growers contribute a great deal of their talent for free. That in turn is likely due both to the self-directed, creative nature of farming, and to the poor economic returns on farms that do not attract young people to the occupation and that therefore reduce the demand for farm knowledge. Were farmers' knowledge transmitted for pay, according to standard consulting fees, it would be counted and valued in the conventional economic accounts. Again, GPI Atlantic's 2000 and 2003 farm interviews point to the potential value of this 'free' contribution to both human capital and farm productivity:

Thus, one "retired" dairy farmer in Hants County, Nova Scotia, noted that he still contributes 50 hours a week to the farm that his son took over. "But that work doesn't count because I love it," he adds (Scott et al. 2003). In Kings County, Nova Scotia, eight farmers were specifically asked how many hours of *free* labour they contribute to their farms on a regular basis (Scott et al. 2000). Assessed over a full year, it was estimated that each farm on average received a total of \$57,800 worth of free labour annually towards the production of the food it produced.

From a human capital perspective, this interview material sends a mixed message: While it may be positive in terms of human capital formation that farmers are contributing their time, skills, and talents for free to the production of food and to the transmission of farming skills to future generations, it is clearly not a positive trend if their free contribution signifies financial distress and inability to find and hire skilled help. This issue of pay for work will be addressed in sections below.

³⁵ *Farm Focus* Jan 28, 2004 31(2): 1463.967.6%

Indicators of Human Capital

Table 8: Indicators and Measures of Human Capital

Indicator	Measure
Employment	Jobs and wages
	Family employment
	Pay equity between farmers and other occupations
	The right people for farming
	Relationship with employees
	Off-farm work and non-farm work
Efficiency	Labour productivity and intensity
	Farm scale
Satisfaction	Creative energy (see section above)
	Appreciation
	Social interaction
	Time use
Renewal	Age of farmer; years of experience
	Next generation taking over farms
	Transfer of knowledge; sharing of information
	Tradition and commitment
	Skills and education
	Safe and healthy work environment
	Day care

Table 8 above attempts to translate several of the themes identified above, and spotlighted by GPI Atlantic's 2000 and 2003 farm interviews, into potential indicators and concrete measures of progress in the field of human capital in agriculture. Indicators of human capital typically focus on employment and formal education. But the section above indicates that human capital is also about the more informal and less tangible aspects of human wellbeing that nonetheless make a very real and tangible contribution to farm productivity.

Here we first present some of the employment statistics that provide the most readily available set of data on human capital in agriculture. We then present some preliminary observations about efficiency, work satisfaction, and farm renewal for which data are presently much less available, but which nevertheless represent vital aspects of human capital in agriculture that deserve further investigation in the future through development of appropriate survey materials in these important areas.

Employment

Farms contribute significantly to rural employment, both directly and indirectly, as shown in Part I of this report. Farmers interviewed in 2003 (Scott et al. 2003) gave many examples of this contribution:

One PEI farmer noted that his family farm hires local people and thereby contributes to the economy of the area. Another notes that “if farms weren’t there, several of the children in the community wouldn’t have the opportunities for little summer jobs like picking rocks or roguing potatoes³⁶ or haying.” Two other PEI farmers noted, respectively: “The farm provides approximately \$300,000 annually in wages for employees to spend in the community” and “the farm contributes a substantial payroll into the community.”

Yet another PEI farmer remarked that both his farm and the farm supply business that in turn depends on the existence of farms employ local people. He noted that the economic benefits of such employment extend beyond wages alone. For example, he has provided a home on his property to his hired farm labourer and family. Another farmer remarked that he tries to hire his neighbours for electrical work, bulldozing, plumbing, carpentry work and other tasks on the farm in an attempt to reward those who provide services in the area.

Several Nova Scotian farmers also pointed to the spin-off benefits of farm employment. As examples, here are three representative remarks from three different Nova Scotian farmers:

- We put on a Fall Supper and Dance for our employees. It was sizeable; at least 200 people (including spouses) were there.
- They had an agriculture day at the school and they asked the kids whose parents had some relationship with agriculture, and 80% of the kids put their hands up.
- For every job on a dairy farm, three are created in the community. And for every 10 kg of milk quota on a dairy farm, one job is created in a processing plant.

Typical employment indicators include statistics on the unemployment rate, levels of full-time and part-time pay, and the number of jobs by industry and occupation. A few representative indicators on which statistics in this area are readily available are presented below, and some additional indicators are suggested, particularly based on GPI Atlantic’s 2003 farm interviews (Scott et al 2003). These additional indicators, which are all relevant to a human capital approach to agriculture, include family employment; pay equity between farmers and other occupations; finding the ‘right people for farming’; positive relationships with employees; and off-farm work.

Jobs and Wages

One of the most commonly used human capital indicators is the **unemployment rate**. It is here considered an indicator of ‘human capital’ because it reflects the under-utilization of human skills, talents, and capacity. The unemployment rate is defined as the proportion of the labour

³⁶ This refers to taking out the bad potatoes.

force that is not working despite actively looking for work. This rate does not count people who are ‘discouraged’ (i.e., who have stopped looking for work because they feel there is nothing available), or people who are ‘underemployed’ (those who cannot find full-time work and are therefore working fewer hours than they would like—called involuntary part-time workers —, and those who are working at a job that does not properly utilize their skills and talents). The unemployment rate also does not take into consideration people who are ‘employed’, but who are not paid, or not paid formally.

In 2006, the official unemployment rates fell to a 30-year low in Canada and in Nova Scotia, though not in PEI. In 2006, the unemployment rate was 6.3% in Canada, 7.9% in Nova Scotia, and 11.0% in PEI, compared to 7.1%, 9.2%, and 9.3% respectively in 1976. The unemployment rate has fallen steadily from the recession peaks of the early 1990s, when unemployment hit 11.4%, 14.3%, and 17.6% in Canada, NS, and PEI respectively (Figure 1).

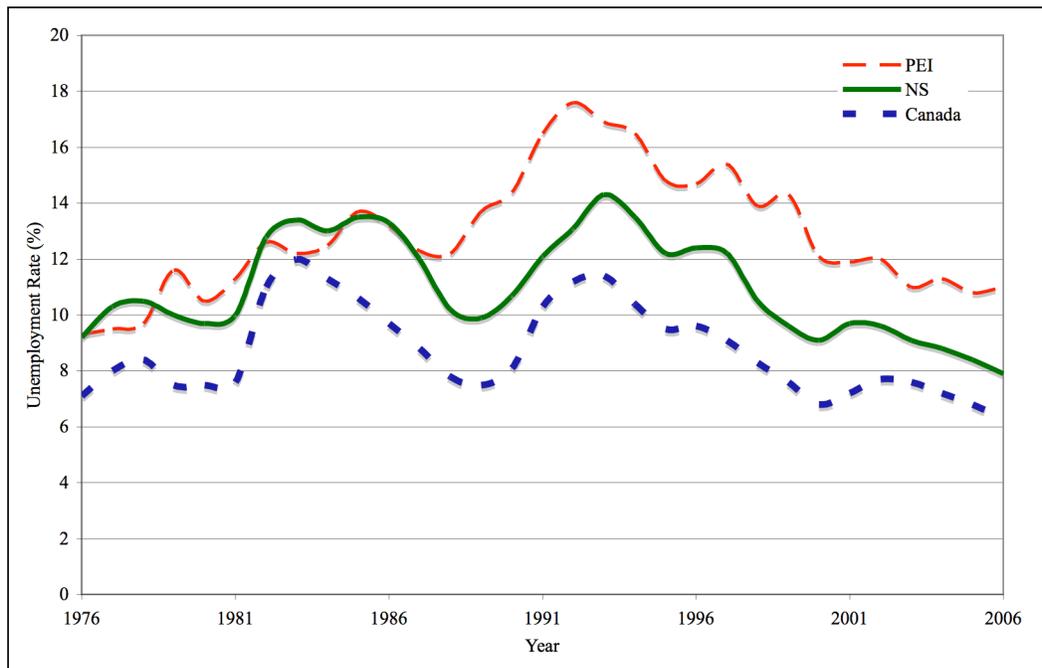
Statistics Canada does compile a **supplementary unemployment figure** that is made up of discouraged work-seekers, of those waiting to start a new job (and therefore not actively looking for work at present), and the difference between the present hours of involuntary part-time workers and the full-time hours they are seeking. When the supplementary unemployment statistics are included, the average unemployment rates for the years 1997 to 2006 are 10.7% for Canada, 17.1% for PEI, and 14.3% for NS.³⁷ However the provincial averages conceal marked rural-urban differences. In the rural areas of Nova Scotia and PEI, the unemployment rates are usually a few percentage points higher than the provincial figures as a whole, and several percentage points higher than the urban rates.³⁸ Employment generation in rural areas is therefore considered to be particularly desirable, since the needs are greatest there, particularly if such employment simultaneously achieves broader genuine progress goals that enhance social, economic, and environmental sustainability.

³⁷ Derived from Statistics Canada. 2007. Labour Force Survey, CANSIM table 282-0086.

³⁸ Nova Scotia Community Counts

<http://www.gov.ns.ca/finance/communitycounts/summary.asp?gnum=pro9012&gnum2=pro9012&sub=labour&gvie w=1#title>

Figure 1: Unemployment Rate (%), Canada, PEI, and NS, 1976–2006



Source: Statistics Canada Labour Force Survey. CANSIM Table 282-0002.

Farms directly generate employment in a number of ways:

- First of all, farmers themselves are ‘self-employed’. Therefore, they are generating employment for themselves, and likely for members of their families as well. Sometimes they pay themselves and family members wages and/or salaries. Sometimes, however, they do not pay themselves wages or salaries, but instead may compensate themselves and family members in other ways (such as through a portion of any farm profit).
- Secondly, they may hire people to work on the farm, and pay these workers wages and/or salaries.
- Thirdly, they generate further employment by engaging contracted services for their farms (such as custom harvesting, or veterinary services).

All of these people, 15 and older, who work on the farm and who are actually paid for it, are included in Statistics Canada’s Labour Force Survey employment estimates under the heading ‘Agriculture and Support Activities’.³⁹

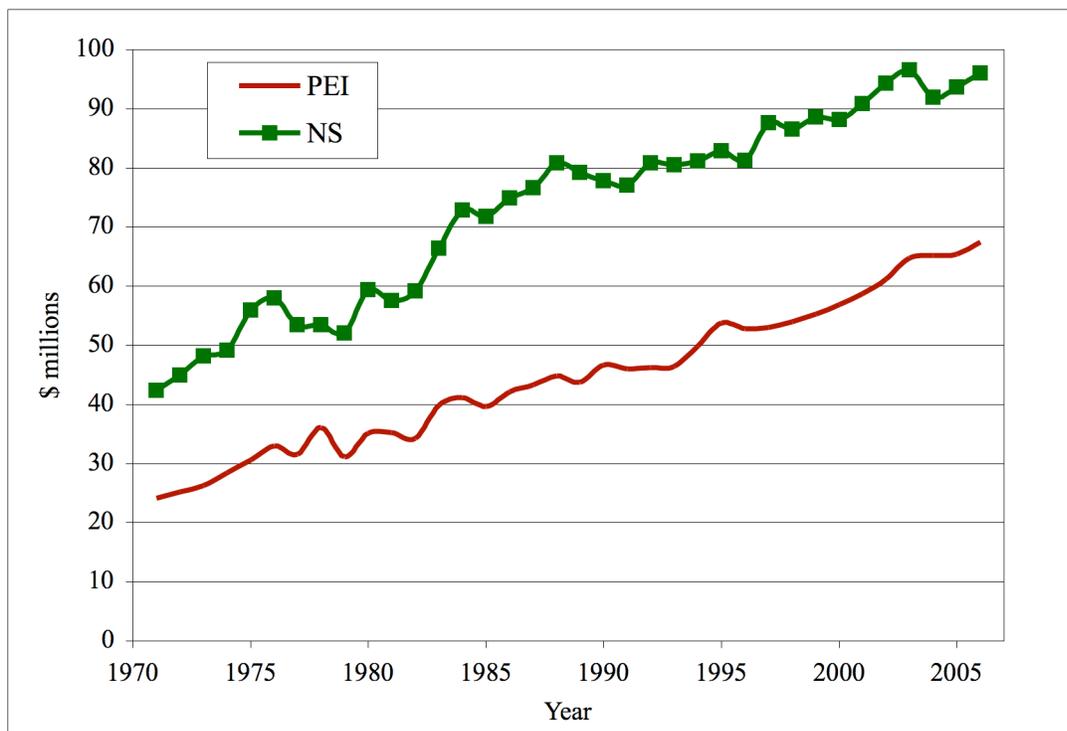
Farms generate further spin-off employment by producing goods that are transported, processed, warehoused, and otherwise handled before being sold to consumers (downstream employment). In addition, other economic sectors provide a range of goods and services to farms, including feed sales, accounting services, machinery sales and repair, mechanic services, etc., thus

³⁹ ‘Agriculture and Support Activities’ is the title of the NAICS (North American Industry Classification System) category, as currently used by Statistics Canada in its industry classifications.

generating additional employment in these sectors (upstream employment). Though additional jobs in those sectors are in fact created by farm activity, these jobs are considered to be ‘indirect employment benefits’. It is possible to make estimates of these indirect employment benefits by surveying farm-related businesses to assess the portion of their business activity that is generated by farms. Please see the report on Farm Economic Viability (Scott and Colman 2008) for estimates of the direct and indirect employment impacts of farm activity in Nova Scotia and of the estimated portion of those benefits that remains in the province.

Figure 2 below shows that in 2006, about \$67 million was spent on farm wages in PEI and \$96 million was spent on farm wages in Nova Scotia (\$2007). It is important to keep in mind that these figures do not include compensation for farm family members who work on the farm without pay. Since the amounts spent on wages in Figure 2 are adjusted for inflation, the trend clearly shows that the amount spent on real wages has increased substantially over the 35-year period between 1971 and 2006—more than doubling in both provinces—despite a decline in the number of farms.

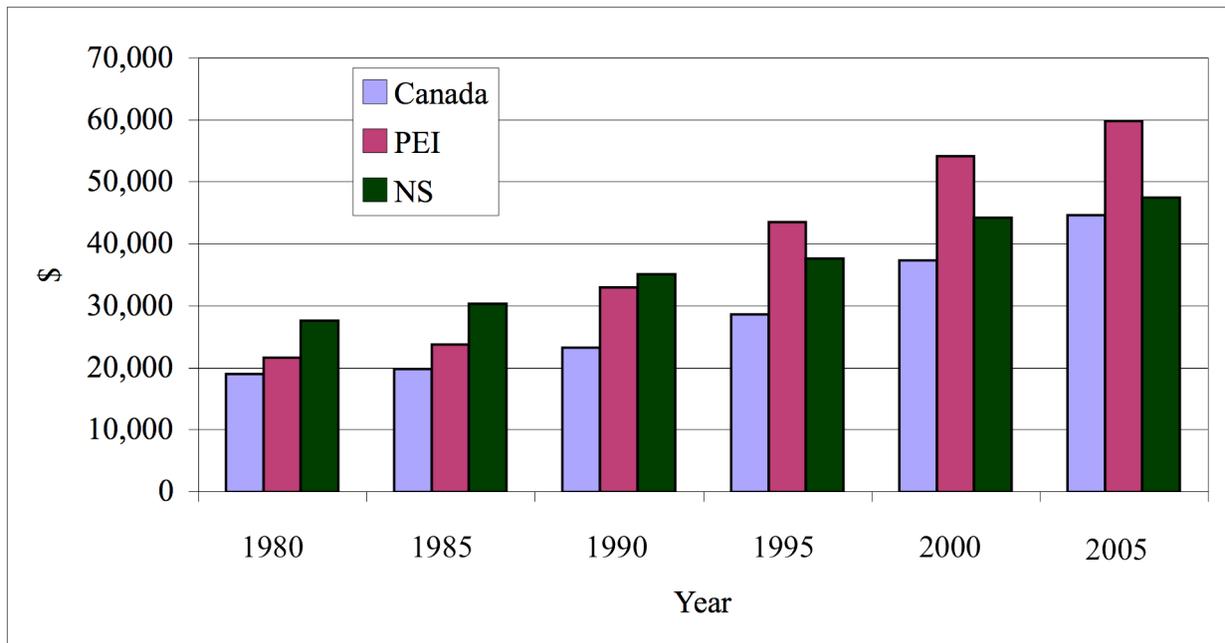
Figure 2: Amount Farmers Spend on Wages (millions of \$2007), PEI and NS, 1971–2006



Source: Statistics Canada. 2003. *Farm Operating Expenses and Depreciation Charges*. Agriculture Economic Statistics. Cat. No. 21-012-XIE. Latest Update November 2007.

Figure 3 below shows that the amount spent on wages per farm increased steadily between 1980 and 2005 in Canada, Nova Scotia, and PEI, with the sharpest increase in PEI, where the average farm now spends considerably more on wages and salaries (\$59,722/year) than the national average (\$44,559/year).

Figure 3: Wages and Salary Expenses per Farm Reporting (\$2007), Canada, PEI, and NS, 1980–2005



Source: Statistics Canada. 1997. *Historical Overview of Canadian Agriculture*. Cat No. 93-358-XPB; 2000 and 2005 data from Statistics Canada. 2006. *Census of Agriculture*. Table 7.8-10.

The number of full- and part-time jobs in ‘Agriculture and Support Activities’, according to Statistics Canada’s Labour Force Survey, is shown in Figures 4 and 5 below. They show that most jobs in agriculture are full-time. In Nova Scotia there are now about 3,600 full-time and 1,100 part-time jobs in agriculture—the lowest number ever recorded, and down sharply by 40% from a total of 7,800 jobs 30 years earlier. Interestingly, however, the decline in farm jobs has not been steady over this period of time. As recently as 2001, there were 7,300 jobs in agriculture in Nova Scotia compared to 4,700 in 2006, so the most dramatic loss in jobs has occurred just in the last few years (Figure 4). This likely reflects the sharp decline in farm economic viability in the province reported in Farm Economic Viability (Scott and Colman 2008).

In PEI, there are about 3,600 full-time and 300 part-time jobs in agriculture. The number of farm jobs in PEI has declined significantly since the mid-1980s. But the pattern of decline is different from that in Nova Scotia, with the sharpest loss of jobs in PEI occurring in the late 1980s and early 1990s, when the number of jobs in agriculture fell by 41% from 6,100 in 1986 to 3,600 in 1994—holding fairly steady since then.

There appears to be some differences in Statistics Canada's own reporting of its Labour Force Survey data and employment figures. For example, in 2001 Statistics Canada's Labour Force Survey, as reported in the agency's CANSIM II database, estimates there are about 8,200 'Agriculture and Support Activities' jobs in Nova Scotia,⁴⁰ while in a separate table entitled 'Distribution of Employed People, by Industry, by Province', Statistics Canada reports agriculture as having 7,300 employed people.⁴¹

There are also differences between Statistics Canada's Labour Force Survey data and other sources like the Census. For example, Statistics Canada's Labour Force Survey reports that in 1996, 8,300 people worked in 'Agriculture and Support Activities' jobs in Nova Scotia,⁴² while a Census table, entitled 'Experienced labour force 15 years and over by industry, 1996 Census', records 9,920 people in this category. There is no accompanying explanation indicating whether, and if so how, the table title might explain the difference between the two statistics. In any case, the latter Census figure (9,920) is used in Robinson and MacDonald's analysis of employment in Nova Scotia agriculture (Robinson and MacDonald 2000).

Robinson and MacDonald (2000) report that the direct and indirect labour force in Nova Scotia agriculture was about 14,300 persons in 1996—including full-time, part-time, and seasonal jobs.⁴³ Their analysis showed that direct employment in agriculture and agriculture-related industries in Nova Scotia had risen over time—both in absolute numbers and as a share of jobs in Canadian agriculture as a whole. That is quite a different conclusion than would be drawn by a 30-year analysis of the trends indicated in Figure 4 below, and indicates how different sources, definitions, timelines, and methods of calculation have yielded quite different results for employment generation both within agriculture and generated by agriculture.

Robinson and MacDonald (2000) also provide a list of 118 manufacturing establishments in the province that processed agricultural products in 1996-7. Unfortunately, to the best of our knowledge, this list has not recently been updated. Again, it would be most important to track this trend in a consistent and systematic way in order to assess whether the decline in farm viability described in Part II above has had an impact on the viability of these manufacturing establishments that, to a greater or lesser extent, depend on a healthy agricultural sector. Unfortunately, other evidence in more recent years indicates that quite a few agriculture-related businesses have closed down or are in danger of closing down (see for example Boutilier and Seed 2007).

⁴⁰ Statistics Canada, 2007. CANSIM II table 282-0008. Labour force survey estimates by NAICS (1100-1129, 1151-1152), sex and age group.

⁴¹ Statistics Canada, 2002. Canadian Statistics, Distribution of Employed People, by Industry, by Province. Available at: <http://www.statcan.ca/english/Pgdb/People/Labour/labor21a.htm>

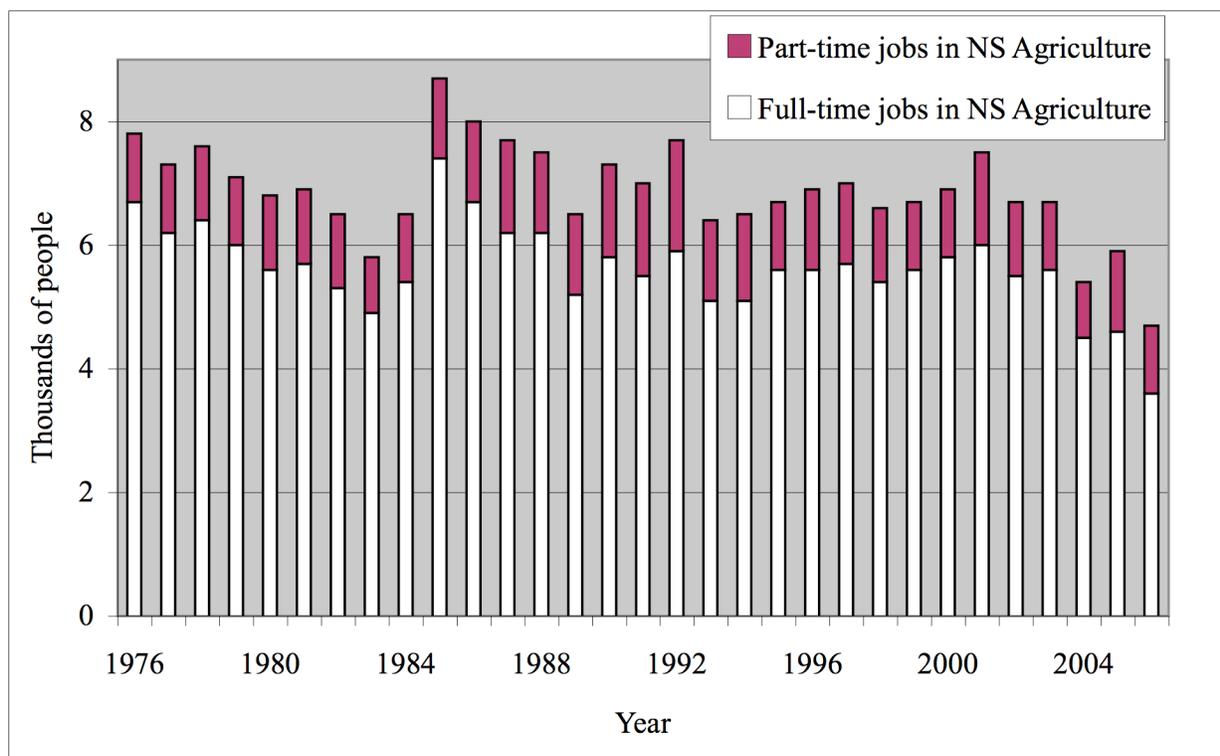
Accessed May 20, 2002. The Nova Scotia Department of Finance also uses this figure and quotes the source as Statistics Canada, Labour Force Historical Review, 2001, CD-ROM No. 71F0004-XCB

⁴² Statistics Canada, 2007. CANSIM II table 282-0008. Labour force survey estimates by NAICS (1100-1129, 1151-1152), sex and age group.

⁴³ The 14,300 figure refers to all 'people working' (whether part time, full time or seasonal) in Nova Scotia agriculture, rather than to 'person years of employment' (which are full time equivalents).

For the moment, therefore, the raw Statistics Canada Labour Force Survey data on full and part-time jobs in Agriculture and Support Activities outlined in Figure 4 below remain the only consistent long-term (30-year) data set available on employment in agriculture. It is a recommendation of this report that—given the crisis in farm viability outlined in the Farm Economic Viability report (Scott and Colman 2008)—these Statistics Canada data be supplemented as soon as possible by more detailed analyses of employment that include direct, indirect, and induced Person Years of Employment⁴⁴ as reported in ATi Consulting (2002) and Roberts et al (2005).⁴⁵

Figure 4: Full- and Part-Time Jobs in Agriculture and Support Activities (thousands), NS, 1976–2006

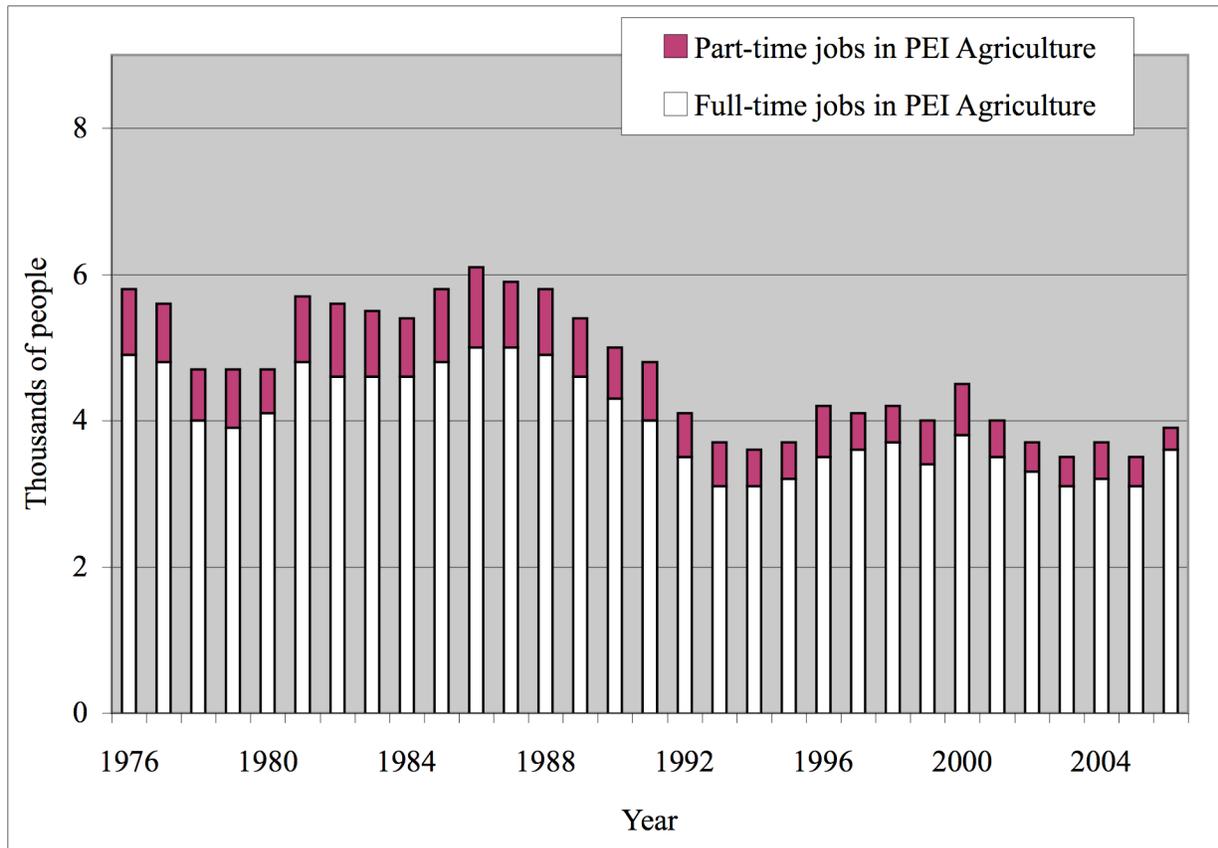


Sources: Statistics Canada, 2007. CANSIM Table 282-0008. Labour force survey estimates by NAICS (1100-1129, 1151-1152), sex and age group.

⁴⁴ 1 Person Year of Employment = Total annual hours worked, divided by 2000 hours/year (40 hours multiplied by 50 weeks).

⁴⁵ Direct employment occurs when people are hired by the farm. Indirect employment occurs in industries that supply farms. Induced employment is caused by wages and salaries spent on goods and services by farm employees (Roberts et al. 2005: 13).

Figure 5: Full- and Part-Time jobs in Agriculture and Support Activities (thousands), PEI, 1976–2006



Sources: Statistics Canada, 2007. CANSIM Table 282-0008. Labour force survey estimates by NAICS (1100-1129, 1151-1152), sex and age group.

Family Employment

The employment indicators above are among the few for which some basic data are readily available, and even there significant data gaps exist in areas like indirect and induced employment, where trend lines can not yet be constructed. However the 2003 GPI Atlantic farm interviews in Nova Scotia and PEI identified other key potential indicators of human capital in agriculture for which no data are currently available, and where further investigation is required on appropriate measurement methodologies. For example, family employment emerged as a very important issue in the interviews with farmers (Scott et al. 2003), though how this indicator should best be measured remains a question.

One Nova Scotia farmer, for example, noted that the family farm gave her three children an opportunity to earn money on their own:

Our kids were able to bring in all their spending money for the year, by helping George in the garden, with the produce, selling it down at the bottom of the driveway. Anything

they wanted to do, they could do, because we didn't have a lot of money to give them allowance, so it was their way to make money to buy what they wanted.... It was a lesson in learning to work, and see the other end.

How such benefits can best be quantified requires investigation.

Pay Equity between Farmers and Other Occupations

Another possible indicator relevant to human capital, and of concern to many of the farmers interviewed by GPI Atlantic in 2003, is the difference in pay between farmers and other occupations requiring similar or comparable skills. Such an indicator might reveal whether farming skills are properly valued in society, and appropriately compensated. Thus, one PEI farmer remarked that the knowledge and understanding of the agriculture industry that he possesses should be valued and rewarded to the same extent as the knowledge and understanding of his accountant and of others to whom he provides a livelihood, like his plumber for example. And a Nova Scotia farmer voiced the need for farmers to get paid at the same rate as other professional, technical people with comparable skills.

In a survey of 331 Canadian farmers reported by Martz and Brueckner (2003:42), only 33% of men and 32% of women felt they were fully compensated for work done on the farm. Though farming is a family business, in which wages may not be the only compensation, it is significant that only 25% of both male and female respondents were paid wages for the work they did on farming operations. Other forms of compensation may include a portion of profits (if they happen), money when needed, use of vehicles, and a share in equity. Yet despite such other forms of compensation, it remains significant that less than one-third of respondents felt they were properly compensated for their work on farms (Martz and Brueckner, 2003). This indicates that human capital in agriculture may well be undervalued—a hypothesis that bears careful investigation.

The “Right People” for Farming

Another human capital and skills-related issue that was very prominent in the minds of interviewees during the 2003 GPI Atlantic farm interviews was the challenge of finding *appropriate* people both to work on farms and to take over farms. Without new and carefully designed survey work in this area, this is a difficult indicator for which to produce meaningful measurements, due to the necessity of defining the required human qualities in ways that are amenable to quantification.

One PEI farmer noted that these qualities go beyond simple technical skills. Thus, he described a viable farm as needing “to have the right people—people willing to work as a team, sharing a common goal of running an efficient business.” He remarked that it was getting harder to find good hired help, and noted that farm families therefore sometimes share help or ‘barter’ back and forth among themselves in return for help or equipment usage.

Another PEI farm family also commented that it was increasingly challenging to find and keep help to work on their farm. At present they are therefore “growing their own” farm help—that is, taking in 4-H kids who are 12-14 years of age and trying to encourage them to have fun while they learn the correct techniques of making hay or milking. Their hope, in training these youngsters now in an enjoyable atmosphere, is to get them back as skilled and motivated summer students in the future.

A Nova Scotia farmer concurred that having good employees is one of the biggest challenges for dairy farmers. He remarked that people who grew up on a farm or who have previous farm experience are the most likely to want to do farm work.

These and other comments, which seem to indicate that available, willing, skilled, and ‘appropriate’ farm labour may be in increasing demand, point to the need for accurate definition and tracking of this important indicator, since it directly affects both the productivity and viability of agricultural enterprises and the labour relationship between farms and their surrounding rural communities. Good evidence in this area would also be useful for policy planners concerned to design and improve incentives for rural living, agricultural training and employment, and summer student opportunities in rural areas.

Positive Relationship with Employees

Another important indicator, which pertains to both human capital and social capital, and which also affects productivity and wellbeing, is the relationship between employer and employee. This issue was emphasized by several of the respondents during the 2003 GPI Atlantic farm interviews, and is therefore identified here as another potential key area for indicator development and data gathering through new survey materials.

This factor is also directly related to and affects the previous indicator noted above. Thus, it seems likely, based on interview comments, that farmers who put a greater emphasis on positive relations with employees also have less trouble attracting and retaining good farm help. New data gathering and evidence in this field could test this hypothesis. In fact, many of the following interview comments point to the fact that the human capital contribution to farm production stemming from positive employment relations is presently insufficiently and inadequately recognized in existing indicators that focus primarily on farm outputs, production, and cash receipts.

Thus, one large potato farmer in PEI remarked that her goal is to have the farm’s hired help stay for 8-10 years, which requires good employment relations. Another PEI farmer noted that provision of medical insurance benefits and worker’s compensation for hired help (through the Federation of Agriculture) has helped him to attract and retain appropriate people for farm work. And a third PEI farmer noted that good communications are needed when more than one person is involved in decision-making.

Yet another PEI farmer acknowledged that there are a “lots of headaches” in farm employment relations, but noted that if the farm team is motivated and happy, then the results and farm production reflect the good working environment. He remarked that a really good year happens for him when management, staff, neighbours, and customers are all enjoying some part of the business (whether profits, products, having business in the community, or receiving benefits from having dealt with the business).

The importance of good employer-employee relations was echoed by many of the Nova Scotia farmers interviewed. Thus, one remarked that: “The best way to keep a good employee is not to tell them what to do, but to ask them what to do. It’s kind of a way of respecting them.”

Another Nova Scotia farmer pointed out that he has a very diversified farm and store, with about 30 people working for him on a regular basis and even more in peak seasons. In sharp contrast to some of the comments above on the difficulty of finding appropriate farm help, this particular farmer noted that he has no trouble finding good people to work on the farm, attributing his success in this area to good compensation, working conditions, and employee relations. He remarked:

Not only are we a major employer in the area, we’re probably the best employer. We pay more per hour than other businesses do, we give more hours. I’m now at the point that I don’t advertise for people to work here. It’s a steady stream, because, last year, as an example, we had university students all over the place here. We tell them up front, if you would like these [long] hours, so we get the really keen ones, the ones that want to pay for university, things like that.

But he added that money is not everything. He is also able to keep employees content with regular parties and celebrations.

Yet another Nova Scotia farmer reported that he takes time off work to help his brother pick apples: “I don’t mind taking two weeks vacation to pick apples, it gives me dollars, it gives me exercise, and I enjoy doing it, and its helping the farmer, because he only really needs me for two weeks in the summer, a short season.” And a Nova Scotia apple administrator pointed to the importance of flexible work arrangements that meet and accommodate the varying needs of different kinds of workers:

Apple growers deal with harvest labour problems by trying to be very flexible. If they are very fast and good, a labourer can earn about \$90 a day, but many earn less because they get paid by the bin rather than by the hour. Women, who have children in school, come after the kids have gone on the bus, and pick until it’s time to go home and meet the bus. So the grower accepts that. A lot of retired people work picking apples. Some people from the military if they have shift work—growers try and work around their shift work. I pick on Saturdays and Sundays because I like the fall, it’s my favourite time of year, and I want to be outside. I also met some very interesting people.

In different ways, therefore, many farmers have come to accommodate worker needs, and made special efforts to provide attractive work conditions that are more conducive to the retention of valued employees. As noted, insufficient attention has been paid to the role of positive employer-employee relations in enhancing farm productivity and viability, but the development of indicators in this field that could begin to provide important evidence on the particular work conditions and circumstances most closely linked to productivity gains. That, in turn, could provide highly useful information to farmers facing the challenge of attracting and retaining skilled and motivated labour on the farm.

Off-Farm and Non-Farm Work

A key criterion for effective indicators is that they are clearly able to demonstrate, according to movement in a particular direction, whether progress is being made or not. Thus, with all the indicators considered thus far, there is no dispute about what constitutes genuine progress. For example, smaller debt-to-income and expense-to-income ratios generally constitute greater progress towards farm economic viability than higher ratios, while enhanced employment generation, retention of skilled farm labour, reasonable compensation for skilled farm work, and good farm working conditions can be considered positive indicators of human capital in agriculture, while job losses, low pay, poor work conditions, and a shortage of needed skilled labour signify potential problems. In short, clear directionality and broad agreement on what constitutes progress is a mark of an effective indicator.

Such clarity does not exist on all issues of importance to farmers, however. On the issue of non-farm work as a supplement to the farm enterprise, for example, there is no general agreement on whether increased non-farm work indicates genuine progress or not. Some argue that increased non-farm paid work undertaken by farmers not only detracts from the farm but also signifies a decline in farm economic viability and potentially leads to the excess work hours and stress often associated with moonlighting, while others feel that such non-farm work supports the farm, enhances viability, and signifies healthy economic diversity in rural communities (Scott et al. 2003).

A survey of Canadian farmers (Martz and Brueckner 2003:86) found that non-farm work increased by 50% between 1982 and 2002, and revealed that non-farm work is increasingly becoming a strategy that family farms in Canada use to make ends meet. 68% of the families in the study had at least one adult farmer working in non-farm jobs, and 47% of male respondents and 49% of female respondents worked at non-farm work.

The broader and more encompassing term ‘non-farm’ (rather than ‘off-farm’) work has been used above, since the numbers for the 1982 and 2002 surveys referenced above refer to all non-farm work performed by farmers. However, a caveat must be added here simply to emphasize that the two terms are obviously not synonymous. Non-farm work refers to income generating work by farmers that takes place off the farm, and also to work that takes place on the farm property, but is not related directly to the farming operation. Examples of work that takes place

on the farm but that is not related to farm operations could include home-based businesses in construction, hairdressing, accounting and many other fields.

According to the 2002 farm survey reported above (Martz and Brueckner 2003:87), 55% of men and 42% of women felt their non-farm work adversely affected the overall operation of their farms. On the positive side, nearly one-third of respondents (32%) reported that this non-farm employment led to increased cash flow, while 12% said their non-farm work knowledge benefited the farm, 7% said the non-farm work (and consequent increased income) had actually allowed farm expansion, and 4% said it had enabled the farm to survive. The negative reported impacts of non-farm work by farmers were that needed farm tasks didn't get done (16% of respondents), that they were not available when needed (14%), that there was an increased need for hired help with farm tasks as a result of their own non-farm work (9%), that farm production declined (8%), and that the non-farm work placed increased pressures on the family (4%).

Since most of the positive factors cited above are financial, there is a strong case to be made that non-farm work by farmers is largely an unwanted necessity occasioned by lack of farm economic viability, and that enhanced viability would therefore reduce the need to take on non-farm work for cash-flow reasons, or in order to save or expand the farm. Nevertheless, given the apparent ambiguities on this question, revealed also in the 2003 GPI Atlantic farm interviews, we do not—at least at this preliminary investigative stage—recommend that increases or declines in non-farm work be used as an indicator of human capital in agriculture.

Efficiency

After considering a range of employment-related indicators and potential indicators above, we now turn to the second key category of indicators and measures of human capital in agriculture—namely, efficiency. Just as there are different criteria and ways of assessing economic efficiency and ecological efficiency, we also have to ask *how* we can best and most appropriately evaluate human capital efficiency.

Thus, if our definition of efficiency is based on the goal of more production per person, we will use very different assessment methods and produce very different results than if key goals are to maintain the employment of as many people in agriculture as possible and to strengthen rural communities. And if people and their quality of life are a key concern (as they must be in any human and social capital approach), we must still consider the possible trade offs between human capital and other capital inputs (such as equipment and mechanized processes).

As well, considerations of efficiency involve the use of time as well as money, people, and equipment, so we must ask how time can best be used in order to make efficient use of human contributions to agriculture and to rural communities?

We certainly do not pretend here to be able to provide definitive answers to these and other challenging questions on efficiency indicators of human capital in agriculture. Indeed, such questions do not necessarily produce consensus opinions within farming communities. For this

very preliminary investigation into ways of measuring the contribution of human capital to agriculture, therefore, we can only point to a few possible types of available data in the area, along with some of the comments offered by Nova Scotia and PEI farmers that are highly relevant to, and can usefully inform, further developmental work in this field.

The existing data and GPI Atlantic's 2003 farm interviews have suggested two categories of indicators and measures of efficiency in relation to human capital in agriculture—labour productivity and intensity, and farm scale. Both the data sources and results presented here and the potential indicators suggested by farmers' comments will require considerable further investigation and development.⁴⁶

Labour Productivity and Intensity

The ratio of farm receipts to wages can potentially be used as an efficiency indicator, since a declining ratio reflects a rising 'wage intensity,' and thus a reduction in the efficiency with which human labour is used. In other words, a declining ratio means that every dollar spent on farm wages produces fewer farm cash receipts for farmers (reduced efficiency), while an increasing ratio means that the same amount of wages is yielding higher farm receipts (increased efficiency). As noted below and also indicated above, however, this definition of efficiency is a narrow one that does not account for other human capital objectives like high employment or the promotion of people-centred rather than equipment-centred agriculture.

Figure 6 below demonstrates the relationship between gross farm income (total cash receipts) and the amount spent on wages. The results for both Nova Scotia and PEI show a clear trend over time towards increased wage intensity (and therefore reduced efficiency in the use of human labour resources—again if other objectives like high employment are not considered). In Nova Scotia, wage intensity has nearly doubled since 1973, and in PEI it more than doubled. The wage intensity in both provinces is now near its highest level in the more than 30 years that consistent records have been kept.

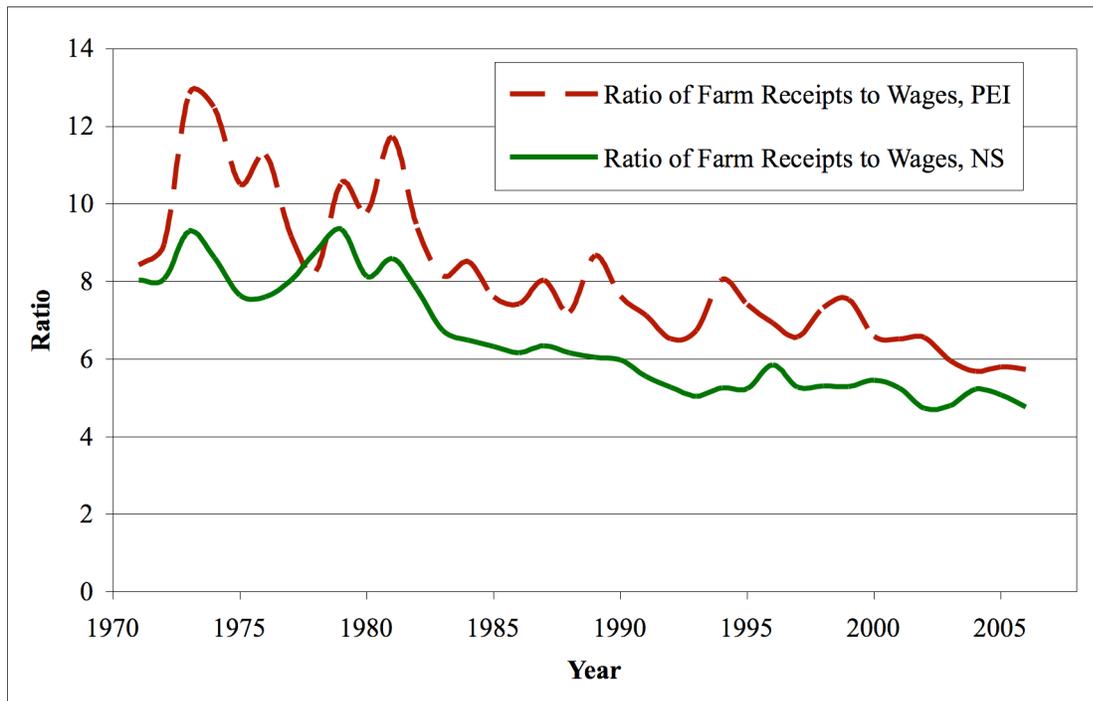
In PEI, farmers now produce just \$5.74 in receipts for every dollar spent on wages, compared to an average of about \$10 in the 1970s and early 1980s—which can narrowly be interpreted as an efficiency decline of about 35% in the last 20 years, when only these two elements (farm receipts and wages) are considered. In Nova Scotia, farmers now produce \$4.77 in receipts for every dollar spent on wages, compared to about \$8 in the 1970s and early 80s—an efficiency decline of about 40%.

As noted, however, the interpretation of these results is more complex than appears at first sight, as other human capital objectives (like high employment for example) may imply other considerations and dimensions of efficiency that are not accounted for in an overly simple equation of high wage intensity with low efficiency. A trend that shows higher wage intensity over time might mean that farmers are employing more people per dollar of gross income, or it might mean that they have to pay higher wages per dollar of gross income, or both. While higher

⁴⁶ Please see the Glossary for a more in-depth discussion of the different kinds of efficiency.

wage intensity could be a good thing for communities where employment opportunities are scarce, it is difficult to tell if it is a good thing for farmers.

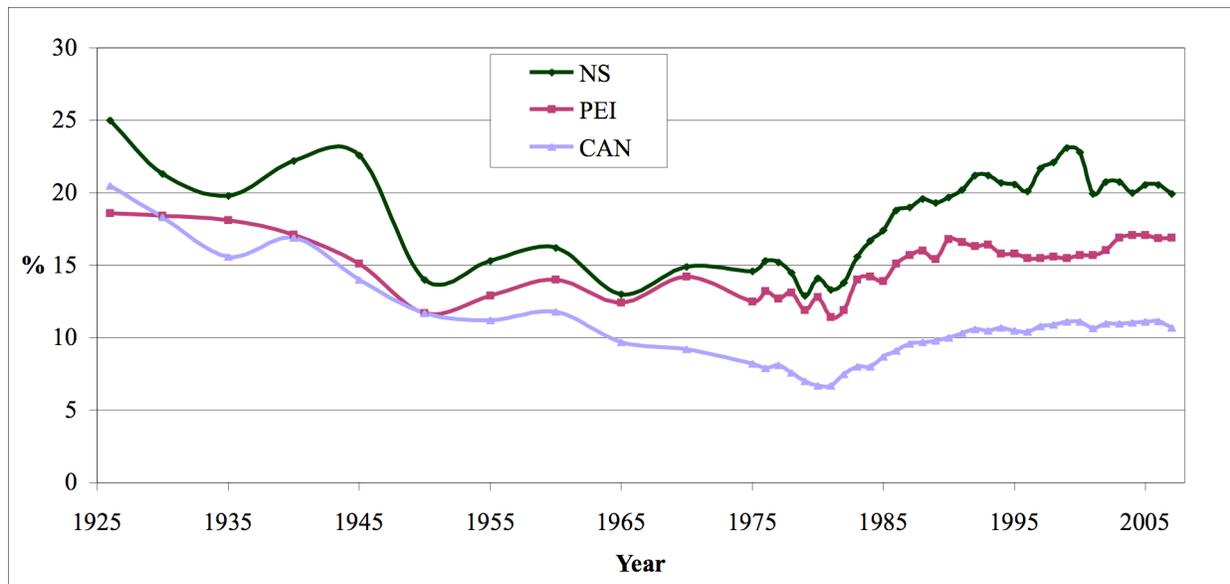
Figure 6: Ratio of Farm Receipts to Wages (%), NS and PEI, 1971–2006



Sources: Statistics Canada. 2007. *Farm Operating Expenses and Depreciation Charges*. Agriculture Economic Statistics. Cat. No. 21-012-XIE. Latest Update November 2007; *Farm Cash Receipts*. Agriculture Economic Statistics. Cat. No. 21-011-XIE. Latest update November 2007.

It is noteworthy that farms in Nova Scotia and PEI spend considerably more on cash wages as a percentage of total farm operating expenses and depreciation charges than the national average. As well, the trend over the last 20 years shows that cash wages are rising relative to total expenses both nationally and in the Maritimes. However, that trend has been accentuated in Nova Scotia, thus widening the gap with the national average—so that Nova Scotia farmers now spend almost twice as high a proportion of their total expenses (including depreciation charges) on wages (20%) as farmers nationwide (11%). PEI farmers spend 17% of their expenses on wages.

Figure 7: Ratio of Amount Spent on Wages (including Room and Board) to Total Expenses (including Depreciation) (%), Canada, PEI, and NS, 1925–2007



Source: Statistics Canada. *Agriculture Economic Statistics*. Cat 21-012-XIE. Latest update May 2008.

Traditionally, figures for ‘labour productivity’ are reported based on the underlying assumption that more goods produced by fewer people signifies enhanced productivity, and is therefore a ‘good’ thing. Certainly this assumption may be said to hold true under two conditions: (1) full employment, and (2) that people do not *want* to do the kind of work in question and that they therefore value higher levels of production generated through fewer labour hours. In rural communities, however, there is rarely full employment, and the second condition cannot automatically be assumed without further examination.

These caveats again illustrate the drawbacks of applying narrow conventional definitions of efficiency that do not consider other possible goals, objectives, and outcomes. Let us therefore briefly consider possible alternative approaches to and indicators of efficiency in this area that take these two caveats into account and allow for a broader range of social goals and objectives than production alone.

If, for example, a key social goal is to have as high a level of quality employment as possible, with little or no unemployment, then a broader (or at least different) definition of efficiency might value the highest possible total numbers of jobs (or paid weeks, or person years of employment) that could be created for a given investment, rather than just the amount of production (output) per hour of labour. Or, it might be beneficial to strive for good productivity measures (net farm income per person year of employment) as well as measures of a people-centred agriculture (person years of employment per farm).

The second condition, assumption, or caveat noted above concerns the *quality* of work, and whether it provides some satisfaction in its own right (regardless of the level of production).

From a health and physical activity perspective, for example, a certain level of manual labour might produce health benefits that are lost in excessive mechanization, even though the latter is more likely to raise labour productivity (more goods in fewer hours). The point here is not to favour one value over another, but rather to note that certain assumptions cannot necessarily be taken for granted. Thus, broader considerations of efficiency should also account for the quality of work, which can be evaluated using indicators of work satisfaction (both employee and employer), educational opportunities provided by the work, job safety, job security, reasonableness of wage, quality of the labour pool from which farmers have to choose, and other factors.

Another consideration in assessments of labour productivity is the question—who benefits from enhanced labour productivity? If productivity gains translate into higher wages and increased leisure time, they may be advantageous to workers. If productivity gains help a farmer to be economically viable, this is also advantageous. But if such productivity gains are taken primarily as excessive profits they may increase inequities and reduce social cohesion, and if they result in higher levels of consumption and resource use, they may potentially be damaging to the natural environment.

In sum, efficiency measured through conventional labour productivity measures alone generally reflects a narrow materialist perspective that places primary emphasis on production. But the GPI approach, which also values human, social, and natural capital, requires a broader consideration of efficiency in this sphere. Certainly from a human capital perspective, efficiency and productivity measures must take into account some of the other possible social goals and objectives (like high employment and work quality) briefly noted here.

Agriculture in Nova Scotia has been shown to be more labour-intensive than in other parts of Canada. According to Robinson and MacDonald (2000), the greater use of human resources in Nova Scotia may be a response to its lower cost (and greater dependability), as compared to other agricultural regions. They indicate that although Nova Scotia agriculture uses more *labour per output*, it is just as productive—if not more so—compared to other regions of the country. This again illustrates the importance of considering broader definitions of productivity and efficiency, as noted above, than the narrow, conventional labour productivity definition of output per hour. According to Robinson and MacDonald (2000:3):

Hog producers in Nova Scotia for example achieve higher feed conversions and higher livestock productivity (pigs marketed per sow) as compared to their typical counterparts in the rest of Canada and the USA. These farms' use of labour per unit of output, however, appears to be 15-20% higher. Dairy producers in Nova Scotia similarly achieve a higher output per cow but utilize more labour per hectolitre of milk shipped.

In the 2003 GPI Atlantic farm interviews, one PEI hog producer very simply and eloquently illustrated the human capital contribution to productivity that has too often remained invisible in conventional measures like labour productivity: “The more time you spend with the pigs, the better they do. It’s a very obvious relationship” (Scott et al 2003). In other words, *more* quality labour-hours rather than less, may in some circumstances enhance productivity. Despite this

potentially valuable contribution of labour and human capital to productivity, it is important to recall, as noted above, that producers often find it hard to get skilled and high quality help on their farms. The balance between these factors is an important and multifaceted issue that is beyond the present scope of this report. Here we simply draw attention to some of the different dimensions of the productivity issue that require related consideration from a human capital perspective.

From the GPI perspective, another major problem with failing to acknowledge the human capital dimension of efficiency and productivity is that this failure can produce hidden costs that—in conventional accounting systems—are sometimes referred to as “externalities” but are not fully and properly valued or taken into account in standard production statistics. Thus apparently higher rates of productivity and production in a particular industry may mask major consequential human, social, and environmental costs in other sectors of the economy.

To give just one example, a business decision to substitute capital for labour—in replacing manual farm labour by a mechanized harvester for instance — may be based on an effort to save time and money and to increase production per unit of labour input. However, when people are put out of work, there are social, economic, health and other costs associated with unemployment that may be borne by society at large and paid in other economic sectors.

GPI Atlantic’s 2004 report on *Working Time and the Future of Work in Canada* (Pannozzo, GPI Atlantic, 2004) details some of the documented costs of unemployment and estimates these costs for Nova Scotia.⁴⁷ The unemployed have higher rates of poverty, illness, disability, stress, mental disorders, and a wide range of other problems. The hidden costs of unemployment therefore include direct taxpayer-borne costs like unemployment insurance, social assistance, and health care costs, indirect productivity losses resulting from excess illness and disability, and loss of tax revenues. As well, there may be indirect declines in the local wealth circulating within a community when mechanized equipment manufactured outside the community is purchased to replace wages paid to a person within the community. These and other hidden costs of unemployment may adversely affect the productivity of local communities and of society as a whole, even while a particular sector appears to register apparent productivity gains.

For all the reasons outlined in brief above, conventional labour productivity is not recommended here as a key indicator of human capital in agriculture. However, further exploration is certainly warranted into broader definitions and potential indicators of productivity that do take into account human capital considerations like the value of higher employment rates and the quality of work.

⁴⁷ Pannozzo, Linda, *Working Time and the Future of Work in Canada: A Nova Scotia GPI Case Study*, GPIAtlantic, April, 2004. Available at: <http://www.gpiatlantic.org/pdf/workhours/workhours.pdf>. Accessed 13 January, 2008.

Farm Scale

Related to the capital/labour substitution issue is the issue of scale, which is increasingly seen as key to farming efficiency. Conventionally, the issue of scale is considered only from the perspective of output and material production, just as was the case with labour productivity (see above). Thus, the question conventionally asked with regard to farm scale is: What is the best scale of agriculture for a certain kind of technology (like combine harvesters for example), which in turn produces the ‘economies of scale’ (and therefore efficiency) required to achieve a certain level of output?

From the point of view of human capital, however, the question must again be broadened to include the human dimension, and to ask also: what scale of farming is best for human beings, and what scale is most efficient to produce an optimum quality of life for farmers? And it can be broadened further to include social and natural capital factors that consider the scale most appropriate to the health of the proximate rural community and to the ecology of the land in question. The question of human-scale farming is discussed in Donahue (1999) with reference to communities, renewal of farmers, human satisfaction, geography, and history.

Here again we can only point to the importance of broadening the consideration of farm scale in these ways. Considerable further investigation is required to develop appropriate indicators and measures of farm scale that properly account for the various human, social, economic, and ecological dimensions of farming. This task is made more challenging by the fact that there is no consensus on the appropriate balance of these factors in relation to scale.

As with the issue of non-farm work considered above, the 2003 GPI Atlantic farm interviews (Scott et al. 2003) revealed considerable differences of opinion among farmers on the issue of farm scale. Some sample comments from those interviews are given below. What is notable from these comments is not so much that farmers are either “in favour” or “against” large farms, as that they are profoundly aware of the economic and social complexities and trade-offs involved in increases in scale. In fact, a simplistic pro-con dichotomy on the issue of scale seems rather beside the point if not entirely false and misleading, since farmers seem acutely aware that change in scale is a dependent variable related to wider economic and technological changes.

One dairy farmer on Prince Edward Island remarked: “[Dairy farms] must have bigger numbers milking so that the small margins can be multiplied many times to make a profit.” In order to be viable, he said, dairy farmers feel that they have to grow, since “the relationship between the bottom line and a really good bank balance hasn’t been that grand” for them.

This view was echoed by a large PEI potato farmer, who argued that the most salient indicator of viability would be that the farm would grow. The farmer noted that she needs sufficient resources to produce about 3-5% growth per year, which was the level needed “to stay even,” and that her ability to produce that level of growth was therefore how she measured her farm’s viability. She commented: “That’s how the industry seems to be going; that you must grow to stay even.”

A third PEI farmer remarked that, just like schools and hospitals have amalgamated and grown bigger, so have farms, since it now “takes more efficiency and size to make enough or some profit.” And yet another farmer in PEI remarked that a farmer can only get so efficient for so long: “You have to have the volume, and to have the volume you have to have the space/room to produce—the land base.”

By way of explanation, another PEI farmer noted that changes in machinery width, capacity, or horsepower quite often dictate the net thresholds for growth, change, and viability. Thus, larger machinery allows work to be done faster, but it also demands larger head lands to provide turning capacity for the machinery, and other requirements necessary for efficient use of the machines. For that reason, this farm family would prefer to have fewer and larger fields to improve its production efficiency.

One PEI farmer remarked that at the beginning of his farming career, he had thought that 200 acres was a good size farm; yet today a decent sized farm was 1200 acres and growing. He noted that, while farmers must be the most innovative people, they can easily go broke if they change too quickly.

Along these lines, another PEI farmer related the larger scale of farms to increased specialization, and a concomitant growing dependence on and need for expensive outside inputs, including machinery, which may have been more modest and less necessary and costly at smaller scales. The farmer noted that these input prices, including the cost of tractors, fuel, or machinery parts, are often out of a farmer’s control.

Several Nova Scotia farmers remarked that increased farm scale may exacerbate rather than ameliorate economic and financial challenges. As well, they noted that increases in scale may be provoked by financial challenges (especially equipment costs) rather than be desired for their own sake, let alone reflective of prosperous circumstances. Thus, one Nova Scotia dairy farmer reported that, in order to make the farm’s fixed assets (like machinery and infrastructure) pay for themselves, he has to spread the fixed costs over the maximum number of dairy cattle. Also, once he invests in a certain piece of farm equipment, such as a tractor, that equipment has to be used over the maximum number of acres in order to pay for itself. Another dairy farmer confirmed this thesis: “The decline in dairy farm viability over time is because the farmers are overcapitalized on machinery.”

Another Nova Scotia farmer noted that there were also social costs to increases in farm scale, and challenges in balancing short-term economic objectives with longer-term community considerations that are central to the traditional ethos of farming:

You have to grow to be efficient. That means one farm is cannibalizing the next farm. The success of the individual farm is determined by your growth and your cannibalization. Your success in your community, on the other hand is determined, I would say more by the diversity in the numbers of farmers. While there has been the disappearance [of many farms], there has been the expansion of the units that are here, so that from an economic sustainability point of view, we’re likely in a much stronger

position because these are better and more efficient operations. So they should be able to stay in for a longer period of time. But that still affects the numbers issue when you look at it. It would get lonely because there is a certain amount of support that goes with having the neighbours that are in the same business—the working back and forth.

A third Nova Scotia farmer posed this same question succinctly in rhetorical terms: “[If a farmer were] asked, would you rather have a neighbour, or your neighbour’s land, it is likely he would choose the neighbour.” And yet another Nova Scotia farmer remarked that growth of the farm in general is needed, “...but not at any cost; not at the expense of someone else. I don’t mind taking a risk and gaining,” he said, “but I don’t want to do it at someone else’s loss.”

With reference to farm scale, the National Farmers’ Union (NFU 2003:10) also makes the argument that increasing scale does not necessarily benefit farmers. According to an NFU study: “Economists point out the benefits of ‘economies of scale’: that larger operations—because of specialization, division of labour, optimized equipment, access to capital, etc.—can produce goods and services more cheaply and efficiently than smaller operations can.” However, the authors note that although farms in Canada have attempted to become more efficient by increasing their scale of operations, they have not benefited from the efficiencies gained, because they have very little market power to get fair prices for their products. Thus, if commodity prices remain depressed while farm input prices increase, farmers may have to send ever-larger quantities of goods to market at reduced margins just to stay in business. In that case, increased economies of scale will not result in increased economic benefit. The NFU study points out that, in fact, average farm size and production have increased in Canada, but prosperity in the farm sector has declined at the same time.

The NFU analysis goes on to argue that there are actually two paths to increased efficiency: Either a firm (or farm) can get larger, and thus take advantage of economies of scale, or it can become more competitive through qualitative innovations. In the second scenario, firms (or farms) may innovate in order to cut costs and thus be able to offer their products at a competitive price in the market without necessarily increasing their farm scale.

However, the NFU study notes that actual efficiency gains in the farm sector have been stymied by developments in the sectors that supply farms and that buy their products (large processors or large retailers), both of which have siphoned off efficiency gains on farms to their own benefit. Thus, both the firms that supply farms with machinery, fertilizer and other inputs and those that buy products from farms are becoming bigger, with competition reduced as a result. According to the NFU analysis (NFU 2003:9-10):

[The] low levels of competition [these firms] face allow them to take ever-larger profits and management salaries from the revenue streams within the agri-food chain.... It appears that traders, processors, and retailers are not only declining to pass the benefits of *their* increased efficiency on to consumers, these transnationals are also absorbing the financial benefits from efficiencies created on family farms. The oligopoly power effects...are now so large that they give the corporations the power to pocket their own efficiency gains *and farmers’ gains as well*. [emphasis in original]

Satisfaction

In both the 2000 and 2003 farm interviews conducted by GPI Atlantic (Scott et al. 2000; Scott et al. 2003), farmers in both Nova Scotia and PEI identified a number of indicators of satisfaction that have the potential to highlight the subjective dimension of human capital (see Table 9 below). Creative energy, already discussed above, is included here as a key indicator of farmers' satisfaction with their vocation, because it was mentioned so many times in so many of the interviews in the specific context of expressions of satisfaction.

Many interviewees pointed out that satisfaction naturally has a lot to do with an individual's expectations or goals. One hog producer in PEI explained the increasing challenge of maintaining a focus on human goals, objectives, and needs in the face of sometimes overwhelming economic and financial pressures:

When you're talking about sustainability and viability, you can't just talk about the bottom line in terms of dollars, you have to consider the other things and you have to acknowledge that as humans we are not only economic machines. There are other parts of our being that need to be satisfied as we work and do different things, as we live. The sustainability in terms of the pig industry in its relationship to land, animals and community has been hard-pressed over the last number of years because there has been so much pressure from [economic] capital; capital is always the first that needs to be satisfied in any economic activity. Because of that we have sometimes been willing or been forced to minimize some of the other needs.

These "other needs," when they are met, are often expressed by farmers in the form of satisfaction with their vocation and with the nature of their work. The 2000 and 2003 farm interview responses on this important dimension of human capital can be grouped into four broad categories (Table 9 below), the first of which, as noted, has already been considered above. Here we consider the other three elements of farm satisfaction that—with the development of appropriate survey materials—can all potentially yield concrete measures of human capital in agriculture.

Table 9: Indicators of Farm Satisfaction

Creative energy (see section above)
Appreciation
Social interaction
Time use

Appreciation

A group of eight farmers interviewed in Kings County, Nova Scotia, in 2000, all ranked their own status in society as low (pegging farmers' status at an average of 4 out of a total of 10 points, where 10 represented the highest possible status) (Scott et al. 2000). These farmers' comments identified several factors contributing to the low status of farmers in contemporary Nova Scotia society, including:

- 1) dirty image;
- 2) the population has never known hunger and therefore does not appreciate the true value of its food and the necessity of its production for survival;
- 3) (closely related to #2 above), food is taken for granted and therefore not seen as important, so that—by extension—the people who produce that food are also taken for granted and not considered important;
- 4) farmers are a small (and declining) minority in the population at large; and
- 5) the public is cynical about farm subsidies and requests for farm 'handouts.'

The feeling that no one appreciates what one does can subtly add stress (and even bitterness) to an occupation, and reduce the quality of life, especially when very hard work fetches neither material reward nor appreciation. Although the GPI farm conversations in both 2000 and 2003 found that most interviewed farmers got a lot of personal satisfaction from the nature of the actual work they are doing (a positive indication of wellbeing), they also generally seemed to feel that others did not appreciate the contributions they were making (a negative indicator of wellbeing) (Scott et al. 2000).

Interestingly, however, farmers' own perceptions about their status and about the views that others hold of farming do not seem to be supported by the evidence gathered when non-farmers are asked similar questions. Thus, a county-wide GPI Atlantic survey of 1,900 residents of Kings County, Nova Scotia, in 2002⁴⁸ showed that the public perception of farmers and their work, at least in that rural community, was in fact very high. Fully 90% of respondents thought farming was very important for the county; 82% said they had a lot of respect for farmers; and 60% thought it was very important that food be locally produced. Since this survey is now six years old, it would be most valuable to ask these questions again in order to assess whether and the degree to which these attitudes have changed in the face of declining farm viability and major development pressures in rural areas of the county.

Since most farmers apparently do not gain much satisfaction from the appreciation of others—despite the GPI survey results noted above—what was the main source of their vocational satisfaction? The eight farmers interviewed in Kings County, Nova Scotia, in 2000, whose comments on status were cited above, did express considerable satisfaction in other ways. Several expressed that their satisfaction in farming was grounded in the excitement and challenge of making an operation work successfully and effectively. In one case, a farmer was particularly satisfied that he had succeeded in making his farm a self-sustaining ecosystem.

⁴⁸ The results of this survey were published in 2003, and are available at www.gpiatlantic.org/pdf/communitygpi/kingssurvey.pdf.

Connections with livestock and with the outdoors were also expressed by several interviewees as strong motivations for farming and as sources of considerable satisfaction provided by the occupation. One farmer described the fact that he could see the direct consequences of his actions as a particularly important source of satisfaction. He said: “When you live on the land, you know that if one insect gets out of hand because you changed its habitat, this can throw the whole balance off. Farmers get a sense of balance and can see the impact more quickly.”

Social Interaction

While a few of the interviewed farmers mentioned that they appreciated the independence associated with farming, most seemed to place considerably greater emphasis and importance on the social aspects of farming and rural living (Scott et al. 2003). Indeed, rich social interaction emerged as one of the key sources of satisfaction for farmers, showing the importance of developing indicators and measures that can capture this dimension of human and social capital:

One PEI farmer, for example, referred glowingly to the various social aspects of farming that penetrated her life and that of her family in many ways. She remarked that everything was more fun and energizing both with her children being involved in the farm and with the social interactions that occurred as part of everyday tasks like delivering hay to other farmers. As well, she and her husband have a hired man and a student working on the farm each summer, so there are people involved in their lives all the time, which, she says, energizes them both. On Sundays, she goes to church in the morning and then comes home at noon for a big family meal together, where the family really values its time together.

Another farmer on PEI remarked that comradeship, laughter, and fun during the day are important to keep farm families going. It is important, she noted, to have adequate nutrition to deal with the labour requirements and stress found in farming; to be able to talk problems out with other farmers; and to have hope for the future. And a third PEI farmer identified a decrease in isolation for the farm family as an indicator of increased farm viability. Some farmers, he noted, needed to have regular interaction with other people in order to continue on in an occupation that often yielded minimal material reward and was financially stressful.

Time Use: “Lack of Franticness” and Time for Other Activities

Time use, and the balance between paid work, unpaid work, and leisure time, is increasingly recognized as one of the most useful windows on quality of life. While conventional GDP-based statistics and measures of progress count only the time spent on paid work, the GPI values the full spectrum of a person’s use of time. This includes the time spent on unpaid household work and volunteer work (both of which constitute productive labour that contributes directly to the economy and society), and free time.

Free time—sometimes referred to ‘leisure time’, or ‘time off’, or ‘recreational time’—is now recognized as essential to health and wellbeing, and even has an acknowledged economic benefit. For example, abundant evidence confirms that stress is an independent risk factor for several chronic illnesses,⁴⁹ and a wide-ranging literature review by the American Journal of Health Promotion found stress to be the costliest of all preventable risk factors—exceeding even the costs of smoking, obesity, and physical inactivity.⁵⁰ A Statistics Canada study found that workers moving to longer work hours had higher rates of depression, unhealthy weight gain, and physical inactivity, while those who reduced their work hours and thereby increased their free time were much less likely to gain weight even than those who continued to work standard hours.⁵¹

To the degree that it reduces stress, therefore, free time, and a more balanced relationship between paid work, unpaid work, and leisure, can therefore bring direct health benefits and reduce concomitant health care costs and productivity losses due to excess stress and job strain.

As some of the following comments illustrate, these farm interviews may inform and deepen time use analysis. The comments highlight the importance of a human capital perspective in broadening our understanding of productivity, viability, and efficiency.

For example, while viability is conventionally defined in strictly economic terms, one farmer on Prince Edward Island remarked that true farm viability is actually indicated when the farm family has the ability to volunteer or participate in events like Open Farm Day or in organizations like Farmers Helping Farmers. On the other hand, she noted that some people may be excellent community leaders, but not great managers of their own business. So successful farming actually requires the capacity to marry effective business management with effective and fulfilling time use that enhances wellbeing and quality of life.

The members of another PEI farm family described time use and management choices not only as vital to the family’s wellbeing and relations, but also as inseparable from the effective functioning of farm operations. Thus, the farmer reported that his mother lives in a ‘granny suite’ in one end of the house on their dairy farm and helps with preparation of noon meals. But beyond simply helping out, she is also a sounding board for what is happening on the farm and provides sage advice on practical matters. The mother herself remarked that this arrangement is a good deal for her too, because she is never alone and has two of her grandchildren very handy. His wife added that the viability of farming today involves having family time—time to do things together. The family noted that they consciously make choices about priorities and try not just to work all the time, and that they willingly give up some financial gain for themselves by hiring help that frees up time for the family.

⁴⁹ See for example the review of literature on the subject in Colman, Ronald, *The Costs of Chronic Disease in Nova Scotia*. GPIAtlantic. Halifax. October, 2002, Chapter 7: “Stress and Chronic Disease,” pages 77-80.

⁵⁰ Goetzl, Ron (ed.), “The Financial Impact of Health Promotion,” *American Journal of Health Promotion* 15 (5). May/June, 2001.

⁵¹ Shields, Margot, “Long Working Hours and Health.” Statistics Canada. *Health Reports*, volume 11, no. 2, Autumn, 1999. Catalogue no. 82-003. pages 33-48.

But—while many interviewed farmers yearned for and frequently referred to the importance of increased leisure and less stress—many had not yet managed to carve out the free time they themselves needed or to integrate greater ease and relaxation into their own lives and work. Thus, one Nova Scotia farmer wistfully recalled the relaxed and unhurried pace of the farm life she experienced growing up, and lamented its loss in today’s more pressured world. Her description well fits our observation that leisure may well be integrated into work rather than carved out into a separate sphere, as most time use studies do. Recalling her parents’ farm work, life, and habits, she said:

[My father] would take time to enjoy the fruits of his labour. He would graft a tree and wait for years for that apple tree to produce fruit, or he would baby a little pig to bring it back to health. So much time and effort went into the way he did things. We had cattle and chickens and we grew a garden, and had sheep. I know how much time it took my mother to make the yarn and produce the mittens, which she used to make for everybody in the community. Everything is rushed today. You have to force feed your chickens to get them to market; you have to fertilizer things to get them to grow better. My parents took more time and time didn’t seem to matter.

Another Nova Scotia farmer similarly bemoaned “a level of franticness there where you wake up in the morning and you can’t stop and relax.” And a third N.S. farmer compared his present situation unfavourably with that on European farms he had visited: “[In Europe] it’s a matter of course that farmers take a day and spend it with their families.”

Yet another Nova Scotia farmer described the time pressures occasioned by moonlighting due to financial need and lack of farm economic viability: “I work off the farm...and I still have that same level of franticness where I rush home from work. I go out and I try and get my farming done between hours. So I wouldn’t consider that a successful situation.”

One Nova Scotia dairy farmer saw a relationship between farm scale (see above) and increased leisure. He remarked that a strong incentive to expand his farm was that the dairy farm had to be big enough to generate the income required to afford employees, so that the farmer himself could get some time off: “The staff make it easier to arrange regular time off or [time off] if someone is sick,” he said.

Some possible measures that might signify a ‘lack of franticness,’ might include the following:

- reduced number of accidents or breakdowns because of ‘hurrying’
- ability to stop and appreciate the day
- ability to take time to teach others
- ability to take the time to do a job well
- stress surveys

Measuring an unhurried and relaxed pace of work marked by a ‘lack of franticness’ is clearly challenging.

Martz and Brueckner (2003:47-48) conducted a time-use survey of Canadian farmers, and found that the farm population has only about half as much total leisure time as the population at large and spends only about one-third as much time socializing (only about half an hour a day averaged over the week) (Table 10). Not surprisingly, farmers spend much more time than other Canadians working—an average of 11 hours a day averaged over a 7-day week when both paid and unpaid work are counted. Given that farmers put in more than two hours more per day of paid work (assuming that farm work is paid) than other Canadians, it is perhaps surprising that farmers also have higher rates of civic and volunteer work than other Canadians.

At least in terms of conventional time use categories, then, the Martz and Brueckner results in Table 10 below seem to indicate that Canadian farmers are overworked and acutely short of free time and social time.

Table 10: Time Use Activity of Farm Population

Time use activity	Average of farm population	Average of peer Canadian population
	Hours per day on average	
Leisure time	2.45	4.65
Active leisure (e.g., playing sports)	0.35	0.75
Television and reading	1.20	2.15
Socializing	0.55	1.60
Working (paid and unpaid)	11.00	9.35
Portion of work that is paid (assume farm work is paid)	7.15	5.00
Civic and volunteer work	0.50	0.35

Source: Martz and Brueckner, 2003:48.

Trends in time use will also have impacts on other indicators of wellbeing. We have already noted above that long work hours can potentially have adverse health impacts. As well, research indicates that a lack of leisure time due to heavy workloads may threaten social cohesion. For example, Coleman (1988) found that families with high *human capital* and high *net earnings* may nevertheless be low in *social capital* if they have little time for social interaction within the family and between the family and other social institutions.

Renewal

We have so far considered three sets of potential indicators relevant to human capital in agriculture. These are employment, efficiency, and satisfaction—all of which focus primarily on the present stock of human capital in farming and on its condition. The fourth category of indicators—‘renewal’—is more concerned with sustainability over time, and assesses the ability

for human capital to be renewed in order to have a thriving agricultural sector in the long term. A wide range of factors determines such sustainability, including the degree to which farms are passed on to the next generation; the degree to which young people are willing to go into farming; the degree to which experienced farmers transfer their knowledge to newer and younger farmers; educational opportunities in agriculture; and character traits like the ability to be flexible and adopt new ideas.

This section both explores existing data availability in this area, and also points to new potential indicators that again emerged from GPI Atlantic's 2000 and 2003 farm interviews.

Age of Farmer; Years of Experience

The average age of farmers has often been suggested as a practical way to assess and measure whether young people are taking over farms. By extension, it has also been suggested that this indicator can be used to assess long-term farm viability from a human capital perspective. In the fisheries, Charles et al. (2002: 51), suggest that a well-distributed age spectrum among fishers is desirable both from a human capital perspective—to ensure continuity within fishing communities and a range of social interactions within the fishery—and also from a management perspective, perhaps to avoid abrupt increases or decreases in harvesting capacity over time. For similar reasons—but perhaps most importantly to ensure the ‘renewal’ described above—it can be argued that a well-distributed age spectrum among farmers is also desirable.

Statistics Canada presently collects and reports data on age categories of farm operators. Unfortunately, similar data do not presently exist for farm helpers, and it is recommended here that Statistics Canada expand its data collection to include age categories for farm helpers, since that can also provide important information on whether farming skills are being passed on to younger generations.

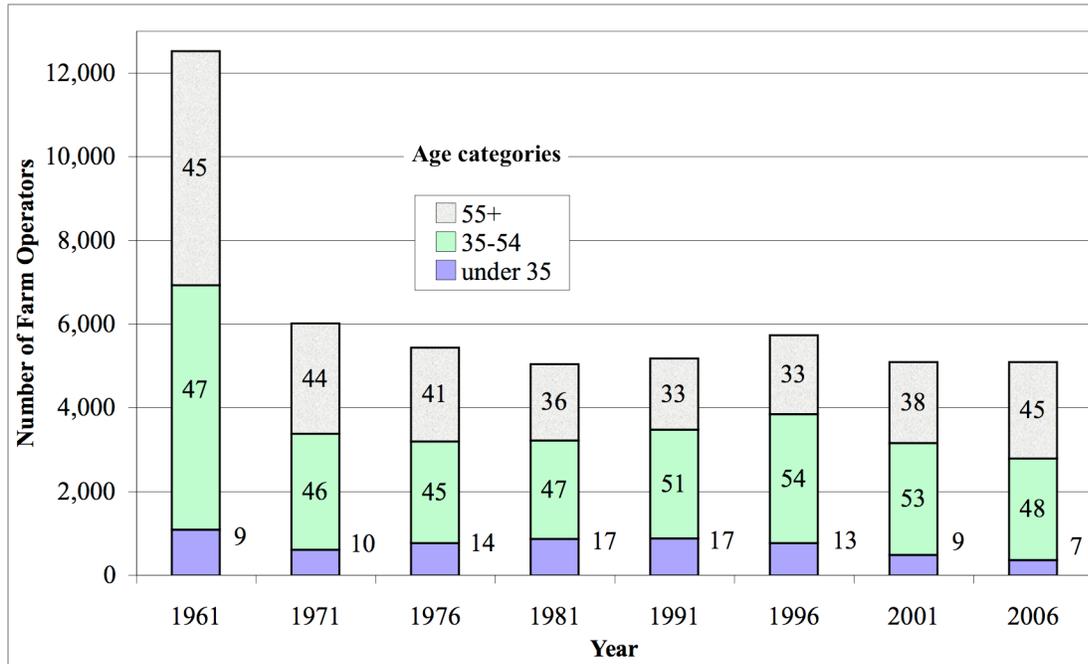
The results for farm operators that do exist are troubling from a renewal and human capital perspective. Thus, Figures 8 and 9 below point to an aging farm population and a decline in the proportion of younger farmers. In both Nova Scotia and Prince Edward Island, the most recent 2006 Census reveals that the proportion of younger farmers (under age 35) is now at the lowest level in recorded history. Only 7% of Nova Scotian farmers and 9% of PEI farmers are today under 35—in both cases less than half the proportion just 15 years earlier.

This is a far sharper decline in a short period than can be explained by demographic factors like an aging population alone, and it does not bode well for the future of farming in the Maritimes. Because this indicates a serious decline in the capacity for human capital renewal in farming, further investigation is urgently required to assess the reasons for this decline and the degree to which it is linked to the declining economic viability demonstrated in the Farm Economic Viability report (Scott and Colman 2008).

Conversely, 45% of Nova Scotia farm operators are 55 or older, as are 39% of PEI farmers. This may well indicate that, in conditions of declining economic viability, older farmers with less

capacity or will to change their living circumstances are more inclined than younger ones to remain on their farms. This hypothesis again requires investigation.

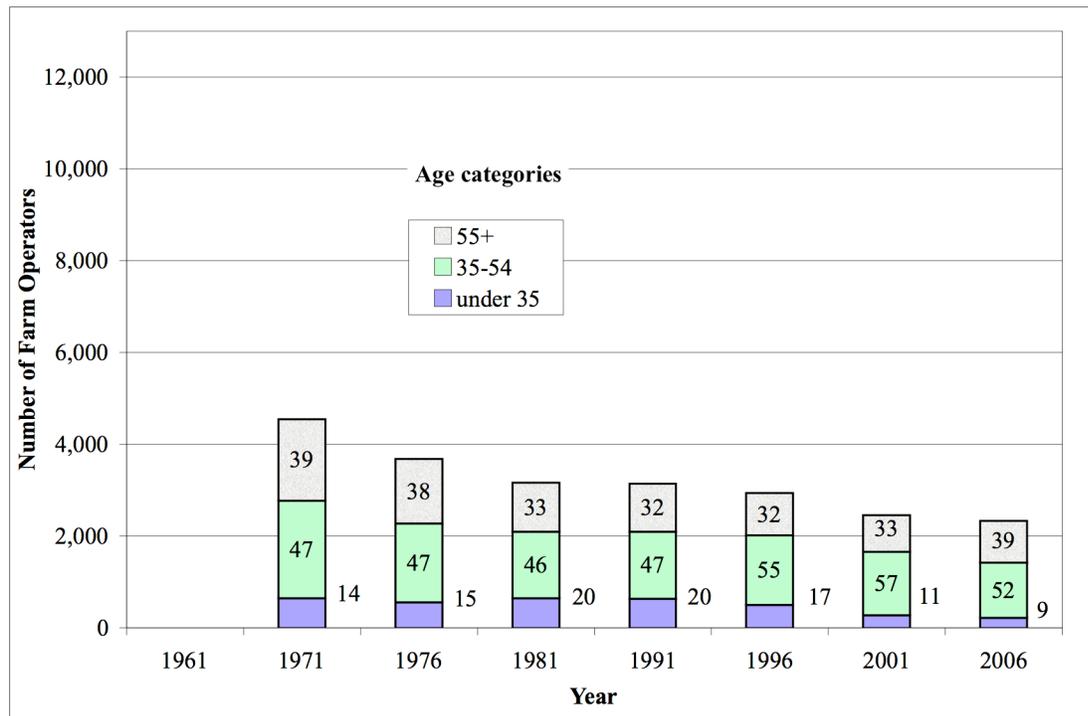
Figure 8: Number and Proportion of Farm Operators (%), by Age, NS, 1961–2006



Sources: Statistics Canada. n.d. *Who's Minding Atlantic Canada's Farms?* Census 2001 release. Available at <http://www.statcan.ca:80/english/agcensus2001/first/profiles/01atl.htm#top>. Accessed December 2003; Marketing Branch, PEI Department of Agriculture. 1982. *An Economic Profile of the Agricultural Industry of Prince Edward Island*; Statistics Canada. 1982. *1981 Census of Canada. Agriculture*. Cat. No. 96-904; Statistics Canada. *Census of Agriculture*.

Notes: The number of farm operators is divided into three age classes. The *bars* on the graph show the number of farm operators (Y axis). The *numbers on the bars* show the proportion (%) of farm operators in each age class. There was not enough space to put the percentage for the “under 35” age class on the bar itself, so this percentage appears beside each bar. The scale on the PEI figure matches that on the Nova Scotia figure, so that they are comparable visually.

Figure 9: Number and Proportion of Farm Operators (%), by Age, PEI, 1971–2006



Sources: Statistics Canada. n.d. *Who's Minding Atlantic Canada's Farms?* Census 2001 release. Available at <http://www.statcan.ca:80/english/agcensus2001/first/profiles/01atl.htm#top>. Accessed December 2003; Marketing Branch, PEI Department of Agriculture. 1982. *An Economic Profile of the Agricultural Industry of Prince Edward Island*; Statistics Canada. 1982. *1981 Census of Canada. Agriculture*. Cat. No. 96-904; Statistics Canada. *Census of Agriculture*.

Notes: The number and proportion of farm operators for PEI in 1961 is, to the best of our knowledge, not available, but the date is kept in Figure 9 for the purpose of facilitating comparisons with the other Nova Scotia numbers in Figure 8 above. The number of farm operators is divided into three age classes. The bars on the graph show the number of farm operators (Y axis). The numbers on the bars show the proportion (%) of farm operators in each age class. There was not enough space to put the percentage for the “under 35” age class on the bar itself, so this percentage appears beside each bar. The scale on the PEI figure matches that on the Nova Scotia figure, so that they are comparable visually.

Next Generation Taking over Farms

The 2003 GPI Atlantic farm interviews revealed the intergenerational transfer of farms to be an issue of great importance to farmers (Scott et al. 2003):

One young PEI farmer described in some detail what might well be a model of effective intergenerational farm transfer. He remarked that he and his father have worked to develop a closer relationship through undertaking farm management responsibilities and tasks together. His father encourages his questions on how the farm operates and why certain decisions are taken, and also encourages him to look for and come up with new ideas and to bring these innovations back to the farm. This young man reported that he now has a ‘passion to farm’, but that his father

has let him develop that desire by himself and never pushed him into farming. He said he is now 99% sure that he wants to farm, but appreciates that both he and his father have agreed that he should first test out the remaining 1% temptation by trying off-farm work for a while before he decides to commit himself to farming. It was his father's idea, he said, for him to work at the Department of Agriculture to see what the conventional working world off the farm was like. He reported that this was a great place to work and learn and that he has great people to work with, but that he still wants to farm.

This young man also reported that he was never 'forced' to work on the farm like some of his friends on their parents' farms. Because those young people hated the push to work, they now have no desire to farm. For him, by contrast, it was agreeable to get up at 5:30 am to milk the cows and to work 12-hour days because he enjoys the work. He remarked that he is now prepared to make that commitment to farming as his chosen vocation. Another important factor for this young man, in terms of quality of life, is that his family now has more hired help on the farm than previously, so that everyone gets some personal time. He also thinks it is important to have good role models, and feels that his own grandfather has been and remains an excellent role model for him and the family. His grandfather, he said, is hard-working, forward-thinking, non-judgmental, and encouraging, welcomes new ideas, and is willing to let go of his farm involvement gradually.

Another PEI farmer said she feels optimistic that young people will continue to choose to farm, because she has observed that young people are able to adapt and to find ways to farm that do not stop them from pursuing other objectives and interests. They have expectations to play hockey, take karate, sing in choirs, travel, and more; they are worldlier than previous generations and perhaps more concerned with wider social issues. Yet, despite the fact that they have more choices available to them, many of these young people still choose to farm. She noted that this was very significant, because farming is not something that anyone does just because they can't do anything else. Rather, she believes that farming parents, whether intentionally or not, have instilled the love of the land and farming in their children, and that, as a result, the desire to farm is as strong in some of the young people as it is in their parents. In her view at least, young people's pride in their farming heritage is still there.

The parents in one PEI farm family reported their great satisfaction in having their children so interested and involved in the farm. And two PEI farming brothers said that the main thing that keeps them going even in the face of economic difficulties is that they are nurturing and caring for something that their own boys will ultimately own and control. In fact, one brother acknowledged that if the boys were not there, he doubts very much that he and his brother would continue to farm.

Whatever such farmers can do personally to encourage intergenerational farm transfer, both in the ways described above and in many other ways, their efforts can clearly be helped or hindered by the availability or lack of institutional, social, and economic supports for this process. Thus one woman expressed her appreciation for PEI's Future Farmer Programme and Agriculture Certificate Programme as important incentives that could inspire young people to look at farming as an occupation.

One young Nova Scotia farmer, aged 21, reported that he took over the family farm at the age of 17 when his father died (in 2003), thus embracing the challenge that lay before him to operate a successful farm and market business without any parental help. He said:

The name has been in the farm for so long that I'd want to do everything I could to keep it that way. It was up to me. I was with my father for quite a while. I had done all his jobs with him, and I knew all that was going on. We were pretty close. I was growing vegetables and other things and selling them to him, prior to this. It meant a lot to me growing up. I started off with a little tomato patch, about 15 plants, and now I grow 1,500. It has come quite a ways. What makes me happy? I guess just running the whole place. The thrill of being in ten different places at once.

Another Nova Scotia farmer said he recognizes that his role in the farm's history is to work towards bringing it back from its downhill economic slide, and to get it set up in such a way that his children (if they are interested) will have a viable operation with which to work. With that long-term intergenerational perspective in mind, he therefore diversified the farm's operations from reliance on cattle alone, getting into chickens, planting orchards, and more. "You plant pears for your heirs," he said simply.

A survey of Canadian farm families (Martz and Brueckner 2003:62) found that "the range and amount of tasks that youth are involved in is amazing to those not from a farming background but commonplace for those who have grown up in a farming family." The survey also found that youth who are involved in the management of their family farm are more likely to gain an interest in farming.

Interestingly, the Martz and Brueckner survey (p.142) found that intergenerational farm transfer was considerably more important to Atlantic Canadian farm youth than to youth in other parts of the country, even though Atlantic farm youth had no greater desire to continue farming themselves. Thus, fully 89% of Atlantic Canadian farm youth stated that they would like their farm transferred within the family, compared to 69% of youth in central Canada and 66% in western Canada. Yet, 56% of all Canadian farm youth indicated that they would like to farm if they had the opportunity, compared to just 53% of farm youth in Atlantic Canada.

A significant finding from the Martz and Brueckner study (p.13) is that most people who are farming today were themselves raised on a farm, with survey data showing that that 71% of women farmers in Canada and 87% of men farmers were raised on a farm. These findings indicate both that agricultural 'renewal' has much more to do with family traditions and on-the-job learning and transmission than with new entrants from other walks of life seeking formal education in agricultural colleges, and also that there will likely be a significantly smaller pool of people taking up farming as the farm population declines.

In an article by Woolley (*Farm Focus*, Sept 10, 2003), the president of the Nova Scotia Federation of Agriculture at the time, Laurence Nason, is cited as predicting that 60-70% of current Nova Scotia farmers, whose average age is 57 and increasing, will be retiring within the

next 10 years. Nason says: “We are very worried there won’t be enough people to take over to maintain a critical mass (of farmers) for a viable industry in Nova Scotia.”

Nevertheless, according to Derrick Jamieson, manager of the Nova Scotia Farm Loan Board, some 40-60 persons are enrolled annually in its New Entrants program. Time and resources did not permit a follow-up investigation to determine either what proportion of these new entrants grew up on farms themselves or what proportion remained in farming for specified periods of time.

The Nova Scotia Federation of Agriculture (NSFA 1998) identifies access to capital as a critical need “for the future of the industry to ensure new farmers are able to move into the field to replace those who will be retiring.” According to the Federation, key barriers cited by new entrants into agriculture in Nova Scotia include the high price of production quotas, the uncertainty of supply management, and the impact of market globalization. The NSFA also cites access to productive land as an issue for both new entrants as well as established farmers. The Federation reported that in PEI, the main barriers cited by new entrants were the high land prices—often driven up by demand from potato producers, and the high cost and amount of capital required to start a farm business.

In Nova Scotia, new entrants to agriculture were estimated on the basis of the number of individuals who borrowed money from the Nova Scotia Farm Loan Board and the Farm Credit Corporation under the New Entrants Program (NSFA, 1998; Nova Scotia Farm Loan Board, 2006). The estimates for the fiscal years 2000-01 and later are not comparable with those for earlier years, because no age limit was placed on the loan program from 2000-01 onwards, whereas in previous years there was an age limit of 35 to be eligible for those farm loans. Also an annual new entrant target of 50 was set by the Loan Board starting in 2003-04.

The objective of the New Entrants to Agriculture Program (Nova Scotia Farm Loan Board 2004) is to encourage new Nova Scotian farmers to purchase and develop successful farm operations. Funds available under this program are provided to new entrants to improve the viability of farm operations, based on the key areas requiring improvement that are outlined by the new entrant in a business plan presented to the Loan Board. Eligible applicants receive a grant equal to the amount of interest paid on qualifying loans for the first two years, to a maximum of \$10,000 per year. In effect, this provides interest-free loans for the first two years of the loan period.

Although Table 11 below—using those numbers—does not show a clear trend line (especially given the comparability problem mentioned above), it does appear to indicate that the number of new entrants into farming in recent years (2003–2006) has fallen off by about 30% compared to the 2000-03 period. If this is indeed the case, then the numbers have troubling implications for agricultural renewal in the province. Needless to say, the estimates in Table 11 below are not direct measures of new entrants (since they exclude all those who did not apply for farm loans), but they may provide enough indication of a potentially troubling emerging trend—from the perspective of the renewal of human capital in agriculture—to demonstrate that the issue at least requires close further investigation.

Table 11: New Entrants to Nova Scotia Agriculture (estimates based on farm-loan users)

Year	New entrants estimate	Target
1993	34	
1994	37	
1995	40	
1996	14	
1997	27	
1998	32	
2000-01	49	
2001-02	56	
2002-03	47	
2003-04	30	50
2004-05	39	50
2005-06	36	50

Sources: NSFA 1998; Nova Scotia Farm Loan Board 2006.

Transfer of Knowledge; Sharing Information

Although information sharing between farmers is part of ‘farmer-to-farmer co-operation,’—one of the Social Capital indicators in this report—it also belongs here, in this section on the renewal of human capital in agriculture, because such information sharing includes the transfer of knowledge from experienced and older farmers to newer and younger farmers. Thus, human capital development is based on farmers having ready access to the information they need to carry out their vocation effectively.

The question that must be explored in this area is whether farmers in general—and newer, younger farmers in particular—are getting the information they need to develop and deepen their farming knowledge? Some of this knowledge may be acquired through formal educational studies, but evidence indicates that a significant portion is passed on informally among farmers themselves.

Although strong quantitative data in this field are not currently available—especially at the provincial level—studies and survey work are required to assess whether access to this knowledge is easy or difficult—particularly for new entrants—and whether (and the degree to which) such access is changing over time. In the absence of ample regional quantitative data, we again rely on respondent comments in the 2003 GPI Atlantic farm interviews to point to the importance of this potential indicator of human capital renewal in agriculture.

Thus, one Nova Scotia farmer expressed appreciation that the Nova Scotia Department of Agriculture had helped him learn what he needed to know about poultry processing. He reported

that when he calls the Department for information on poultry disease, “we’ve never had them refuse to tell us anything. They’ve been supportive in that way. And they encouraged me.”

Another Nova Scotia farmer pointed to the potential interrelationship between formal and informal knowledge transfer. Thus, he noted that he “picks up some tricks” about orchard management from working at the Kentville Research Station, and that he, in turn, can bring some of his experience from farming to help at his work.

A third Nova Scotia farmer reported on the value of informal transfers of knowledge, and on the generosity that such information sharing embodies:

I learned a lot from the farmer on a Jersey farm in New Brunswick where I spent some time. I learned a lot of skills, family skills, some dairy skills, public skills. He was a very nice gentleman. Dairy farmers really share with one another, they are very generous. If someone has made a new innovation, they are pleased to show it to you.

Some of this information sharing can span considerable distances. Thus, one Nova Scotia farmer and cheese maker remarked that he had learned what he needed to know about cheese making informally from European contacts. In this area, he did not actually find information that was useful concerning the “hands on stuff, and that’s much more important. The practical stuff, you see with your own eyes.”

Despite the absence of consistent and systemic quantitative data in this field—particularly at the regional level—two fairly recent surveys have at least confirmed the importance of the informal transfer of knowledge and information sharing among farmers. Thus, a recent survey by Ipsos-Reid, which examined farm management practices in Canada, the United States, and Australia, found, for example, that 78% of farmers in Canada started farming alongside a more experienced farmer (AAFC 2002).

Another survey of Canadian farmers (Martz and Brueckner, 2003: 147) found that farmers learn about new agricultural developments mostly from ‘talking to others.’ Thus, the authors reported that “The most important sources of information for both men and women are the less formal sources such as word of mouth or talking to neighbours,” with fully 94% of male farmers, 87% of female farmers, and 85% of youth reporting that they used such informal conversations to find out about new developments in agriculture. For farm adults, the next most important information source after “talking to others” was meetings—which can also be classified as an informal source of knowledge transfer.

Newsletters, agricultural fairs, and newspapers were the next most important sources of information, though farm youth relied more for their information on newspapers than on meetings, newsletters, and agricultural fairs. Other information sources, such as books (60%), government (54%), television (54%), agrologists (48%), the Internet (47%), sales people (43%), commodity associations (42%), and continuing education (39%), were chosen from the survey list less often. Table 12 below lists the five most popular sources used by farmers to learn about new developments in agriculture.

Table 12: Percentage of Men, Women, and Youth Who Used Select Information Sources to Learn about New Developments in Agriculture

Information source	Men (%)	Women (%)	Youth (%)
'Talking to others'	94	87	85
Meetings	86	76	72
Newsletters	84	70	70
Agricultural fairs	79	67	68
Newspapers	77	71	76

Source: Martz and Brueckner, 2003: 147.

Note: Only information sources referenced by close to 70% of respondents or more are reported in this table.

Tradition, Heritage, and Commitment to Farming

There are also important inner elements to the agricultural renewal process that are harder to measure and quantify, but are no less real in attempting to answer basic questions like: Why do people continue to farm? Why do offspring take up the reins from their families, and continue to operate the family farm? The 2003 GPI Atlantic farm interviews revealed that, for some farmers, the choice to continue farming is associated with a sense of heritage and an inner commitment (Scott et al 2003):

Thus, one Nova Scotia farmer estimated that probably 70% of the farmers in the Brooklyn area where he worked continue farming because of family tradition: "I'm sure after 100 years of farming, it would be hard to turn that farm away, even if they work off the farm to pay for it. You wonder why, but it has to be something to do with pride." Another Nova Scotia farmer puts it down to history, noting that: "This country was built on small farms. Diefenbaker brought all foreigners in here and put them into farming," and they have since carried on that tradition.

Another farmer similarly thought that a sense of heritage keeps people in fruit production. He noted that families that have been in that vocation for a long time have a real sense of pride and accomplishment when they remark, "I'm a third generation apple grower." He observed that, although the majority of fruit farms are not doing well financially, there remains a strong commitment to continue apple growing, and somehow to find ways to do it.

And yet another Nova Scotia farmer attributed the viability of his farm to the pride he has in his work: "If you don't love what you do, you're not going to stay there. So it's pride."

The relevance of this inner sense of commitment and heritage to the renewal of human capital in agriculture was well and simply captured by one Nova Scotia farmer, who remarked that she did not actually encourage her son to farm because she thought there must be easier ways for him to make a living and have an easier life. "But that's what he wanted to do. It was in his blood, I guess. It was in my husband's blood too. He never wanted to do anything else."

Entrepreneurship

While farm renewal is certainly related to and dependent upon all the factors described above—including commitment, keeping a tradition, sharing information, skilfully passing on the value of farming to future generations, and more—the 2003 GPI Atlantic farm interviews revealed that another part of farm renewal has to do with the very practical ability to seek new opportunities and make changes (Scott et al. 2003). This might be referred to as a sense of entrepreneurship. Again, although there are presently few quantitative measures of this quality, comments by farmers point to its importance for farm renewal.

One farmer on Prince Edward Island, for example, remarked how important it is in farming always to be open to (and looking for) new approaches and more economical and efficient ways of doing things. He and his family, he said, are always ready for change and looking for new ways to use resources to lessen costs. Another PEI farmer described this entrepreneurial and open-minded quality as essential to a viable full time farming operation, which in his view must consist of people who are always seeking information.

According to Robinson (1999), entrepreneurial energy is a key agricultural resource. He argues that the “continued prominence of agriculture in [Kings County]’s economic life has resulted from the industry successfully shifting to new opportunities as economic conditions and technologies have changed. Entrepreneurship of farm people gives the industry a dynamic aspect not often appreciated” (p.15). Such entrepreneurial energy is therefore essential for effective agricultural renewal if farming is to remain dynamic and to adapt effectively to changing conditions, circumstances, technologies, and markets.

Skills and Education

Skills and education are the most obvious and commonly addressed aspects of human capital. While the value of skills and education in and of themselves is well accepted, GPI Atlantic’s 2003 farm interviews indicated that the real measure of their value is in their advantageous and practical application by students. Below are some comments addressing this indicator, and pointing to the need to modify conventional valuations to include this application dimension (Scott et al. 2003):

Several farmers emphasized the importance of financial and accounting skills for successful farm management. Thus, one PEI farmer noted that it was essential for farmers to know exactly how money is moving in and out of the farm, while another concurred that financial management skills are critical to viable farms, and another remarked that good record keeping is a sign of a viable farm.

Other farmers spoke of the value of different kinds of formal education. One PEI farmer felt that post-secondary education could give farm family members more choices and opportunities to

gain entrepreneurial advantages or to learn about animal management and health, and a range of other issues relevant to successful farming.

Another Islander spoke of PEI's Future Farmer Program, which has a phased-in education structure. She noted that young farmers could enter this program from grade 12 and receive help from the PEI Agriculture Department in various ways. Thus, the Department might provide assistance by paying some of the tuition costs for the young farmers to get training in farm business management, sponsoring an apprenticeship program for a year, facilitating practical business training and mentoring by an experienced farmer, and more. After receiving such training, the young farmers could consult with Departmental representatives, prepare a farm business plan, and receive access to funding within the Future Farmer Program in order to help them move forward and apply their skills in practice. He noted that these Future Farmer training and assistance programs included web-based content to accommodate the reality that many farmers will not or do not want to sit in a classroom.

Another PEI farmer referred to the High School Agriculture Certificate Program, which had its first graduates in 2003. He noted that each year the students in this program undertake extra activities outside the classroom like a visit to the Nova Scotia Agricultural College or a tour of a potato farm, which adds a practical dimension to their formal classroom studies. The farmer remarked that each of the Certificate Program subjects offered is built around agriculture—thus also fostering practical application of those skills. For example, when students write a term paper, it is on issues relevant to agriculture, while math assignments might be related to food production calculations rather than the exercises provided in regular math programmes.

One PEI interviewee worked with an Advisory Committee of the Agriculture Resource Council to develop a grouping of short courses designed to transmit skills and knowledge that they knew farmers, and more particularly their labourers, needed to do a better job on the farm. She remarked that she is always pleased when a farmer calls to say there is a worker who would benefit from spending a day away from the farm, learning a specific skill required for farm tasks, whether it was welding, truck driving, weed identification, soil sampling, or any one of a wide range of useful skills.

One Nova Scotia farmer reported that he had personally hired someone to coach him on doing his own books and financial records, because he had found that it was better to know how things were going himself rather than referring to someone else, like a professional accountant, to find out the cash flow and other aspects of the financial state of his farm.

In sum, farmers pointed to a very wide range of ways in which they acquired the knowledge and skills required to run and manage their farms effectively. Assessments of this dimension of human capital in farming must therefore include, but also clearly go beyond, access to and graduation from formal education programs alone—which is the conventional method used to assess educational attainment.

Safe and Healthy Working Environment; Subsidized Day Care

Finally, the 2003 GPI Atlantic farm interviews pointed to two very practical indicators of farm renewal that—obvious as they seem—are rarely taken into account in assessments of human capital in agriculture and in the capacity of that capital to sustain itself. If farms are unsafe and have excessive injury rates, they will not only lose valuable human resources—which technically can be referred to as a depreciation of human capital—but will also not attract new entrants. A key indicator in this area therefore must be basic safety, which can be assessed by trends in workplace injuries and accidents. These statistics are available by industry and—while not presented here due to time and resource constraints—can be readily tracked for agriculture by comparison with other industries.

A second key indicator—referenced particularly by several female interviewees in the GPI Atlantic farm interviews—has to do with the availability of and access to adequate day care. Without such services, the requirements of child rearing and child care may prevent farming parents from continuing their farm work in a way that provides balance with their domestic duties. Again, in technical terms, the loss of such skilled human resources may be referred to as a loss of human capital, at least from a production and financial perspective. By contrast, high quality child care services may enable farmers to find the desired balance between their farm work and their child rearing responsibilities, and thus enhance human capital.

The availability of good child care is again highly relevant to the theme of ‘renewal’ in agriculture, as it may well determine whether young farmers remain in the business after they have children. If child care is less accessible in rural than urban areas, and if the latter thereby provide better opportunities for balancing career and family life, young families may well be tempted to move to where such opportunities are more readily available.

Here, just a few comments by farmers are cited to indicate the importance they attach to these basic issues of safety and day care (Scott et al. 2003):

One PEI farmer, for example, remarked: “A safe working environment for staff and family is part of viability. It means taking responsibility; being pro-active; and passing on safety issues to children and employees.” Another PEI farmer noted: “As a farmer, there is no maternity leave or any other ‘benefits’, no EI, no way to provide the family with a safety net. Therefore, subsidized day care is well deserved. Our food bill was cut by 1/3 having them in day care at no cost to us.”

A third PEI farmer expressed appreciation at the availability of subsidized child care: “It was much better than having a child ride in the tractor for safety reasons too. It provided an environment with other children. And yet another concurred: “Yes, subsidized day care continues to be very important to our family.” Such comments are typical of those expressed particularly by young farmers, indicating the importance of this issue for renewal in agriculture. In a broader sense, these comments also indicate the value of indicators and measures of human capital for policy purposes, since they point to key interventions that policy makers might otherwise not consider but which may be vitally important in maintaining the long-term health of this important industry.

Conclusions: Human Capital

Human capital (which is sometimes more colloquially called human wealth or human wellbeing) refers to the skills, health, values, leadership, and education of people. Analysts have noted that it refers both to *what human beings can contribute* (human resources) and to *how well human beings are* (human health, in the broadest sense). Evidence also points to a positive feedback loop between these two components of human capital: the more meaningfully we can contribute, the healthier we are, and the healthier we are, the more we can contribute. Thus, a key social goal regarding human capital is to have happy, healthy people fulfilling their potential by contributing to life and society in meaningful ways. While the value of human capital is not systematically assessed in conventional accounting mechanisms, the Genuine Progress Index does give high priority to measuring and tracking progress towards these social goals.

While the discussion in this chapter has raised many significant issues relating to human capital in agriculture, certain key conclusions have emerged that are particularly relevant for policy purposes. These are summarized here.

Farming Contributes to Human Wellbeing

While industrial sectors are conventionally assessed for their contribution to the economy, it is also important to assess how different sectors contribute to wellbeing in particular ways. As a measure of wellbeing, the Genuine Progress Index is therefore concerned not only with the quantity of jobs, but also with their quality. It is widely acknowledged that some types of jobs are more meaningful, creative, challenging, and satisfying than others. To that end, the discussion above—and particularly the 2003 GPI farm interviews (Scott et al. 2003) that have been cited extensively throughout this chapter—have attempted to assess the contribution of farming to human wellbeing and satisfaction.

Qualitative evidence from the 2003 GPI farm interviews in Nova Scotia and PEI—which could form the basis for survey questions designed to quantify these factors and apply them comparatively—indicates that farming does indeed provide participants with the potential opportunity for creative, interesting, and challenging work that allows people to be outdoors and to develop meaningful relationships with animals and with growing things; and that requires them to learn a wide range of different skills and talents. The interviews indicated that farmers apparently enjoy the challenges they face, and that they often put everything they have in time, energy, and resources into making their farm business work.

Beyond the benefits to farmers themselves, farming also has the potential to contribute to human health in the population at large by producing good and nutritious food. Interviewees indicated that their own awareness of these wider benefits of their work further enhances their own satisfaction with their work.

But while the Nova Scotia and PEI farm interviews indicated that many farms do indeed provide excellent opportunities for human nourishment, development, and satisfaction, no data are presently available to assess whether there is an upward or downward trend over time in this contribution to human wellbeing. For example, the sharp decline in farm economic viability graphically illustrated in the companion GPI study on this subject may well have increased the stresses and insecurities associated with farming to the point where the occupation no longer provides the level of satisfaction and enjoyment it once did. Unfortunately, existing evidence does not yet allow such correlations.

Other key questions that flow from the subsistence dimension of human capital, and that also bear investigation in future surveys, relate to the broader health and nutritional contributions of farming. These questions include:

- Does the population at large have adequate nutrition, and what are the trends in the nutritional value of food consumed? Statistics Canada's recent *Food Statistics*, as well as questions in the Canadian Community Health Surveys about vegetable and fruit consumption, do attempt to fill some of the knowledge void in this area, but further work is needed. In addition, GPI Atlantic's extensive study of indicators for an educated populace includes a detailed chapter on food and nutrition literacy that examines the evidence currently available from various nutrition surveys conducted in Canada over the years.⁵²
- Is there a demonstrable relationship between access to farm-fresh local food and nutritional status?
- How and in what ways is the nutritional status of the farm and general population connected to the health of the farm sector? For example, is a decline in farm economic viability reflected in any measurable change in the nutritional status of farm families and of surrounding rural communities?
- And from a policy perspective, if farm-fresh local food is indeed related to enhanced nutrition, are there ways to increase access to such food?

In sum, since farming, by definition, is about the production of food and nutrients for human consumption, the actual relationships between farming and nutritional status require careful investigation and analysis.

'Recreation'—including leisure, time to reflect, time spent outdoors, and time spent playing, socializing, and exploring without the intent of material gain—is widely acknowledged not only as a vital contributor to wellbeing but also as a basic human need. For this reason, the value of free time is one of the 20 core components of the Nova Scotia Genuine Progress Index.

As the 2003 GPI farm interviews made clear, farming in the Maritimes is often characterized by celebrations of many kinds, including kitchen parties, barn dances, community suppers,

⁵² For access to this material—which will be publicly released in the Spring of 2009—please write to info@gpiatlantic.org. In the Spring of 2009, the material will be available in the education and social capital sections under 'publications' on the GPI Atlantic website at www.gpiatlantic.org

exhibitions, and the activities of folk schools. Many interviewees reflected that farming is more than an occupation but reflects a sense of place associated in their minds with recreation, memories of childhood adventures on the farm, and enjoyment. It would be highly desirable to track this recreational and celebratory component of farming over time to assess whether it is more or less a part of farm life than it once was, and whether it is contributing as much to the quality of farm life as it did 30 or 50 years ago?

The ability to express and experience creativity is also widely recognized by sociologists and psychologists as a basic human need. Again, based on preliminary evidence from the 2003 GPI Nova Scotia and PEI farm interviews and other sources, farming can help to satisfy this need. Examples of creative energy expressed through farming cited by farmer interviewees included creating a business, building things, growing food, raising animals, starting a project and seeing it through, problem-solving in day to day tasks, meeting challenges, and having a wide range and variety of creative outlets. Some interview respondents also remarked that farming operations by their nature make people of all ages feel genuinely needed. According to Richard Layard (2003), feeling needed and being able to express creative energy are two key determinants of happiness.

Farming Contributes to Employment Generation

The evidence presented both in this chapter and in the accompanying farm economic viability report indicates that agriculture is an important employment generator with a significant multiplier effect. Agriculture creates employment in rural areas where unemployment is generally higher than in urban areas. The evidence examined indicates that agriculture not only creates direct employment on farms, but also generates jobs in the many farm-related upstream businesses (veterinarians, equipment dealers, mechanics, feed and crop supply businesses etc.) and in downstream businesses (food processors, transportation, retailers, etc). As well, farms provide on-the-job training in a wide range of skills and contribute many other potential human benefits such as practical problem-solving skills that are applicable beyond the workplace.

When unemployment and supplementary unemployment statistics (that include discouraged workers and underemployment estimates) are added together, the average unemployment rates for the years 1997 to 2006 were 10.7% for Canada, 17.1% for PEI, and 14.3% for Nova Scotia. But in the rural areas of both Nova Scotia and PEI, the total unemployment and supplementary rates were a few percentage points higher than the provincial averages and the rates in urban centres. Employment generation in rural areas is therefore considered to be particularly desirable, since the needs are greatest there, particularly if such employment simultaneously achieves broader genuine progress goals that enhance social, economic, and environmental sustainability.

The amount farms spend on wages, adjusted for inflation, has increased substantially over the 35-year period between 1971 and 2006—more than doubling in both provinces—despite a decline in the number of farms and a decline in overall farm economic viability. The amount spent on wages per farm also increased steadily between 1980 and 2005 in Canada, Nova Scotia, and PEI, with the sharpest increase in PEI, where the average farm now spends considerably more on wages and salaries (\$60,000/year) than the national average (\$45,000/year).

According to Statistics Canada's Labour Force Survey, most jobs in agriculture are full-time. In Nova Scotia there are now about 3,600 full-time and 1,100 part-time jobs in agriculture—the lowest number ever recorded, and down sharply by 40% from a total of 7,800 jobs 30 years earlier. Interestingly, however, the decline in farm jobs has not been steady over this period of time. As recently as 2001, there were 7,500 jobs in agriculture in Nova Scotia compared to 4,700 in 2006, so the most dramatic loss in jobs has occurred just in the last few years.

In PEI, there are about 3,600 full-time and 300 part-time jobs in agriculture. The number of farm jobs in PEI has declined significantly since the mid-1980s. But the pattern of decline is different from that in Nova Scotia, with the sharpest loss of jobs in PEI occurring in the late 1980s and early 1990s, when the number of jobs in agriculture fell by 41% from more than 6,100 in 1986 to 3,600 in 1994—holding fairly steady since then.

Important employment studies (such as ATi Consulting 2002, and Robinson and MacDonald 2000) contribute a great deal to our understanding of employment multipliers and full-time-equivalent employment generation, but since these studies have only been undertaken once and since there has been no consistent follow-up to show changes over time, trends cannot presently be determined based on those studies. It would also be very helpful to replicate the ATi and Robinson and MacDonald studies in PEI—both to generate comparable baseline data on employment multipliers for PEI and also to compare overall direct, indirect, and induced job creation in PEI agriculture with analogous job creation in Nova Scotia agriculture.

As well, a list of manufacturing establishments that process agricultural products (such as that which appeared in Robinson and MacDonald 2000) could be updated yearly to determine trends in agriculture-related sectors over time. Based on the direct job statistics and economic viability trends reported both in this chapter and in the accompanying farm economic viability report, it is very likely that Nova Scotia has also lost a significant portion of these upstream and downstream agriculture-related businesses over the last few years.

There are other important benefits and costs associated with farm employment that also remain invisible in conventional accounting systems, but that should be measured in more comprehensive assessments like the GPI. For example, the value of unpaid farm work by family members often remains uncounted, as do indirect benefits of farm employment like opportunities for family members to earn spending money and to learn business and other work skills. Other largely uncounted costs associated with farm employment include the lack of pay equity between what farmers and farm workers earn and what workers earn other sectors requiring comparable skills—resulting in an opportunity cost to the agriculture sector, as skilled labour is drained away to other sectors that offer higher pay.

The evidence examined indicates that one of the most important ways to attract new entrants into farming is to keep the farms we have. Thus, studies have shown that most of those who enter farming and who stick with it have grown up on farms. As well, qualitative analyses, including those based on the 2003 GPI farm interviews, indicate that the best and most skilled farm workers, and those with the best 'instincts', are often those who grew up on farms and who have

farming ‘in their blood’. Thus losing a farm sets off a spiral of losses: direct and indirect loss of employment in a rural area, loss of training opportunities, loss of an important way to grow up and acquire farming knowledge and skills, loss of potential farmers, and loss of potential farm workers.

In order to maintain a positive relationship with farm employees and thus retain skilled workers, farmers in the 2003 GPI farm interviews (Scott et al. 2003) gave the following advice:

- maintain good communication
- provide health plans and workers compensation packages (possibly through the Federations of Agriculture)
- allow employees to share in farm benefits
- respect employees and involve them in the business and in strategic and planning decisions
- have parties and celebrations
- allow for flexible work arrangements

Non-farm work on the part of farm operators is at times a ‘necessary evil’ (in the words of one interviewee) required to keep the farm afloat, to help pay start-up costs for a new venture or value-added product line, or in some cases even to get away from the stress of the farm business when it is not making ends meet. In other cases, however, non-farm work is not necessarily negative and may be useful and desirable for personal development or to pursue other interests.

Efficiency of Farm Work

The ratio of farm receipts to wages—the amount of revenue generated on farms relative to the amount spent on wages—has declined in both Nova Scotia and PEI over the past 30 years. This can mean that farm revenues are stagnant, or that farm wages are rising relative to farm revenues, or that the efficiency of farm workers drawing wages is declining. To understand this dynamic better, other indicators were also examined:

Thus, the ratio of the amount spent on wages relative to total farm expenses declined in both Nova Scotia and PEI between the 1920s and the early 1980s, but since that time has been climbing—indicating a climbing wage-intensity in the last two to three decades relative to the previous 60 years. In other words, wages have been occupying an ever larger chunk of the expense pie over the last 25 years. Prince Edward Island, and Nova Scotia in particular, have a higher wage intensity than the national average.

While these results may indicate lower labour ‘efficiency’, they could also indicate a shift in agriculture towards more labour-intensive horticulture-type operations and away from field crop types of farming operations. While it is likely that a combination of factors has led to the increase in the wage-intensity of farms, it must be acknowledged that if a key social goal is to increase wage earnings in rural areas, then this goal is apparently being achieved. That goal of improved wages, however, must be balanced with the goal of farm economic viability to ensure

that the increased wage burden is not undermining viability to the extent that jobs might eventually be threatened.

Productivity or efficiency measures for farm work must take into consideration not only how much revenue each hour of work generates, but other employment-related goals and objectives, including:

- the quality of the job (including quality of output and outcome and whether the job is satisfying, safe, and a good learning opportunity for the employee);
- the goals of the community (for example, whether more employment is needed, and if so, of what kind);
- whether the employment outcomes and benefits engendered by farm work (such as profits generated, workers trained, etc.) are staying close to home or leaving the region.

As well, it must be recognized that there is not always a direct relationship between wages paid and the corresponding farm receipts generated, as conventional labour productivity analysis implies. Conventionally, a reduction in labour costs per unit of output is assumed to improve profitability and economic viability. But two key examples in particular were noted in this study with regard to Nova Scotia livestock where the opposite appears to be the case. Thus, in both the dairy and hog sectors, a documented increase in labour per unit of output has resulted in a higher agricultural productivity (higher feed conversion, more hogs per sow, or higher output per cow) than the national average.

Similarly, farm scale is generally directly related to efficiency considerations, with larger farms conventionally assumed to benefit from advantages in economies of scale. However, evidence from the Maritimes indicates that smaller farms benefit from other efficiencies, like economies of proximity, and provide a range of benefits to rural communities flowing from a higher number of farmers relative to the rest of the population. Comments from farmers in the 2003 GPI farm interviews (Scott et al. 2003) demonstrate a profound awareness of the economic and social complexities and trade-offs involved when farms increase in scale.

Based on the evidence examined for this study, it is recommended that measures such as off-farm work and farm scale be evaluated on a case by case basis, using the other indicators in this report, as it has not been possible to identify one generalized conclusion as to whether such off-farm work and increases in farm scale do or do not signify improved viability. Rather, particular circumstances and conditions must be taken into account before assessments are made.

To complicate matters further, the evidence examined also shows that increasing efficiency does not necessarily benefit the farm in the long run, because downstream and upstream businesses have generally been better positioned in the marketplace to absorb the benefits of these efficiencies. In other words, improved efficiency has not necessarily increased profit margins, farm gate prices, or farm economic viability. It remains to be seen whether recent trends in direct marketing and on-farm processing will help farms capture the benefits of increased efficiencies more effectively and prevent those benefits from leaking to other components of the food supply chain.

Satisfaction

Farmers were invited to read over the interview report (Scott et al. 2003), which forms the basis for most of the indicators recommended in this report. They were particularly asked to comment on indicators recommended for selection for the different categories of human and social capital and farm community viability referenced in this present study.

In that process, it is noteworthy that a very significant proportion of farmers reviewing the interview report reacted very positively to the suggestion that ‘lack of franticness’ be measured as a way to assess satisfaction with farming as an occupation. Many commented that they heartily related to the need for more leisure time and craved a reduction in work hours. As noted in this chapter, a Canadian survey found that farm families work longer (paid and non-paid) hours, and volunteer more hours than their non-farming peers.

As evidenced in other GPI reports, trends in time use have impacts on a wide range of other indicators of wellbeing. For example, we have already noted above that long work hours can potentially have adverse health impacts—a relationship described in detail in GPI Atlantic’s Work Hours report, and supported by a Statistics Canada study linking long work hours to increased rates of smoking, physical inactivity, depression, and unhealthy weight gain. As well, research indicates that a lack of leisure time due to heavy workloads may threaten social cohesion, and weaken the voluntary sector. While it is certainly not the only indicator of farming satisfaction, the available evidence indicates that improved work-life balance, a reduction in excessive work loads, and greater leisure and ‘lack of franticness’ would contribute greatly to improved satisfaction with farming.

Renewal of Farms and Farmers

From the perspective of ‘renewal’ and building human capital over the long term, the limited results that do exist for farm operators are troubling. Census of Agriculture figures point to an aging farm population and a decline in the proportion of younger farmers. In both Nova Scotia and Prince Edward Island, the most recent 2006 Census reveals that the proportion of younger farmers (under age 35) is now at the lowest level in recorded history. Only 7% of Nova Scotian farmers and 9% of PEI farmers are today under 35.

Another survey found that 78% of farmers in Canada started farming alongside a more experienced farmer. If family tradition and heritage are important reasons why many rural residents continue in a farm business and if they are factors in keeping people on the farm, then the decline in young farmers may indicate a breakdown in the tradition of passing along farm knowledge and experience inter-generationally. Comments in the 2003 GPI farm interviews (Scott et al. 2003) also indicate that the departure of young people from the farm is also a significant source of stress for those who remain, and who worry about the continuation of farming traditions and family legacy over time.

While farm renewal is certainly related to and dependent upon factors like commitment, maintaining tradition, sharing information, and skilfully passing on the value of farming to future generations, evidence from the 2003 GPI farm interviews indicates that another (and at least equally important) part of farm renewal has to do with the very practical ability to seek new opportunities and make changes. Thus the other side of the tradition and continuity coin is the fostering of entrepreneurial energy and innovation as key agricultural resources.

Along with the person to person transfer of knowledge and skills required for farming, this chapter has also pointed to other opportunities for learning specific skills that also contribute to the building, development and strengthening of human capital in the farm population. In the 2003 GPI farm interviews (Scott et al. 2003), farmers pointed to a very wide range of ways in which they acquired the knowledge and skills required to run and manage their farms effectively. Assessments of this dimension of human capital in farming must therefore include, but also clearly go beyond, access to and graduation from formal education programs alone—which is the conventional method used to assess educational attainment.

A safe and healthy working environment as well as the availability of subsidized day care were also noted as critical elements to farm renewal.

Having the next generation effectively take over farms has been identified in this study as one of the most important issues affecting long-term farm viability and the future of agriculture in the Maritimes altogether. The economic barriers to this inter-generational transfer have been shown to be daunting: How, for example, does a young person take over a farm when economically viable farms are over-capitalized, thus making them too expensive to buy, and when most other farms are having trouble making ends meet?

Despite the mounting challenges identified, the 2003 GPI conversations with farmers in Nova Scotia and PEI (Scott et al. 2003) did produce inspiring stories of young people taking over farms, and effectively joining innovation and entrepreneurial skills with respect for tradition and heritage to improve their viability. As fuel and transportation prices increase and as global food shortages, higher food prices, and food safety concerns potentially threaten the affordability of imported food and the reliability of long-distance food supply lines, new Maritime farmers will increasingly be needed to fill the growing demand for locally produced food. Thus the issue of renewal is vital to the long-term health of agriculture in this region.

4. Social Capital

The economic viability of farming, the commitment of farmers to ecological wellbeing, and human capital factors in agriculture—all examined in earlier parts of this study—are important dimensions of the contribution of farming to society at large. However, this part of the study focuses more directly and specifically on the societal aspect of farming by examining the actual networks of social relationships—sometimes referred to as social capital—that characterize agriculture in the Maritimes. In particular we look at how people co-operate, what is needed for that co-operation to be effective, and also how webs of relationships can help improve farm viability in PEI and Nova Scotia.

In our highly individualistic world and economic system, insufficient attention is sometimes paid to the importance and value of social capital not only in making farming work, but also in contributing to productivity in other economic sectors. The section begins with definitions and a discussion of what social capital is, then examines how farms contribute to social capital, and finally explores potential indicators of social capital in agriculture.

Definition

In the previous section, human capital was recognized as a vitally important resource for agriculture. According to Côté (2001), “while human capital is embodied in individuals, social capital is embodied in relationships.” These relationships between people are characterized by flows of trust, reciprocity, information, and co-operation. According to Putnam, social capital is the collective value of these relationships and networks, and the inclinations that arise from these networks for people to do things for each other (Putnam n.d.).

Thus, social capital produces actual value, since it is about the connections formed between people in order to achieve common goals. Evidence indicates that not only the amount and number of relationships, but also the diversity of different *types* of relationships in a community (in business, sports, and friendships for example), serve to strengthen social capital and improve its effectiveness in achieving desired goals and outcomes. Social capital is sometimes referred to as ‘social fabric.’

Analysts have distinguished different types of social capital. For example, one distinction that will be useful in this analysis is between ‘bonding’ and ‘bridging’ social capital. Thus, the social capital that forms between similar people or groups is called bonding social capital, while the social capital that forms between people or groups that do not normally associate with each other is called bridging social capital (Boody and Krinke 2001; Putnam n.d.).

Bonding and bridging social capital both have utility and value. According to Putnam (2000: 23), “bonding social capital constitutes a kind of sociological superglue, whereas bridging social

capital provides a sociological WD-40.” If farmers get together to create a farmers’ market, that is an example of bonding social capital. If farmers, restaurants, and consumers get together to create a Harvest Festival, that is an example of bridging social capital.

Bridging social capital is important because it broadens the perspective and knowledge of diverse groups within a network, thus generating tolerance, understanding, or empathy where these may not have previously existed. In fact, if there is too much bonding social capital (which tends to be inward-looking and somewhat exclusive) without bridging social capital (which reaches out and is more inclusive), problems may develop. As one analyst notes:

Groups and organizations with high [bonding] social capital have the means (and sometimes the motive) to work to exclude and subordinate others. Furthermore, the experience of living in close knit communities can be stultifying—especially to those who feel they are 'different' in some important way. (Smith 2007:1)

Putnam notes that bridging social capital is harder to create than bonding social capital. Bridges are generally only created when people make the effort to reach out or try new things. Therefore, says Putnam, the kind of social capital that is most essential for healthy public life in an increasingly diverse society is precisely the kind that is hardest to build (Putnam et al. 2003).

Why Is Social Capital Important?

Recent research shows that social capital has a number of benefits that are not generally measured (OECD 2001; Putnam 2000; Putnam et al. 2003; Schuller n.d.; Milestead and Darnhofer 2002). According to Schuller (n.d.), social capital can help people be more effective in achieving common objectives, whether they are trying to increase local business, reduce crime, take better care of children, or share information. In *Better Together*, Putnam et al. (2003) cite many U.S. case studies that show the positive effects of social capital and that demonstrate ways in which people have together reached goals that would have been far beyond the grasp of individuals in isolation. At the same time, the value of networks cannot be assessed entirely in terms of the goals they are designed to achieve, since their members also enjoy the intrinsic satisfaction of association and of being part of a community.

Ultimately, analysts have observed, many of the benefits that flow from social capital are due to the fact that networks and associations assist people to trust rather than fear each other (New Economics Foundation 2002). For example, neighbourhood trust is associated with lower crime rates (OECD 2001; Putnam et al. 2003). Where people are trusting and consider each other trustworthy, and where they are subject to repeated interactions with fellow citizens, everyday business and social transactions are observed to be more fluid (Putnam 2000: 289).

There are also political benefits. Thus, an OECD study found that regions or states with higher levels of trust and engagement tend to have better quality governments (OECD 2001). And Putnam observed that social capital allows citizens to resolve collective problems of all kinds

more easily (Putnam 2000: 290).

Social connectedness is also associated with improved sense of wellbeing and health. Thus, social networks and social supports have been demonstrated in many studies to carry substantial benefits for health, including strengthening immunity, increasing compliance with behaviours that promote health, and enhancing adaptation and recovery from disease. Lack of adequate social supports may be as great a risk to health as poor diet, lack of physical activity, or smoking.⁵³

According to Health Canada:

Families and friends provide needed emotional support in times of stress, and help provide the basic prerequisites of health such as food, housing and clothing. The caring and respect that occur in social networks, as well as the resulting sense of well-being, seem to act as a buffer against social problems. Indeed, some experts in the field believe that the health effect of social relationships may be as important as established risk factors such as smoking and high blood pressure.⁵⁴

It has been argued that social support and social cohesion are stronger influences on cardiovascular disease than individual medical care.⁵⁵ Social relations, and support from family, friends, and communities have been shown to contribute to health; to reduce the incidence of premature death, depression, mental illness, and chronic disability; to reduce adverse responses to stress; and to improve medical outcomes in high-risk populations.⁵⁶

In attempting to explain why white American males are five times as likely to die of coronary heart disease as Japanese men, comparative studies have pointed to greater social support and cohesion as a likely explanatory factor:

The evidence from the Japanese acculturation studies certainly suggests that strong social ties and meaningful social interconnectedness / cohesiveness might be a source of significant protective benefits...and thus be an important factor in the prevention of CHD.⁵⁷

⁵³ “The Role of Nutrition in Health Promotion and Disease Prevention Programs—Position of ADA,” *Journal of the American Dietetic Association*, 98: 205-208, 1998; Karch, Bob, “Social Factors in Health Promotion,” *American Journal of Health Promotion*, 3 (1), March-April, 2000.

⁵⁴ Health Canada, *Toward a Healthy Future: Second Report on the Health of Canadians*, Health Canada and Statistics Canada, September, 1999, page 60.

⁵⁵ Lyons, Renee, and Lynn Langille, *Healthy Lifestyle: Strengthening the Effectiveness of Lifestyle Approaches to Improve Health*, Atlantic Health Promotion Research Centre, Dalhousie University, prepared for Health Canada, Health Promotion and Programs Branch, April, 2000, page 17.

⁵⁶ *Ibid.*, page 18; and Health Canada, *Statistical Report on the Health of Canadians*, Ottawa, September, 1999, page 131.

⁵⁷ Kabat-Zinn, Joh, “Psychosocial Factors: Their Importance and Management,” in Ockene, Ira, and Judith Ockene, *Prevention of Coronary Heart Disease*, Little, Brown, and Company, Boston, 1992, pages 301-302.

A study in Alameda County, California, constructed a social network index combining four types of social connections (marriage, extended families, church membership, and other group affiliations). Those who scored low on the index were twice as likely to die of heart disease and of all-cause mortality in the succeeding nine years as those who scored high, after controlling for age, race, socio-economic status, self-reported health status, and a range of risk factors. Many other studies have produced similar findings that indicate the protective role of social supports and social cohesion.⁵⁸

According to one analysis:

Social support provides...an emotional and practical resource for coping and for enhancing quality of life. Belonging to a social group makes people feel cared for, loved, and valued. It provides social status and a sense of control, two elements that have powerful protective effects on health.⁵⁹

Social capital has also been associated with a reduced risk of Alzheimer's disease (OECD 2001); increased ability to cope with traumas; and increased effectiveness in fighting illness (Putnam 2000: 288). The social connectedness of mothers has been shown to reduce the risk of child abuse and social problems among children and teenagers (OECD 2001).

Self-reported survey measures also show that people achieve greater overall wellbeing where the level of social capital is high (OECD 2001). Putnam (2000: 331 and 333) spells out the relationship: "As a rough rule of thumb, if you belong to no groups but decide to join one, you cut your risk of dying over the next year *in half*... Civic connections rival marriage and affluence as predictors of life happiness." Other studies show that people rich in social networks are four times less likely to come down with an illness; that middle-aged women with large social circles have 23% lower incidence of coronary artery disease; and that people over the age of 80 with poor social networks have a 60% higher than average chance of dementia.⁶⁰

In addition to proven benefits for health, happiness, and wellbeing, high levels of social capital have been shown to improve economic outcomes. Thus, networks of relationships can help with information sharing, resource sharing, and expanded commercial activity. In agriculture in particular, social capital has been demonstrated to help farms and rural communities increase their resilience (Milestead and Darnhofer 2002). For example, strong support networks with roots in the local community can be the basis for a durable relationship between farmers and consumers that can strengthen direct marketing activities.

It has been argued that, where high levels of trust and strong social networks flourish, individuals, firms, neighbourhoods, and even nations are more likely to prosper economically, and that social capital can even help to mitigate the effects of socioeconomic disadvantage (Putnam 2000: 319-325). Indeed, GPI Atlantic's own extensive survey work in two Nova Scotia communities found that strong social networks, high levels of social support, and frequent social

⁵⁸ Ibid., page 303.

⁵⁹ Lyons and Langille, op. cit., page 18.

⁶⁰ Erin Middlewood "Social Medicine" *Orion* Sept/Oct 2005 p.26. Quoted in McKibben (2007:109).

interactions compensated in large part for lower incomes in producing levels of life satisfaction, subjective wellbeing, and self-rated health that were comparable to those with higher incomes.⁶¹

Bill McKibben (2007:120) also points to an environmental dimension of social capital by noting that social capital will become progressively more important in a future with unpredictable weather and resources: “In a changed world, comfort will come less from ownership and more from membership. If you’re a functioning part of a community that can meet some of its needs, for food, for energy, for companionship, for entertainment, for succour—then you’re more secure.”

In his essay *Social Capital and the Collective Management of Resources*,⁶² Jules Pretty notes that social capital can be useful for managing common resources:

Where social capital is high in formalized groups, people have the confidence to invest in collective activities, knowing that others will do so too. Some 0.4 to 0.5 million groups have been established [in the UK] since the early 1990s for watershed, forest, irrigation, pest, wildlife, fishery, and microfinance management.

Measuring Social Capital

Researchers have attempted to measure and assess the value of social capital in a number of ways, and these methodologies are still being developed. For instance, Putnam (2000) measured the density of social networks in which people are involved; the extent to which they are engaged with others in informal social activities; membership in groups or associations; and the number of times a person entertains friends at home. Bookman (2004:25) also looks at ways households cope with care of young and/or ill family members.

In its own survey work, GPI Atlantic has assessed levels of social support as well as frequency of contact with neighbours, friends, and relatives. During interviews with farm people in Nova Scotia and PEI, interviewees were asked to give examples of communities they considered viable, and they were asked why they liked their communities (Scott et al. 2003). Out of these qualitative discussions, new potential indicators and measures of social capital emerged, such as use of bartering; sharing machinery; opportunities for eating together; intergenerational organizations and activities; the degree to which people leave doors unlocked; and the number of self-serve farm product stands (where farmers trust the customers to pay for what they take).

⁶¹ Pennock, Michael, Martha Pennock, Linda Pannozzo, and Ronald Colman, *Kings County GPI Community Profile, Glace Bay GPI Community Profile, and A Tale of Two Communities*. GPI Atlantic. June, 2008. Available at www.gpiatlantic.org. Accessed 30 June, 2008.

⁶²Science 12 December 2003: Vol. 302. no. 5652, pp. 1912 - 1914
www.sciencemag.org/cgi/content/abstract/302/5652/1912. Accessed September 2007.

Depreciation of Social Capital in Rural Communities

Use of the term ‘capital’ implies that measurement is not confined to trends and indicators alone, but also includes an assessment of *value*. Indeed, what distinguishes the Genuine Progress Index from other quality of life and wellbeing indicator systems is that it aspires to move towards a set of accounts that assess the value of social, human, and environmental capital alongside the manufactured capital that we currently track. Ideally, capital stock accounts would report on assets and liabilities in balance sheet form (including the value of natural, human, and social wealth), and flow accounts would assess the full social, economic, and environmental benefits and costs of particular economic activities.

We currently have sophisticated systems for assessing the depreciation of manufactured capital, but no comparable systems that properly assess depreciation of natural, human and social capital. In fact, however, these forms of capital are just as subject to depreciation as manufactured capital. Soil erosion, loss of soil organic matter, and the degradation of forests signify the depreciation of natural capital, just as a sicker or more poorly educated populace signifies a loss of human capital, and higher crime rates or a decline in voluntary and community activity signify a loss of social capital.

Conversely, from a GPI perspective, forest restoration, an expansion of protected areas, shifts to organic farming methods, and health promotion efforts signify investments in natural and human capital. From this perspective then, measurement of social capital must go beyond physical indicators and trends, and include the concept of depreciation and investment that recognize the *value* of that capital.

Putnam has suggested that depreciation of social capital can be measured by indicators like increasing numbers of lawyers per capita, police per capita, and security personnel per capita, since these costs are engendered in response to security and safety problems that in turn stem from reduced trust (Putnam 2000).

In addition to extra expenses associated with lack of trust and security, an unravelling social fabric might also be indicated when individuals are transformed from active ‘citizens’ to ‘consumers’ who see their needs being met in the marketplace rather than in the family and community. Thus, as social capital deteriorates, life may become more expensive, as we begin to hire people and buy things rather than to trade and barter goods and services informally and to do things for each other voluntarily. Ironically, our conventional GDP-based measures of progress count such shifts from the informal to the market economy as growth and progress, though they may well signify a decline in community vitality, trust, and social capital.

Such shifts in social capital may also be gauged by the type and quality of social interactions—if children, for example, play less frequently with each other, but instead focus more on computer and video games and on television. Indeed, a growing body of evidence now indicates that people entertain friends at home less frequently than in the past. Smith (2007), for example, found that, in 1975, Americans entertained friends at home an average of 15 times per year, but by 1998 they were barely half as likely to do so.

Similar evidence is now available for Canada. Human Resources and Social Development Canada (HRSDC), reporting on Statistics Canada's General Social Survey time use results, notes that: "The amount of time spent on social activities (such as socializing with friends at home) decreased from a high of 1.9 hours per day in 1998 to 1.7 hours per day on average in 2005. This decrease amounts to roughly an hour and a half per week."⁶³ Statistics Canada's 2005 time use survey also found that Canadians who spend more than an hour a day on the Internet devote nearly 30 minutes less time each day socializing with their spouses and children than non-users (those who spend less than five minutes on-line a day).⁶⁴

From a GPI valuation perspective, these trends towards reduced socializing and heavier reliance on electronic rather than personal face-to-face interactions and communications might be classified as a potential depreciation of social capital. However, it must be acknowledged that robust valuation methods for social capital have not yet been developed, and that even basic reporting on social capital—let alone development of appropriate indicators and measures—is still in its infancy. Fortunately, growing recognition of the importance of social capital is rapidly producing major new sources of evidence, such as Statistics Canada's first ever General Social Survey (GSS) on Social Engagement, which in 2003 interviewed nearly 25,000 Canadians aged 15 years and older in an effort to understand and shed light "on the many ways in which Canadians engage in civic and social life."⁶⁵

Both Statistics Canada's 2003 GSS Social Engagement Survey and its 2002 Ethnic Diversity Survey do assess the degree to which social contact involves interaction with people of different backgrounds. From the perspective of the 'bridging social capital' discussed earlier, a depreciation of such capital might be signified by a reduction in the degree to which different generations and ethnicities interact and learn from each other. Psycho-social research indicates that inadequate interaction and understanding between people may produce irrational fears and feelings of isolation, depression, insecurity, and prejudice. In fact, sufficient evidence certainly exists to justify classifying as a decline in social capital a trend towards individuals basing their self-worth on what they buy rather than on their craft, vocation, and quality and diversity of relationships. Sadly, however, Statistics Canada Social Engagement and Ethnic Diversity surveys have so far only been administered once in Canada, so trend lines even for basic evidence in this area are not yet available.

⁶³ Human Resources and Social Development Canada, *Indicators of Well-being in Canada*, Leisure—Active Leisure Time. Available at: <http://www4.hrsdc.gc.ca/indicator.jsp?lang=en&indicatorid=51>. Accessed 1 July, 2008.

⁶⁴ Roberts, Scott, "Heavy Internet users fall down on social, household tasks," *Globe and Mail*. August 2, 2006. Available at: <http://www.theglobeandmail.com/servlet/story/RTGAM.20060802.w3internet0802/BNStory/Front/home>. Accessed 1 July, 2008.

⁶⁵ Statistics Canada, General Social Survey: Social Engagement. *The Daily*. 6 July, 2004. Available at: <http://www.statcan.ca/Daily/English/040706/d040706b.htm>. Accessed 1 July, 2008. For an summary of key results, see Statistics Canada. 2003 General Social Survey on Social Engagement, cycle 17: an overview of findings. Catalogue no. 89-598-XIE. Available at: <http://www.statcan.ca/english/freepub/89-598-XIE/2003001/index.htm>, & <http://www.statcan.ca/english/freepub/89-598-XIE/2003001/pdf/89-598-XIE2003001.pdf>. Accessed 1 July, 2008

Nevertheless, even the limited available data do provide interesting insights of direct relevance to this study of social capital in agriculture and in rural communities. Thus, Statistics Canada reports:

The 2003 GSS confirms the image of rural and small town areas as places where people are most ‘neighbourly’. Indeed, over one-half (54%) of individuals who lived in these areas said they know most of the people in their neighbourhood, while this was the case for 17% of individuals in Canada’s largest cities.... [T]he share of Canadians who know most of their neighbours declined steadily as urban size increased.⁶⁶

Again, phrasing the findings in social capital terminology, it might be concluded from this evidence that social capital is stronger in rural than urban areas, and that rural-urban migration may lead to a decline in social capital. Again, it must be emphasized that work in this area is still in its infancy, and such ‘conclusions’ must really be considered hypotheses at this stage of investigation. Nevertheless, it is significant even now to note that such changes in social capital are not accounted for in valuation methods that rely solely on market exchanges, and that such conventional accounting methods implicitly—and inaccurately—ascribe a zero value to social capital. This study seeks to redress that balance by at least drawing attention to the reality and value of social capital in at least one key social and economic sector—farming.

After the publication of his ground-breaking book *Bowling Alone* (Putnam 2000), which documents the decline of social capital in the U.S., Putnam joined with colleagues to publish *Better Together* (Putnam et al. 2003) to document vibrant examples of social capital in practice and in action. The authors are aware of the subtleties and nuances inherent in the study of this subject matter and of the dangers of simplistic interpretations that count all interactions as positive contributions to social capital. For example, they warn that, even when the effects of community ties are largely beneficial, the means by which they work are sometimes not. Thus, social capital can rely on informal sanctions and gossip, and not just on fellowship, good intentions, and altruism.

Putnam et al. (2003) also note that the benefits derived from social capital are won from a great deal of time and effort. Thus, social capital often develops through extensive and time-consuming face-to-face conversation between people. The examples presented in *Better Together* suggest that social capital is usually developed in pursuit of a particular goal or set of goals and not for its own sake. People seek better schools, neighbourhood improvement, economic advantage, or some other particular good, with social capital a means to those ends. For example, Bill McKibben in *Deep Economy*, describes how community groups in the Pacific Northwest have come together to bring back the wild salmon by improving habitat and protecting rivers. “Once rolling, the building of connections can accelerate quickly. We learn once again what skills and gifts our neighbours possess, and they become valuable to us again” (McKibben 2007: 174).

⁶⁶ Statistics Canada. 2003 General Social Survey on Social Engagement, cycle 17: an overview of findings. Catalogue no. 89-598-XIE. Page 17 and Chart 24. Available at: <http://www.statcan.ca/english/freepub/89-598-XIE/2003001/pdf/89-598-XIE2003001.pdf>. Accessed 1 July, 2008.

Robust, quantitative survey data on social capital in Maritime agriculture do not yet exist. This study therefore relies on wide-ranging interviews conducted in 2003 in farm communities in Nova Scotia and PEI (Scott et al. 2003) to explore social capital. The interviews did yield valuable potential indicators of social capital, outlined in this report, which can potentially be used to construct a more systematic survey in the future. Statistics Canada itself frequently relies on qualitative research, including focus groups, as a key preliminary step in designing a new survey, since such research can play a vital role in identifying what matters to people, and which indicators may potentially have the greatest relevance and salience to Canadians. This study should be seen in that light.

From the interviews, it does appear that social capital is very well developed among farm people. At one point, a store clerk in Prince Edward Island was asked why people in PEI appear to be so friendly. Her immediate response was: “Because we need each other.” That remark, in a way, crystallizes the essence of social capital and its relation to the pursuit of common goals and objectives, as noted above. If people need each other, they are more likely to work productively together and to enjoy each other’s company as a natural part of life. Because of the lack of quantitative data, it is not yet possible to assess if this form of capital is in decline over time, or if it is increasing at least in some sectors. Once there is a stronger appreciation of the value of social capital, which is a key goal of this study, it will be important to monitor this over time to ensure that a vital resource is not depreciating in value and being lost over time.

Farm Contributions to Social Capital

Farms contribute to the development of social capital in many ways that are generally uncounted and therefore not fully acknowledged. Interviews with farmers in Nova Scotia and PEI in 2003 (Scott et al. 2003) were rich with examples of how farm families can provide both community leadership and an anchoring presence in rural communities. Since farm economic viability has often been such a challenge, as earlier GPI reports clearly indicate, farm families have had to forge alliances and to develop co-operative arrangements just to get by (Walsh 1976). Indeed, because farm economic returns are so poor, it appears that—for some farmers at least—it is the social aspect of farming—the friendships, networks, alliances, and organizational development—that keep some producers holding on to the farming way of life.

Community Leadership

The available evidence indicates that vast amounts of unpaid hours are allocated by farm families to developing, maintaining, and participating in community organizations. Some of these contributions were documented by Scott et al. (2003) in their 2003 interviews in PEI and Nova Scotia, with some representative samples summarized below:

One farmer in Prince Edward Island dedicated long hours through the 1970s and 1980s to the Potato Marketing Board, the Canadian Horticultural Council, and the Canadian Association of Fairs and Exhibitions. But now he feels guilty for having pulled back from those commitments in recent years as a result of the huge amount of work he has to do on his farm and the fact that he doesn't have a surplus of cash to hire someone to do the jobs that he can do himself. Another PEI farmer noted that he does still hire a summer student to work on the farm so that he has time to be a soccer coach and a 4-H leader—community activities that are important to him.

Many PEI farmers who were interviewed strongly affirmed their willingness to provide leadership in community-based organizations, and to serve on various committees. Older farming residents in particular often indicated that they had been around long enough to know from experience the benefits of keeping their farming community alive, and also to understand what they might lose—good, dependable neighbours, a place where everyone knows almost everyone else, and a sense of trust among the people in the area—if they did not actively participate in sustaining their community. They also recognized that they could not effectively influence decisions or affect change if they were not actively part of community processes and organizations.

One PEI farmer noted that he had spent 15 years on the Milk Quality Committee, six years on the Marketing Council, and six years on the board of the Agriculture Research Investment Fund. He remarked that all of these experiences have been wonderful personal development activities, that he enjoys working on the various committees with the other people who have 'real sharp minds' that challenge his thinking, and that he likes that challenge. The farmer said he wouldn't trade the time he has spent in these activities for anything and remarked that his experience has helped give him satisfaction and a positive attitude towards the industry. Interestingly, however, and despite his very affirmative and upbeat comments on the value of community involvement, this farmer was not sanguine about the future. He noted that although these council, community, and committee jobs have to be done, there are actually fewer and fewer farmers to do them.

Similar sentiments on the value and depth of community involvement were expressed by the Nova Scotia farmers interviewed in 2003. One remarked that he'd been on the executive of the Nova Scotia Federation of Agriculture, and was a director with the Co-op in Truro. This farmer said that he has enjoyed these commitments because they have provided a 'window into what's going on', an opportunity to make important contacts, and an expansion of learning opportunities, and they have diminished any sense of isolation.

Another Nova Scotia farmer described his particular community activities in this way:

we support just the Fire Brigade, and the Colchester Community Workshop for mentally challenged adults. The Workshop provides facilities, and jobs for people. You can take in things and they fix them for you. All of our strawberry stakes on the farm, we get 500 per year, we get them to make them all. I've always supported them, since I began farming, because they are good people. Last year a Community Workshop group came out to pick strawberries, and there was about 60 of them, 45 years of age on average. All of the people from the Community Workshop were sitting in the field waiting for their bus to

come back, I said “now, who wants to get on the trailer and pat some cows?” They love it, and it’s fun, and it’s really nice to see.

These qualitative findings from the 2003 GPI farm interviews are confirmed by results from a 2001 survey of 333 Nova Scotia Federation of Agriculture (NSFA) members conducted by ATi Consulting (2002). Those results showed that farm owners and employees are active contributors both to their communities and to organizations that support the agriculture industry. The largest percentage (39%) participate in church groups, followed by participation in general charities (19%), volunteer fire departments (15%), sports groups (12%), and agricultural groups like 4-H (10%). At least 70% of farmers in the survey participated in at least one form of community activity.

A time use survey of Canadian farmers (Martz and Brueckner 2003) also found that large numbers of farm men and women (82%) are active as volunteers in their communities and schools. Table 13 below shows that on average, the Canadian farm population dedicates a half-hour per day to civic and volunteer work. This is considerably more than the 21 minutes per day average for the Canadian population at large, as indicated in Statistics Canada’s 1998 General Social Survey (GSS) time use survey, and the 0.3 hours per day indicated in Statistics Canada’s 2005 GSS time use survey.⁶⁷ On average, then, farmers—despite their heavy work load—spend more than an hour more per week engaged in civic and voluntary activities than other Canadians.

Table 13: Time Use Activity for Canadian Farm Population

Time use activity	Average of farm population	Average of peer Canadian population
	Hours per day on average	
Leisure time	2.45	4.65
Active leisure (e.g., playing sports)	0.35	0.75
Television and reading	1.20	2.15
Socializing	0.55	1.60
Working (paid and unpaid)	11.00	9.35
Portion of work that is paid (assume farm work is paid)	7.15	5.00
Civic and volunteer work	0.50	0.35

Source: Martz and Brueckner, 2003.

Volunteer work is a way for people to contribute to their communities, but it is also a way for them to build up human capital. This was clearly indicated in many of GPI Atlantic’s 2003 farm interviews, where farmers remarked on the value of their participation in community and

⁶⁷ Statistics Canada, Household, Family and Social Statistics Division. *Overview of the Time Use of Canadians in 1998*. Table 1; and Statistics Canada. General Social Survey on Time Use, *Overview of the Time Use of Canadians 2005*. Catalogue no. 12F0080XIE. Ottawa. Ministry of Industry. July, 2006, Table 1.1, page 5.

industry organizations as learning experiences and ways of keeping up with what was going on in the industry. Abundant evidence indicates that participation in voluntary organizations both enhances skills and facilitates their application in practice. According to Schuller (n.d.) there is also a strong association between high levels of civic engagement and educational success.

Community Anchor

Possibly more important than farmers' personal volunteer and leadership contributions as a key component of social capital, is the anchoring quality that farms provide to rural community life. This refers to the contribution of farms in providing context to rural life and relations, history and knowledge of heritage, and continuity and stability to social relations. This 'anchoring' quality can be particularly useful to a community in the effective management of resources (either individual or common). The knowledge that has been passed on in farm families, often for generations, helps to avoid mistakes, while knowledge of a community's heritage also helps people build on what has been accomplished in the past.

While this anchoring role is inadequately recognized in the existing literature on social capital, its importance emerges very clearly from the 2003 GPI interviews conducted in Nova Scotia and Prince Edward Island (Scott et al. 2003). A few sample but representative comments illustrate this anchoring function and its role in strengthening community heritage, identity and ties.

In a pattern that is not uncommon in the Maritimes, one PEI farm family, for example, has three generations working together on the family farm, which in turn contributes to community continuity. All three generations feel a strong attachment to their community of Marshfield, PEI, which they describe as spanning both the old fashioned attitudes of the grandfather and the more modern views of the next two generations. They described the mixing of these approaches as a "well-balanced" situation.

One PEI farmer noted that communities with large numbers of commuters have less 'identity' than rural farm-based communities, by virtue of the fact that farmers don't leave the community to work, and therefore strengthen their roots in that community, giving it a greater sense of identity. He remarked that when farmers host public events (like a 4-H activity or a field day), this also gives communities identity.

And another PEI farmer noted that successful communities are ones that are proud of their heritage, because they remember who their forebears were and appreciate what they accomplished. This farmer recalled that her father always walked their land and knew every part of it intimately. She remarked that they are very connected to their land and feel that it is almost a part of them. Thus, a farm that her father bought 30 years ago is not simply a field number, but has a personal name—'Somers Farm'—thereby acknowledging a connection to the past.

A 2001 survey of 333 Nova Scotia Federation of Agriculture (NSFA) members (ATi Consulting 2002) shows that farmers are frequently among the longest-standing residents of their communities. Nearly half of the farm businesses surveyed (47%) has operated for more than 50

years. Only 7.5% were established in the last 5 years, although even a portion of these may in fact be long-standing operations that have recently changed hands. The report authors note that while the infrastructure associated with other productive activities can be moved and relocated, the land on which farming is based cannot be ‘moved’. In an increasingly mobile society, therefore, the very fact that farms are rooted in land makes their anchoring quality even more important in giving communities a sense of heritage, belonging, and continuity.

Indicators of Social Capital

Based on the extensive interviews conducted in 2003 with farm people in Nova Scotia and PEI (Scott et al. 2003), indicators of social capital for Maritime agricultural communities are proposed in Table 14 below. Because this field of investigation is so new, this first stage in developing new indicators focuses on (a) the *nature* of the social relationships that each indicator is intended to illuminate and (b) the *importance* of each indicator as revealed in comments from the interviews. Because these interviews are here referenced for the specific purpose of identifying proposed indicators, the comments are cited somewhat extensively in the discussion.

Once agreement is reached on *what* is to be measured, a defined suite of appropriate indicators with specific, quantifiable measures can then be proposed—a process that itself will require further consultations with members of rural communities, representatives of agricultural organizations, provincial and federal government agriculture departments, and experts from Statistics Canada. Only at that point can actual measurement tools and survey instruments be developed to collect the necessary data.

In other words, we are still a long distance from being able to report quantitatively on any of the suggested indicators, but it is hoped that this discussion will help set that process in motion so that valuable and vital social capital can eventually be properly accounted for and essential information on the subject regularly and consistently reported. The following proposed indicators and measures are therefore a first step, based on the 2003 farm interviews, designed to help initiate such a process.

Table 14: Indicators and Potential Measures of Social Capital

Indicator	Factors amenable to measurement
Supportive Relationships	Co-operation among farmers
	Co-operation between producers and consumers
	Relationships between producers and community
Quality Relationships (that promote equity, trust, and understanding)	Number of farmers relative to the rest of the population
	Equitable relationships <ul style="list-style-type: none"> - income disparity - concentration of assets - size of farms
	Inter-generational equity
	Opportunities for developing mutual understanding (bridging social capital)
	Opportunities for people in rural communities to interact (eating together, working together, active cultural activities such as storytelling, barn dances, singing)
	Opportunities for interaction with and learning with other communities

An analysis of interview transcripts from the 2003 GPI farm interviews (Scott et al. 2003) has led us to divide proposed indicators of social capital in agriculture into two categories—supportive relationships and quality of relationships. The former category deals with the nature and extent of relationships both among farmers themselves and between farmers on the one hand and consumers and rural communities on the other. The second category attempts to delve more deeply into the types of relationships that exist and particularly to evaluate their quality in terms of three basic criteria that have been identified in the literature as key to enhancing social capital—namely, do they build equity, trust, and understanding? Interview comments addressed both these dimensions of social capital in agriculture.

Supportive Relationships

Co-operation among Farmers

Producers have a wide range of ways in which they co-operate and support each other. Sometimes they informally work out arrangements to trade skills, services, tools, and equipment, and to share resources in a number of ways. Such informal arrangements may develop naturally and gradually over a number of years. In other circumstances, co-operative arrangements are more formal, taking place through various clubs, associations, federations, or commodity organizations. Co-operative arrangements may also develop through shared commercial enterprises, such as the Scotian Gold Co-operative in Nova Scotia's Annapolis Valley. Such co-operatives are often developed by farmers to help reduce their costs, share expenses, and take advantages of economies of scale by marketing a product together.

Regardless of the particular type of co-operation, the following comments from farmers in the 2003 interviews in PEI and Nova Scotia reveal two common threads running through all forms of farmer co-operation—namely that co-operation among producers helps both to increase farm viability and to weave effective and productive social fabric in the community. Both these functions also emerge in the profile of the Brooklyn Feed Mill in the section below.

A dairy farmer on Prince Edward Island reported pooling his land with that of a neighbouring hog farmer and farming it co-operatively with the neighbour both for their mutual benefit and for the benefit of the land itself. He noted that such pooling of land gives both of them a longer rotation and gives him the capacity to benefit from access to hog manure that enhances diverse farming operations. He reported that it has now been 15 years since the neighbours started trading and pooling their land, and that they have now built up the trust to pool all 150 acres and to work them together.

Thus, the dairy farmer grows forage on the neighbour's land, and the neighbour grows soybeans on the dairy farmer's land. Last year with hog prices very low, the neighbour would have been in a very tough financial situation without his excess crop of soybeans to pull him through the season. Also, the additional crop yields of forages as a result of the pig manure and the nitrogen value provided by the soybean production have produced a very positive and supportive relationship, creating a viability and mutual benefits that each farm could not have had on its own.

The arrangement also produces direct savings and avoids wasted materials and unnecessary effort. For example, the dairy farmer used to have to grow his own grain in order to harvest straw for use as cattle bedding. Now he gets his straw from his neighbour as part of their mutual trade, saving him from having to grow grain and buy a combine. In fact, the dairy farmer remarked, he is very happy indeed not to have to grow grain.

Other good examples cited by PEI farmers of working together to increase viability, albeit in more formal ways, are the Atlantic Tender Beef program run through Co-op Atlantic and the Prince Edward Island Feeder Co-operative. In the latter case, the Farm Credit Corporation lends money to the co-operative, which in turn lends money to farmers to buy and feed animals until they go to market. In the former case, farmers strive to meet and maintain Atlantic Tender Beef standards, which enable them to charge premium prices that in turn enable them to pay their loans back to the co-operative. A PEI farmer noted that co-operatives fell out of favour for a time because of poor management, but she remarked that a resurgence is now very possible due to good planning and capable directors in charge.

Another farmer on Prince Edward Island confirmed that alliances between farmers, packers, and retailers, as occurs with the Atlantic Tender Beef, program, provide a good example of all partners improving their financial prospects and making more money by working together than they could ever do alone. The same farmer also remarked that the Conservation Clubs that were started by the PEI Soil and Crop Association are made up and driven by the farmers who are members of the Club.

Yet another PEI farmer noted that he and others had started the Island-wide Crop Science Club in 1991, and were always trying to improve their performance each year compared to previous years, hosting test plots and tours which “lets your hired men and sons see what others are doing.”

One PEI farmer described her involvement in the Commodity Clubs that are organized to bring together farmers from the same commodity group (e.g., all beef farmers or dairy farmers, etc.). But, though organized around an economic sector and function, this farmer noted that a key benefit of the clubs is social, with members simply enjoying each other’s company—joking, sharing stories from their common experiences, and talking together. If someone is having a problem—whether economic or personal—she remarked that other Club members make an effort to encourage and lift the spirits of that person, valuing laughter as an important element of their activities. But, she asked: “What about the wives of that same group? They are still isolated.” In sum, the social capital component even of an industry organization (let alone a community group), is too often unrecognized and undervalued, though—as this farmer makes abundantly clear—it may well constitute one of the association’s most valuable contributions.

Another PEI farmer remarked that a key indicator of farm viability is whether farmers are co-operating in new and innovative ways, and he suggested that this could and should be measured. He observed that farmers in Quebec have been among the most successful in working hard and working together in order to create the substantial support system that they now have—which mostly exceeds what is available to farmers in other provinces. He noted that part of this success may be cultural, and observed that, in Quebec, the Caisse Populaire—working as a credit union—is the most dominant form of banking because Quebecers have a stronger culture of working together and sharing than most other Canadians.

Other PEI farmers cited numerous examples of practical co-operation among farmers on the Island. One farmer noted that in earlier times it was taken for granted that if a barn burned, for example, the neighbours always got together to help rebuild it. But he felt that this basic attitude was still alive and well on the Island today though it might manifest in different forms and circumstances. For example, as a result of the 2000 potato wart disaster that wreaked havoc on the Island’s potato industry and forced many Island farmers into bankruptcy after the U.S. banned the import of Island potatoes and demanded severe restrictions on Island potato shipments even within Canada, restrictions against potato growing were subsequently put on some Island fields in order to create buffer zones that could provide protection against future outbreaks. In response, PEI farmers got together among themselves to trade land in order to accommodate those farmers who had large acreages in the buffer zones where they couldn’t grow potatoes.

The same farmer cited other examples of such co-operation within the farming community, especially during difficult times and when there were challenging financial circumstances. In the beef industry, for instance, farmers with animals in feedlots ready to go to market at times that prices were low, have worked with other farmers to put the animals on their land to pasture. And he has observed farmers who finished planting early go over and help a neighbour finish, and he has seen farmers trade land back and forth to enable good crop rotation while still maintaining

the level of crop desired. All this, he noted, enhanced resilience within farming communities on the Island.

These observations and sentiments were largely echoed by the Nova Scotian farmers interviewed in 2003. One remarked:

Probably 80% of Nova Scotia milk does go through the two co-operative dairies, Farmers and Scotsburn, which is different than other provinces. In Quebec co-operatives are big. In Ontario it is largely private companies. Over the last couple of years, the dairy processing sector in Canada has become more vertically integrated. There are now a lot fewer and a lot bigger players. It is similar to, but not as extreme as what's going on in the grocery store chains.

Another Nova Scotia dairy farmer who supplies milk to Scotsburn co-operative dairy, noted that being a shareholder meant he has an investment in the company, and that at the end of the year, the company distributed some of the profits back to the producers by increasing their share equity in the company. He said: "It's been a very successful venture from my point of view over the past few years in that our share equity has grown steadily within Scotsburn. And we know we have some involvement in the processing sector, which we might not have otherwise."

One Nova Scotia farmer who owned a dairy farm with her husband reported that "in 1961, the farmers decided to buy Farmers [dairy] and make it a co-op. Then they had things in their own hands. I think things started to get better then."

Another Nova Scotia farmer reported that her farm is part of the Seaspray Atlantic Organic Farmers Co-operative—an alliance of certified organic producers who organized to provide large quantities of produce (primarily vegetables, fruit, and meat) to supermarkets, restaurants, and national and international buyers. This collaboration makes it possible to come up with the quantities that each buyer wants, which would be difficult if not impossible for each individual farm. She said:

We'd like to know what they want from us, so that we can provide more organic goods, from our area, rather than the Californian stuff. That makes no sense to me, why in August they're bringing Californian tomatoes when this is our season. And that goes on all the time. Hopefully that can get straightened out.

A Nova Scotian fruit grower reported:

There are three reasons why the NSFGA [Nova Scotia Fruit Growers Association] is a strong alliance between producers. The first is because of the heritage — the Association has been around for a long time. The second reason is possibly the face-to-face contact growers have with each other with the orchard tours. They discuss their problems and solutions together. One grower built a tree-planter, which was used on many farms in Kings County for several summers in a row. The third reason is apple growers don't see each other as competition. There's certainly a feeling of helping other growers.

Another Nova Scotian fruit grower echoed this sentiment and said:

Scotian Gold Co-op [a local fruit packer, broker and retailer] has a group of growers that meet weekly. It's sort of a mentoring process. They're there telling them things but also the growers get a chance to talk together, and Scotian Gold is definitely there to serve their growers. I think there is also a group of growers that meet for coffee, quite a few mornings of the week in a small community. They come into the nearest coffee shop and have their meetings, just to talk about what's going on, and I think that's a really good support for them. If one guy has seen a bug in his orchard, then the other guys know they should go look.

This farmer remarked on the particular importance of this fruit co-operative in dealing with the two main buyers for the local Nova Scotia market—Sobeys and Atlantic Wholesalers (Superstore):

So a co-op is a really great thing because it allows the small guys or the guy that doesn't want to be involved in marketing to sell apples. You send your fruit there, and they deal with the buyers. Scotian Gold has been in existence since the mid 50s. If everybody tries to take their fruit into the market place, and they all try to compete against each other, (we had this a few years ago)...next thing you know I'm beating up on you and you're beating up on me [competing to offer the lowest price]. That's not a good situation.

The farmer remarked that he thinks Scotian Gold pays a fair price for the fruit, which can outweigh the benefits of direct market options. If everyone has a farm stand, he said, then everyone will be competing with each other on price.

This theme surfaced in other interviews, as when a Nova Scotia dairy farmer remarked that there is simultaneous competition and co-operation within the dairy farming community. He said:

I would say there is competition but it's not the same as if we were—myself and my neighbour—we both had a hardware store. You're not competing directly against each other for customers. It's certainly competitive in that you have to be as efficient as possible, have the best cost of production as possible in order to be successful. You're competing against yourself, but in doing so, rather than the two hardware store scenario, you can work with your neighbour. And hopefully you better each other's operation.

Another Nova Scotia farmer described practical and cost-effective co-operation among farmers in use of equipment. For example, he reported that the local federation of agriculture owned several pieces of equipment—particularly items that are not used a lot on one farm, but that are still necessary to have around, and that can be usefully shared by the 15 farms in his community. He said:

I work very closely with one neighbour. We have several pieces of equipment between us, a corn-planter, a grain drill, a combine—items that you don't use very often but it's

really too expensive to own one yourself. In some instances those [arrangements] don't work, but we've been fortunate in our case it has worked. Then there are other odds and ends of equipment that you know who has it in the community and someone will do a little bit of custom work if they have an item that someone else doesn't have. So it helps to fill in the voids.

Other farmers confirmed the value and practical utility of such arrangements, often pointing to the social capital inherent in such co-operation, and to the positive and valuable informal relationships that develop through such shared use of equipment:

One Nova Scotia farmer described a land-sharing arrangement he has that helps him achieve a good crop rotation:

For instance, if we want to grow 100 or 200 acres of carrots and we want to have a rotation (we're looking at a three-year rotation), we'd have to have 600 acres and we don't have that land base. We work with a few other farmers growing different crops and share land. We're involved with four farmers and we exchange land so that we can keep a good rotation in our crops and that's vital in our vegetable production. We just couldn't grow the crops we do without it. We meet in the fall. We're connected with the Brands who grow broccoli and the Vermuelens with lettuce and then grain. We've got a four-year rotation right now.

Two Nova Scotian women who operate a small retail organic food and farm supply store reported having created an informal supportive network with others around the province who have similar stores. They described how they help each other:

We're [both women who run stores] trying to encourage people to shop locally. We promote them [their store] and they promote us [our store]. We provide her with product from the farm. They have pitched in with us when we have a shortage, like one week when we didn't have enough dairy. We're trying to establish community. If we can meet maybe once or twice a year and then keep up contact by e-mail and phone and find out what each other is doing, then we have a bigger voice.

And a Nova Scotia farmer recalled her childhood:

[Farming] was a community effort. I remember making hay when it was threatening to rain. Dad would get his hay in the barn and he wouldn't even unhitch the horses, he would go straight to the neighbours without being asked or expecting pay. You just did it, because the neighbour's hay needed to go in the barn.

Illustrating the value inherent in social capital, interviews in both Nova Scotia and Prince Edward Island pointed to key benefits emerging from such co-operation. Examples of three such benefits follow.

Social Networks among Producers

One Nova Scotia farmer reflected on the bonds among farmers that she recalled as a young farm wife in rural Nova Scotia, as epitomized by a radio show at the time:

The CBC Radio Monday night ‘Farm Radio Forum’ was popular with farmers in the 40s and 50s. It was something that made farming worthwhile for me. You’d gather in someone’s house to listen to the radio program and have a discussion. We took notes about the discussions. Those were sent in to the program. Then the next week they would have a report on our opinions. It went on into the 50s. That’s when everybody in this neighbourhood was a farmer—or nearly everybody. Now you just have three or four. I can’t see them sitting around a table listening to a program like that. One program in particular was about The Value of a Farm Wife. It was all worked out—like as if you had to pay her to make your meals, do the housework take care of the kids—what it would be per day. It might have been \$69 a day, which was a lot then.

She recalled:

That sense of community and the idea that one person needs another. Barter was a good way to pay for things when cash was in short supply. Labour wasn’t in short supply. But now everything’s money, money. That was one thing about the Farm Forum—it really brought the community together. You would go to a different person’s house every week. They went after their chores were done. And there was the social part. You would have a little lunch and tea.

Speaking with One Voice

A farmer in Prince Edward Island reflected on the greater power and influence that come with co-operation. At the time of the potato wart crisis, for example, he recalled that the Potato Marketing Board was the ‘voice’ for the potato industry, representing the producers, and presenting a united message and negotiating body with all the other players like CFIA, the U.S. Department of Agriculture, and Agriculture Canada.

He noted that the Hog Board, Milk Marketing Board, and Cattleman’s Association all have consumer promotion programs that emphasize education and increased usage of product, with each producer contributing a portion of proceeds from animals marketed that then goes into promotion. On their own, he remarked, each producer could not provide the materials needed to promote their products or to achieve the significant impact that occurs when they all contribute a small amount. From such observations, the farmer had concluded that power lies in co-operation and in speaking with a single voice on issues.

Sharing Information

According to one Nova Scotia fruit grower:

The Nova Scotia Fruit Growers' Association (NSFGA) orchard tours are an excellent example of sharing information. In the 1920s, orchard tours would be a week-long event complete with campfires and singing in the evenings. Now they are one-day group visits to 3–4 orchards in the morning, and another 3–4 orchards in the afternoon with a picnic lunch and evening BBQ. The tour is an opportunity for exchanging lots of technical information and for discussing orchard problem-solving. There is also a NSFGA meeting in the spring called Woodville Workshop, where growers get to talk and information is shared. There are pest management workshops, usually through the winter. I think they just need a place to meet and talk.

Another Nova Scotia fruit grower described being part of a group of fruit growers that is working together to make the transition to organic production:

The neat thing about the group is that it's being chaired by the head of Tree Fruit Production of the local research station, Charlie Embree. And they've got most of the scientists that work in the apple field sitting on it. And while a lot of these people don't have too much connection to organic farming, they have a lot of knowledge of conventional practices and historic practices and access to a lot of data base material through research that's being done on organic apples in other areas. So it's a lot of resources and a lot of knowledge and plus when you get, say 6 or 8 growers in the same room, you've got a lot of heads working on a problem, there's a really good chance that somebody is going to come up with an idea, more so than just yourself.

One Nova Scotia farmer spoke directly of the educational value of farmer gatherings. He said: "We have a meeting scheduled for next week, where we're going to discuss anything new that's been learned over the winter, [and] if anybody has any questions." As another farmer noted, this model for sharing information is not new among apple growers:

In conventional apple farming, quite often in the summer they have what they call twilight meetings, which is the apple growers would go to a certain guy's farm after supper and they'd have a meeting, look at his orchard, and discuss problems that would be coming up that time of the year. And the apple growing community has always had a bit of that.

Another Nova Scotia farmer affirmed the value of formal organizations in this information sharing process:

The local Federation of Agriculture is a good group for sharing information. Because of the active agriculture in his area, this group tends to have people who are involved in a lot of different, bigger boards and other federations. Information is brought back to the local federation and provides good fodder for informal discussions.

Measuring this Indicator

There are a number of possible ways to measure the degree and level of co-operation among farmers:—beginning with a simple listing and counting of agriculture-related co-operative businesses and observing trends over time; and listing and counting agriculture-related organizations in general, like growers associations and production and marketing organizations, while again noting the changes over time.

At the farm level, a survey could be developed—perhaps as part of a larger survey assessing the different forms and levels of social capital in rural communities—to ask about the different kinds of co-operation happening among producers, and about the time devoted by farmers to co-operative activities. Such surveys would have to be followed up every few years to determine changes over time and to assess whether levels of co-operation were increasing or declining.

Finally—since the GPI is not only an indicator system but aspires towards full cost accounting measures—it would be most valuable to assess the actual economic and financial benefits that derive from co-operative ventures, and whether such benefits are increasing or declining over time. For example, such an accounting would ask questions like these:

- If farmers once worked together to collect mussel mud to fertilize fields, what benefits derived from such co-operation, and if they no longer do so but instead buy fertilizer individually, what costs and benefits accrue from such a change?
- Does land swapping enhance fertility rotations, and, if so, what is the financial benefit derived from such arrangements?
- If farms work together to share equipment in a way that prevents each farmer having to buy his or her own combine or other machinery, what savings derive from such co-operative arrangements?

In sum, there are a number of different dimensions to assessing the degree and level of co-operation among farmers, several of which are, at least in principle, measurable. Needless to say, there are also elements and benefits of co-operation that are more difficult to quantify, including the social and psychological supports that so many farmers emphasized in the 2003 farm interviews referenced above. But the three measurement methods suggested above can at least point towards such deeper benefits, with survey methods carrying considerable potential to ask directly about levels and types of social support (as for example in Statistics Canada's 2003 General Social Survey on Social Engagement).

Co-operation between Producers and Consumers

Another way that social capital can improve farm viability is through the personal and social bonds developed between customers and the farmers who sell their produce directly to them in retail situations at farmers' markets or at the farm gate. People who make the extra effort to buy directly from farms and farm markets frequently do so because they enjoy certain benefits, possibly including quality characteristics (produce freshness, free-range animal products, etc),

direct connection with the producer, and the knowledge that their dollars will have a positive impact locally. Growers who market directly may also derive benefits from knowing their customers directly, and they may be able to earn more from the products they sell than they would by selling to wholesalers, stores, and supermarkets.

There are many other informal ways that consumers and producers can support each other. To cite just one recent example, a farm called up its farm-gate customers during an electricity outage to request their help in keeping their meat stock frozen by lending space in their town home freezers where electricity had been restored. Comments from the GPI farm interviews in 2003 (Scott et al. 2003) give an idea of what farmers are looking for in such co-operative relations with consumers.

One farmer in Prince Edward Island remarked that non-farmer interest in farming is important for farm viability and is indicated by attendance at events such as Open Farm Day. She observed that Island farmers are very pleased to have a grassroots working committee that includes non-farmers that has the promotion of farm industry as its mandate.

Another Island farmer observed: “It’s a circle: the consumer has an opportunity to see how things are done on a farm and gains confidence in buying products produced locally. Farms are encouraged by consumer support and are more likely to produce high quality products.”

And another commented that particularly today, when farmers often feel “beaten up” by financial and economic challenges, regulations and more, they feel real pride when they hear consumers say they have faith in farmers and in what they produce. He noted that farmers value that connection and would not want to destroy that “trust” under any circumstance. Indeed, several interviews emphasized that this sense of trust is a strong contributing factor to farmer satisfaction altogether, confirming evidence in the emerging social capital literature that effective social bonds and networks are characterized by trust.

One Nova Scotia farmer commented: “In Europe, food producers are valued quite highly and get more respect [than in Canada]. The Dutch value their farmers, especially after the war and having to rely on other countries for food.” Another remarked: “Many farmers just want recognition of the value of the work they do from the general public.” And yet another said: “Customers who demand local product in the store are critical. People who cook at home instead of eating ‘ready meals’ are critical.”

A Nova Scotia tofu producer reported that she sells a lot of her tofu and tofu products at the Halifax Farmers’ Market, where her customers trust her to provide high quality, freshly made tofu. She remarked that her customers also know that she tries to keep her prices down, and she reported that she gets a lot of positive feedback from her customers, which in turn keeps her going.

Another Nova Scotia farmer attributed strengthening farmer-consumer co-operation to a gradual learning process in the general public:

The more times you have instances like this SARS epidemic, or the mad cow instance, people start to subtly think more, or they learn more about how they live, what they eat, how the way they live causes other animals and plants to be grown for them to eat. I think people are starting to figure some of these things out.

A survey of Canadian farmers (Martz and Brueckner 2003) found they often feel a lack of support from urban dwellers, who want cheap food but at the same time expect farmers to work to their demands. Surveyed farmers frequently commented that urban people lacked commitment to buy local goods and needed to be educated about the importance of agriculture and the benefits it holds for society.

Since 2003, a number of initiatives in Nova Scotia and PEI have promoted the consumption of locally produced food, but it still remains to be seen whether these initiatives will actually increase local food consumption and positive connections and understanding between farmers and their customers. Unfortunately the ‘buy local’ initiatives were not accompanied by any monitoring of progress or systematic results-based evaluations of their actual impacts, nor were large retailers like Sobeys and Atlantic Superstores under any obligation to adhere to any new guidelines. It is precisely in order to monitor the effect of such initiatives that new indicators like those in the GPI are urgently required.

In this case, regular monitoring and reporting of the proportion of consumer shopping baskets comprised of locally grown and produced goods would constitute one of the most important GPI indicators of a viable agricultural system and a sustainable economy altogether, if data were only reported. Indeed, this indicator is measurable and readily quantifiable, particularly since sophisticated, computerized check-out systems based on itemized bar codes now record every item sold in supermarkets. Without such trends over time regularly reported, there is no reliable and consistent way to tell whether “buy local” initiatives are having the desired impact. Such reporting could ensure that well-intentioned and even costly programs effectively enhance farm community viability.

There is a strong social capital component to local food initiatives. In the U.K., for example, Brown et al. (2002) found that local food goes hand in hand with trust and social connection. There are bonds between producers working in co-operation with other producers and with local retailers and hoteliers, and between producers and consumers in the case of direct ‘face to face’ sales. They also found that more than twice as many local food businesses have direct contact with all or some of their customers, compared to non-local food businesses (74% vs. 35%). In this way, local food serves to increase social contact between both similar and diverse groups of people, thus strengthening both bonding and bridging social capital.

Analysts have observed that putting a face to a product is an important contributor to learning, understanding, consumer satisfaction, and social capital (English 2001). An overview of Maine Farmers’ Markets, for example, found that customers genuinely like talking to the person who grows the food. At the Portland Public Market, to cite one revealing anecdotal episode, sales of Skylandia Farm’s products were never as good in February and March as the time Skylandia farmer Jim Cook spent a single day at the market, talking with customers. “We tried for three

years to get away from this gruelling road schedule [of direct marketing],” he said. Then he ran into a Vermont farmer who said, “You can’t. You have a story to tell, and nobody tells it like you do.”

In the same overview (English 2001), grower Paul Volckhausen is cited as reporting that at the co-operative where he sells, each farmer has to work in the retail stand for part of each week. In the past, he has usually sent an apprentice or other worker from his farm. But this year he has had to go himself, and “the customers loved it,” he says. “They asked all kinds of questions.”

Measuring this Indicator

There are a number of possible ways to measure the degree to which farmers and consumers are connecting in a meaningful way. It is possible to begin by listing and counting the number of farmers markets and vendors over time in a given jurisdiction, as well as the dollar value of business done at farmers markets. Further, Statistics Canada could add some questions to its household surveys to find out the proportion of respondents buying directly from producers as well as the socio-demographic profile of these buyers.

In addition, it is possible to track and report public attendance at Open Farm Days, farm and agricultural exhibitions, and agricultural fairs over time. Some work has already been done in this area in both Nova Scotia and Prince Edward Island. Thus, attendance at Open Farm Days—one particular day each fall when an organized number of farms throughout Atlantic Canada are open for visitors—is known to be on the rise. In PEI, the first Open Farm Day in 2002 counted over 4,000 visits.⁶⁸ In 2007, over 7,200 visits were counted on 20 farms.⁶⁹ In Nova Scotia, more than 8,000 visits were recorded to 46 farms in 2004.⁷⁰ In 2007, the number of visitors rose above 10,000 people, but the number of participating farms went down to 40.⁷¹

As well, and perhaps most importantly, there are several potential indicators of local food use, such as monitoring the percentage of locally produced food in consumer food baskets—data that are available through analysis of computerized check-out records kept by stores and supermarkets, as noted above. Additionally, it is possible to monitor the degree to which companies and large institutions (like schools, universities, hospitals, and government agencies) buy local; it is possible to assess changes in supermarket policies on sourcing food locally; and consumer surveys can assess the extent of consumer knowledge about locally grown and produced foods and where to obtain them.

As well, local food prices can be compared to analogous imported food prices, with the degree of disparity serving as a useful indicator of whether local food purchases are sufficiently supported and encouraged, and whether ‘buy local’ campaigns are actually likely to change consumer habits. All such indicators, and more, have been tried and tested, and can readily be used to

⁶⁸ PEI Department of Agriculture and Forestry. 2002. *Corner Post* November (25)9:2.

⁶⁹ www.peiagsc.ca/cgi-bin/whatsnew/newsevents.cgi (accessed December 28, 2007)

⁷⁰ www.gov.ns.ca/news/details.asp?id=20050920001 (accessed December 28, 2007)

⁷¹ www.gov.ns.ca/agri/agaware/openfarmday07B.shtml (accessed December 28, 2007)

evaluate the success and effectiveness of buy local initiatives and campaigns, as well as the degree of consumer and institutional commitment to local food.

Needless to say, there are major challenges of definition as well as methodology and application—such as in defining “local.” For example, “local” has been variously defined in terms of either driving distances or distances ‘as the crow flies’ with varying standards (50km, 100km, 220km or miles, etc.), or in terms of jurisdictional boundaries (a province or region) or ecosystems (sometimes called ‘agrisystems’ or ‘foodsheds’). But jurisdictional boundaries can be so large in the case of many Canadian provinces that the meaning of “local” can be easily eviscerated. There are other complications. As one description notes:

Where local food is determined by the distance it has traveled, the wholesale distribution system can confuse the calculations. Fresh food that is grown very near to where it will be purchased, may still travel hundreds of miles out of the area through the industrial system before arriving back at a local store.... Often, products are grown in one area and processed in another, which may cause complications in the purchasing of local foods.⁷²

Despite these and other challenges, indicators of local food usage, such as those noted above, have been developed. To give just a few examples: Berea College in Kentucky tracks the proportion of food purchased by the college that is produced in Kentucky. It reported an improvement from 6% to 11% between 2002 and 2004, with out-of-state purchases declining proportionally from 94% to 89% of the total. The college set a performance goal aiming to attain 30% regional food purchases within five years and 50% in ten years.⁷³

For comparison purposes it also reports on what other select U.S. colleges with a commitment to local food purchases are doing. Thus it notes that Hendrix College in Arkansas increased regional food purchases by 20% in six years, and that Middlebury College has relationships with 30 local vendors, with 10% of its good is grown or processed in Vermont. The University of Northern Iowa formed a purchasing power alliance with ten other local food buyers who together have now spent more than \$600,000 on local food purchases. And 19 colleges and universities including University of Portland (Oregon), Albertson College (Idaho), and Macalester College (St. Paul, Minnesota) contract for food services with Bon Appetit, a company that emphasizes cooking from scratch with seasonal, locally grown foods.

Such initiatives can be models for universities, school boards, hospitals, companies, government agencies, and other organizations and institutions in the Maritimes. Primarily because of supply management in the dairy and poultry sectors, Maritime universities are generally doing very well by the standards and results reported above. For example, Mount Allison University in Sackville, New Brunswick, currently purchases 33% of its food from local sources, and Dalhousie

⁷² “Local food—Definitions of ‘local’” from Wikipedia, the online encyclopedia. Available at http://en.wikipedia.org/wiki/Local_food#Definitions_of_.22local.22. Accessed 5 July, 2008.

⁷³ Berea College, Ecological Indicators of Sustainability. See Indicator 19: Regionally Produced Food. Available at: <http://www.berea.edu/sens/indicators/indicatorssideshow/documents/Indicator%2019.ppt>. Accessed 5 July, 2008.

University stands at 29%.⁷⁴ The large impact of supply-managed sectors on these statistics indicates that sectoral monitoring is required for local procurement measures in this region. For example, it will be important to know what proportion of fruits, vegetables, and beef are from local sources.

Other efforts have tracked the degree to which supermarkets themselves are committed to sourcing food locally. In the United Kingdom, for example, the International Institute for Environment and Development tracked “supermarket progress towards a greener and fairer food system” by questioning ten supermarket chains about their policies. As one of its key indicators (4.1) it assesses company policy on sourcing food according to four criteria:

- *Source*: Identification (with verification) of the farmer/supplier from within a defined locality
- *Distance*: Description of the distance the food has travelled
- *Distribution*: Description of the degree to which the product is stocked across the store network in a region or county
- *Seasonal*: Degree to which seasonal and locally distinctive products are stocked at appropriate times.⁷⁵

Again, such assessments and regular tracking and reporting of food sourcing policies at Sobeys, Atlantic Superstore, Co-op Atlantic, and other major food retailers would be extraordinarily useful in this region.

It is also possible to assess trends in consumer attitudes towards local food and their degree of knowledge about local food and where to find it. In the U.K., for example, a detailed Mintel Group survey examined attitudes towards 'local produce,' practices of British consumers in making or not making local food choices, and knowledge about local food. It found that four in ten adults were oblivious to where the food they buy comes from, one quarter claimed a commitment to buying local foods—to support the local economy and/or because they believed the food was fresher, and 14% did not know where to obtain such local produce.⁷⁶ Again, an analogous survey in the Maritimes would be most useful.

In sum, there is no shortage of potential means to measure, assess, and monitor the degree of commitment, understanding, and actual buying patterns associated with local food, which in turn can be an excellent indicator of producer-consumer relations and thus of the strength of social capital in the agricultural sector, as the earlier evidence indicates.

⁷⁴ Mount Allison and Dalhousie statistics provided by Marla McLeod, Ecology Action Centre, based on meetings with the food service providers of these universities. Personal communication. June 2008.

⁷⁵ International Institute for Environment and Development. 2002. Tracking supermarket progress towards a greener and fairer food system. Indicator 4.1. Available at: http://www.racetothetop.org/indicators/module4/page_2.htm. Accessed 5 July, 2008.

⁷⁶ Mintel Reports. Attitudes Towards Buying Local Produce - UK - January 2003. Summary of key results available at: <http://reports.mintel.com/sinatra/reports/index/&letter=1/display/id=2169&anchor=a2169>. Accessed 5 July, 2008.

Relationships between Producers and Community

In addition to networks of relationships among farmers and between farmers and consumers, there would, ideally, also be close and supportive relationships between farmers and the people in their communities. While such farmer-community relationships are even more challenging to measure than the producer-producer and producer-consumer networks discussed above—largely because they are less likely to be market or industry-based—it is still most important to track them to the degree possible, as the following comments from the 2003 GPI farm interviews show.

Indeed these comments clearly indicate that producer-community relations do have a market impact and a direct influence on the viability of farming: If such relations are in an overall state of decline, then it will literally be more difficult to farm. If, on the other hand, a good understanding exists between farmers and their wider communities, substantial direct and indirect benefits can flow in both directions.

In the Prince Edward Island farm interviews, a number of producers said they call neighbours before spraying or spreading manure, and they remarked that they also avoid spreading manure on weekends—since these are issues of particular sensitivity that could cause annoyance to neighbours and potentially sour relations if not handled carefully and with consideration. The issue also arose in the Nova Scotia interviews. One Nova Scotia farmer reported:

At first we had a liquid manure system in our barns and of course, it had an effect on the community. Especially under certain weather conditions, other people would have to suffer with us and some suffered more than we did because the wind would be blowing their way. When I was in Sweden I saw that there is a better way to [deal with the manure], so we changed [the manure system], along with the [hog] housing system.

Because there are clearly some potentially adverse mutual impacts—of which manure smells and spraying are among the most sensitive—several interviewees in both Nova Scotia and PEI indicated that good farmer-community relations could not be taken for granted but required work and effort. As one Nova Scotia farmer reported:

I work hard at keeping relationships on an even keel by doing things for our neighbours like snow plowing or helping out in other ways. I figure that I impose on them in many ways, like stinking up the place every once in while, slowing down traffic with my tractor and machinery, so I like to keep relationships good.

Several interviewees referred to other special efforts made by farmers to reach out to members of their communities. One PEI farmer reported:

Working on the PEI Agriculture Awareness Committee is a pleasure, not a chore. It is a real team effort. For rural communities to survive, it is important to work with the urbanites who are moving in. Neighbours make such a difference [that it's important] to

help with the connection to the land by welcoming new people to communities and helping them become a part of the history in the making.

The interviewees gave many examples of very specific actions taken to create, maintain, and strengthen producer-community relations, including staging events that increase learning and understanding while at the same time providing enjoyment and opportunities to socialize. For example, farmers reported that community businesses give prizes to their 4-H Club public speaking winners; local stores purchase Easter Beef at inflated prices to support their local farmers; people from within a radius of about 25 km around Winsloe United Church buy tickets for the annual roast beef supper hosted by area farmers; and the Crapaud Exhibition tractor pull attracts more participants and spectators every year.

Several farmers had anecdotes that illustrate that some people, at least, really appreciate what farmers do. Typical of such stories is the following from a Nova Scotia farmer:

I was out here one morning with the cows, and the mail driver delivers the paper, and he stopped, and I was talking to him for a minute, and he asked me about the farm, and he said, ‘you’re a tough bunch, I don’t think people realize how hard you have to work’. So, that was good to hear.

Another Nova Scotia farmer described how people in her community rallied around her on the farm when her husband had to go away for a few months to do a contract:

I’ve been able to draw on my wonderful neighbours and family and friends to pick up the slack. We’ve hired a couple of young students, and they’re very enthusiastic and helpful and eager for the work. My family lives nearby and my Mom chips in with the childcare and whatever she can do. And my Dad is the jack-of-all-trades, mechanic guy to keep things going in that respect. And the neighbours came by and said, ‘you just have to ask. Give us a call.’ They keep checking in on me with little phone calls and visits to make sure I’m coping fine, [like] offers to take the kids to the beach, since I can’t get away as much as I’d like to from the farm. We’ve certainly got a wonderful support system there, and that’s crucial.

However, not all interviewees felt that farmer-community relations were prospering, with some expressing concern that a decline in public knowledge about farming and about the source of food was eroding understanding. This concern is confirmed in other studies. For example, Campbell (1994) cites a Kings County pork and poultry farmer who said: “People are getting farther and farther away from understanding the farm. Everyone used to have a grandfather on the farm.”

In order to assess the level of understanding between PEI farmers and residents, a 2002 PEI Federation of Agriculture survey interviewed 25 farmers and another 100 randomly selected residents about their opinions on agriculture in PEI. Some key results from both the farmer and public surveys, as reported on the PEI Federation of Agriculture website (www.peifa.ca), are

provided in Table 15 below. Results reflect the percentage of respondents agreeing with the listed statements, and the major public concerns identified by respondents.

Table 15: Responses to PEI Federation of Agriculture Survey, 2002

Farmer survey	
Statement	% agreeing
Farming is an important part of the PEI economy	100
Food produced on PEI is safe to eat	100
Agriculture on PEI does not enjoy a positive public image	73
Agriculture industry needs to improve its public image	100
Farmers undertake activities on their farms which have a negative impact on their neighbours	27
It is important to farmers that the public understand and accept the things they need to do on their farms	100
The most overwhelming public concerns regarding the industry: Pesticides and pesticide use; Water quality; Odour	
The most valid public concerns: Soil erosion; Pesticides; Water quality	

Public survey	
Statement	% agreeing
Agriculture is an important part of the PEI economy	90+
Agriculture is a good place for government to invest public funds	80+
Food produced on PEI is safe to eat	80+
The school curriculum should include information about agriculture	80+
Farmers want the public to understand and accept the things they need to do on their farms	80+
Farmers should be able to undertake activities on their farms with no interference from their neighbours	70+
Farmers undertake activities on their farms which have a negative effect on their neighbours	41
Food safety is a concern	78
Most of the food available at the grocery store comes from Island farms	46
<i>Water quality</i>	
- Water quality is adequately protected on PEI	15
- Commercial fertilizers, pesticides, and manure runoff contribute negatively to the overall quality of drinking water	nearly 70
- There is an excess of soil washing into island watercourses	92
<i>Soil conservation</i>	
- Soil is part of our public wealth	92
- Current farming practices are a threat to our soil	41
- Potato production erodes Island soils excessively	61
- Most Island farmers undertake soil conservation practices on their farms	57
<i>Pesticides</i>	
- Pesticides are a necessary part of modern farming	48
- Pesticides, when properly applied are not a threat to public health	52
- Pesticide use impacts the environment	78
- Pesticides are affecting the health of your family	29
- Everyone who applies pesticides is trained in the proper application methods	61
- PEI farmers could prosper by engaging in organic production	84
A mix of farm and forest creates an attractive landscape and an attractive landscape is good for tourism	80
Current agricultural practices are reducing the attractiveness of the landscape (land clearing and soil erosion—specifically runoff—identified as the culprits)	Significant proportion

Source: PEI Federation of Agriculture. Available at www.peifa.ca. Accessed December 2003.

Fifteen percent of respondents in this public survey agreed that land use practices in their community were having a detrimental effect on the enjoyment of their property, citing manure spreading and pesticide application as the most common detrimental activities. However, substantial majorities of respondents agreed that they were prepared to tolerate a certain amount of odour from farming practices and that farmers manage odour to the best of their abilities, with 61% agreeing that farmers follow strict guidelines for the handling and spreading of manure.

Ninety-two percent of respondents agreed that livestock on PEI are raised humanely, but fewer than half (47%) agreed that burning for blueberry production is an acceptable practice. As the areas of greatest concern in the agriculture industry, respondents overwhelmingly cited the following issues: water quality/ preservation of the Island's water resources; pesticide use; and soil conservation. A significant number of respondents (though fewer than those citing water, pesticides, and soils) also considered odour to be an issue of major concern to them.

A follow-up to this 2002 PEI Federation of Agriculture survey would help to track whether and the degree to which attitudes are changing or shifting over time. Based on information gleaned from the 2003 GPI farm interviews, however, it would be useful to add some questions specifically concerning ways in which PEI communities *appreciate* farmers in addition to the questions that in 2002 focused primarily on problems and issues of concern.

Illustrating the kinds of activities and farmer-community relations that currently receive insufficient attention and that require survey data, a letter to the editor written by Darlene Sanford, President of the PEI Cattlemen's Association clearly describes an example of community support that is highly relevant to current challenges in the agriculture industry.⁷⁷ In the letter she describes how a business and a community organization responded to low prices for beef and pork:

- Canadian Tire stores and Canadian Tire's Foundations for Families donated \$19,700 to the food bank and Salvation Army Family Services specifically so that they could buy locally produced beef and pork.
- Canadian Tire dealers Boyd Jeffery and Jim Watt said the money was raised through casual days, store barbeques, and the annual Christmas tree program.
- They said PEI's rural communities are suffering due to the low prices farmers are receiving for their products. They said they are very aware of the plight of local producers and wanted to show their support.
- Jeffery and Watt also increased the donation by encouraging their own staff to buy local. They offered each employee a \$100 rebate to purchase Island-produced beef or pork, which amounted to an additional donation of \$18,700, and bringing the total donation amount to \$38,400.
- "The response to the program has been terrific, and the benefits have worked their way through the fabric of the province," according to Sanford.
- Producers have benefited from the sale of their products, as well as the increased awareness the program generated.
- The PEI Women's Institute has begun a major campaign to encourage major grocery store chains in PEI to stock PEI or Maritime-grown products in their stores.

In sum, in addition to the very important questions on public concerns like water, pesticides, soils, and odour that dominate the 2002 PEI survey described above, it would be interesting to add questions on public understanding of farm economic viability, and on community actions that express support for and appreciation of farmers' work and contribution.

⁷⁷ Sanford, D. 2004. Islanders help when neighbours are in need. Letter to the editor. *Farm Focus*. May 26, 31(10):4

Quality Relationships (Equitable, Trusting, Understanding)

As noted in Table 14 above, we have divided potential indicators of social capital in agriculture into two categories: Potential indicators in the first category—social relations among farmers, between farmers and customers, and between farmers and the community—are described above. But those relationships should have certain characteristics and qualities in order to be effective and to contribute optimally to the value of social capital. In particular, the social capital literature indicates that the most viable, effective, and valuable social networks are those built on equitable relationships based on trust and mutual understanding. Thus, the second category of potential social capital indicators, considered in this section, constitutes an attempt to assess some of these qualities that would ideally characterize the social relations described in the previous section.

In a fascinating report, *A Strategy for the Nineties*, the PEI Cabinet Committee on Government Reform (1992) outlines what amounts to a ‘wish list’ for agriculture in PEI, based on contributions from Island farmers. Although the actual words ‘equitable’ and ‘sustainable’ are not explicitly used, the contributing farmers articulated a vision for agriculture that is in fact equitable and sustainable (p.13). For example:

- 1) They want a large number of medium sized farms: “Islanders want farm numbers to be maintained, so far as possible, and farm size to vary, with particular emphasis on medium-sized farms.”
- 2) They want specific kinds of growth: “Growth and development is important — but not necessarily growth in terms of ‘getting bigger’ and ‘producing more’. Rather, the emphasis is on growth in terms of ‘doing better.’ Growth in product value; growth in net income through higher prices and lower costs of production; growth in quality of life and a more secure future through a greater sense of control over the future, a stronger sense of pride in being farmers, environmental stewardship, and more positive relationships with society and within the industry.”

These statements, which include recognition of the value of social capital, point to a vision that is certainly not to have all farms be the same size, or every person exactly equal to the next. Rather, they indicate a farming sector that is diverse but not increasingly concentrated or polarized, in which farmers can associate as equals, the farm population is on an equal footing with the rest of society, power is shared, and farmers have ‘positive relationships’ with each other and with other Islanders. This remarkable PEI Cabinet document in effect outlines some key dimensions of the quality of relations that we here propose identifying, monitoring, and tracking.

Number of Farmers Relative to the Rest of the Population

The first aspect of quality relationships, then, is to ensure that the farm population is somewhat stable relative to the rest of the population. That goal is outlined in the PEI Cabinet document above in the statement: “Islanders want farm numbers to be maintained.” This simple (and

eminently quantifiable) aspiration actually has profound implications for social capital. If the farm population becomes too much of a minority relative to the population at large, then it is less likely that the rest of society will be exposed to farms; develop an understanding of farming; or have friends or relatives on farms. With a declining relative farm population also come declining political power and community influence, and neighbourly relations become more challenging.

As Figures 10, 11, and 12 below clearly illustrate, the farm population in Nova Scotia, Prince Edward Island, and indeed nationwide, has declined dramatically in both absolute and relative terms since the 1930s. In PEI the farm population was only 4.5% of the total population in 2001, and in Nova Scotia the farm population constituted only 1.2% of the total population (Figures 10, 11, and 12).

Figure 10: Absolute and Relative Farm Population, NS, 1931–2001

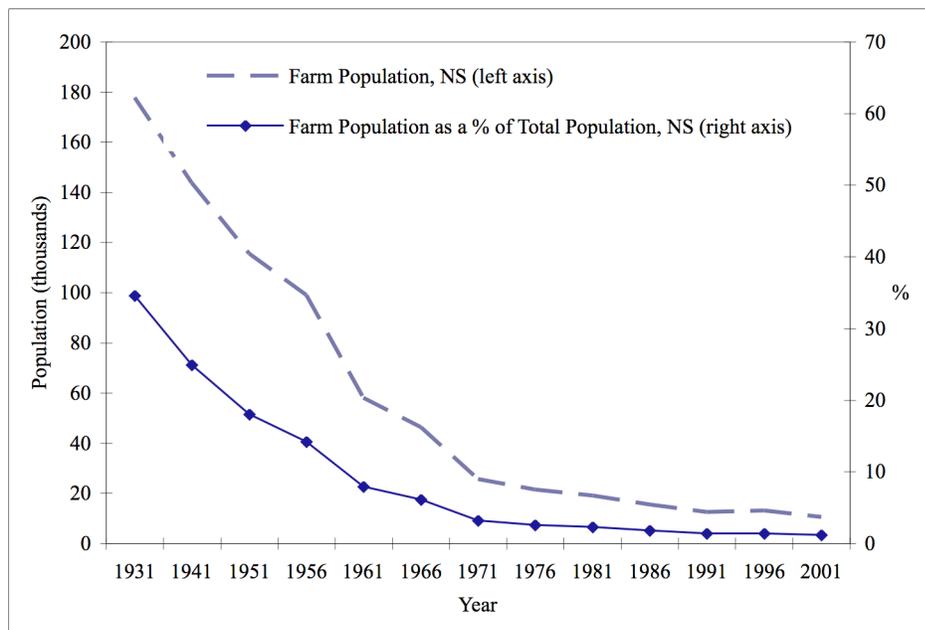
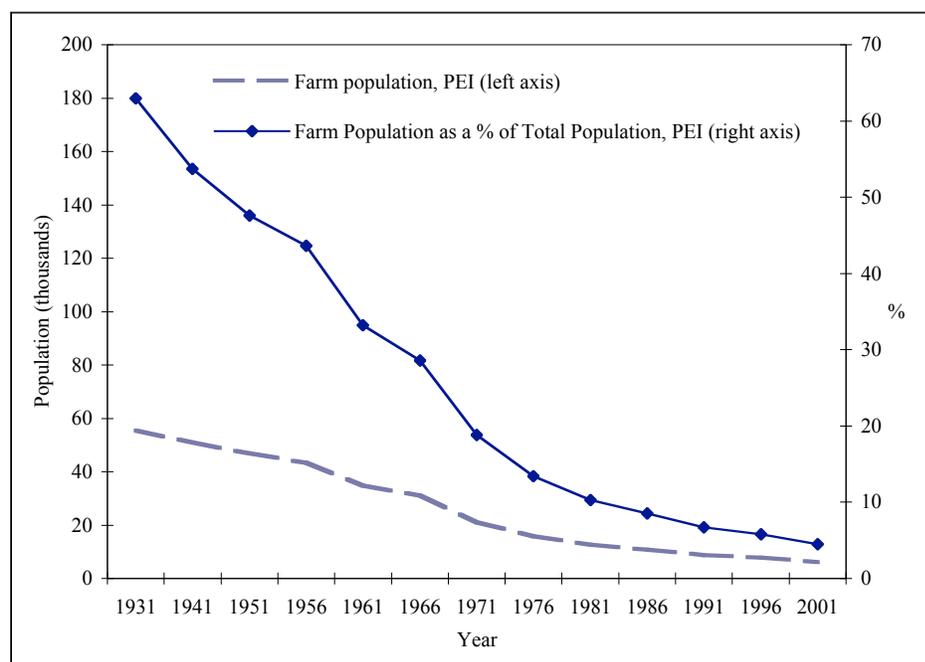


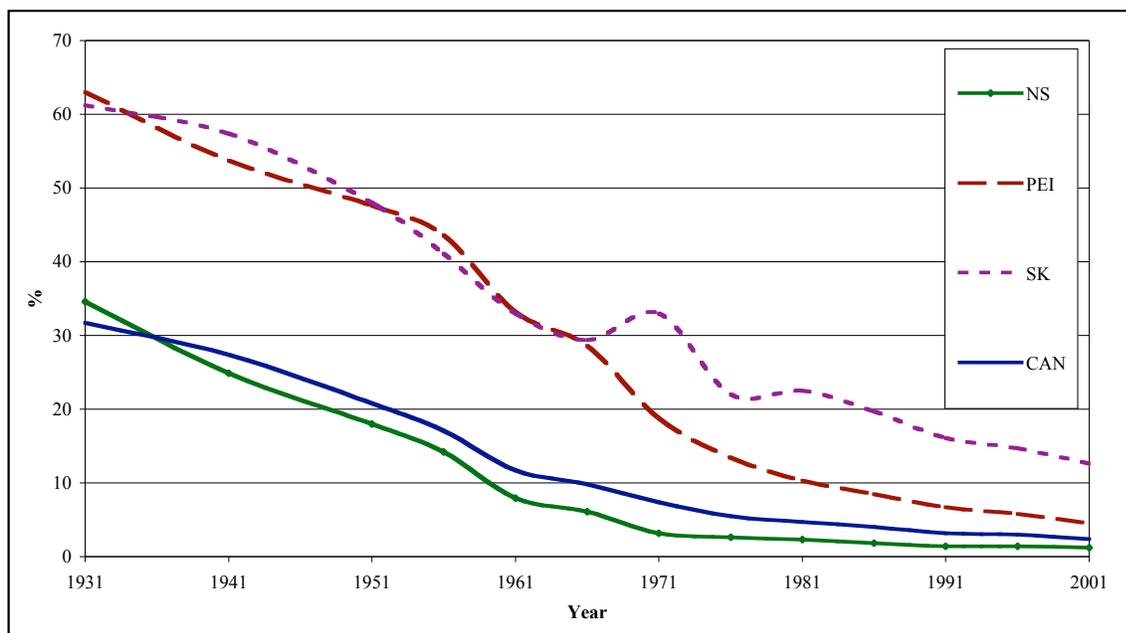
Figure 11: Absolute and Relative Farm Population, PEI, 1931–2001



Sources for Figures 10 and 11: Derived from Statistics Canada. 2001. Table 14. *Farm and Non-Farm Populations, 1921–2001*. Available at <http://www.statcan.ca/english/freepub/95F0303XIE/tables/html/agpop14.htm>. Accessed December 2003. An update of these data to include 2006 statistics will be possible after the relevant 2006 Census statistics become available on September 18, 2008.

Note: The scale of both axes in both figures is the same to make comparisons easier.

Figure 12: Farm Population as a Percentage of Total Population, Canada, NS, PEI, and SK, 1931–2001



Source: Derived from Statistics Canada. 2001. Table 14. Farm and non-farm populations, 1921–2001.

Equitable Relationships

Discussion groups were held in Prince Edward Island in November 2003 to follow up on the GPI farm interviews held earlier that year (Scott et al. 2003). In one of those discussions, one farmer said her neighbours did not offer to help her family after their barn burned down, and she was mystified by that lack of response. When she questioned one woman, she was told that no-one had helped because they (the farmers) had won the lottery (which was not true). Thus, the prevalent impression in the local community that this farm was ‘better off’ due to a false notion of lottery winnings apparently held people back from wanting to help out the farmers in a time of difficulty. The discussion group noted that the story seemed to illustrate on the one hand a lack of adequate knowledge and communication and thus a breakdown in farmer-community social relations and understanding, and on the other hand a strong adherence to equity considerations—that people were most likely to help out those they considered on an equal footing to themselves.

Another aspect of equitable relationships that came up in the 2003 GPI farm interviews was the issue of pay equity between farmers and other segments of society (Scott et al. 2003). Thus one PEI farmer felt strongly that his hard work and the knowledge and understanding of the agriculture industry that he possesses should be rewarded to the same extent as the work and knowledge of those people for whom he provides a livelihood, like his plumber, accountant, and others. He felt that he should not be taking anything less than those people who are part of his

rural community. This sentiment was echoed by a Nova Scotia farmer who also voiced the need for farmers to be paid at the same rate as other professional and technical people.

Aside from issues of pay equity between farmers and between farmers and others, a key dimension of equitable relationships is the degree of concentration and distribution of assets in agriculture. In GPI Atlantic’s fisheries accounts, Charles et al. (2002) argue that the fishery is not likely to make “genuine progress” from the perspective of social and economic sustainability unless the benefits it generates are distributed relatively equitably (for example, among the fishers themselves, among the different fleets or gear sectors within the fishery, and between the harvesting and processing sectors).

Nevertheless, concentration in the farming sector continues to grow, largely as a result of the drive to achieve economies of scale. If we want more farmers and less polarization based on farm size, as the PEI Cabinet document cited above seems to indicate, then increasing concentration in some sectors may be a concern. Although there are many benefits associated with supply management, concentration appears to be an unfortunate cost associated with the key supply-managed commodities. Thus, the dairy and poultry sectors in both Nova Scotia and PEI have seen alarming rates of concentration—with PEI poultry an extreme case (Tables 16–19).

Table 16: Concentration of Dairy Farming in NS, 1976–2006

Year	Number of farms reporting dairy	Total number of dairy cows	Average number of dairy cows per farm reporting	Farms with dairy as a % of total NS farms
2006	346	21,791	63	10.9
2001	443	23,918	54	11.3
1996	619	26,623	43	13.9
1991	818	28,913	35	20.6
1986	1,031	34,122	33	24.1
1981	1,427	36,237	25	28.3
1976	1,999	38,582	19	36.8

Sources: Statistics Canada. 1997. *Historical Overview of Canadian Agriculture*. Cat No. 93-358-XPB; Statistics Canada, 2006 Census of Agriculture, *Farm Data and Farm Operator Data*, Cat No. 95-629-XWE. Available at www.statcan.ca/english/freepub/95-629-XIE/6/6.1-10_A.htm.

Table 17: Concentration of Dairy Farming in PEI, 1976–2006

Year	Number of farms reporting dairy	Total number of dairy cows	Average number of dairy cows per farm reporting	Farms with dairy as a % of total PEI farms
2006	254	13,097	52	14.9
2001	359	14,623	41	19.5
1996	482	16,353	34	21.7
1991	649	18,318	28	27.5
1986	877	21,805	25	31.0
1981	1,176	24,106	20	37.3
1976	1,732	25,611	15	47.1

Sources: Statistics Canada. 1997. *Historical Overview of Canadian Agriculture*. Cat No. 93-358-XPB; Statistics Canada. 2006. *Census of Agriculture, Farm Data and Farm Operator Data*, Cat No. 95-629-XWE. Available at www.statcan.ca/english/freepub/95-629-XIE/6/6.1-10_A.htm.

Table 18: Concentration of Poultry Farming in NS, 1976–2006

Year	Number of farms reporting poultry	Total number of hens and chickens	Average number of hens and chickens per farm reporting	Farms with poultry as a % of total NS farms
2006	527	4,248,495	8,061	13.9
2001	560	4,084,846	7,294	14.3
1996	483	3,558,559	7,368	10.8
1991	640	3,616,704	5,651	16.1
1986	792	3,050,298	3,851	18.5
1981	1305	3,435,103	2,632	25.9
1976	1384	2,992,860	2,162	25.5

Sources: Statistics Canada. 1997. *Historical Overview of Canadian Agriculture*. Cat No. 93-358-XPB; Statistics Canada. 2006. *Census of Agriculture, Farm Data and Farm Operator Data*. Cat No. 95-629-XWE. Available at www.statcan.ca/english/freepub/95-629-XIE/6/6.5-1_A.htm.

Table 19: Concentration of Poultry Farming in PEI, 1976–2006

Year	Number of farms reporting poultry	Total number of hens and chickens	Average number of hens and chickens per farm reporting	Farms with poultry as a % of total PEI farms
2006	152	447,061	2,941	8.9
2001	169	365,182	2,161	9.2
1996	154	352,488	2,289	6.9
1991	298	429,724	1,442	12.6
1986	428	275,656	644	15.1
1981	694	222,729	321	22.0
1976	887	268,252	302	24.1

Sources: Statistics Canada. 1997. *Historical Overview of Canadian Agriculture*. Cat No. 93-358-XPB; Statistics Canada. 2006. *Census of Agriculture, Farm Data and Farm Operator Data*. Cat No. 95-629-XWE. Available at www.statcan.ca/english/freepub/95-629-XIE/6/6.5-1_A.htm.

The trends towards increased concentration and decline in small and medium-sized farms can also be seen in the steady increase in the numbers of larger farms in both Nova Scotia and PEI, with this trend considerably more pronounced in PEI than in Nova Scotia (Figures 13 and 14 below).

Figure 13: Percentage of Farms over 400 Acres, Canada, NS, and PEI, 1976–2001

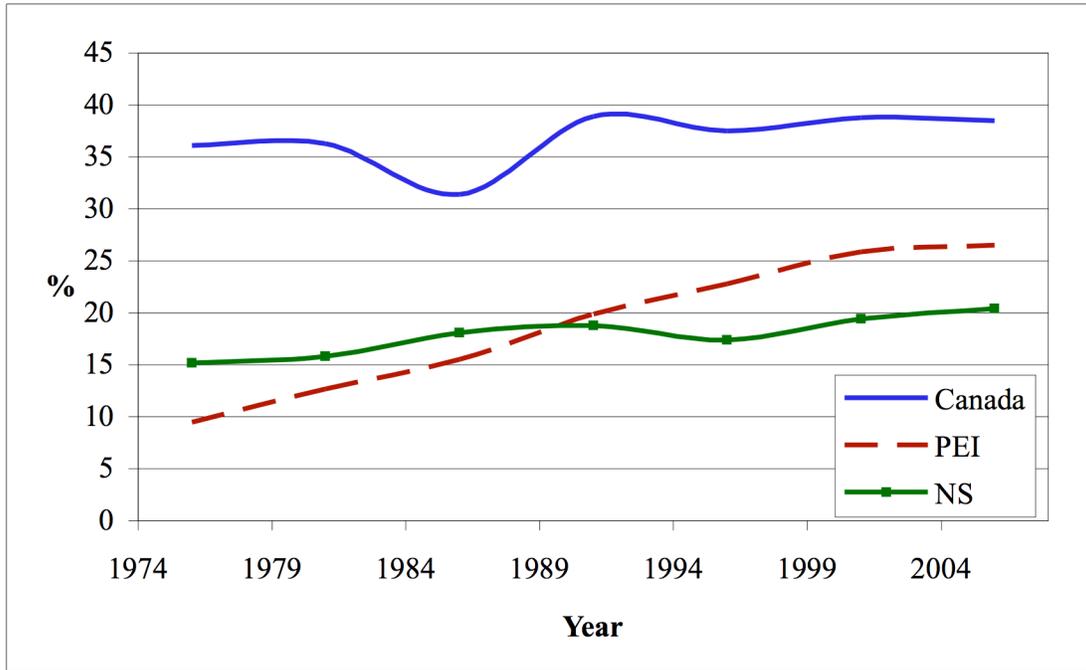
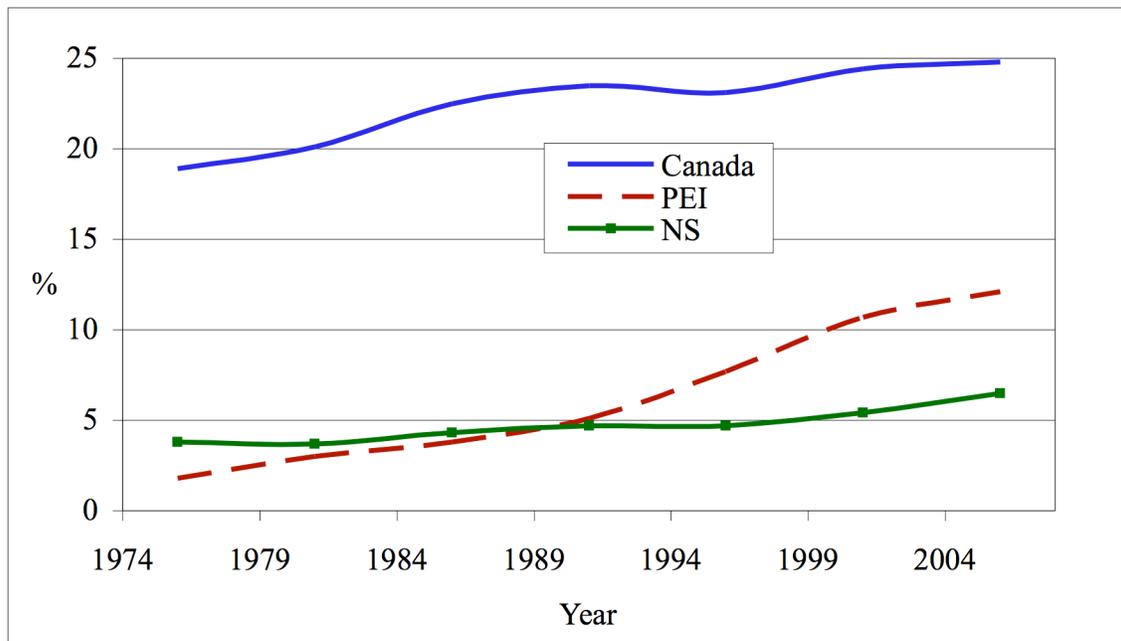


Figure 14: Percentage of Farms over 760 Acres, Canada, NS, and PEI. 1976–2001



Sources for Figures 13 and 14: Data for these two figures are derived from Statistics Canada. 1997. *Historical Overview of Canadian Agriculture*. Cat. No. 93-358-XPB; and Statistics Canada. 2007. *2006 Census of Agriculture. Farm Data and Farm-Operator Data*, Cat No. 95-629-XWE. Available at www.statcan.ca/english/freepub/95-629-XIE/1/1.3.htm.

Aside from pay equity and concentration in the farm sector, both referenced above, there are additional ways of assessing trends in equity that are relevant to the agriculture industry, including assessments of disparities both within rural and agricultural areas and between such areas and others.

For example, a Statistics Canada researcher (Singh 2002) analysed the issue of income disparity between urban and rural regions. Comparing all Canadian provinces, Singh found income disparity between urban and rural regions to be largest within Manitoba and Nova Scotia, and smallest within New Brunswick and Newfoundland and Labrador. All of PEI is classified as a predominantly rural region and thus a rural-urban income gap was not calculated for PEI in this study.

Singh (2002) also looked at trends in the incidence of low income⁷⁸ in rural regions between 1980 and 1995. Table 20 below shows the results for PEI, Nova Scotia, and Canada.

Table 20: Incidence (%) of Low Income in Rural Regions, 1980–1995

	1980	1985	1990	1995	1980–1995 Average
PEI	17.7 %	15.5 %	12.9 %	15.2 %	15.3 %
NS	17.3 %	17.7 %	15.5 %	19.4 %	17.5 %
Canada	16.2 %	17.3 %	13.8 %	16.3 %	15.9 %

Source: Singh (2002). *Rural Income Disparities in Canada*.

Despite the considerable rural-urban gaps identified by Singh (2002), Rupnik et al. (2001), also of Statistics Canada, found that within rural areas, the distribution of income is ‘more equal’ than in urban areas (Figure 15 below).⁷⁹ Comparing regions with different population densities, they found that, since the 1980s, rural areas have had the lowest degree of income inequality while areas with a population of 100,000 and over have had the highest. In other words, incomes are more equally distributed within rural areas than in more populous areas, with those earning lower incomes in rural areas not as far behind higher income earners as in the more populous areas.

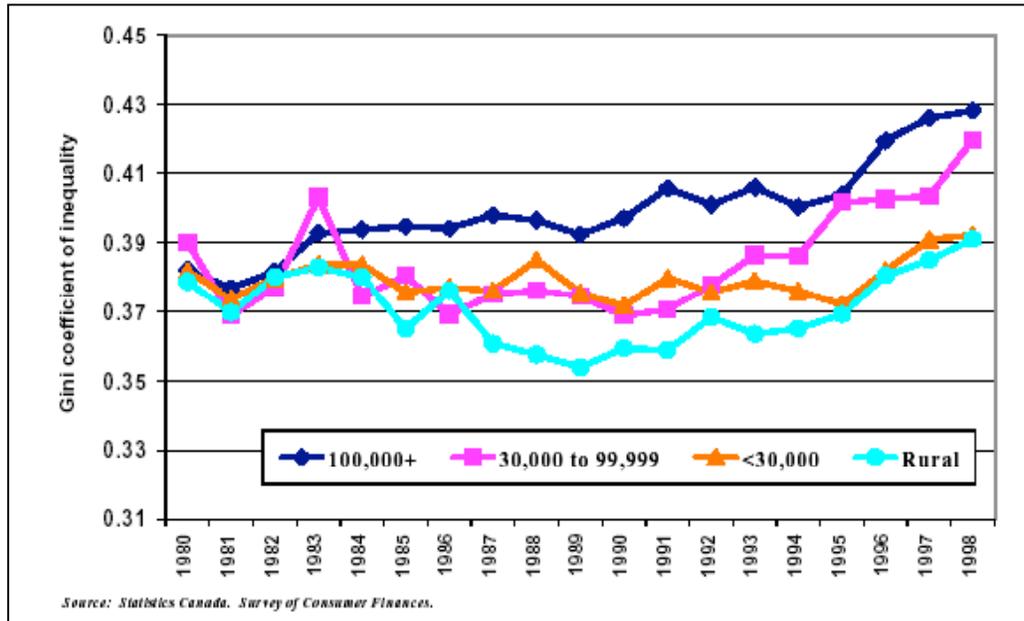
Despite the lower degree of income inequality in rural areas relative to large cities, Figure 15 also shows that income inequality has increased in all areas in Canada, particularly since the early 1990s, including in rural areas. If there is a link between equity and social cohesion, as the

⁷⁸ Incidence of low income is the proportion or percent of members of economic families or unattached individuals who are living below Statistics Canada’s main measure of low income—the low-income cut-off or LICO. See also Glossary for definitions related to ‘low income’.

⁷⁹ Using the Gini coefficient of inequality. The Gini coefficient is defined as: “A measure of income inequality within a population, ranging from zero for complete equality, to one if one person has all the income. It is defined as the area between the Lorenz Curve and the diagonal, divided by the total area under the diagonal.” From Deardorff’s Glossary of International Economics. Available at: <http://www-personal.umich.edu/~alandear/glossary/g.html>. Accessed 6 July, 2008.

literature on social capital indicates, it might therefore be hypothesized that social cohesion and the concomitant wellbeing it engenders are stronger in rural than in urban areas, but that they have declined across the country, including in rural areas.

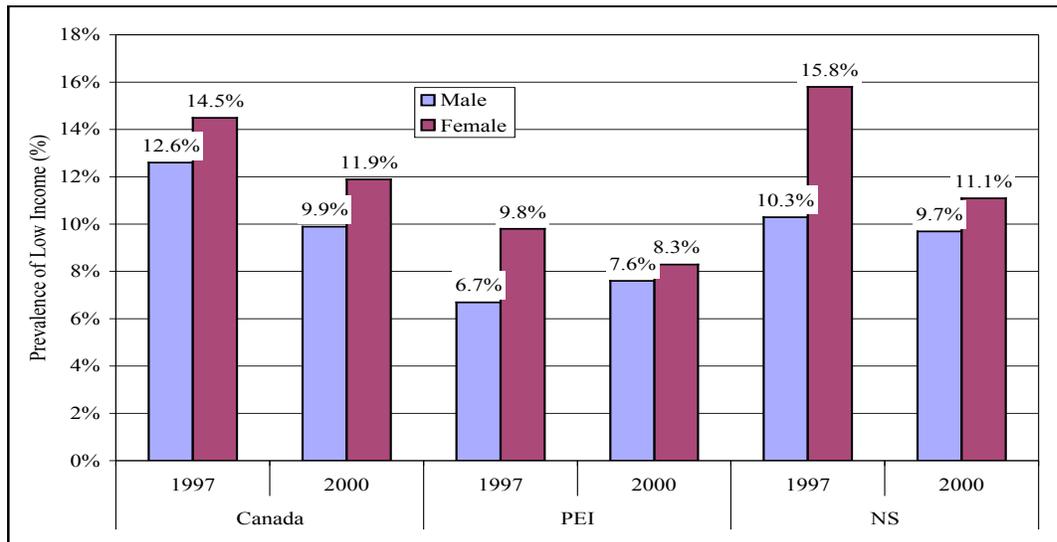
Figure 15: Income Inequality in Rural Areas, Canada, 1980–1998



Source: This chart is taken directly from Rupnik et al. 2001.

In terms of both prevalence of low income (Figure 16) and income gap (Table 21), PEI is the most equitable province in Canada. In 2000, it had the lowest rates of low income for men (7.6%), women (8.3%), and children (6.6%) in Canada (national rates—9.9%, 11.9%, and 12.5% respectively).

Figure 16: Prevalence of Low Income, by Gender, Canada, PEI, and NS, 1997 and 2000



Source: Statistics Canada *Income in Canada 2000*. Cat No. 75-202-XIE.

PEI also has the smallest income gap between the richest 20% and poorest 20% of households (Table 21 below); and between the richest and poorest 40%; and it has the country's smallest Gini coefficient (income inequality measured over all incomes, with lower numbers signifying greater equality).

Table 21: Equality of Income, Canada and Provinces, 2000

	Average Disposable Household Income Ratios, 1980–1998		
	Richest 20%:Poorest 20%		
	1980	1990	1998
Canada	8.2	7.1	8.5
NF	7.6	5.8	7.3
PEI	7.4	6.2	6.7
NS	7.1	6.2	8.5
NB	6.7	6.1	7.0
QC	7.6	6.9	7.9
ON	7.8	7.1	8.3
MN	8.8	6.7	7.6
SK	8.1	7.3	7.4
AB	9.1	7.4	10.4
BC	9.3	7.6	8.0

Source: Statistics Canada. *Income in Canada 2000*. Cat No. 75-202-XIE.

The direct relationship between the equality measures presented here and the quality of social relations requires considerable further investigation, and the above statistics are presented here simply to illustrate the kinds of data that are presently available in this field that might potentially help shed light on the equity dimension of social relations. No comparable data for agricultural and rural regions are yet available to quantify and measure the two other dimensions of quality identified in the social capital literature—trust and understanding, though emerging sources hold potential promise in these areas.

For example, Statistics Canada's Canadian Community Health Surveys ask important questions on social supports, volunteerism surveys are now conducted every three years, and the agency's first ever General Social Survey on Social Engagement (2003) asks about contact with relatives, friends, and neighbours, sense of belonging, and sense of trust within respondents' communities. Interestingly, the most rural parts of the country—Newfoundland and Labrador and Prince Edward Island—consistently report the highest levels of social support in the country.

GPI Atlantic borrowed some of these questions for its own survey of more than 3,600 residents of rural Kings County and Glace Bay, Nova Scotia, including:

- Do you have someone in your life you can really count on to help you out in a crisis situation?
- Do you have someone you can really count on to give you advice when you are making important personal decisions?
- Do you have someone who makes you feel loved and cared for?

High rates of response to such questions likely point to high levels of social capital. But it must be acknowledged that considerable further work and investigation will be required to quantify the relationships between particular elements of social support and contact on the one hand, and actual levels of social capital on the other.

Such data challenges do not diminish the importance of social capital as a key and valuable resource in agriculture as discussed in the introduction. We simply need to acknowledge that research in this field is still in its infancy, that appropriate data remain very limited, and that we therefore still know very little about the nature, dimensions, and measurement of social capital in agriculture.

Nevertheless, the best way to spur the necessary research and data collection in this area is to begin with a recognition of the importance and value of social capital, at least in qualitative terms, and of the necessity of moving rapidly towards its assessment and valuation. In fact, the evidence presented in this study leaves no doubt that social capital is as real, valid, and important a form of capital, requiring the same level of valuation and measurement, as other capitals like natural capital, human capital, and manufactured or produced capital. It has been shown to be a key basis and ingredient for effective agricultural production.

In addition to the indicators of social capital presented above, many additional potential indicators and measures of social capital in agriculture emerged from the 2003 GPI farm

interviews and could be considered in future updates of this report. These include inter-generational equity; opportunities for developing mutual understanding (bridging social capital); opportunities for people to interact (eating together, working together, cultural events such as story-telling, barn dances, and singing); and opportunities for interaction and learning with other communities.

Once appropriate indicators and measurement methodologies have been developed and agreed, and after data are collected and reported, the next step will be the actual valuation of social capital in agriculture from an accounting perspective. Ideally, that would include an assessment of the economic value of social capital and of the economic benefits that flow from its use. Clearly, this signifies a long-term process in the gradual evolution of appropriate measures of social capital—initially from an indicator perspective and eventually from an accounting perspective.

Stories Illustrating Rural Social Capital

Because all the potential indicators suggested in this study have emerged from the 2003 farm interviews in Nova Scotia and PEI, it is important to give the last word to farmers here in order to acknowledge that their experience and understanding are the basis for any analytical and developmental indicator and measurement work in the field of social capital. This section therefore concludes with two important stories related to almost all the indicators considered—both those presented in some detail above and those recommended for future development. The first story is about the development of farmer co-operatives, and the second story is about 4-H. Analysts have observed that stories and story-telling are an integral part of social capital itself and may convey profound traditional experience and understanding, so these concluding stories are presented here as told by the farmers themselves.

What follows are profiles of initiatives, new and not-so-new, that offer some wisdom about forms of social capital and co-operation that may help a farm or community increase viability. These profiles help explain the kinds of conditions and qualities inherent in each initiative (as highlighted in text boxes) that have particularly seemed to make that initiative thrive. As well, these profiles can bring to life in a human way many of the indicators discussed in previous sections by indicating that these measures are not merely conceptual but have a very practical application and reflect actual learned experience.

Two Nova Scotia Models of Farmer Co-operatives

Brooklyn Co-op Feed Mill, Hants County, Nova Scotia

The Brooklyn Co-op Feed Mill, which employs three people full-time, is described here by Bev Patterson, the mill manager, with a few additional comments from James Card, who has farmed all his life in Centre Burlington, Hants County, Nova Scotia.

Mill manager, Bev Patterson, notes that the mill is located in Brooklyn because that used to be the centre of the Hants West farming district many years ago. The mill used to be by the river, along with a co-operative grocery store and hardware store. By the late 1950s and early 1960s, the Co-op was supplying about 90% of the feeds used by farmers in the area.

James Card, a farmer in nearby Centre Burlington, recalls that the feed mill was once flanked by an active rail station, loading yard, egg-grading station, and other processing infrastructure, and he remembers that there used to be one or two carloads of farm products per week shipped out from the Brooklyn station. All of this supporting infrastructure is now gone, except the feed mill, which has been moved closer to the main road.

The co-operative principle in this case was born of necessity and came into effect simply because the farmers needed feed grains. They pooled their resources, set themselves up a mill, and bought their grains as a co-operative. Now Co-op Atlantic out of Moncton services all of the co-operative retail outlets, including Brooklyn, throughout the Maritimes, but the feed mill is still controlled by its own independent Board of Directors comprised of the farmers themselves.

Until the early 1990s, the mill manufactured bulk livestock feed. Bev Patterson, who manages the Mill, saw the potential for retailing bagged feed, and other farm supplies. He and the mill board members recognized that the mill had to change with the times because there were fewer farmers growing their own grains who needed custom milling services. To succeed, therefore, the mill had to diversify. They also saw an opportunity to manufacture their own wild bird seed mixes to replace a similar product that the Co-op Atlantic system was buying elsewhere. As a result, the mill now supplies about 75% of the bird seed needs for the Co-op stores in the Maritimes.

Why did the Mill not shut down when the supporting processing infrastructure fell

away and when the demand for custom milling services from farmers growing their own grain declined? As explained by Bev Patterson, the mill is still needed by the remaining farmers, and the Co-op has a commitment to the local farmers and to the local people who sank money into the Co-op system for years. He remarks that there is considerable loyalty there, and that so long as the mill continues to operate in the black and provide a service, it will stay.

Brooklyn Co-op Feed Mill

- Diversify according to the changing nature of farming.
- Replace imported products by manufacturing them on-site.
- The Mill shows loyalty to farmers, remembering the heritage of the Co-op and the farmers' contributions to it over the years.
- Large conglomerates have made it difficult for the co-op grocery and hardware stores to survive.
- When you take competition away, everyone suffers. When you don't support locally grown food, it will disappear, leaving fewer choices.
- Information exchange and learning are constantly happening at the Mill, which helps business and keeps the job interesting.
- Satisfaction on the job from the constant challenge.
- Word of mouth advertising works, and saves money.
- Co-operation is helping farmers pool resources and save money.

What, then is the actual role and function of the Co-op today in changed times and circumstances? By all accounts, that role is probably considerably less significant today than it was 10 or 15 years ago, when a lot of communities revolved around a co-operative store like a feed mill or a grocery/hardware type outlet. In fact, 25 or 30 years ago, there were four different co-operatives retailing feed, groceries, hardware and other necessities between Brooklyn and Truro alone. However, the larger conglomerates and chain stores have long since forced most of these smaller co-operatives out of business

In response to this trend, however, Co-op Atlantic has pooled services to achieve similar economies of scale, and is now one of the largest integrated wholesale agri-food operations in the Atlantic region. Co-op Atlantic now offers the services of a livestock nutritionist, a feed sales representative, and credit services to its clients, and it took the initiative to differentiate and sell good quality local beef in its grocery stores under the Atlantic Tender Beef label.

What is the economic impact of the mill? According to Bev Patterson, the most important consideration is that everyone suffers when local competition is taken away, and when resources become increasingly concentrated in large conglomerates. He uses the example of buying groceries:

I expect that the percentage would be very high for those who do not know [where their food comes from], and have not been taught that unless you're buying local products, such as beef, apples, pears, whatever, one day it will be gone. And of course as things like that disappear, we all pay the price one way or another.

But the economic exchange in which the mill is engaged has further ramifications, including in the building of intellectual and social capital. Thus, the Mill is considered to be a place for information exchange. For example, Bev Patterson remarks:

If I want your business back, I've got to be able to provide that service, hopefully in a professional manner, so that you will come back. ...I had questions asked of me that I had no idea what the farmer was talking about. But I went right back to the farmer, and said 'You tell me, then we'll both learn', and that's been my attitude throughout my career with co-op — is to learn. There's not a day that goes by that I don't learn something.

For Bev Patterson, his job as manager is clearly satisfying because it's challenging. He says: "When I leave my job, I don't really leave it. When I'm on my way home, I'm thinking, what could I have done better today? That's what makes me tick." He is very positive about the mill, the services it performs, and its future, and is more than willing to anticipate and respond to change to ensure it continues to provides services optimally.

Most advertising for the mill is by word of mouth. Bev Patterson says: "I think if you do a good job, it's just as effective as if you go out with the thousand dollar flyer.... I know good news takes a lot longer to travel, but when it reaches people it sticks there."

How do farms and co-operatives support each other? Bev Patterson remarks simply: “We hope to be providing the goods at the lowest cost, on a timely basis.” For example, the mill takes orders for seeds from all the farmers who are interested in buying, and compiles them into one big order. When buying en masse in this way, the price is better. All the associated costs are also reduced through such bulk ordering, including administrative, transport, and handling charges. In this way the co-op system is able to pool farmers’ requirements and resources and reduce costs.

Beyond the simple economies of scale that the co-op is able to achieve, there is also an ongoing spirit of personal service that flows from the simple reality that the farmers own the mill co-operatively, that goes well beyond what any normal commercial enterprise provides, and that—in a very real sense—keeps the operation running. Thus, as manager, Bev Patterson personally and directly helps farmers in the area where he lives reduce costs in any way that he can. For example:

When I leave at night, I put feed in the back of my truck. They pick it up in my door yard. I’ve been doing that for years. I have customers in the Kennetcook area. I bring their grains in (to the mill). When I come by in the morning, his truck is loaded with grain, I drop my truck off, jump in his truck and bring his truck to work. We mill his grain and take it back. Without that service, he wouldn’t be using our operation.

Northumberland Co-op

Mike Isenor, manager of the Northumberland Co-op, describes the birth and day-to-day operation of Northumberland. The following is told in his own words, as recorded during the 2003 GPI farm interviews:

In the late 70s there was a fairly active community of sheep producers. They came from all over the province to attend the sheep fair (a breeding stock sale). Of course, after a lot of people got into sheep, suddenly the price dropped and it was difficult to get a consistently good price for lambs at the auctions. Some weeks the price could be good, and the next week it could be devastating. Producers got together to organize something where they could control their own market and prices. One of the main driving forces behind it was Brewster Kneen. He was a great organizer and could get people enthusiastic about doing things that they thought they couldn’t do.

It was about 1980 when we initiated the Farmers’ Market Project to see if there was a market for lamb meat in Halifax. We would get 30-35 lambs butchered and cut up and take them into the farmers’ market on Saturday at 5 am. There were line-ups of people in the morning waiting to buy our lamb and we were always sold out. On the basis of that experiment, it was established that there was a demand for lamb and we should be able to organize a market for it.

Around the same time, Frank Sobey and the whole Sobey family were great lovers of lamb. Frank had just hired a new supervisor for all his meats departments from England, Ron Young. Frank took Ron in his big car and drove him around the farms in Pictou County. He used to say to Ron “why don’t we have any fresh Nova Scotia lamb in our stores? I want those lambs in my stores.” The timing was superb. Ron was very supportive of us. He wanted us to succeed.

In the beginning the problem was having a year’s supply. Traditionally people had their lambs in the late spring, and would go to market in late fall. No lambs were available from December until July. We had to work with the sheep producers to get a consistent year-round supply. This was the biggest challenge. As soon as we got started Ron Young gave us four of their biggest stores in Halifax. In the following weeks we’d get a few more lambs and we’d add a store until we were doing pretty well all their stores in the Halifax Metro area, then Truro and New Glasgow. As soon as we had lambs available, Ron would tell us where to send them.

In 1982 we officially incorporated as a co-op, so we had our 20th anniversary last fall. All the farmers own the co-op. I’m the manager, but there’s no owner. Members have equal say as to how the co-op is run. Directors are selected from the membership at our annual meetings, and

they make the decisions with the manager. The idea, right from the beginning was to return as much money as possible to the farmers. Our objective was to maintain a steady price that producers could count on; that they could work toward. They knew what they were going to get paid if they had lambs ready in May, for example. That only worked when you took the profit motive

Northumberland Co-op

- Attempt by co-op to generate better prices for producers.
- Farmer’s market is an incubator for new business, and test market.
- Example of retailer support needed to get an initiative off the ground; retailer *wanted* the initiative to work (in the beginning).
- Purpose: to obtain a fair, steady, and predictable price to the farmers for their lambs.
- Retailers later cut out direct sales to individual stores, preferring deliveries to a warehouse that supplies the region. This is problematic for meat coming from provincially inspected abattoirs, which, according to existing regulations, can only supply meat to stores within the province.
- Discovered importance of having abattoir—bought one and formed another co-op.
- Customer loyalty—customers wanted fresh, locally produced lamb.
- Diversity of markets and control over marketing is important.
- Discovered it has to increase the market just to remain the same size.
- Sheep farmers can only make a small income or just break even from sheep farming; they often do it in combination with other things, since it is rarely viable by itself.
- Working together through Northumberland brings market stability.
- Co-op system: a profit allocation goes back to farmers.

away. It was also a big advantage that Sobey’s was so supportive in the beginning because they wanted it to work too. There wasn’t a hassle with them about prices.

In the beginning when we had too many lambs in the fall, Sobeys advertised them in their flyers, and they sold them for the price basically that we charged them. They were very supportive, and that got us on our feet. Once it was seen that we could actually supply the lambs and co-ordinate and deliver, we were up and running. Within a year or so we were delivering to all the Sobeys stores in Nova Scotia. Then we started to add other stores like Dominion and IGA, and independent stores and restaurants. For a long time, though, Sobeys was the major customer.

After Ron Young left the scene, Sobeys became a large corporation, and the idea of supporting Northumberland was lost. David Sobey basically stuck to us, even when some of the big supervisors were thinking of doing some things differently that were counter to our best interest. But eventually they wanted everything to come through their warehouses in Debert instead of direct sales to individual stores. And they wanted more processing—pre-cut lamb instead of whole carcasses, which we did, and then they wanted it put on trays for individual portions and delivered through the warehouse. Delivering directly to the warehouse is problematic for us because stores from all over the region would pull stock out of the warehouse, and because we are provincially inspected, we are only permitted to sell within the province.

After operating for about four years, Northumberland purchased the abattoir that we were getting our lambs killed in. So we formed a new co-op. The same members formed the Brookside Abattoir Co-op. At that time we felt we had really good quality, and reputation. When Sobeys started to go to other suppliers of lamb, customers left Sobeys for the lamb and went over to the stores that were still buying directly from us. We still sold the same number of lambs. But Sobeys' share of our business was down to about 25% and Superstore was up to about 50 or 60% and the independents were somewhere in between. But now Superstore is demanding central warehousing, so we are in the same challenge.

A customer goes to a grocery store and looks at the lamb from New Zealand or Ontario and it's cut up and sealed in a tube package, it doesn't look appealing. They want fresh lamb from Nova Scotia that's been delivered the day before. The local lamb is far superior to imported lamb. In other parts of the world, New Zealand lamb is thought to be the best lamb, but not here. It's the flavour and the tenderness and the freshness.

Restaurants and a couple of little independent stores make up about 40% of our sales at this time. Sobeys would make up about 35% right now, and Super Store makes up 25%. Over the last few years we've been building on restaurants. We had to be in charge of marketing our own lambs, because if you leave it to someone else they're not looking after your interest. They could switch to another supplier at any time. If that happens we're back to where we started and the sheep industry wouldn't stand a chance in the province. It wouldn't exist.

By being our own marketers, and by diversifying, we become more insulated from a store deciding that they're not going to buy from us. We've been vulnerable to that and we're lucky that we have not been wiped out. If they change supervisors and then say 'lets try this' then — bingo — we could be wiped out. If you're selling 90% of your product to one place and all of a sudden you're cut off and you're supply is ready to go, what are you going to do? You're always having to try to increase the market in order to stay the same, it shifts around so much.

Growers

We have about 100 shippers (producers of lamb) on our list, people that have sold to us in the last few years. We're usually able to accommodate most people who have lambs, or raise the kind of lambs we're looking for. As a co-op, market standards are set based on what we need. We try to let our producers know what our customers are asking for. We pay according to production that most closely fits the majority of our market demand. We try to hit the premium price for the lambs in highest demand, or lambs with the best return.

Some of our biggest producers would have four or five hundred ewes, producing six to seven hundred lambs a year, down to people with 10-15 sheep selling you 20 lambs a year. The average would be people selling you about 60–70 lambs a year. These would be people where sheep farming is not their main income.

Sheep farming is not something you'll get rich at. I don't really believe that the way things are now that you can be viable strictly on sheep farming—even with 500 ewes. There are paper scenarios that show it can be done, and theoretically it can. But everything has to go right. I see it more as something people can do to enable them to stay where they are, and make a living along with something else. It has to be something they really like to do. There are a few people with large numbers doing it. But it's pretty darn hard, and you'd have to live on a pretty small income I would think.

Centralization and Amalgamation vs. a Distinct Product

Most of the farming here is in competition with world prices. If you can't produce enough to put tractor-trailer loads of this product in the warehouses to distribute to all the stores, you can't sell any—unless you go to a farmers' market or an independent store. The only way to be viable in the food industry is to be centralized with a huge market and all the raw materials at the most economical advantage. You have to have the cheapest inputs. Our inputs aren't the cheapest (in Nova Scotia). We don't have enough market. There's not enough demand for the products to ever get big enough.

Northumberland lamb survives because Nova Scotia lamb is perceived as a distinct product by our customers. You can't replace it with Ontario lamb or New Zealand lamb. New Zealand prices are very low. If we were trying to sell at those prices, then all the farmers

would quit raising lambs. For instance New Zealand legs of lamb often sell for \$2.99/lb and ours sell for \$4.99/lb in the stores.

Since Northumberland has operated, people have received on average, a way better price than they would have without Northumberland. For a number of sheep producers operating independently, it's really tricky to balance your supply with the demand. Working together through Northumberland brings stability. At this point, there are the same number, or perhaps fewer farms raising sheep, but in the past lambs were raised up as feeders and shipped out of the province to be finished in other places, like Ontario. Now a lot more of the lambs are finished in the province.

People who buy lamb are willing to pay more money for their meat because it's something they like. Probably the majority of lamb is bought by people from other areas of the world who ate lamb prior to coming to Canada. People who are used to eating lamb can't get used to eating watery chicken.

In 2002, 5,000 lambs went through Northumberland. Although the price varies a bit, if we get \$3.65/lb from the store, the farmer gets about \$2.95. We need 65 to 70 cents a pound to operate Northumberland. One of the reasons why lamb has not really competed very well with other meats is that it's not very economical to process because of the small size. It's a lot more expensive to process one lamb than it is to process a cow, per pound.

The current challenge is, in the last few months, reduced sales compared to last year. Superstore decided to switch to lamb pre-cut, store it in a warehouse, and bring it in from a Federal plant. They were 50-60% of our market before doing that, and now they're down to about 30%. We still sell to some of the stores because they put up a fuss that they needed our lamb for certain customers.

The other supplier is out there to make a profit; their reason for being is not for the welfare of the sheep farmer, and the price to the sheep farmer will fall. That's the difference. If Northumberland makes a profit, it's returned to the farmers. If we do make extra money, we have a profit allocation that is paid back to all the farmers in accordance with how many lambs they produce. So there's no incentive for Northumberland to make a profit for themselves, and that's what makes us unique.

If, in the future, all meat has to be federally inspected we'd be in big trouble because there is only one federal plant in the Maritimes that will kill lambs. To be a federal plant you have to be a pretty big size, a lot bigger than we are. You have to have a lot more than lamb, and generally a federal plant finds they are not doing enough lamb to justify the cost of keeping a line open for it so, they don't want to bother with lamb.

4-H in PEI and NS

Founded in 1913, 4-H (which stands for Head, Heart, Hands, and Health), is North America's largest service organization for youth aged 8-21 living in rural communities, and is "dedicated to the development of young people to help them become responsible members of society."⁸⁰ There are close to 2,400 4-H members and 100 4-H clubs in Nova Scotia, and another 650 members in 28 clubs on PEI. The PEI 4-H mission statement says: "P.E.I. 4-H is a family-oriented, community-based, youth organization which provides opportunities for developing leadership and life skills while promoting agriculture awareness. We learn to do by doing!"⁸¹

To describe and understand what 4-H does, and particularly its contribution to social capital in agriculture and rural communities in Nova Scotia and PEI, we again rely entirely in this concluding section on the words of local farmers and rural residents in both provinces who were interviewed in the 2003 GPI farm interviews (Scott et al. 2003).

Chris MacBeath is a young farmer and very active 4-H member who lives in Marshfield, about 10 km east of Charlottetown, Prince Edward Island. He lives with his family on a 550 acre dairy farm, and plans to stay home to farm when he completes his education. In the summer of 2003 he worked as a summer student with the PEI Department of Agriculture and Forestry, but also spends as much time as possible working on his home farm with his father, uncle, and grandfather.

Chris remarks that he has learned a tremendous amount from 4-H projects on production and showing of cattle, which makes him feel more skilled with cattle and able to contribute to decision-making on the farm. Based just on a discussion with a friend at a 4-H event, he sold his friend a heifer. 4-H has given him confidence to be involved in community activities and has encouraged development of leadership skills through his holding different executive positions in the Club.

Chris was involved in conference planning with the Provincial 4-H Office and learned how things need to be organized to run smoothly. As a result, he now appreciates details of a well-run event and operation, which transfers back to the management of the farm and events in the community. His 4-H experience also gave him exposure to the wide range of different agricultural commodities, which allowed him to make friends and contacts among many different kinds of farmers, as well as develop a respect for all areas of agriculture.

Through working and learning in 4-H with other people who have a passion for agriculture, Chris says he can now see how others operate and what works, which in turn can be used on his home farm. As a result of his 4-H award trips, Chris has met other farmers in Canada and the U.S., and has thereby developed a greater appreciation for agriculture in Canada as a whole and in the U.S. He says he has learned that all farmers have similar problems, challenges, and dreams.

⁸⁰ Nova Scotia Department of Agriculture, "What is 4-H". Available at: <http://www.gov.ns.ca/agri/4h/awareness/whatis4h.shtml>. Accessed 8 July, 2008.

⁸¹ "Prince Edward Island 4-H: What's it all about?" Available at: <http://www.pei4h.pe.ca/>. Accessed 8 July, 2008.

In particular, Chris thinks one of the most important and valuable things about 4-H is that it ‘mixes the generations’. For example, people of all ages look forward to being together for Achievement Day. While we are not—in this concluding section—belabouring the connections between the stories presented here and the more conceptual theory of social capital discussed earlier, it is worth noting in passing that such inter-generational and inter-commodity contact fostered through 4-H can be considered a valuable contribution to what analysts call ‘bridging’ social capital.

Colleen Younie is a 4-H leader and parent who grew up on a dairy farm in the Eastern Townships of Quebec and now lives in Morell, PEI. She has worked for the PEI Department of Agriculture and Forestry for the past 31 years and is now a farm business management specialist. Her 6

children have all been 4-H members engaging in many projects, travel programs, and activities over the years. In addition to its other benefits, she describes 4-H as a great developer particularly of communication skills and community pride.

Danny MacKinnon is a dairy farmer and 4-H leader in PEI. He was born and raised on the dairy farm that he now runs with his wife—the fifth generation in his family to do so. He has worked as an agricultural engineer with the PEI Department of Agriculture and Forestry, but feels he was born to be a farmer.

4-H

Qualities of 4-H highlighted in the accompanying interviews include:

- Leadership and organizational skills development.
- Contacts and networking lead to sales and economic benefits.
- Sharing information.
- Encourages communication between generations.
- Young people get excited about farming.
- Develops communication skills and community pride.
- Creates alliances among groups in order to accomplish something bigger.
- Fosters reliance on each other.
- Through activities for youth, 4-H creates things for young people to do in rural areas.
- Education—including improving communication skills through speaking in public.
- A chance to learn where food comes from; meaningful opportunities to increase understanding of agriculture.
- It is common for older youth to help the younger children in 4-H.
- Fosters cooperation among 4-H children and youth, and a balance between competition and cooperation.
- The descriptions of 4-H indicate that this organization is able to do many things that the public school system struggles to achieve, such as teaching young people to be confident and cooperative, have common sense, be good at communicating, and have self-discipline and a range of practical skills.
- Public speaking and confidence are nurtured by the judging component of 4-H, where the children and youth are asked to give the reasons for their judging choices.
- The values 4-H fosters in young people are important for farm and community viability. These include consistency, attention to detail, community participation, leadership, willingness, and enthusiasm.

Danny takes the time to go to 4-H shows with his son who loves them, and says he is very impressed with the friends his son has made as a result of 4-H. His children are getting to know other farm children through 4-H, which in turn is very supportive of the farming community in general and most encouraging for the development of future friendships and relationships within the farming community.

Nancy Reeves works as a water quality technician with the PEI Department of Environment, but says she has the ‘heart of a farmer’ and is dedicated to the 600-acre family farm on which she grew up in Pleasant Valley and with which she maintains close ties. Nancy is currently the Chair of the PEI Agriculture Awareness Committee, and is a 4-H leader and parent..

In 2002, she reports that she had a great opportunity to work with Morell Consolidated School, when she was invited to talk to the Morell 4-H Club leader who was spearheading a project to mount an agricultural school fair to raise awareness on agriculture. The 4-H Club had recognized that even though communities in PEI are largely rural, they are not necessarily agriculturally based, nor are the residents necessarily well informed about agriculture. Nancy remarks that she was amazed that this small 4-H Club had such profound understanding and was willing to take on such an ambitious project.

Working together, and with Nancy’s support, the Morell 4-H Club started to create alliances, pulling into the project the school principal, senior high geography class, 4-H leaders, 4-H summer students, and staff from the PEI Department of Agriculture and Forestry and Agriculture-Agrifood Canada. The fair featured a gymnasium full of displays of agricultural businesses and opportunities, and there were beef and dairy calves, horses, poultry, and goats outside. The project’s success was based on commitment and partnerships, with the local 4-H Club not trying to do it all alone and by itself.

It was such a positive story for agriculture that the PEI Agriculture Awareness Committee gave that school its Agriculture Education Award for 2002. During the 2003 GPI farm interviews, Nancy reported that she had just found out that the school and 4-H Club would have their second agriculture day on September 19, 2003, which made her particularly pleased, since it demonstrated strong resilience, commitment, and continuity. She noted that the man who had spearheaded the 2002 event, had since passed away, so the event was going to happen again apparently because the community had taken up the cause in his memory.

Gail and Temple Stewart purchased their farm on the Loyalist Road in Hampshire, about 8 km west of Charlottetown, PEI, about 25 years ago, raise 100 head of cattle, and own and operate T & G Farm Supplies Ltd. from a small outbuilding on the farm. They have three grown daughters, all married to farmers.

They remark that their community has always had things for the young people to do and to keep busy, especially through 4-H activities. For this couple, the benefits of 4-H participation and training for their daughters have been ‘unbelievable’. For example, when their oldest daughter had finished university, where she studied plant science, she applied for and got a job with Farm

Credit Corporation that had nothing to do with what she had studied. When she later asked FCC why she was even chosen for an interview, she was told it was her ‘4-H background’.

The family particularly felt that their daughters’ communication skills were greatly developed through 4-H. Gail herself feels handicapped by her lack of confidence in speaking in meetings or to a group, and was very eager that her children gain the skills to speak in public, which they accomplished through 4-H. She feels that parents really need to support their children in encouraging them to participate in 4-H activities and particularly to engage in the public speaking training and practice.

At their daughter’s wedding, Gail Stewart asked her beef 4-H leader, Alex Dixon, whom she admired greatly, to propose the toast to the bride. Alex, she said, took genuine interest in the accomplishments of the 4-H members, visiting their homes and the 4-H project animals on an ongoing basis, and showing real interest in ensuring the success of each member’s 4-H year. Gail remarked that he was a great role model, having learned from his mother, who was also a highly successful 4-H leader for many years.

Nova Scotia organic farmer Ruth Lapp, of Centre Burlington, described her visit to a 4-H event as follows:

At the invitation of Lois Brown of Scotch Village, I attended a 4-H Goat and Sheep Judging clinic at her farm. A group of people around a lamb were learning about what needed to be attended to in a 4-H judging competition. Lois Brown was the instructor. She explained the ‘ideal type’ of a lamb. General appearance and form were explained in great detail—for example, the importance of a wide and full breast, ribs ‘well sprung and smoothly and uniformly covered with a minimum amount of firm flesh’. Each child and their accompanying adult held a sheet of paper entitled ‘Scoring Sheep’ which had a diagram of a sheep, and points to consider. The object of the clinic was to highlight the various aspects that the children would be judging in competition, where they would be independently examining lambs for their potential breeding qualities and market value.

At the same time the sheep/lamb scoring was being explained, another group of children and adults were gathered around a goat. Harlene Wiseman of Rawdon 4-H was the instructor. She encouraged the children to *think*, and make judgments based on ‘common sense’, and consideration of the ‘purpose’ of the animal. The children were also instructed on the formalities of format required in making their presentation to the judges... “I place this class of Dorset ewes...” Showing confidence in presenting information and maintaining good posture were highly stressed.

The clinic lasted about one hour, with a lot of information, as well as opportunity for hands-on learning. I was amazed. The 4-H kids at the clinic ranged in age from 6 to 18. [Age 8 is the youngest in 4-H; younger children are referred to as ‘clover buds.’] One small six-year-old boy, who appeared quite confident around the sheep, has apparently been showing and judging sheep since he was four.

Harlene Wiseman, a 4-H leader in Rawdon, Nova Scotia, has been involved with 4-H for 31 years, starting at age nine. She said that she finds that most children (even in rural based schools) have no idea where their food comes from. “When I was growing up, I knew where food came from,” but she remarked that children today don’t know how to make decisions about their food, or even that pork comes from a pig.

Harlene explained that there has been a loss of government funding and support in recent years, and that many projects have had to be cut from 4-H programming. She noted that, although 4-H is still officially under the auspices of the Nova Scotia Department of Agriculture, it is now left mostly to the individual clubs to run projects and programming with little financial support. She remarked that 4-H Night in Nova Scotia was a social event that “I wouldn’t have missed when I was a kid,” but that it was now not very well attended. When she was young, she said, “4-H was the thing to do,” but there are now so many competing activities for children that 4-H is not as well attended as it used to be.

Despite such challenges, Harlene believes that 4-H can still serve a very useful and important role in fostering greater understanding and appreciation of the fact that rural areas are places where our food is produced, and that these are ‘working landscapes’. She noted that 4-H is becoming more attuned to the concerns of environmentalists, and is incorporating this knowledge into its programming and projects. Projects, she said, are chosen based on what the children and youth are interested in learning, and also on who is available in the community to teach or provide leadership, since 4-H depends heavily on volunteer work.

Harlene is very concerned about the loss of working farms, and thereby of the farmers’ knowledge, which was always a crucial ingredient in 4-H projects and programs. Because of the decline in roadside farm stands, she notes that there has been a significant loss of communication between farmers and the general public. Again, not to belabour the conceptual connections with social capital theory, it is worth noting here that the processes described by Harlene Wiseman in terms of reduced attendance at 4-H events, reduced funding and overall 4-H participation, reduced access to farmers’ knowledge, and reduced opportunities for farmer-public communications can collectively be described as a ‘depreciation in social capital’ in rural Nova Scotia.

Gwen Jones grew up on a sheep farm in Wales, has an academic background in parasitology, and now lives and farms in Noel Shore, Hants County, Nova Scotia, where she keeps a flock 100 breeding ewes. She has been a 4-H leader for many years, though she knew nothing about it before coming to Canada, because it didn’t exist in Britain.

Her son went to school in the city and wasn’t involved in sports, so 4-H seemed like a good option for meeting other youngsters in active ways that would renew his connection to the land. He started at 4-H when he was 10, even though he was initially a bit timid about it and really didn’t want to go, beginning with a sheep project because they raised sheep at home. However, 4-H did not have any leaders for sheep at the time, so Gwen and her husband stepped in as leaders. She describes the experience:

We were standing there with the leader's manual saying, 'um, look, it says you walk around in a circle, why don't you try that' (laughing). We figured out roughly what he was to do. When it came to achievement day, the lamb got away from him, and leapt over the picnic tables and galloped off through the crowd. Everybody thought it was a riot. Everybody had a good time, and he loved it.

Then he decided that he could show [the lamb] at the Hants county exhibition. There were a couple of other kids in 4-H there—the Oultons in Windsor. Well, Wayne Oulton was in 4-H at that time, and they were big guys, 17 or 18, and they had sheep, and they were expert. They knew exactly what to do. They helped him, which was common in 4-H. They made him feel welcome. There's just been no looking back since then.

Gwen notes that it is common for adults to become involved in 4-H because of their children, and that everyone who came into it from the outside had experiences like the one she described. "The kids welcome your kid in, and help them along as opposed to being sort of rabid, in your face competitive. The kids really respond to it" Gwen stayed in 4-H because, she says:

we've got a really nice bunch of kids here.... We've got 3 or 4 farm families—dairy farms. They like working with animals. They freely offer their animals for any of the other kids to use. So even if the kids don't come from a farm, they can use a high-quality dairy cow. ... They do things together as a group. They're just a joy to work with.

Benefits of 4-H

Based on her own observations, Gwen feels that "you get far less out of organized sports than you do out of 4-H." Why? She explains:

For one thing it has a balance of competitive and non-competitive. It's essentially non-competitive. You do your best throughout the year while you're working on your projects, and then you can move into competition at the County Exhibition. The winners move on to the provincial show and yes you get competition there all right! But, it's not all just win, win, win.... Our motto is 'learn to do by doing', so just *do* these things! Learn a new skill...raise an animal, don't just show it. Raise it!

...It gives them an enormous amount of self-confidence and self-discipline in ways they don't realize they're disciplining themselves. But if they have to go out there and feed their animal every day, then, yes they are. Or if they 'have to' finish a project in a given time period, or they have to attend meetings. They have a public speaking requirement and a judging requirement where they judge four items in whatever project they're in, and give the reasons to a judge, so its another form of public speaking....

It's really challenging. And of course less is expected of the younger ones than the older ones. But they get to know year by year. They get better and better at doing the same tasks.... At the AC (Nova Scotia Agricultural College)... they can always pick [the 4-H

kids] out by their class presentations. Certainly our son's entire career choice (veterinarian) evolved from working with animals and 4-H.

Raising Market Animals

Gwen further describes the market animal project in which the 4-H youngsters become fully aware that the animals they raise eventually become food. After the children and youth have been in a beef, sheep, or poultry project for a couple of years and have learned about the animals, they can then engage in a market animal project, where they raise the animal to market size and weight to be auctioned off at the provincial show. The youngsters get to keep the money and, of course, people are more willing to bid on a 4-H animal.

Benefits to the Community

Gwen notices that parents quite often hang around while project work is going on, perhaps hoping to be invited in to do some hands-on work or provide assistance. That parental participation in turn feeds back into the communities, because it strengthens the inter-generational and overall bonds in a community when families know what is going on with their children, as opposed to communities in which parents and children seem to inhabit different worlds. She says:

This community has always been interested in 4-H and what the kids are doing... A number of clubs have made a big effort to have a community Achievement Day, or to do things for the community. I think that's something that's really excellent, and should be encouraged more.

4-H Values

Several interviewees remarked that 4-H fosters many important community and social values, including consistency, attention to detail, and community participation. For example, Gwen sees the value of consistency being learned in 4-H animal projects simply by youngsters realizing that animals rely on them, which in turn can only be imparted by having to get up early in the morning and taking care of the animals day after day. She remarks that 4-H also helps youngsters develop attention to detail through the judging projects, in which they learn to judge the animals for a number of different important qualities.

According to Gwen, 4-H also values young people for what they can actually do and accomplish, and has a long record of 'graduating' well-rounded youth. She notes that the longer young people stay in a 4-H program, the more it fosters real leadership ability, even though the children and youth generally do not realize themselves that this is happening. She sums up her highly positive view by saying that 4-H "fosters the kind of person that makes a good member of the community."

Shining Moments

Gwen describes two special 4-H events that are sources of particular pride and joy for her:

Every year we do two things that I think are really important. One is taking animals to the Museum (Halifax) on the March break, where maybe twenty or thirty thousand people may come through in the course of that period. Probably 90% of them don't know a sheep from a goat. The kids look after the animals, and talk to the public. The second is, we do the same thing at the Kermesse [IWK Children's Hospital fundraising fair].

Gwen lights up at the enthusiasm of the 4-H children and youth for these two projects. Initially, she noted, the 4-H group took the animals to the Kermesse mainly to provide entertainment in the fair's petting zoo. But then they decided to help raise money for the hospital:

Last year we made little cardboard sheep, and we wrapped [roaving] around them to make woolly sheep bodies, and we're selling them for a dollar a piece.... All the kids were sitting there making these things, and leading the lambs around, and talking to the kids at the fair. I think that's what stands out for me, because all you have to do is suggest something and the kids just take right off. It's enthusiasm. It's a willingness to do it. It's not "we have to go down there, what a drag," but "Yeah, yeah, yeah!"

Conclusions: Social Capital

Several key themes and conclusions emerge from this section on social capital in agriculture. Among these, the following seem particularly worth emphasizing:

Spending Time, Saving Money

While all forms of capital—natural, human, social, cultural, and produced (or manufactured)—are subject to depreciation through either depletion or degradation, and while all these forms of capital require periodic investment and re-investment (if only in the form of conservation) to ensure they continue providing services and benefits to human society, they also differ in some fundamental ways. For example, unlike equipment, machinery, and other forms of manufactured capital that generally depreciate over time and require repair and replacement as parts wear out, renewable natural capital regenerates naturally and indefinitely unless used unsustainably. Social capital also has unique features in this regard that distinguish it from both natural and produced capital. Like human and cultural capital, social capital is an infinitely renewable resource that tends to increase in value and availability the more it is used.

Analysts have made note, however, of a trade-off in terms of time, since it takes time and attention to develop and nurture the relationships of trust and understanding that form the bedrock of social capital. While time is readily quantifiable—with time spent socializing and

engaged in civic and voluntary activity now tracked regularly in Statistics Canada's time use surveys (and also in periodic volunteerism surveys)—there are other ingredients in social capital that are more difficult to quantify. For example, developing the valued, trusted, and effective social networks that comprise social capital also requires maturity, experience, and courage.

These distinctions among types of capital are important to understand, so that appropriate investments can be made in such a way as to generate the optimal benefits that each kind of capital can generate in its unique way. In this case, therefore, it is noteworthy that 'investing' in the social networks and relationships that comprise social capital requires time and effort, for example, just as investing in natural capital requires conservation and knowledge. Nevertheless, as the many examples above of farmer co-operatives, commodity associations, sharing equipment, and trading land clearly demonstrate, an investment of time spent building social capital is highly likely to save money and produce very tangible economic benefits.

Benefits of Building Social Capital

In addition to the more obvious benefits of social capital, such as saving money, learning, enjoyment, and building something meaningful, there are less obvious benefits that have been alluded to in many of the farmer comments cited in the previous pages. These benefits include reduced isolation, the satisfaction that comes from feeling needed, wanting to stay in and have connection to a place, challenging narrow assumptions and prejudices through 'bridging' social capital, improved personal health, personal development, and enhanced wellbeing.

For example, evidence from the social capital literature indicates that when older community members are more thoroughly integrated into activities and families, the benefits of community relationships are (quite obviously) more likely to be passed to the next generation through stories and advice than when older people are more isolated or confined to institutions. The benefits of building and maintaining social capital can often be found in the stories of ancient cultures, which are passed down from generation to generation.

In the Celtic tradition, for example, there is a specific teaching for each of the thirteen moons of the year. The first six are about individual learning, and the final seven are about how to live in community. First Nations people have legends passed down from generation to generation that often have vital lessons for living in community. These lessons were particularly important for communities where all members needed each other for survival. For these peoples, the benefits of social capital were very clear, and the care taken to spell out the fine points of living in community and building relationships indicates that these are actual learned skills that cannot be taken for granted but must be taught and renewed from one generation to the next.

Today, observers have noted, social capital itself and the benefits that flow from it tend to be taken considerably more for granted than in these ancient cultures, with the skills required to build social capital taught less frequently and less systematically, and the benefits that derive from them rarely spelled out clearly and explicitly. In many cases, little respect remains for knowledge in this vital area accrued by previous generations. As a result, the skills required to

build social capital are often in short supply, the investment of time and effort is frequently not made, and social capital itself is inadequately recognized and valued. As a result, even tangible potential benefits, like the money that can be saved through co-operation and collaboration, may not be realized to the extent possible.

At the same time, we have reviewed evidence showing that social capital appears to remain stronger in rural than in urban areas of Canada, at least as measured by such indicators as likelihood of knowing one's neighbours. And we have reviewed danger signals, like increasing concentration in agriculture and farm product retailing, and the concomitant decline in family farms and farm economic viability, which may undermine and portend a decline in the social capital that still presently exists. It is hoped that the emphasis given to social capital in agriculture in this study will not only help spur the kinds of investments required to renew and increase its strength, but will also enable rural and agricultural regions to provide an example to the rest of the Maritimes and Canada by demonstrating the value of tangible benefits generated by stronger social capital in rural areas, so that more urban settings might also be inspired to invest in and build social capital more effectively in their own regions.

Farmers Have Found Ways to Work with Others

As indicated in the 2003 GPI farm interviews from which comments have been cited in the previous pages, farm people have no shortage of stories about how they work together. They share observations, equipment, fields, workers, marketing channels, and much more. These sharing arrangements require trust, which takes time to build, as in the case of land trading and sharing arrangements that are gradually extended and amplified over time as trust is built. As indicated in the previous pages, farmers also co-operate with their customers and with their communities.

Largely through the accounts given by farmers of such co-operative relations, this chapter on social capital as a whole draws attention to the sharing, co-operation, and supportive relationships that are common in healthy farm communities. While conventional accounting mechanisms do not make entries in account books called 'trust', or 'friendship', or 'barter', or 'working together', sufficient qualitative and anecdotal evidence has been presented to indicate that the challenges in quantifying such relations do not diminish their real and actual value and the tangible and practical benefits that they generate. As further research and data collection proceed in this field over the years, it will eventually be highly informative to estimate and add up the value of these relational potential accounting entries as more information on their benefits (and the costs of their loss) becomes available.

This aspiration points to the eventual possibility of estimating the full value of social capital, so that it might one day be included properly in national and provincial balance sheets, alongside other forms of capital, to denote its genuine contribution to the nation's real wealth. In the meantime, it is possible to draw attention to the value of social capital simply by imagining what farming would be like if each farmer had to work completely on his or her own, and without the

benefit of close co-operation with other farmers, consumers, and the community. Such a scenario would likely be almost impossible if not entirely so.

Farm Contributions to Social Capital

Among the many contributions that farmers make to social capital in rural Nova Scotia and Prince Edward Island, *leadership* has emerged as a key one. The interview comments cited point, for example, to the vast amounts of unpaid hours allocated by farm families to developing and maintaining community organizations.

In addition, a significant contribution has been detailed in the form of *heritage* and continuity, since farmers are very often the ones in rural communities most likely to stay in one place, often for generations. In an increasingly mobile world with less connection to place, farmers' connection to land provides their community with 'anchors': people who know the history; who understand the dynamics of their particular community's relations and its strengths and weaknesses; and who stick around and make the community 'tick' so to speak. This 'anchoring' quality can be extraordinarily and practically useful when a community needs to manage resources (either individual or common), because the knowledge of a community's heritage that comes with continuity helps to avoid mistakes, and helps build effectively on what has been accomplished in the past.

In the introduction to this chapter on social capital, it was noted that inadequate interaction and understanding between people may produce irrational fears and feelings of isolation, depression, insecurity, and prejudice. In fact, sufficient evidence certainly exists to justify classifying as a decline in social capital a trend towards individuals basing their self-worth on what they buy rather than on their craft, vocation, and quality and diversity of relationships. Despite troubling trends and danger signals, the 2003 GPI interviews with farm people (Scott et al. 2003) revealed a group of people who do still base their self-worth on their craft, vocation, and the quality of their relationships. Indeed, an argument can be made that one of the main contributions of farm people to social capital is a 'cultural memory' that might help prevent or at least ameliorate the unravelling of social fabric in the larger society.

The Nature of Relationships

Social capital is all about relationships, but the previous pages and citations from the 2003 GPI farm interviews have made clear that it is not only about the *extent* of such relationships, but also about their *quality*. This is true of all forms of capital. For example, produced capital can depreciate in value both as a result of depletion (if a factory owner has less machinery), and as a result of degradation (if existing machinery falls into disrepair). Other GPI Atlantic reports have demonstrated this to be true of natural capital, with a forest, for example, subject to depreciation both from over-harvesting (depletion) or loss of age and species diversity (degradation). Similarly, it is not enough simply to document the existence of social networks in purely quantitative terms (e.g., numbers of community organizations and memberships) without also

examining the nature and quality of those relationships which, ideally, will be characterized by equity, trust, and understanding, as noted above.

As a society, therefore, we must extend the analysis of social capital to these qualitative dimensions to assess whether we are actually ‘good at’ relating with each other, and whether our relations are becoming more or less equitable, trusting, and understanding. Such qualitative factors should also be tracked over time to the extent possible to ensure that we are not losing our capacity to ‘get along’ and to make farming communities work optimally. Some potential indicators of equity were suggested above, including trends towards concentration in the farm sector, but considerable further work must be done to track these qualitative elements accurately and comprehensively.

Studies in the U.S. (e.g., Putnam 2000) point to a serious loss of social capital over time on the one hand, but also (e.g., Putnam et al. 2003) point to significant examples and models of people and communities co-operating and getting together in new ways to improve their lives and mutual wellbeing. A review of this chapter—and particularly of the comments made by farmers in the 2003 GPI farm interviews—may leave the reader with the impression that social capital is alive and well in the farm communities of Prince Edward Island and Nova Scotia. That is very likely true in important respects. But one also gets the impression from many interview comments and from available evidence on declining economic viability, increasing concentration and more, that there has been a depreciation of social capital over time.

As noted several times in the previous pages, investigation of this relatively new area is still in its infancy, with present efforts, as in this study, devoted primarily to the identification of potential indicators of social capital in agriculture—for most of which data do not yet exist, but which are certainly amenable to the future collection of appropriate survey data. Alongside this essential indicator development, further qualitative and quantitative research also needs to take place to assess the conditions and qualities that help to foster beneficial relationships, particularly so that we do not lose those of value described so eloquently by many of the Nova Scotia and PEI farmers interviewed in 2003.

Preliminary evidence in this field indicates that key minimum conditions required to protect, maintain, and enhance the quality of social capital in rural PEI and Nova Scotia include at least the following:

- a certain minimum threshold of farmers in the community;
- a certain minimum threshold of people who stay in the community over time;
- relatively equitable income levels both among farmers and between farmers and other community members (i.e., not perfectly equal, but not excessively polarized);
- ample opportunities for ‘bridging’ social capital (i.e., meeting and working with people with whom one would not normally socialize; and reaching out to people of different ages, abilities, races, life experience, occupations, and agricultural sectors).

5. Farm Community Viability

Agricultural community viability refers to the capacity of agricultural communities to survive shocks and stresses, and to thrive in the long term. In other words, the communities are ‘resilient’. Resilience reflects the ability of any system to ‘bounce back’ from shocks and disturbances, and to maintain its integrity in the face of external stressors. This applies both to ecological systems, in which genuine progress is assessed by the capacity of an ecosystem to maintain its ‘health’ over time, and to human systems in which socioeconomic structures and communities are able to recover from dramatic changes in the natural resource base or in the overall economic system.

Previous GPI reports have focused on diversity as a key contributor to such resilience and viability, since a stress or weakness in one part of the system can often be effectively dealt with or compensated for by strengths in other parts. For example, the GPI Forest Accounts noted that mixed hardwood-softwood forests with abundant age and species diversity experienced much lower rates of defoliation in spruce budworm infestations than less diverse stands. Examining this phenomenon, analysts found that greater hardwood content and uneven-aged management provided habitat for, and increased the diversity of, birds and parasitoids that are natural predators of the budworm.⁸²

The GPI Fisheries Accounts found a similar phenomenon in human communities. Not surprisingly, fishing communities with greater economic diversity and different types of fisheries, proved much more resilient in the face of the Atlantic groundfish stock collapse and more capable of weathering and recovering from the consequent job and income losses, than those communities that were less diverse. In sum, viability by no means implies remaining the same, but rather an enhanced capacity to embrace change. Thus, both ecological and human communities may well change as a result of stress, but they are considered to be viable so long as the change is healthy in the long term (modified from Charles et al., 2002).

In the 2003 PEI and Nova Scotia farm interview process, a number of different questions were asked to develop a sense of what characterizes a viable agricultural community (Scott et al. 2003). In other words:

- What makes an agricultural community resilient?
- What, in particular, is valued within and about such a community?
- What does such a community look forward to in terms of its future?
- What particular features make such a community ‘special’?

⁸² GPI Atlantic, *The Nova Scotia Genuine Progress Index Forest Accounts: Volume 1*. November, 2001, pages 68-71, citing Su, Q. et al. 1996. “The influence of hardwood content on balsam fir defoliation by spruce budworm,” *Canadian Journal of Forest Research*. 26: 1620-1628; Crawford, H.S. and Jennings, D. T., 1989. “Predation by birds on spruce budworm *Choristoneura fumiferana*: functional, numerical, and total responses. *Ecology*. 70: 152-163.

Because this field of study is in its infancy, and in order to provide living context for this discussion, this chapter presents concrete examples both of rural communities in Prince Edward Island and Nova Scotia that were identified by interview respondents as being particularly viable and resilient (see the section below), and of communities that respondents identified as considerably less viable (see the section below). These examples can help to identify and focus attention on the particular conditions and qualities most likely to lead to more viable communities. Because much of the evidence presented in these examples is interview-based, we have necessarily taken a broad view of ‘viability’ here, which includes people’s desire and commitment to be part of such communities.

In this chapter, four potential key indicators of farm community viability are identified and presented along with comments and stories from the interviews and also proposed methods of measuring genuine progress in this field. In this way, we attempt to combine qualitative and quantitative research in this emerging area of study. Combining the sparse data available in this field with a presentation of people’s human experience can, at this stage, be very useful in the process of indicator development in this area by identifying what is important and what matters to residents of rural communities in the Maritimes, and thereby also providing some important clues about where future progress can concretely be made in enhancing viability. Where data are available to point to trends for a particular indicator, they are presented. However, data are not yet well developed for most of the indicators recommended in this chapter.

Examples of Viable Farm Communities

The examples highlighted in the text that follows are presented, to the extent possible, in the words of those interviewed as part of the 2003 GPI farm and rural community interviews (Scott et al. 2003). Interpretations and conceptual summaries of key community assets, strengths, and marks of viability emerging in the interviews are confined primarily to the text boxes accompanying the interview comments.

Emerald, PEI

Brenda Penak describes Emerald as a ‘happening place’. The annual Irish Festival attracts hundreds of people to a community of just 60. She remarks that people donate hours and hours of time to make the event happen. As part of the 2003 Irish Festival (the year in which the GPI interviews took place), the Bedeque Bay Environmental Management Association (BBEMA) was planning

Emerald

- An interest in the history and heritage of the place
- The Irish Festival
- High volunteer rate
- People are asked to participate in a wide range of activities
- People are welcoming and helpful
- There are public places to gather and hold events—railroad station, Confederation Trail, recreation centre
- Residents are proud of their community and want to share it with others

an Environmental Scavenger Hunt along the Confederation Trail. Brenda Penak notes that asking BBEMA to participate in the Festival pointed to a community that wanted to engage people in as wide a range of activities as possible and to enjoy each others' company while doing so.

Brenda Penak remarks that when BBEMA moved into its new Emerald headquarters in December 2002, community residents erected a sign welcoming BBEMA to Emerald, and brought in baked goods to greet the staff. On a personal level, she says Emerald is the kind of "happy" and "helpful" community in which she would not think twice about running across the road to borrow jumper cables from a neighbour if her car didn't start.

She attributes Emerald's community spirit in part to its heritage. Thus, many old-timers are very attached to the Emerald railroad station, because it reflects a time that the town was a junction and thus "a real people place." Reflecting that spirit, she reports that the community recently renovated the Recreation Centre, which is a key gathering spot for the area for anniversary parties, special dinners, auctions, and other events.

Brenda Penak states that long time residents of Emerald are proud of their community, proud of their railroad station, and proud of what they can do, and they want to share all of that with other people. She remarks that the Confederation Trail, which runs right beside the railway station where BBEMA is located, tends to unite people as they walk and bicycle. As a result, she remarks that many people simply drop in to BBEMA just to see what is happening, with more than 40 regularly showing up at BBEMA Open Houses.

This strong sense of community in ordinary times clearly carries over into tough times, like the potato wart crisis of 2000-01, when local farmers and residents found they could rely on the community to provide strong support. Brenda Penak commented that simple community-based activities like enjoying the local park or boardwalk, or joining Irish dance classes and other events at the Recreation Centre provided invaluable outlets for those most affected by losses, helping them to weather the crisis.

Marshfield, PEI

Chris MacBeath describes his community of Marshfield, east of Charlottetown, as extremely "laid-back" and "old-fashioned"—made up mostly of farm families.

Marshfield, he says, is well respected because its farmers are looked upon as leaders in different organizations.

He comments that 4-H Achievement Day is one of the most important events of the year because it brings all community members and local families together. All the 4-H project work is on display and the calves that have been taken care of by the youngsters are shown as part of a full day of activities.

Marshfield

- 4-H and church activities bring people together
- There is community support for farmers in tough times
- Older people maintain a vision of agriculture as the foundation of community

Chris MacBeath notes that the church in his community is a centre of activities for families, of events like barbecues, and of community members generally looking after each other. He remarks that everybody in Marshfield knows each other and gets along well, which creates a strong resilience and web of mutual support whenever there is a problem. That community support, he says, extends to farmers during tough times.

There are challenge that Chris MacBeath notes very frankly, including the fact that there are not a lot of young children in the community. He remarks that older residents do not like to see farmland going out of agricultural production and very much want to keep agriculture as a base for community activity. Despite the economic and demographic challenges, he notes that this sense of vision of agriculture as a foundation for the community has helped unite the community and overcome difficulties.

Albion Cross, PEI

According to *George and Melanie Matheson*, the provincial Ploughing Match, held annually in Albion Cross, is a unifying event for the community that attracts Islanders year after year and that has wide appeal both locally and to visitors. In 2003, at the time that the interview took place, George was treasurer for this event. He notes that a lot of the event directors are farmers, and that the event is almost entirely run by the local people in the area. He remarks that the event had financial difficulties about six years previously, but has now had a few good years allowing the construction of new buildings and a dining hall. are wonderful community events themselves.

<p style="text-align: center;">Albion Cross</p> <ul style="list-style-type: none">• Ploughing match and ceilidhs are unifying events• People work together on these events all year

George Matheson refers to a recent Central Kings Community Improvement Committee (CIC) study that found the continuation of the Ploughing Match second only to ‘keeping the seniors in their homes’ in the list of what the community is doing positively. He remarks that his four year old and even the 15-year-old baby sitter will spend three full days at the Ploughing Match. Because people do preparatory work on the event together year-round, he says it keeps the area alive and united in a common endeavour. George Matheson attributes the recent successes of the event to strong leadership and perseverance that have gradually strengthened it. He notes that they have been greatly aided by good weather at the last few Fairs, which has boosted attendance and thus ensured a positive bank balance, which, as treasurer, he much appreciates.

Summerside, PEI

Colleen Younie highlights Summerside as a resilient community because it was able to rebuild successfully after the loss of the military base. She notes that the town is actually stronger since the loss, because residents now no longer have to live with the threat inherent in being a one-industry town dependent on an enterprise whose future was uncertain.

To rebuild the town after the base closure, Colleen Younie reports that residents came together to look for new ideas to build business and community institutions. As a result, the town has now diversified with theatres, the College of Piping, a boardwalk with unique shops, and more. She notes that resilience does not mean simply rebuilding what has been lost, but rather bringing the community together to look at what is possible now that a new situation has developed.

Summerside

- Avoided one-industry town
- Diversified business base
- Everyone brought together to look at what was possible
- Worked with what they had rather than what they didn't have anymore

Crapaud, PEI

Colleen Younie thinks that resilience is very evident in the rebuilding of the Crapaud rink after it collapsed under the weight of ice and snow in February, 2001. The community did not just replace the old building, but rather took the time to look into the needs of the whole community and then built a community centre with facilities for meetings, an ice surface, a fitness centre, and other amenities. The community relied on residents who were committed to the cause and who were willing to donate a tremendous amount of time and energy to fundraise for and supervise the project.

Elmer MacDonald agrees with Colleen Younie's assessments and says it would have been easy for the community to wring its hands and decide that rebuilding would take too much money, time, and effort. He says that a priest once told him residents have a major responsibility to maintain the communities in which they live, because too many rural residents have allowed their communities to become dormitories that people only use to sleep without really *living* there. Resilience, in Elmer MacDonald's view, is working together on a common goal like staging the annual Crapaud Exhibition or rebuilding the rink complex and, thereby, ultimately building the community itself.

Crapaud

- Adversity caused community to assess new and wider possibilities offered by rebuilding the rink in such a way as to serve the community as a whole
- Residents were committed to seeing such a large project through to completion
- A vision of a community where people *live*, not just *sleep*
- People enjoy accomplishing something together
- Exhibition used as an opportunity to strengthen community organizations

Elmer MacDonald, who in 2003 was chairman of the Crapaud Exhibition, remarks that he enjoys the challenge of working with a group of people to accomplish something together. Although the

Crapaud Exhibition is quite small, he notes that it celebrated its 50th anniversary in 2003, and is very important to the whole community because it plays a major role in strengthening community-based organisations by raising funds for the Women’s Institute, the Minor Hockey Association, the firemen, 4-H, and the Exhibition Association, with all these organisations and more benefiting from the event.

In line with Brenda Penak’s earlier remarks on the value and importance of volunteerism in Emerald, PEI, Elmer MacDonald remarks that the Crapaud Exhibition depends entirely on the efforts of volunteers, who pull together all the parts in such a way that 2,500-3,000 people leave the event having had a good experience and feeling value for their time. Although the many volunteers get no personal benefit from the event except one free closing dinner, Elmer MacDonald says the most important satisfaction the volunteers gain from their participation is a sense of direct involvement in their community and a great appreciation in seeing their community thrive.

Hunter River, PEI

Karen MacInnis describes why she sees Hunter River as a thriving rural community on Prince Edward Island. First of all, she notes there is real leadership, with community leaders effectively implementing the kinds of programs and projects that the community genuinely needs and wants. For example, she says, the Old Library is bustling with activity; and the CAP (Community Access Program) site provides access to the Internet (and therefore the world). The library and CAP site provide a place for people to be together, meeting the multiple needs for education, training, and socializing while instilling the desire for more learning. She remarks that residents take leadership roles in a wide variety of ways, and provide direction to the community through community councils, a watershed group, local churches, a healthy community alliance, and many other associations.

- | |
|---|
| <p style="text-align: center;">Hunter River</p> <ul style="list-style-type: none">• A public place for people to go to be together• People take leadership roles• Diversity of businesses—availability of multiple services• Activities for youth• Older residents who understand benefits of keeping community alive• Youth find employment in immediate area• Community school offerings• Many groups in which to participate |
|---|

A second key and related strength of this rural community is that local people, including youth, do not have to leave the town in order to feel they are in touch with the world. The town has a doctor, a dentist, gas station, post office, school, bakery, senior’s home, nursing home, feed mill, other businesses, bed and breakfast, and many services readily available, thereby meeting a wide assortment of needs. Karen MacInnis remarks that activities for young people through the local church groups provide the opportunity to ask the tough questions in life, while reinforcing values like trust, hard work, kindness, generosity, and respect. Because of the diversity of activity, youth are able to find employment in the immediate area without leaving. She notes that there is lots of home

development in the area, which on the one hand provides employment and opportunity but is also a two edged sword as long-time residents do not always want the change that new people bring.

A third strength identified by Karen MacInnis is simple good neighbourliness. Echoing some of the earlier comments, she remarks that neighbours in Hunter River and surrounding communities can be called upon when one needs help, and respond immediately if there is a need, with everybody tending to look out for each other. She also notes that people's willingness to contribute to community activities indicates that they truly feel part of their community, with residents volunteering to help with a wide range of activities that increase excitement and interaction in the community, such as helping organize school events and soccer games at the Elmer MacDonald playing field.

Fourthly Karen MacInnis points to an important role played by community schools. She notes that the local school not only fosters education in the conventional sense but also provides a location for community learning activities in the winter. A wide variety of courses is offered over a 10-week period, including crafts, gardening, mechanics, and other skills and hobby training. She remarks that learning does not only take place in institutions and through formal courses, and she speaks proudly of the ongoing activities of the PEI Community Schools Association, which receives core funding annually from the PEI Department of Education. Karen MacInnis reports that over 3,000 Islanders attend community schools programming each winter across the province, with courses in guitar, arts, crafts, introductory computer, and very much more offered to all Islanders. She notes that PEI Community Schools have been in existence for over 30 years and depend on volunteers to plan, organize, and deliver programs of interest to all age groups.⁸³

Cornwall / North River, PEI

John Hutchings identifies Cornwall/North River as another resilient rural community. In Cornwall/North River, farms are literally right on top of the town, he says, and yet there is no strife but good communication and respect between farm and non-farm people. Because the farm and non-farm populations are so closely connected by location, there is always a natural interaction between them.

<p style="text-align: center;">Cornwall / North River</p> <ul style="list-style-type: none">• Good communication and respect between farm and non-farm residents—considerable interaction because of proximity of the two• Many farm-related businesses• Community spirit from achieving Sportsplex together

According to John Hutchings, this interaction translates into concrete actions that demonstrate consideration, support, and mutual respect, with the community strongly supportive of farmers and farmers equally supportive of community activities. For example, farmers notify residents in advance when spraying, spreading manure, and undertaking other activities that might potentially cause discomfort or inconvenience to local residents. And there are frequent letters to the editor of the main PEI newspaper, *The Guardian*, from Cornwall residents supporting local farmers when hardships hit the agriculture sector. John Hutchings reports that whenever there is

⁸³ Further information on the PEI Community Schools Association is available at www.peiacs.9cy.com or by calling 892-3445.

a farm edition of the local newspaper, area business people are very generous with sponsorships, while farmers, in turn, willingly sponsor hockey teams and other activities to support community youth and promote community spirit.

This particular area has a number of people who are one generation removed from the farm and have set up businesses that support and are supported by farmers, including gas stations, a veterinary clinic, mechanics and welding shops, and other services that meet farm needs. The Dutch Inn—a local motel, convention centre, and restaurant—has dozens of meetings each year directly related to agriculture, and the community uses the facility for family weddings, anniversaries, club brunches, and a range of other activities. In fact, the town has become such a hub of farm-related activity that a lot of the users of local services are farmers from the surrounding areas who also use the inn and restaurant for their social activities.

John Hutchings also echoes the comments of interviewees cited above on the vital importance of community interaction for viability and resilience. Like other respondents, he also cites the importance both of having a congenial, welcoming, and convenient place for interactions and of engaging jointly in shared projects. Just as rebuilding the Crapaud rink united residents in a common and ambitious endeavour, so in Cornwall / North River thirteen communities came together to fundraise one-third of the cost of building the community's new Sportsplex / ATM Arena Complex. That project, he says, bound residents together and fostered a strong community spirit.

Wheatley River, PEI

Marg Weeks considers Wheatley River, between New Glasgow and Milton, PEI, to be a viable rural community. In fact, the area is very rural and abounds with many farms. She notes that a wide range of creative and innovative businesses and community enterprises has taken root in the area, including an art gallery, animal nutrition store, New Glasgow lobster suppers, the Island Preserve Company, and a community theatre production.

Wheatley River

- Many farms
- Variety of businesses and community endeavours, including arts
- Strong community organizations such as 4-H and Women's Institute
- Jobs for youth
- Most young people stay and carry on to mentor new generation of youth
- Welcoming to new people

She reports that there are also very strong chapters of 4-H and of the Women's Institute in the area, and that there are ample summer job opportunities to keep local youth in the area. In fact, she remarks that the next generation has grown up to be the 4-H leaders who now mentor the new generation of young people, and who now actively participate in the theatre productions and other community activities. Although some people leave, she says, most do stay, and there is a welcoming atmosphere for new people moving in to the area. Overall, she feels that everything seems very well established and stable within this rural community, and that there is a good balance between continuity and openness to change that contributes to resilience and viability.

Victoria, PEI

John MacQuarrie regards Victoria as an outstanding example of an independent, resilient, and viable community because the village took its own initiative to create a village plan without involvement of government. In the plan, and as a major priority, residents explicitly recognized the value and importance of agriculture for the area. Although the village also has active fisheries and tourism sectors, the plan gave explicit recognition to the importance of agriculture-related businesses in supporting community goals, objectives, and lifestyle in the most fundamental ways.

John MacQuarrie reports that, in formulating its plan, the village also acknowledged that there were some issues with existing agricultural practices that had to be dealt with and the plan therefore set standards on crop rotation, use of fields, and nutrient management for the agricultural properties in the area that are above any existing regulations. This demonstrated that the community was not afraid of change, of tackling tough issues, and of being a leader in charting new directions, and that it was able to balance continuity and respect for tradition with innovation and forward movement in its approach to agriculture—a key marker of resilience and viability.

Victoria
<ul style="list-style-type: none">• The community decided to create its own plan• Community recognized the importance of agriculture, and the fact that agricultural businesses were supportive of the community• Set high standards for farms in the area• Everyone’s voice was heard• Understanding of the importance of relationships

Reflecting on that community village plan process, *John MacQuarrie* remarks that it was a fascinating example of what can happen when members of a community sit down together and work as a team. They understood that the process as all about relationships, he says, and as a result they ensured that everyone’s voice was heard and they were able to make some very significant and far-reaching decisions without any recourse to government. He remarks that the approach and process were very practical, with community members simply taking the view: “These are the issues and how are we going to take care of them to survive together?” He says that they found the solution to this question in the simple formula—“Give a little and gain a lot.”

Old Barns / Brookfield, NS

Duncan McCurdy describes the area where he farms near Truro as a strong and viable community with some unusual features. In his own words:

They talk about the average age of farmers going up. If you look at our average, its younger people that have taken over the farms. It’s continued on through families. There hasn’t been a lot of people move into this area—it’s just people who have been here, and most of the younger generation are continuing on.

On this road, for example, ... Andrew would be about my age (34), Tim's probably two or three years younger. The next farm down the road, Trevor has just taken over from his father and he is probably a year younger than I am. Our average age through here is far less than the industry average.

Our community has changed, but not nearly as much as other places. There haven't been many building lots sold. It's not hugely different from when I was going to school, 25 or 30 years ago. There's not a lot more houses or subdivisions comparatively. The houses that have gone in don't tend to go in on farmland so much.

Area residents acknowledge that the success of the community, particularly in controlling the spread of subdivisions, maintaining the rural and agricultural quality of the area, and preventing conversion to residential and commercial uses, is largely a function of the dominance of the supply-managed dairy

industry, which has the resources to compete effectively for land. Thus, *Jim Burrows*, who also farms in the area, recognizes the potential risk of encroachment by urbanization, but notes that farms on the market have mostly been sold for agricultural uses. He explains why his community has been so far more successful than many others in this regard:

Old Barns / Brookfield

- Younger people taking over farms
- Control on subdivisions and house lots—farms remain
- Dominance of supply-managed agriculture (dairy) where producers have the resources to compete for land and thus prevent urbanization

A lot of that goes back to the strength of the dairy industry in that you can afford to pay a reasonable price for the land, where the [other] commodities cannot afford to compete with urbanization. That has helped to keep the urban pressure out of this community. We have purchased land in the past, mainly with that thought in mind, in that it's worth so much as agricultural land, but it's also worth something that you don't have urban encroachment.

Scotsburn, NS

Elsbeth Wile describes two Nova Scotia rural communities—Scotsburn and Wileville—that present sharp contrasts in terms of community strength and stability. Again, in her own words:

The last place I lived in Pictou County before I moved to Wileville was Scotsburn. It had a real sense of community. They had two huge businesses—the dairy and a lumber mill. That community knew how to work together—there were lots of activities where everyone was included. They made a new person welcome. You were asked to join the group that built the tennis court and the baseball diamond. It was great. But you were asked to join those things. It was a bit more rural, further out, and people relied on each other more. There were a lot of roots there.

In Wileville, next door to Bridgewater, by contrast, the lifestyle is much more transient:

It doesn't really have a community identity. This is average to low income here and very blue collar. So you don't have the diversity. If you're not part of a family here, you're on the outside, more than I felt in Scotsburn. There's nothing to build a community around. There's the Fire Department but we've never been active in that. There's no church in Wileville. There's no school. There's no glue.

The contrast, she points out, has less to do with economics than with attitudes and communal focal points:

- | |
|--|
| <p style="text-align: center;">Scotsburn</p> <ul style="list-style-type: none">• Community with two large businesses• Activities where everyone is included• New people welcomed• Residents are asked to pitch in to all activities• More "rural," and therefore people rely on each other more• A community can have business infrastructure, but no glue |
|--|

We calculated once that there are 48 businesses here. It's everything from the plumber to a lumber mill, three farms, everything in between—a restaurant and a hardware store and a funeral home, all because there's a tax advantage to being in the municipality instead of in town. It has infrastructure, but no glue. It's like a suburb.

Resilience is about attitudes. There are a lot of communities here in Lunenburg County where a lot of people have moved in—Petite Riviere, Riverport, Bayport. They have preserved that community identity. There's a school in Riverport that is a real focal point in that community. A lot of things have spun out from the school.

Waterville, NS

Jan and Alexandra Chute describe their community as a resilient one. According to Alexandra Chute, the local residents

have already created strong bonds and are willing to reach out and create more bonds with other people.... New people are welcomed, old people are given parties when they go away. It's a very loving community, very humanistic. Even if they don't really care about you because they don't like you, they do care about you as a community member.

Jan Chute explains that "the diversity as well as the things people have in common, is what holds community together." She remarks that the community

has a lot of activities going on—the day care, several churches, a big school, the Christian school, the fire hall. They just got a new fire engine and they did the whole tour through the neighbourhood. You could hear them. There were two miles long of fire engines. It was awesome! Everybody was at the end of their driveway, waving.

Jan and Alexandra Chute’s remarks are particularly revealing in terms of the spirit of giving that is essential to a vibrant and strong community. Again, in their own words:

- Jan: Everybody’s got a brick down there in the Fire Hall with their name on it.
- Alexandra: We contribute to an auction every year.
- Jan: It’s that whole process [of contributing] that makes everybody feel that it’s part of their blood, sweat and tears.
- Jan remarks that, although problems like drought or mad cow disease affect farmers directly and in particular, the whole community actually feels and experiences the effects: “When it affects the whole community like a drought, misery shared is misery halved.”

Alexandra Chute observes that the glue that holds their community together is people relying on each other: “You just don’t know what an individual’s strengths are until they are put to the test. So when something bad happens—a flood, a fire—somebody always pops up.” When the Chutes had a house fire, Alexandra remarks that they were surprised at the

Waterville

- Strong bonds between people, but willing to reach out to new people
- Caring for others because of being a community member
- Community members reflect diversity as well as “having things in common”
- Many activities and strong community infrastructure
- Everyone contributed to the fire hall; this process of contributing builds sense of ownership in the community infrastructure
- Glue that holds community together is reliance on each other

people who stepped forward and did things for them: “We were shocked. There is a mechanic we had taken our car to, maybe once. When our house burnt down, they offered us their house!”

Please also see Appendix I: Profiles of Farmers’ Markets and Farm Museums for further examples of viable farm communities.

Examples of Struggling Communities

During discussions of viable rural communities in the 2003 GPI farm interviews (Scott et al. 2003), examples would also emerge of those that were not doing well. Some representative examples of communities considered by respondents to be less resilient and viable are provided here, but—due to the greater sensitivities involved—neither the particular communities nor those describing them are named here.

It is important to state the obvious here—that the purpose of the distinction here between more and less viable communities in these two sections is not to praise some and criticise others. Rather it is to attempt to identify the common conditions, factors, and circumstances that are likely to foster or hinder viability in rural communities so that these communities can more effectively build on their strengths and overcome their weaknesses. This knowledge and

understanding can potentially be highly useful to policy makers and rural leaders as they attempt to enhance resilience and viability in the face of major challenges that rural regions of the Maritimes have in common.

As in the previous section, each of the following communities is described through the direct experience of a person who either presently lives or recently lived in that community, with minimal interpretation and in the person's own words to the extent possible. Interpretative summaries outlining key themes and lessons learned are again confined to the accompanying text boxes.

Community A

This particular community on Prince Edward Island is described as being not very resilient or lively. The respondent attributes the reason to a very large farm business coming into the community in the mid-1970s, from which there are still major repercussions, with the community even now bearing the scars. The large farm, comprising 10,000 acres and based on beef production, was established before the PEI Lands Protection Act came into effect in 1982.⁸⁴ Although that particular beef operation is now defunct, the estate of the original owners in Montreal still owns a lot of the land. The interviewee describes what happened:

- Difficulty stems from loss of a significant number of independent farms
- Business generated from those farms was lost
- Loss of community activities
- Working together to share equipment or make hay doesn't happen

Instead of saying 'management has left, now what can we do to buy our farms back and start our farms again?' it was 'woe is me, they have left and what are we going to do?' People did not take up the challenge of growing on our own again. The community is still

⁸⁴ The purpose of the PEI Lands Protection and the history behind it are described as follows on the InfoPEI Government website at <http://www.gpei.ca/infopei/index.php3?number=40915&lang=E>. Accessed 19 July, 2008:

"The issues involving land ownership and land use in Prince Edward Island began in the early history of the province. The Island was initially divided into sixty-seven 20,000-acre lots or townships. These lots were allocated in advance of settlement to a relatively small elite group of absentee proprietors. Over time, the land was purchased from the absentee landlords and returned to local ownership.

"Issues associated with absentee landlords resurfaced again in the 1960's, as non-residents began investing in local real estate throughout the province. As a result, substantial amounts of land in the coastal areas fell out of the control of local residents. In 1972, Government introduced amendments to the Real Property Act to restrict the purchase of land by non-residents.

"In 1981, an application by a non-resident corporation to acquire 6,000 acres prompted public concern over the perceived impacts of land ownership distribution and its implications for the future. Some viewed this as giving pre-eminent control of the province's agricultural industry to one company. This led to the introduction of Bill 37 - the Lands Protection Act (the Act) in 1982."

reeling from an event that happened 30 years ago. That is not considered to be very resilient. To be resilient, an agricultural community needs to work together —such as sharing equipment or helping each other with hay. That doesn't happen in this community. Maybe this community lost activities sooner than other places because the large farm business bought up a great number of the smaller farms to make one big one, and they lost all the business that small farms do in the community.

Community B

This community is described by the respondent as 'not very vivacious', and not working together to foster any kind of satisfaction or harmony. She remarks that there is no Women's Institute, no bridal/baby showers, and no community activities that bring residents together. Although there is a golf course in the area, it has not added to the resilience or vibrancy of the community, because it has had so many financial troubles that its presence has not been a positive experience for the community. As an example of the lack of collaboration, she recalls that when a pig barn burned down, only one person came with offers of help or food.

- Grudges among community members stifle community spirit and prevent cooperative efforts to improve matters
- This community is not vibrant because there is no Women's Institute, no bridal/baby showers, and no collaborative community activities
- The golf course has not improved the community
- People did not rally to help when a barn burned

The interviewee attributes some of the difficulty to in-fighting between local families that has been going on for generations and about which not much can be done. One family's great, great grandfather sold another family's great, great grandfather a side of beef and didn't get fully paid for it, and the grudge is still being held. Things like this, she says, prevent even the most miniscule amount of co-operative spirit.

A few kilometres away, she says, there is a very vibrant community where people get together regularly for barbecues and always have a good time together—not trying to find fault with each other, but rather trying to find ways to make things better. In that community, she remarks, people share baby clothes, there is a lot of visiting, and the organizations (church, rink, school, etc.) all support each other. There may be troubles, but everyone tries to see the positives. What pulls them together, she says, is simple openness and warmth, and all ages socializing together.

Community C

One farmer attributes the lack of resilience in his own community to economic factors. In his own words:

In the community in which our farm is located there is really no place to spend money. There is no bank, no school, no store, no church. People travel to get food and services.

Some also live in several communities some distance away from the community in which they work.

In the immediate area there are about three major employers, whereas 25 years ago there may have been twenty, so without these major employers the community would not have a base to keep people here. Also, there is very little diversity in the immediate area. The potato industry would involve probably 95% of people in this area.

- It is difficult to circulate money in this community because many of the businesses and services that used to be there are gone
- Decline from twenty to three employers
- Very little diversity of activity (potatoes 95%)

Community D

Another respondent attributes her community's difficulties to a range of factors:

- There are very few activities in the community.
- There are hardly any children in the community: "So what is the future of the community?" she asks.
- There are only three to four farmers left in the area as farms have become larger.

- An identified problem is that there are fewer farms as farms have become larger
- There is little age diversity—hardly any children
- There are few activities to bring people together

Indicators of Viable Communities

From the concrete examples in Sections 2 and 3 above and from other wide-ranging interviews conducted in Nova Scotia and PEI in 2003 (Scott et al. 2003), a list of potential indicators of community viability was developed that can now be tested in rural Maritime communities to assess their utility. These indicators are listed in Table 22 below, and then described separately, with further reference to the interview material, and with suggestions on practical measurement tools and methods.

Table 22: Potential Indicators of Viable Communities

Indicator	Measure
Bioregional food self-reliance	% of locally grown food in <ul style="list-style-type: none"> - grocery stores - institutions like schools and hospitals - restaurants
	% of food dollar that goes to local farmers
	% of consumer food basket comprised of local food
	Local procurement policies of large retailers and institutions
	Food imports as a percentage of net food supply
	Farmers Markets: number; % of farm vendors; attendance; economic impact
	Diversity of farm sector
Economic self-reliance	Economically viable farms and farm businesses
	Integration of farm businesses with other businesses
Resilience—durable economies	Participation and self-determination
	Community vision
	Locally controlled business
Community culture	Number of farms in each community
	Level of activity in the community
	Degree to which community is perceived as friendly and welcoming
	Level of volunteer activity
	Degree of reliance of community members on each other
	Trust
	Social diversity

Bioregional Self-Reliance

A strong theme emerging in the 2003 GPI farm interviews (Scott et al. 2003) as having a particularly evident effect on the degree of rural community viability was the degree of that community's 'self-reliance'. Self-reliance may be defined as a community or region being largely able to provide for its own needs, and not immediately experiencing crisis if flows into the region are cut off for any reason. This is not the same as 'self-sufficiency'—a term that generally implies little or no need for outside products or interaction even in normal circumstances. In a self-reliant community or region, flows of product, resources, people, and ideas are not only needed but welcomed, even while that community remains largely able to meet many of its own needs, create its own identity, build on its strengths, and use all of its inherent and adopted resources in an optimal manner.

A 'bioregion' is an area with similar biological features, and is sometimes defined according to the logic of which groups need to work together to protect and conserve those biological features. There are clearly bioregions within bioregions. For example, communities may need to

work together within a particular watershed, while at the same time maintaining wider collaborative associations within a province, within the Maritimes, or even within eastern Canada and with the eastern seaboard of the United States. ‘Bioregional self-reliance’ is characterized by a healthy local food system; extensive webs of interactions; and an appropriate infrastructure that effectively integrates the different elements of the economic and social system.

Thus, self-reliance by no means implies isolation or undue protectionism. On the contrary, ample evidence indicates that communities become stronger and more viable when they are able to work effectively and collaboratively with other communities. The 2003 GPI farm interviews, for example, provided numerous examples of the utility and benefits of farms working together to share resources and ideas, and of communities working together to achieve common goals—in effect creating ‘communities of communities’ (Scott et al. 2003, and see previous chapter on Social Capital). The concept of a bioregion described above indicates that such associations among farmers and communities are rarely random, but rather based on a particular and meaningful geographic or social identifications like communities working together to protect their common watershed, or producers working together to create a farmers’ market or a branded product. Such associations serve to strengthen rather than undermine self-reliance.

Nevertheless, there are certain points in this process of collaboration and association where key choices must be made that either maintain or forsake local roots and a particular bioregional identification. Agriculture, for example, can follow either an ‘industrial’ path or a ‘community-based’ path.

The industrial path is generally characterized by the use of large quantities of imported resources to create a product that is then exported. ‘Economies of scale’ are generally cited as a key reason for consolidating production units into very large enterprises, and for increasing concentration of ownership and control. In this model, the per unit costs of production are kept low, and the products are sold as cheaply as possible. The logic of this path, and evidence of certain benefits accruing to communities from more industrial agriculture operations surfaced in the 2003 GPI farm interviews (Scott et al. 2003). In particular, large industrial operations tend to employ large numbers of people and to help maintain downstream and upstream agricultural businesses.

The ‘community-based’ path, by contrast, is characterized by the greater use of local resources, recycling of resources (such as manure for example), and site-specific knowledge. Food is produced according to local or bioregional demand, and resources are used according to community needs. In this model, community members have greater participation in the food system as customers, or even as co-investors. Instead of focusing on ‘economies of scale’, there is greater emphasis on ‘economies of location’ and ‘economies of co-operation’. In other words, products are able to sell because they are fresh and close to markets rather than because of global demand.

In the community-based path, small farms and other businesses may band together to create and market products in ways that they could not do alone. Thus, while a large industrial operation may have sufficient economies of scale to require minimal collaboration with other enterprises,

community-based farming generally requires extensive networks of association to produce and market products effectively.

Some farms will follow a path that is a hybrid of an industrial and a community-based approach. For instance, dairy farms are excellent users of local pasture and forage, recycling manure, and selling almost exclusively in the local market. Yet many such farms are becoming larger and more mechanized, relying more extensively on imported machinery and fossil fuels for example, and thus adopting key elements of the industrial model.

It is likely healthy for an economy to have a variety of agricultural paths and sizes of farms, since different circumstances and conditions require different models. Nevertheless, choices must be made at certain critical junctures in order to enhance viability, with the path chosen for the future needing to reflect realistically the realities of any resource shortages or abundances. For example, if oil is in short supply and fuel expensive, then an industrial path dependent on long-distance transportation of goods or use of synthetic fertilizer will become less viable. However, if people are in short supply and if an economy is experiencing major labour shortages, then more labour-intensive community-based agriculture will be more challenging. As well, some vital choices may pit short-term economic gains against longer-term goals for community viability.

In Vermont, Bill McKibben (2007: 231) has argued that localized economies based on the community-based agriculture path will be needed both to reduce the progression and impact of climate chaos, and to deal with its effects. In an era of escalating energy prices and increasingly scarce fossil fuel, McKibben argues that communities will be better off in relatively self-reliant regions. And if there is wilder weather, prolonged and more frequent drought episodes, and more extreme storm activity, as predicted by climatologists, he notes that imported food supplies may become more unreliable and insecure, and that there will be major advantages to being part of a more durable local and regional economy.

For all these reasons, he argues, we need to rebuild our local economies. McKibben acknowledges that this path may not yield the same quantities of foodstuffs as highly industrialized and centralized systems of production and may grow less quickly. But he argues they would be more durable, secure, and reliable in the longer term, and would produce richer relationships and better quality products. If McKibben's assumptions are correct, then from a GPI perspective, the path he charts may well indicate the way genuine progress is operationalized in the future.

Jacobs (2000: 79-81) argues that successful bioregional self-reliance requires identifying and building on a community's strengths and recognizing the relevance of local circumstances. The 2003 GPI farm community interviews in Nova Scotia and PEI (Scott et al. 2003) were partly designed to stimulate discussion on these issues and to investigate farmers' views on the present degree of agricultural and community self-reliance and the potential to increase it, as well as their views of different development models and visions for the future. Comments from those interviews that are related to bioregional self-reliance are reproduced in this section.

One other concept must be introduced here, since it is directly relevant to understanding bioregional self-reliance. According to the National Farmers Union and the 2007 international Forum for Food Sovereignty held in Sélingué, Mali, ‘food sovereignty’ is a concept that includes:

- promoting fair trade that pays producers adequate product prices;
- safeguarding the right of producers to a reasonable income;
- ensuring consumers access to locally grown and culturally appropriate food that is safe and nutritious; and
- giving farmers the capacity to use and manage farmlands, associated water resources, seeds, livestock, and biodiversity sustainably, on the understanding that farmers have a direct stake in the sustainability of the environment.⁸⁵

One of the often-expressed motivations for greater bioregional self-reliance is that it gives communities a greater degree of self-determination and food sovereignty that are generally lacking in the industrial model.

Comments from farmers (Scott et al. 2003) indicate considerable openness to developing a more local or bioregional food system:

One PEI farmer remarked: “It is satisfying when the price of products reflect adequately the care and attention given to producing safe, quality products.” And another commented:

In Europe there was a stronger relationship between the producer and the consumer—much more noticeable than in PEI. It was something like the relationship developed in my grandfather’s time at the local Farmer’s Market. I wondered how the farmer today could get a reward from consumers for being environmental stewards.

A third PEI farmer remarked:

Islanders want to eat Island beef over Brazilian beef, but they need to know the difference, and locally produced food needs to be clearly labelled and promoted.

⁸⁵⁸⁵ This definition is adapted slightly from the National Farmers Union website: www.nfu.ca. A more comprehensive definition emerged from the 2007 Forum for Food Sovereignty held in Sélingué, Mali, where about 500 delegates from more than 80 countries adopted the Declaration of Nyéléni on 27 February 2007. The Declaration says in part: Food sovereignty is the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It defends the interests and inclusion of the next generation. It offers a strategy to resist and dismantle the current corporate trade and food regime, and [offers] directions for food, farming, pastoral and fisheries systems determined by local producers. Food sovereignty prioritises local and national economies and markets and empowers peasant and family farmer-driven agriculture, artisanal fishing, pastoralist-led grazing, and food production, distribution and consumption based on environmental, social and economic sustainability. Food sovereignty promotes transparent trade that guarantees just income to all peoples and the rights of consumers to control their food and nutrition. It ensures that the rights to use and manage our lands, territories, waters, seeds, livestock and biodiversity are in the hands of those of us who produce food. Food sovereignty implies new social relations free of oppression and inequality between men and women, peoples, racial groups, social classes and generations. http://en.wikipedia.org/wiki/Food_sovereignty.

Canadian farms need to be able to compete in different ways (not on a price basis), and for this reason, branding becomes important.

Another PEI farmer noted wryly: “If bottled water can be sold for \$1.50 a bottle, what did food producers miss? There is a need to promote the benefits of buying locally and extol the virtues of our food.” And yet another related greater local self-reliance to improved food security: “Trace-back systems do not provide security,” he said. “They only provide a system of recall and source identification. Local or bioregional food systems are inherently secure because any terrorism or other food safety issues remain localized.”⁸⁶

A Nova Scotia farmer remarked:

We have certain unique features here, like we can grow grass-fed [beef] a lot better than the West, and we can grow a lot of our meat off grass, but we’ve got to find a way to promote the local beef and make it unique. Nova Scotia beef are healthy and happy, grown on forage, and we have research that shows that that yellowing of the fat is higher in antioxidants. It’s like the blueberries—it’s better for you.

Measuring Bioregional Food Self-Reliance

Table 23: Measures of Bioregional Self-Reliance

Measure
% of locally grown food consumed in <ul style="list-style-type: none"> - grocery stores - institutions like schools and hospitals - restaurants
% of food dollar that goes to local farmers
% of consumer food basket comprised of local food
Local procurement policies of large retailers and institutions
Food imports as a percentage of net food supply
Farmers Markets: number; % of farm vendors; attendance; economic impact
Diversity of farm sector

In addition to the measures of bioregional self reliance suggested in Table 23 above, there are a number of questions that might be asked assess the degree to which an area is self-reliant.

- To what extent is fresh produce and meat available in the community?

⁸⁶ Ferraro, P. 2003. Evaluating our successes: The Post-Utopian World of Organic Agriculture—An Agricultural Movement or an Agribusiness Industry? ACORN Conference, March 14, 2003. Halifax, Nova Scotia.

- To what degree does genuine ‘food sovereignty’ exist, according to the definitions of the National Farmers Union and the 2007 Declaration of Nyéléni?
- Is there adequate infrastructure for a local food system—slaughter facilities, processing facilities, cooling and freezing facilities, cold storage, etc.?
- Do governments inhibit or facilitate the development of local food systems through their policies and their incentive and subsidy systems?
- To what degree are foods produced on farms further processed, and what proportion of farm produce is retailed in its raw or natural form?
- Where processing of local foods does occur, what proportion of that processing remains within the local (provincial, regional) economy, and what proportion is exported further afield?
- How diverse is the agriculture sector?
- Is there a trend towards consolidation and concentration or towards decentralization and diversity—in the farm input, production, processing, wholesaling, and retailing sectors?
- What percentage of the food system is based on wholesale sales from farms vs. retail sales from farms (direct marketing to consumers)?
- Can people identify, or identify with, the food grown in their area? Do they know what is grown locally, and where to purchase it, and to what degree do they make that choice when offered alternatives?

While all these measures and questions cannot be addressed immediately and in depth in this report (primarily due to present data limitations and lack of monitoring of most suggested indicators), there is limited information available on some of them, as reported below. In a few select cases, recommendations are also offered below on the potential for future data collection and analysis in some key areas. The good news here is most of these indicators and questions are readily measurable and quantifiable through reliable and methodologically sound survey and other data collection techniques, so that broad-based information on local food consumption and other aspects of bioregional self-reliance can become available as soon as the interest and political will exist to collect the needed data.

Percentage of Locally Grown Food Consumed

The Canadian Council of Grocery Distributors (CCGD), representing large Canadian food distributors,⁸⁷ did a member survey in May 2007 that provided Atlantic Canadian information on the portion of large grocery retailers’ purchases from Atlantic Canadian suppliers (growers and processors) (Jeanne Cruikshank, pers.com, January 21 2008). Unfortunately there are no data compiled for previous years, so trends in regional food purchases cannot yet be assessed. Tables 24 and 25 below show grocery store purchases by CCGD stores from Atlantic Canadian growers

⁸⁷ This Canadian Council of Grocery Distributors (CCGD) represents large Canadian distributors and marketers of food and grocery related products (four or more stores), and accounts for more than 80% of food distribution volume in Canada. Atlantic Canadian members include Atlantic Wholesalers, Sobey’s, Costco, Coleman’s, and Co-op Atlantic. Jeanne Cruikshank, CCGD. Presentation to Council of Atlantic Premiers. 12 January, 2006. Available at: <http://www.ccgd.ca/home/en/pdf/presentations/council%20of%20atlantic%20premiers%20jan%2012%202006.pdf>. Accessed 20 July, 2008.

and processors. Co-op Atlantic percentages, as provided in Co-op Atlantic literature, are shown separately, since they are significantly higher than the grocery retail average.

It is important to note that many processors buy raw material from elsewhere and process or repack it in the region, so the actual amount of food purchased from Atlantic growers and harvesters is much lower than the amounts shown in the tables below. To take just one example, most of Canada's fish processing plants (800 out of a total of 1,400 nationwide) are in the four Atlantic Provinces, with those 800 plants employing about 30,000 workers, and accounting for about 60% of Canada's production. The majority of large fish processing facilities in the country also located in Atlantic Canada, with the country's two largest plants in Nova Scotia and New Brunswick.⁸⁸ So grocery wholesalers and retailers are highly likely to buy processed fish from this region, which are counted in the tables below as purchases from Atlantic Canadian suppliers.

Each year, however, this industry relies more on imports, with total Canadian seafood imports amounting to \$1.7 billion in 2006. The United States is the single largest supplier of all Canadian imported seafood (39%), followed by China (18%), and Thailand (14%), though fish imports from China, Thailand, Vietnam and other Asian countries are growing rapidly, while the U.S. share is shrinking. In sum, a considerable portion of what appears as regional purchases in the tables below has nothing to do with local food or bioregional self-reliance, but is part of a globalized industrial food production and processing system. For example, one of the largest fish processing plants in Atlantic Canada is owned by a large international food products company, while most fish sticks and prepared fish meals eaten in Canada are made from fish imported from the U.S.⁸⁹

⁸⁸ Environment Canada, Toxic Chemicals Update, Volume 10. Issue 1, January 2008. ISSN 1206-5455. Available at: <http://atlantic-web1.ns.ec.gc.ca/epb/newsletters/toxchem/Default.asp?lang=En&n=3F836B38-1>. Human Resources and Social Development Canada. Fish Products Industry. Available at: http://www.hrsdc.gc.ca/en/hip/hrp/sp/industry_profiles/fish_products.shtml. Both accessed 20 July, 2008.

⁸⁹ U.S. Department of Agriculture Foreign Agriculture Service. Canada Fishery Products Annual 2007. September. 2007. Available at: <http://www.fas.usda.gov/gainfiles/200709/146292564.pdf>. Agriculture and Agri-Food Canada. Canada's Fish and Seafood Industry. Available at: http://www.ats.agr.gc.ca/supply/3301_e.htm. Bnet. Canada's upscale seafood processing industry nets U.S. catch — seafood imports from U.S. help Canada meet demand. Available at: http://findarticles.com/p/articles/mi_m3723/is_1_15/ai_98336132/pg_1?tag=artBody:coll. All accessed 20 July, 2008.

Table 24: Portion of Grocery Retailers' Purchases from Atlantic Canadian Suppliers (Growers and Processors)

Grocery department	Average of leading retailers including Superstore, Sobeys, Co-op Atlantic	Co-op Atlantic
Meat	23%	63%
Produce	18%	32%
Dairy	50%	54%
Seafood	40%	61%
Frozen	47%	57%
Bakery	61%	75%
Deli	36%	75%
Packaged goods	10%	22%

Sources: Canadian Council of Grocery Distributors; the Co-op Atlantic column is from Co-op Atlantic flyer.

Table 25: Portion and Dollar Amount (\$2007) of Grocery Retailers' Purchases from Atlantic Canadian Suppliers (Growers and Processors)

Total For Canadian Council of Grocery Distributors Stores		
Department	\$ Value of Purchases from Atlantic Canada Vendors	Atlantic Canada Vendor Purchases As % of Total
Dairy	\$229,724,932	49.7%
Meat	\$128,576,277	22.6%
Produce	\$65,664,706	17.7%
Seafood	\$25,708,641	40.0%
Deli/HMR	\$34,742,775	35.3%
Bakery	\$92,668,146	60.9%
Frozen	\$91,113,354	47.3%
Packaged Goods	\$126,797,873	9.7%
Total	\$794,996,704	24.7%

Source: Canadian Council of Grocery Distributors.

The percentage of locally grown food consumed in Atlantic Canadian institutions and restaurants is not tracked at this time. Keeping track of the extent of local food purchases over time will help Nova Scotia and the Atlantic region assess its progress towards a more self-reliant food system.

As noted in the previous chapter, a number of recent initiatives in Nova Scotia and PEI have promoted the consumption of locally produced food, but it still remains to be seen whether these initiatives will actually increase local food consumption. Unfortunately the 'buy local' initiatives were not accompanied by any monitoring of progress or systematic results-based evaluations of their actual impacts, nor were large retailers like Sobeys and Atlantic Superstores under any

obligation to adhere to any new guidelines. It is precisely in order to monitor the effect of such initiatives that new indicators like those in the GPI are urgently required.

In this case, regular monitoring and reporting of the proportion of consumer shopping baskets comprised of locally grown and produced goods would constitute one of the most important GPI indicators of a viable agricultural system and a sustainable economy altogether, if data were only reported. Indeed, this indicator is measurable and readily quantifiable, particularly since sophisticated, computerized check-out systems based on itemized bar codes now record every item sold in supermarkets. Without such trends over time regularly reported, there is no reliable and consistent way to tell whether “buy local” initiatives are having the desired impact. Such reporting could ensure that well-intentioned and even costly programs effectively enhance farm community viability.

Monitoring the percentage of locally produced food in consumer food baskets—data that are readily available through analysis of computerized check-out records kept by stores and supermarkets as noted above—is only one of several potential indicators of local food use. Additionally, it is possible to monitor the degree to which companies and large institutions (like schools, universities, hospitals, and government agencies) buy local; it is possible to assess changes in supermarket policies on sourcing food locally; and consumer surveys can assess the extent of consumer knowledge about locally grown and produced foods and where to obtain them.

As well, local food prices can be compared to analogous imported food prices, with the degree of disparity serving as a useful indicator of whether local food purchases are sufficiently supported and encouraged, and whether ‘buy local’ campaigns are actually likely to change consumer habits. All such indicators, and more, have been tried and tested, and can readily be used to evaluate the success and effectiveness of buy local initiatives and campaigns, as well as the degree of consumer and institutional commitment to local food.

Needless to say, there are major challenges of definition as well as methodology and application—such as in defining “local.” For example, ‘local’ has been variously defined in terms of either driving distances or distances ‘as the crow flies’ with varying standards (50km, 100km, 220km or miles, etc.), or in terms of jurisdictional boundaries (a province or region) or ecosystems (sometimes called ‘agrisystems’ or ‘foodsheds’). But jurisdictional boundaries can be so large in the case of many Canadian provinces that the meaning of ‘local’ can be easily eviscerated.

There are other complications. As one description notes:

Where local food is determined by the distance it has traveled, the wholesale distribution system can confuse the calculations. Fresh food that is grown very near to where it will be purchased, may still travel hundreds of miles out of the area through the industrial system before arriving back at a local store.... Often, products are grown in one area and processed in another, which may cause complications in the purchasing of local foods.⁹⁰

⁹⁰ “Local food—Definitions of ‘local’” from Wikipedia, the online encyclopedia. Available at http://en.wikipedia.org/wiki/Local_food#Definitions_of_..22local.22. Accessed 5 July, 2008.

Despite these and other challenges, indicators of local food usage, such as those noted above, have been developed. To give just a few examples: Berea College in Kentucky tracks the proportion of food purchased by the college that is produced in Kentucky. It reported an improvement from 6% to 11% between 2002 and 2004, with out-of-state purchases declining proportionally from 94% to 89% of the total. The college set a performance goal aiming to attain 30% regional food purchases within five years and 50% in ten years.⁹¹

For comparison purposes it also reports on what other select U.S. colleges with a commitment to local food purchases are doing. Thus it notes that Hendrix College in Arkansas increased regional food purchases by 20% in six years, and that Middlebury College has relationships with 30 local vendors, with 10% of its food grown or processed in Vermont. The University of Northern Iowa formed a purchasing power alliance with ten other local food buyers who together have now spent more than \$600,000 on local food purchases. And 19 colleges and universities including University of Portland (Oregon), Albertson College (Idaho), and Macalester College (St. Paul, Minnesota) contract for food services with Bon Appetit, a company that emphasizes cooking from scratch with seasonal, locally grown foods.

Such initiatives can be models for universities, school boards, hospitals, companies, government agencies, and other organizations and institutions in the Maritimes. Primarily because of supply management in the dairy and poultry sectors, Maritime universities are generally doing very well by the standards and results reported above. For example, Mount Allison University in Sackville, New Brunswick, currently purchases 33% of its food from local sources, and Dalhousie University stands at 29%.⁹² The large impact of supply-managed sectors on these statistics indicates that sectoral monitoring is required for local procurement measures in this region. For example, it will be important to know what proportion of fruits, vegetables, and beef are from local sources.

Other efforts have tracked the degree to which supermarkets themselves are committed to sourcing food locally. In the United Kingdom, for example, the International Institute for Environment and Development tracked “supermarket progress towards a greener and fairer food system” by questioning ten supermarket chains about their policies. As one of its key indicators (4.1) it assesses company policy on sourcing food according to four criteria:

- *Source*: Identification (with verification) of the farmer/supplier from within a defined locality
- *Distance*: Description of the distance the food has travelled
- *Distribution*: Description of the degree to which the product is stocked across the store network in a region or county

⁹¹ Berea College, Ecological Indicators of Sustainability. See Indicator 19: Regionally Produced Food. Available at: <http://www.berea.edu/sens/indicators/indicatorsideshow/documents/Indicator%2019.ppt>. Accessed 5 July, 2008.

⁹² Mount Allison and Dalhousie statistics provided by Marla McLeod, Ecology Action Centre, based on meetings with the food service providers of these universities. Personal communication. June 2008.

- *Seasonal*: Degree to which seasonal and locally distinctive products are stocked at appropriate times.⁹³

Again, such assessments and regular tracking and reporting of food sourcing policies at Sobeys, Atlantic Superstore, Co-op Atlantic, and other major food retailers would be extraordinarily useful in this region.

It is also possible to assess trends in consumer attitudes towards local food and their degree of knowledge about local food and where to find it. In the U.K., for example, a detailed Mintel Group survey examined attitudes towards 'local produce,' practices of British consumers in making or not making local food choices, and knowledge about local food. It found that four in ten adults were oblivious to where the food they buy comes from, one quarter claimed a commitment to buying local foods—to support the local economy and/or because they believed the food was fresher, and 14% did not know where to obtain such local produce.⁹⁴ Again, an analogous survey in the Maritimes would be most useful.

In sum, there is no shortage of potential means to measure, assess, and monitor the degree of commitment, understanding, and actual buying patterns associated with local food, which in turn can be an excellent indicator of producer-consumer relations and thus of the strength of social capital in the agricultural sector, as the earlier evidence indicates.

Percentage of Food Dollar that Goes to Local Farmers

Preliminary estimates based on data collected for the Food Miles Project of the Ecology Action Centre and Nova Scotia Federation of Agriculture, show that over time, a smaller share of the money spent on food in grocery stores and restaurants in Nova Scotia is finding its way back to farms (Table 26). In PEI, by contrast, a larger share of the money spent on food in grocery stores and restaurants is finding its way back to farms (Table 27).

In Nova Scotia, it appears that only about 7% of the consumer food dollar is returned to farmers—down from 10% in the 1990s, whereas in PEI, about 36% is getting back to farms. At this point, it is unclear why PEI is showing a more positive trend and a higher overall percentage than Nova Scotia in terms of the proportion of consumer food spending finding its way back to local farmers. Since the following estimates are preliminary and designed primarily to begin this investigation, it is recommended that follow-up studies be conducted to find out the reasons for the differences and to assess whether all the relevant variables are being properly incorporated into the calculations.

⁹³ International Institute for Environment and Development. 2002. Tracking supermarket progress towards a greener and fairer food system. Indicator 4.1. Available at: http://www.racetothetop.org/indicators/module4/page_2.htm. Accessed 5 July, 2008.

⁹⁴ Mintel Reports. Attitudes Towards Buying Local Produce - UK - January 2003. Summary of key results available at: <http://reports.mintel.com/sinatra/reports/index/&letter=1/display/id=2169&anchor=a2169>. Accessed 5 July, 2008.

In any case, based on the available literature, it can be estimated—by way of setting goals and targets—that a food system that could properly be characterized as ‘self-reliant’, would have more than 50% of the consumer food dollar going back to local farms.

Table 26: Estimate of Farm Cash Receipts as a Percentage of Food Spending (\$), NS, 1991–2006

Year	A Farm Cash Receipts ⁹⁵	B Inter- national Exports ⁹⁶	C Inter- provincial Exports ⁹⁷	D Total Exports (B + C)	E Cash Receipts, Domestic Sales (A–D)	F Amount NS Spends On Food ⁹⁸	G Proportio n of Food Spending That Goes To Farms (E/F)
1991	309,225,000	23,073,670	113,300,000	136,373,670	172,851,330	1,705,223,585	10.14%
1996	367,046,000	27,629,329	138,700,000	166,329,329	200,716,671	1,927,902,184	10.41%
2001	402,363,000	38,439,229	209,500,000	247,939,229	154,423,771	2,048,940,468	7.54%
2006	433,127,000	44,064,178	223,400,000	267,464,178	165,662,822	2,301,799,113	7.20%
Genuine Progress Target							At least 50%

Sources: Statistics Canada. 2002. *Agriculture Economic Statistics, Food Consumption in Canada*, Parts I and II.

Notes:

- Figures reported in the table are in current dollars.
- Payments (subsidies) are subtracted from Farm Cash Receipts.
- The latest inter-provincial export data available are for 2004, and they are used here instead of 2006 data to complete the estimate. Only 30% of the “meat, fish, and dairy products” category is used, because we have assumed here that about 70% of that category is fish and seafood, which is excluded because we are specifically concerned with land-based farms in this report.
- Food spending for 2006 is estimated based on 2005 figures from Statistics Canada, *Spending Patterns in Canada*.

⁹⁵ Statistics Canada. *Agriculture Economic Statistics*. Cat. No. 21-011. Payments (subsidies) are subtracted from Farm Cash Receipts.

⁹⁶ Strategis http://strategis.ic.gc.ca/sc_mrkti/tdst/engdoc/tr_homep.html. Total agricultural exports from Nova Scotia, NAICS codes: 111 and 112. February 11, 2008.

⁹⁷ Statistics Canada CANSIM tables 386-0001 and 386-0002. The latest inter-provincial export data available are for 2004, and are used here instead of 2006 data to complete the estimate. Only 30% of the “meat, fish, and dairy products” category is used, because we have assumed here that about 70% of that category is fish and seafood.

⁹⁸ Statistics Canada. *Food Consumption in Canada*, Part I and II 2002. Cat. No. 32-229, Appendix B, p.C7. The amount spent on food is derived by multiplying total annual food expenditure per person by the population of Nova Scotia (Statistics Canada CANSIM table 051-00005). Food spending for 2006 is estimated based on 2005 figures from Statistics Canada, *Spending Patterns in Canada* Cat.No. 62-202, Table 2, p.18.

Table 27: Estimate of Farm Cash Receipts as a Percentage of Food Spending (\$), PEI, 1991–2006

Year	A Farm Cash Receipts ⁹⁹	B Inter- national Exports ¹⁰⁰	C Inter- provincial Exports ¹⁰¹	D Total Exports (B + C)	E Cash Receipts, Domestic Sales (A–D)	F Amount PEI Spends On Food ¹⁰²	G Proportion of Food Spending That Goes To Farms (E/F)
1991	221,075,000	52,789,876	120,900,000	173,689,876	47,385,124	223,742,270	21.18%
1996	280,565,000	85,985,341	105,700,000	191,685,341	88,879,659	276,798,665	32.11%
2001	277,698,000	50,901,796	118,200,000	169,101,796	108,596,204	326,576,592	33.25%
2006	356,310,000	88,020,534	137,400,000	225,420,534	130,889,466	360,093,370	36.35%
Genuine Progress Target							At least 50%

Sources and notes: See sources, notes, and footnotes for Table 26 above; numbers for Table 27 are derived in the same way as numbers in Table 26 using PEI data.

Although most of the information in Tables 26 and 27 above is taken directly from Statistics Canada data, there are assumptions built into the calculations in columns B and C, while the column F results are based on self-reported data. This renders the column G figures ‘estimates’ rather than conclusive results.

For example, columns B and C provide estimates of Nova Scotia farm product export, in order to subtract that figure from total farm cash receipts for the purpose of estimating the amount of farm cash receipts deriving from local (Nova Scotia) sales. But the reported export categories do not differentiate adequately between farm products, processed products, and fish products to identify clearly the portion of farm cash receipts deriving from out-of-province sales. Also, the amount spent on food reported in column F is based on a survey of household spending that depends on respondent recall that may not be accurate. These and other unknowns may skew the results in column G.

As noted above, the estimates in Tables 26 and 27 must therefore be regarded as simply a preliminary effort to raise awareness of an issue vital to any assessment of food self-reliance and to identify the enhancement of such self-reliance as a policy priority. An indicator that assesses

⁹⁹ Statistics Canada. *Agriculture Economic Statistics*. Cat. No. 21-011. Payments (subsidies) are subtracted from Farm Cash Receipts.

¹⁰⁰ Strategis http://strategis.ic.gc.ca/sc_mrkti/tdst/engdoc/tr_homep.html. Total exports from NS, NAICS codes: 111 & 112. February 11, 2008.

¹⁰¹ Statistics Canada CANSIM tables 386-0001 and 386-0002. The latest data available is for 2004, and is used instead of 2006 data to complete the estimate. Only 30% of the “meat, fish, and dairy products” category is used, because I am assuming about 70% of that category is fish and seafood.

¹⁰² Statistics Canada. *Food Consumption in Canada*, Part I and II 2002. Cat. No. 32-229, Appendix B, p.C7. The amount spent on food is derived by multiplying total annual food expenditure per person by the population of Nova Scotia (Statistics Canada CANSIM table 051-00005). Food spending for 2006 is estimated, based on 2005 figures from Statistics Canada *Spending Patterns in Canada* Cat.No. 62-202, Table 2, p.18.

the proportion of provincial food spending returned to local (in-province) farms is recommended here as a key indicator of such self-reliance. It is therefore hoped that this preliminary effort—with all its caveats—will spur Statistics Canada and provincial agencies to investigate the issue carefully, to collect appropriate data, to differentiate reporting categories more precisely, and to report regularly on this important indicator.

Imports as a Percentage of Net Supply

Another measure of bioregional food self-reliance is the proportion of food consumed in Nova Scotia that is imported. Unfortunately, data for this measure are not presently available at a provincial level.¹⁰³ At the national level, Table 28 below clearly shows that—in every category—imports are rising relative to net supply. Despite caveats on calculations methods noted below, the contrast between the 1964 and 2006 results is sufficiently dramatic to indicate Canada’s sharply expanded reliance on imported food in the past four decades, and thus a movement away from bioregional food self-reliance—at least at the national level. Once again ‘genuine progress targets’ have been suggested—based on evidence of potential domestic supply—as a possible benchmarks in at least some categories.

Table 28: Imports As a Percentage of Net Supply, Canada, 1964–2006

	1965	2006	Genuine Progress Target
Fruits	71.6 %	101.8 %	In season, less than 5 %
Vegetables	21.9 %	53.6 %	In season, less than 5 %
Red Meat	3.0 %	18.5 %	Less than 5%
Dairy	0.3 %	1.7 %	Less than 5%
Poultry	1.6 %	17.2 %	?
Eggs	1.3 %	8.2 %	?

Source: Statistics Canada. Update table from *Canada Food Stats*, Sent by Marcel Boudreau, January 31, 2008. Original data from *Food Consumption in Canada* Cat No. 32-229.

In the ‘fruits’ category, we see that imports amounted to 102% of net supply in 2006, which seems to indicate an error in the calculation. This counter-intuitive result is due to the formula used for calculating net supply, which includes two items— waste and re-export—that tend to skew results upward: The formula is: *Net Supply = (Beginning Stocks + Imports + Canadian Production) minus (Exports (and Re-exports) + Waste + Manufacturing + Ending Stocks)*. Because of the inclusion of the waste and re-export components, this formula can yield results over 100%, despite the fact that Canada produces fruit consumed domestically, so that Canadians could not in fact be importing all the fruit they consume.

¹⁰³ Marcel Boudreau, Statistics Canada, *pers comm*. January 18, 2008. Mr Boudreau informed GPI Atlantic that Statistics Canada is unable to do a custom tabulation that would provide provincial-level data for this measure.

Clearly, considerably more work is required to refine this measure in order to produce a more accurate assessment of imports as a of net supply over time. In fact, the uncertainties surrounding these important data sets and indicators quite clearly point to the relatively low policy priority accorded the issue of bioregional food self-reliance to this point. Again, it is hoped that the preliminary efforts to address the issue in this study, based on existing available data sets, will spur Statistics Canada and provincial agencies to track and report these indicators regularly so that reliable, consistent trendlines in these areas can be developed without delay.

Despite the uncertainties and need for better data, the preliminary trends indicated in Table 28 above can at least begin to raise important and provocative questions about food self-reliance that can only become more salient over time if rising fuel and transportation prices, as well as potential global food shortages and other insecurities, threaten the viability of Canada's imported food supply lines. The preliminary data and the issues they raise also point to the need to set realistic 'genuine progress targets' to enhance food self-reliance and food security.

For example, Canada clearly does not have the climate to produce fruits and vegetables *all year*, nor to produce *all kinds* of fruits and vegetables. So realistic targets in this area must include seasonal variations and distinctions among product types. But for those items that Canada and the Maritimes can produce, at the *times* we can produce them, genuine progress targets for food self-reliance and security would encourage a reduction in imports of those goods in order to expand markets for local growers.

Interestingly, Table 28 indicates that even imports of red meat, which Canada is capable of producing in ample quantities year-round, have grown in the last 41 years from 3% to 19% of all red meat consumed in the country. This indicates that inadequacy of supply cannot explain the sharp increase in red meat imports, and that we must look to other factors like changes in global trading regimes, greater reliance on cheap labour abroad to keep domestic prices low, and increased concentration in food distribution, in order to understand the trends indicated in Table 28 above.

For the supply-managed sectors, such as dairy and poultry products, imports have remained low. But Table 28 shows that, *even in these protected areas*, imports have gone up over time—quite dramatically in the case of poultry (from 2% in 1965 to 17% in 2006). Supply management alone, therefore, has not provided protection against the reduction in bioregional food self-reliance indicated by the trends in Table 28 above.

The questions raised here—particularly in assessing why Canada increasingly imports food that can be grown domestically—carry special importance for the Genuine Progress Index as a whole, since they point to vital accounting issues and to the distortions that can occur when full benefits and costs are not included in conventional accounting mechanisms. Thus, the evidence indicates that the most important proximate cause of increased reliance on imports is price and the consequent sourcing of goods from wherever they can be produced most cheaply. However, the more comprehensive full-cost accounting mechanisms of the Genuine Progress Index point to hidden costs associated with those imports and hidden benefits in local production that are not recognized or accounted for in conventional accounting mechanisms.

For example, indirect or hidden import-related costs include:

- time delays that compromise freshness and increase reliance on chemical preservatives that in turn may have adverse health impacts;
- increased reliance on cheap labour that may erode human capital;
- greater reliance on industrial farming that has serious environmental impacts and that also frequently undermines food self-sufficiency and self-reliance in developing nations;
- greenhouse gas and pollutant emissions associated with long transport routes, which in turn erodes natural capital; and
- the loss of family farms in rural communities in the Maritimes and other parts of Canada, which in turn erodes social capital.

By contrast, the evidence presented in this study and elsewhere indicates that greater support for local production can help enhance human, social, and natural capital, and thereby wellbeing in general.

A careful consideration of the full benefits and costs associated with both local production and food imports is also essential for policy planning purposes, and to chart realistic paths forward that take local conditions and comparative advantages into account while enhancing long-term food security. For example, efficiency is often cited as a key reason for the increasingly high levels of food imports indicated in Table 28 above. Thus, it is conventionally considered more efficient to grow and process particular foods in large quantities where the factors of production are cheapest and then to transport them long distances than to rely on smaller and more diverse production units domestically.

This points to the key challenge in this area, which is to create a food system that is both efficient and also fulfils the ‘genuine progress’ goals of enhanced food self-reliance and security, vital community life, and viable farms and farm communities. Such an efficient locally based food system might be organized on a ‘foodshed’ basis—similar to the concept of a watershed, but based on efficient webs and networks of food production, processing, and consumption. Such thinking and planning might well prepare the Maritimes for a post cheap oil world that will require greater reliance both on local partners and on local food production abilities, instead of on a food system that may become increasingly vulnerable to price and supply shocks. Enhancing food self-reliance through a new food web that meets the region’s most important needs may help stem the erosion of food sovereignty that evidence indicates is already under way.

Based on evidence of climate, local conditions, and supply adequacy, it is recommended here that seasonal targets be set of importing less than 5% of net supply for those farm goods that can be produced well in the Maritimes—like beef, lamb, dairy, and fruits or vegetables in season. For items like grain, grain-fed livestock, and out of season produce, targets could be set at higher levels. Further research is required to set those targets at appropriate levels that take into account less adequate local conditions and supply.

Farmers' Markets: Number; Percent of Farm Vendors; Economic Impact

In order to increase consumption of locally produced food, to increase the proportion of food dollars that go to local farmers, and to replace imported food items with locally grown food, the Atlantic region requires adequate natural, human, and social resources as described in previous sections of this report. But it *also* needs appropriate infrastructure to support a more self-reliant bioregional food system. Such infrastructure includes adequate local transportation networks, farm markets, independent farm product outlets, home-delivery services, processing facilities, training programs, grower co-operation, and more.

The existing agricultural infrastructure has been developed largely to process and then export large quantities of particular products like potatoes. At the same time, however, the infrastructure for an efficient local food system has been neglected, leading to diminishing capacity to process local food, and thereby adversely affecting bioregional self-reliance. For example, the Nova Scotia Federation of Agriculture noted that a crisis like the closing of borders to beef exports in response to the May 2003 Alberta BSE scare “clearly pointed out the need to maintain local slaughter plants so that animals produced in this region can be processed here as well” (NSFA 2003).

Particularly in response to rising fuel and transportation costs, and to global food price increases and shortages in some areas, there is growing interest in many parts of the world in developing effective local food system infrastructures. Here we examine one element of such infrastructure—farmers’ markets—and note potential indicators and measures of their reach, viability, and impact that can potentially be developed as data become available. Since this is only one element of an effective local food infrastructure, this discussion is offered here simply to begin indicator development in this important area. In the future, it would also be important to track other elements of such a bioregional food infrastructure, such as those listed two paragraphs above.

As communities have sought to become more food self-reliant in recent years, and as demand for local, fresh, and organic produce has grown, farmers’ markets have increased in size and number all over North America. Farmers’ markets are generally based on collections of growers who work together to market the food they grow directly to customers, though they now also frequently include local artisans, crafts people, and producers of other local products aside from food. In the U.S., the number of farmers’ markets increased 2.5 fold between 1994 and 2006 alone, and they currently number 4,385 by USDA estimates. Farmers’ markets now account for an estimated \$1 billion of local food sales in the U.S. (Ikerd 2008).

In Nova Scotia, there are now more than 15 farmers’ markets operating in different parts of the province (Don Black¹⁰⁴, pers. comm. February 4, 2008), and they are doing business valued at more than \$62 million to the provincial economy.¹⁰⁵ In PEI there is one main Farmers’ Market in

¹⁰⁴ Don Black is Coordinator, Farmers’ Markets of Nova Scotia Cooperative Ltd

¹⁰⁵ See Farmers’ Markets of Nova Scotia Cooperative Ltd website: <http://nsfarmersmarkets.ca/>. Accessed March, 2008.

Charlottetown with over 50 vendors. In addition, there are seven other private farmers' markets in PEI offering a wide range of farm and other goods.¹⁰⁶ Data are not presently systematically and consistently collected and reported on all farmers' markets in Nova Scotia and PEI. To develop effective indicators in this important area, however, data should be collected for each market on the number of farm vendors, on the proportion of farm vendors as a percentage of all vendors, and on their sales, and it is important to develop accurate estimates of the economic impact of these markets. Such data collected on an annual basis would help monitor genuine progress on one key infrastructural component in the development a more self-reliant food system.

Farmers' markets have been found to perform vital economic functions that can substantially enhance farm viability. In the previous chapter, it was noted that direct connections between customers and farmers builds social capital and increases livelihood opportunities for farmers. In that regard, farmers' markets have sometimes been likened to incubators and catalysts for small business ventures, as they are suitable low-risk venues to test products and receive direct customer feedback before investing large sums in production capacity.

Farmers' markets have also been found to be highly useful for selling 'differentiated' products that fetch premium prices, when they are differentiated in the market according to quality, where and how they are produced, or some other identifier. One example of this is organic certification that allows certified organic products to be specially labelled and thus generally sold at higher prices than conventional products. As an increasing number of consumers is willing to pay the extra price in exchange for the assurances that certified organic labelling brings, farmers are also increasingly able to obtain higher prices for their products in exchange for following certain production rules.

In the absence of consistent and comprehensive quantitative data on farmers' markets, we rely here on comments from farmers' market vendors and those who sell directly from their farm to illustrate some of the benefits associated with direct contact between farmers and their customers in a healthy local food system of which such markets are an integral part. These comments were received as part of the 2003 GPI farm interviews (Scott et al. 2003) that have been referenced throughout this report.

One farmer in Prince Edward Island acknowledged that it is important for farm market vendors to maintain a high quality product and to have customers come back and say, "That steak I got from you last week was sooo good. I'm back for more." He noted that he does not "over-finish" his cattle because probably 75% of his customers would not want more than about a quarter-inch of fat on their meat. This, he says, is cost-effective for him as well. He remarked that customers frequently say they buy meat from him because they have developed a relationship and trust level with the producer. Thus, even though the mad cow crisis had badly hit the mainstream farming operations at the time the GPI farm interviews were conducted, he noted that his farm has had no problems maintaining its prices. In particular, he remarked that the positive feedback

¹⁰⁶ See PEI Department of Agriculture Fresh from our Farms directory: www.gov.pe.ca/af/agweb/produce/markets.php3. Accessed March, 2008.

from customers contributes to the satisfaction he and his family feel in producing a quality product.

Another PEI farmer summarizes some of the benefits of farmers' markets this way:

The resurgence of farmers' markets makes farming more viable. Organics has contributed to that reactivation. The regional or local market can compete with more mainstream food retailers by being a service provider, based on the customer, not the bottom line. People are willing to pay more where there is good service and it is a comfortable, fun place to be. Like the Charlottetown Farmer's Market on Saturday morning—face to face for farmers, consumers, and neighbours. There is an interchange that occurs.

And members of rural communities expressed the same level of appreciation in their description of local farmers' markets. One customer reports that quality is the key to success:

A pork farmer in my area found that the market price made it difficult for him to make a profit. So he continued to produce pork, but he took a new marketing approach. He sells 50lb lots of pork to people he knows. The direct consumer contact means he makes a profit. It works for him and it works for his customer, who is very happy with the quality of the pork. It's three times better than what I could get at the grocery store. I do the same thing when I buy chicken from a neighbour farmer.

One Nova Scotia farmer who runs a busy roadside market and the farm that supplies it reports:

The key is to have a good variety and make sure it's fresh. I keep the prices reasonable, sometimes lower than what other people are selling for. We try to go on volume more than marking it up high and only selling a little bit. We'd rather have a small mark up and sell a wide range. Right now the ideal thing is the more you can grow yourself to put in here [the market] the better it is, as far as making profits. Cutting out the middleman.

And a Kings County, Nova Scotia, farmer who sells his produce at the Wolfville farmers' market notes that it is possible for farming to be viable

if you can get yourself into a situation where you have a small farm, you grow a little bit of stuff, you bring it, and you sell it to a small appreciative audience.... And there's some more intangible aspects to having a small appreciative audience—it's not just a buying and a selling price. You know, there's an eagerness there, an enthusiasm from the customers.

I was selling to places like Great Ocean in the city, but I backed out of that when I [did not have] enough for the people here. I shrunk right back to here, and I've been here at this market for a very, very long time when there were only two or three of us selling, knowing that if I stuck with it, it would grow. It's the faith that you have that the concept is sound. Like the concept of organic agriculture is sound. The concept of having a market in Wolfville was really sound, and the two of them have grown together to a point

where, I'm not sure whether it's going to be enough for me to make a living off of, but I like to have all the pieces slowly put together.

Another Nova Scotia farmer describes his experience with U-pick customers—another infrastructural element of local food webs that often creates even deeper farmer-customer relations than farmers' markets, since U-pick situations bring consumers right onto the farm itself to partake of the actual harvest process:

The people you get would be people that bring their young kids for a day at the farm. And quite often they are families that see that as sort of an intrinsic value to bring kids to the land. And people that just like to know the farmer, they like to come and pick their apples and get to know you a little bit. It's very interesting at our U-pick we have people now where they'll come and they'll say 'we come here twice a fall, and we used to come and bring our kids and these are our grandkids and we bring them now'. They'll probably keep those apples in their cold room till Christmas.

A Cape Breton farmer reports that her farm primarily markets directly to customers:

We've been coming to the farmers' market here in Sydney for five or six years now, and also the farmer's market in Antigonish. Then we have a lot of customers that come directly to the farm. I would say exclusively, up until this year, it's all been direct marketing to customers. Last year around Thanksgiving we experimented with our local Co-op and put a few birds in for the last few weeks of the season. It was really well received. They wanted them back again this year, and we've expanded it to other local Co-ops. This is the first year that we're offering fresh chicken throughout the season in Inverness, Margaree and Cheticamp. It's within a 45-minute radius of our farm.

Despite her new venture into Co-op sales, this farmer remarks that the direct marketing

has been the corner stone. That's how we started, very slowly, word of mouth, direct to customers. And our customers brought us customers. So I think there's going to be benefits having it in the Co-op too, we're going to tap into a different market, that wouldn't come to the farm, or the Farmers' Market. [But] I wouldn't want to do it exclusively through the Co-op. I like having the direct marketing.

One Nova Scotia farmer reports that she sells much of what she produces directly from her farm:

When people come to the farm and want to buy meat, I give them a price. Some say 'that sounds so expensive'. They want it so cheap. On the other hand, it's always nice if I sell something and people say, oh that was delicious, we loved them, and we were really happy with it.

Diversity of Farm Sector

Another key indicator of bioregional food self-reliance that emerged from the 2003 GPI farm interviews (Scott et al. 2003) is the diversity of the farm sector. In the introduction to this section it was noted that diversity has also been established as a key contributor to resilience and viability in several other GPI studies, in which evidence indicated that stresses or weaknesses in one part of the system can often be effectively dealt with or compensated for by strengths in other parts.

For example, the GPI Forest Accounts noted that mixed hardwood-softwood forests with abundant age and species diversity experienced much lower rates of defoliation in spruce budworm infestations than less diverse stands. Examining this phenomenon, analysts found that greater hardwood content and uneven-aged management provided habitat for, and increased the diversity of, birds and parasitoids that are natural predators of the budworm.¹⁰⁷

The GPI Fisheries Accounts found a similar phenomenon in human communities. Not surprisingly, fishing communities with greater economic diversity and different types of fisheries, proved much more resilient in the face of the Atlantic groundfish stock collapse and more capable of weathering and recovering from the consequent job and income losses, than those communities that were less diverse (Charles et al. 2002).

Similarly, comments from growers in Nova Scotia in the 2003 interviews (Scott et al. 2003) also indicated that viable farm communities are based on a diverse mix of activities. Interviewees noted that diversity not only helps establish viability over the long term, but also enables farmers to supply a range of products to the local market and thus to weather dips in prices or crop failures due to pests, diseases, and climatic conditions that affect particular commodities on a seasonal basis.

Diversity has also been found to strengthen social capital, since people's capacity to buy a range of locally produced products near where they live engages the population more effectively and regularly with food production and with local farmers than in cases where the region specializes in a particular commodity grown largely for export. In fact, this capacity is a rather unique characteristic and strength of Maritime farming that it quite different from farming in the Prairie Provinces where farms tend to produce grain and oilseeds that are mostly shipped away for processing and export. Because of the considerable diversity of farming in this region, Maritimers actually have a greater capacity to stay connected with the food they consume.

Thus, one Nova Scotia farmer remarked: "Many farmers have to engage in a number of different things to make a go of the farm." And a Nova Scotia sheep farmer commented:

¹⁰⁷ GPI Atlantic, *The Nova Scotia Genuine Progress Index Forest Accounts: Volume I*. November, 2001, pages 68-71, citing Su, Q. et al. 1996. "The influence of hardwood content on balsam fir defoliation by spruce budworm," *Canadian Journal of Forest Research*. 26: 1620-1628; Crawford, H.S. and Jennings, D. T., 1989. "Predation by birds on spruce budworm *Choristoneura fumiferana*: functional, numerical, and total responses. *Ecology*. 70: 152-163.

I think its pretty hard to do it alone on sheep, there must be some other sources that are complementary maybe. There are people that have sheep farms and a craft store that specializes in woollen crafts, or someone who sheep farms and shears sheep, or someone who sheep farms and runs a co-op, or the wife teaches school.

Another Nova Scotia farmer remarked:

It is important to relieve the farm of having to provide 100% of a person's income. Your farm will give you 60% of your survival, [but] you need 40% from somewhere else. Nova Scotia farms are not like farms in Saskatchewan or Alberta. We have a smaller acreage. Most successful farms are diversified. They have a fruit and vegetable stand, they raise a few head of cattle, they have a real diversified income.

Yet another noted that diversity helps spread risks and identify new economic opportunities:

We're a very diverse industry, which gives you strength. It's just like any other industry: If you are a one-industry town—you look at Sydney, when the steel industry went down—trouble... it's risky. So you've got to be diverse, you've got to spread your risk. We're [Nova Scotia is] fairly isolated, we're stuck out on the eastern shore [of Canada]. [But] we have a market advantage, from the point of view if we wanted to create a Nova Scotia brand or something. The other thing is that we're situated well, on the main sea-lanes, [and] we have a population of 200 million in the U.S. close [by]. So there's tremendous potential, and we've got to harness that potential. And at the same time we've got to sustain what we've got in order to harness that potential. So I'm certainly happier in Nova Scotia than let's say Manitoba or Saskatchewan.

Another Nova Scotia farm family noted that it has had to diversify its operations and its economic activities in order to help pay the bills. To that end, the family started a vacation home rental business in a historic house near the cranberry bog on their land, and a computer business on the side. The interviewee remarked that her son helps his father with the farm, and also services computers on the side. "Together, it works," she noted. "Separately, it doesn't."

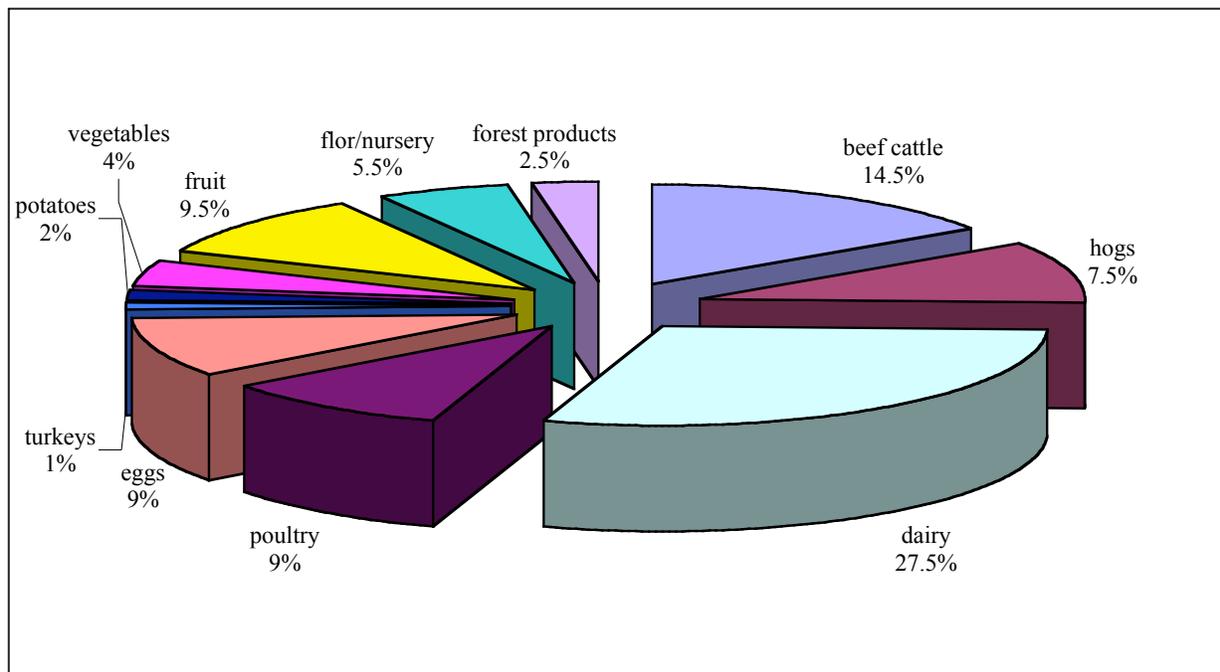
According to ATi Consulting (2002:8), the diversity of Nova Scotia's agriculture sector has contributed to its relative stability. Though the economic viability of farming has in Nova Scotia has declined dramatically in recent years, as the accompanying report on that subject clearly demonstrates, ATi Consulting reported as recently as 2002:

While industry receipts have stayed steady at about \$400 million each year, its various components have fluctuated. The array of products produced by the agricultural sector provides economic stability for areas where agriculture is an important industry.

In other words, price fluctuations in particular commodities can be compensated for and stabilized by the diversity of the farm sector as a whole.

The relative diversity of agriculture in Nova Scotia and PEI over time is illustrated in Figures 17 to 20 below that show the proportion of cash generated by different agricultural products in the two provinces for 1972 and 2002. These pie charts indicate not only that PEI's agriculture sector is considerably less diverse than Nova Scotia's, but also that PEI agriculture has become less diverse over time while Nova Scotia agriculture has become more diverse. Note that although diversity is more properly indicated by physical production statistics, the following pie charts show the proportion of each major agricultural product's contribution to total farm cash receipts not to volume of production.

Figure 17: Major Agricultural Products, by Cash Receipts Generated as a Proportion of Total Farm Cash Receipts, NS, 1972



Source for Figures 17 to 20: Derived from Statistics Canada. 2004. *Farm Cash Receipts*. Agriculture Economic Statistics. Cat. No. 21-110-XIE. Available at www.statcan.ca. Accessed February 2004.

Notes: "Major agricultural products" constitute the ones with the highest percentage of cash receipts, adding up to at least 90% of total cash receipts. Therefore, those products denoted in Figures 17 to 20 above do not add up to 100%, since the pie charts show the proportion of each product's contribution to *total* farm cash receipts. The percentage contribution changes from year to year, so the differences between the two years (1972 and 2002) by no means imply linear trends over time.

Figure 18: Major Agricultural Products, by Cash Receipts Generated as a Proportion of Total Farm Cash Receipts, NS, 2002

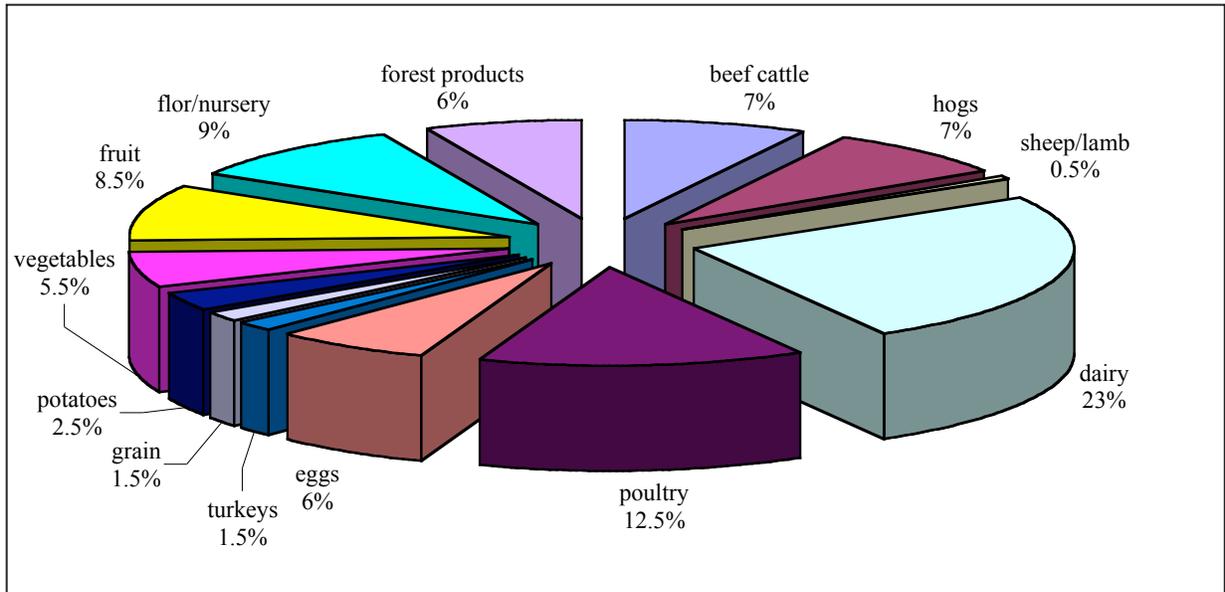


Figure 19: Major Agricultural Products, by Cash Receipts Generated as a Proportion of Total Farm Cash Receipts, PEI, 1972

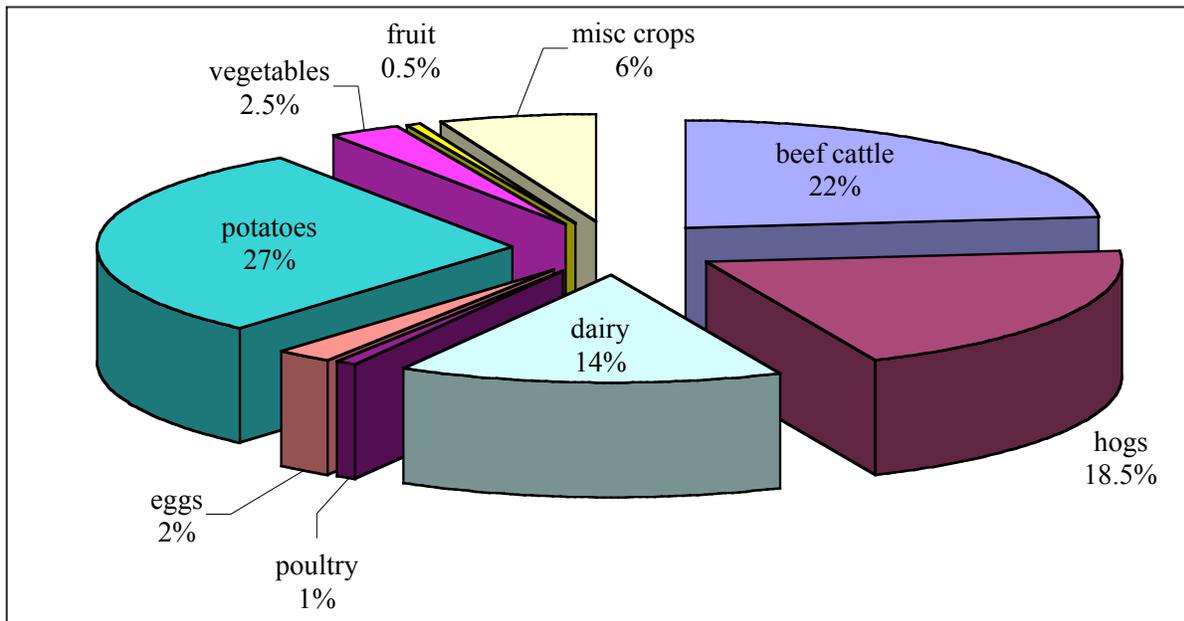
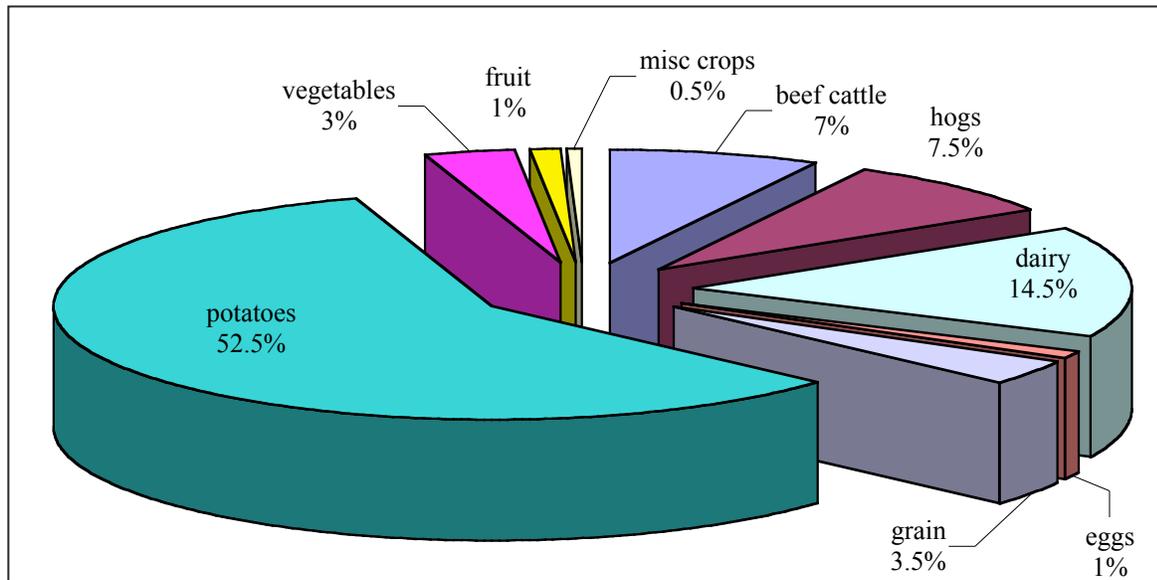


Figure 20: Major Agricultural Products, by Cash Receipts Generated as a Proportion of Total Farm Cash Receipts, PEI, 2002



Source for Figures 17 to 20: Derived from Statistics Canada. 2004. *Farm Cash Receipts*. Agriculture Economic Statistics. Cat. No. 21-110-XIE. Available at www.statcan.ca. Accessed February 2004.

Notes: “Major agricultural products” constitute the ones with the highest percentage of cash receipts, adding up to at least 90% of total cash receipts. Therefore, those products denoted in Figures 17 to 20 above do not add up to 100%, since the pie charts show the proportion of each product's contribution to *total* farm cash receipts. The percentage contribution changes from year to year, so the differences between the two years (1972 and 2002) by no means imply linear trends over time.

It would be useful to relate the PEI results above to the dramatic fluctuations in net farm income experienced by PEI farmers, as indicated in the accompanying economic viability report. Time and resources do not permit a full investigation of the relationship between these two measures.

Here we focus simply on one overarching question raised by this discussion and by the trends illustrated above: Does a certain amount of diversity bring benefits to the local food system and to farming communities? Unfortunately, insufficient quantitative evidence is available at the present time to answer this question definitively. However, it is noteworthy that a PEI Task Force on Agriculture in 1992 noted that the pace of consolidation and specialization on PEI farms has been the fastest of any province in Canada, and that this trend may be at odds with the maintenance of agriculture diversity (PEI Cabinet Committee on Government Reform 1992).

The Task Force reported:

The trend to specialization on individual farms both results from and reinforced a sector approach in the structure of government activities and farm organizations.... This approach has brought many benefits in terms of producer expertise and efficiency, economies of scale, sector competitiveness, and market development. The question is

whether the limits of this approach have been reached. Has specialization become fragmentation? (p.6).

The report authors spell out the advantages of having a diversified agricultural sector, where different farm types complement each other:

Each of the sectors makes a valuable contribution to the overall industry, with particular strength in certain aspects. Potatoes are the leading contributor to cash receipts. The supply-managed industries provide social and economic stability through the large number of medium-sized family farms, value-added through the processing sector, and a reliable supply of high quality products for Islanders. The beef and hog industries are a local market for grains, forages, and by-product feeds, generating a high multiplier benefit to the economy. As well, they play an important role in land management by providing manure and supporting crop rotation. The horticultural sector is a major employer in rural PEI and holds significant potential for value-added.... Thus a major strength of PEI's industry is its diversity. The mix of commodities provides overall stability, while their interdependence can provide a competitive edge within each sector. (p.10)

Economic Self-Reliance

The accompanying report on the economic wellbeing of farms reveals a sharp decline in viability, particularly in recent years. That trend has adverse implications for economic self-reliance both within the agricultural sector and in rural communities in Nova Scotia and PEI. Yet economic self-reliance has been identified in the literature as a key component of community viability.

In this case, economic self-reliance refers to the ability to generate real wealth within the 'foodshed' (as defined above), but it certainly does not mean that everything has to be produced locally—a common misinterpretation. 'Generating real wealth' locally simply means producing products (like food) that people need, and that derive from the natural, human, and social resources of the area in question. In other words, local economic self-reliance requires that there be both economically viable farms and also a mutually beneficial integration of those farms with other businesses to create a solid web of economic activity that benefits the local region. (See the description of 'food webs' in the glossary at the end of this report.)

Communities that are not economically self-reliant are considered to be primarily 'dependent' on either economic activity or markets located outside the region. This makes them vulnerable to shifts in trade patterns, commodity price fluctuations, political and natural upheavals, supply disruptions due to fuel shortages or to rising fuel and transportation costs, or other unpredictable changes outside the region's control. Such vulnerabilities can undermine community resilience, stability, and viability.

Again it must be emphasized that economic self-reliance does not exclude trade or imply that all production must be local. Instead, viable communities will likely be comprised of a healthy combination of home-grown and outside business. But if most or all economic activity within a given community has no base in its foodshed, then it cannot be considered self-reliant from the perspective of the definition adopted here.

Measuring Economic Self-Reliance

Two measures of economic self-reliance emerged from the GPI farm interviews conducted in 2003 (Scott et al. 2003), as indicated in Table 29 below.

Table 29: Measures of Economic Self-Reliance

Measure
Economically viable farms and farm businesses
Integration of farm businesses with other businesses

Economically Viable Farms and Farm Businesses

It is clear from the accompanying report on farm economic viability in Nova Scotia and PEI, that farming needs to become far more economically viable in both provinces if it is to survive. A survey of Canadian farmers found that the most important issue for farmers is receiving a ‘fair price’ for their products—defined as a price that would allow farmers to pay rising input costs and still make a reasonable profit (Martz and Brueckner 2003). This concern was expressed by many farmers in the 2003 GPI farm interviews and is reflected in the following comment from a PEI farming couple (Scott et al. 2003): “People need to understand the food value in the products that farmers produce. Then there might be more appreciation and willingness to pay for that goodness. People will pay more and say little if they *understand*.”

As noted by ATi Consulting in a 2002 report on Nova Scotia farming, markets in which prices are normally dictated by outside forces give Nova Scotia farmers little chance of recovering increased costs from the consumer (ATi Consulting 2002: Executive summary, no page number). Four methods potentially available to Nova Scotia farmers to retain greater control over prices include: orderly marketing, direct marketing, adding value, and/or niche marketing (i.e., not selling to a commodity market). A few examples of these four methods, as provided by farmers in the GPI farm interviews (Scott et al. 2003), follow:

Three Nova Scotia farmers’ comments on the dairy quota system, reproduced below largely in their own words, illustrate the importance of orderly marketing in the dairy and poultry sectors in enhancing long-term farm viability (Scott et al. 2003) are reproduced below. The third comment is particularly prophetic in pointing to the potential downside of this 1960s initiative in limiting farm entrants, even while enhancing economic viability for existing operations:

Society, or consumers, whether they know it or not, decided in the 60s that the price they were going to pay for their milk and their eggs was going to be set by the industry in conjunction with government, so that farmers could make a living at it. And do I think it's right? I think it's necessary. If it wasn't for the poultry or dairy farms that we do have now, there wouldn't be a spot of agriculture in the province.

This particular farmer argues that most equipment dealerships exist because of the supply managed farming sectors, but that these dealerships benefit all farm sectors, since other farmers can also access farm equipment they need because the infrastructure is there. He says: "There is not near the agricultural infrastructure that there was in the past, but if it wasn't for the dairy and the poultry guys there would be none."

The second farmer reports:

The quota system developed for dairy and poultry products is a highly regulated attempt to control the supply of product and match it to demand in the marketplace. It helps to provide a regular income over the year. This makes planning much easier. The quota system for dairy and poultry has helped to stabilize incomes for those farms, making those operations more viable. The reason that quota has worked well is that it means the domestic market is getting met, so that we don't have huge surpluses of volume that put downward pressure on the price.

The disadvantage of the quota system is that it is difficult to start out in a dairy farm and invest the dollars required. I'm lucky to be born into a situation where I was able to farm. Otherwise it would be just about impossible to get into it. In 1990 when I started, there were 600 dairy producers in the province. Now there are about 320, although I think there would be fewer if there was no quota system. It is disadvantageous to lose producers because of the critical mass needed to have a 'voice' and to make dairy supply businesses viable.

And the third farmer notes:

At the time we began to concentrate on dairy, the quota system was evolving. My husband used to say: 'You should never put a price on quota' or 'you should put a ceiling on the price', because a young fellow would never be able to buy a farm.

As noted above, other attempts to increase farm economic viability include direct marketing, niche marketing, and adding value to the raw farm product. The section on farm markets and U-picks above provides examples of direct marketing. In the following two examples, one farm business was successful in creating a niche market, adding value, and keeping the business at a comfortable scale. The other farm business had to create markets outside the region in order to be viable.

‘That Damn Dutchman’s Cheese’ is a small farm-based business on the Parsborro shore, and was featured in the March 2003 issue of *Rural Delivery*. As described in that profile, the definition of success for this business is *not* expanding, gaining market share, or relying on employees to do the grunt work—as in most conventional business models. Instead, business success is defined by this cheese maker as pride in quality of products, and a good quality of life—living and working with family on a beautiful piece of land. Part of the business ‘package’, therefore, is being a destination with beautiful grounds; offering visitors the opportunity to watch cheese being made; and having a gift shop, livestock, café, etc.

The cheese maker’s direct sales both at the farm and at the Halifax City Farmers’ Market are straightforward, and provide a profit margin wide enough to sustain a small-scale operation. But supplying retailers has been found to be too much work and usually entails competing against mass-produced cheese. Instead, cheese is sold at Masstown Market, the Co-op in Truro, and Halifax Farmer’s Market. Because cheese is not exported outside Nova Scotia, the farm is not required to register with the Canadian Food Inspection Agency.

In sum, deliberately deciding to remain small and not to expand into the mass retail and export market has avoided regulatory hurdles, additional costs, excess work, and a competitive environment that would force prices down, reduce profitability, and compromise product quality. It has also enabled the business to protect its prized quality of life and unique business package, and to avoid dependence on large retailers and the vagaries of trade deals. In effect, the cheese-maker has demonstrated that the conventional economic growth model is by no means the only viable business paradigm, and that a niche market and value-added product can effectively enhance economic self-reliance, financial stability, economic security, and social benefit.

Our second example is Case VanDyk, whose farm-based business in Lunenburg County sells blueberry juice to what can also be considered a ‘niche market’. In this case, however, the business has to sell outside Nova Scotia to make it viable. VanDyk produces 4,000-5,000 bottles of blueberry juice each month, 65% of which are sold in Ontario, 25% in the Maritimes, and the rest in the U.S. and Western Canada. Not surprisingly, the biggest challenge for this business is distribution (Woolley 2003).

But what both these farm business examples demonstrate is the potential to add value effectively to a farm product to enhance economic viability and success. A survey of 333 Nova Scotia Federation of Agriculture (NSFA) members (ATi Consulting 2002:40-42) identified farmers engaged in value-added activities on their farms (17% of the 333 respondents). This group indicated that value-added activities on farms (such as processing, milling, packaging, meat cutting, etc.) are important both to sell products (39% of those engaged in value-added activities), and to make efficient use of employees (14%) by evening out the workload through the year and providing off-season work. Of the respondents who answered affirmatively that they engaged in value-added activities, 23% stated that value-added activities provided additional income. Farmers engaged in value-added production have frequently found that it offers higher margins than the sale of the raw product.

The 2003 GPI farm interviews confirmed that in both Nova Scotia and Prince Edward Island, farmers recognize the need to place greater emphasis on adding value to the raw farm products produced (Scott et al. 2003). According to one PEI farmer: “We send too much raw product out of the province that eventually comes back in, in a processed form.” And another remarked: “Viability is moving up the value chain, particularly in PEI. It is not satisfactory for farmers just to produce commodities. The world does not need PEI’s commodities.”

In sum, ‘orderly marketing’, direct marketing, niche marketing, and adding value to the raw farm product have all been demonstrated to be effective methods of enhancing farm economic viability and self-reliance in the Maritimes. These experiences may also assist policy makers seeking to chart new paths forward for Maritime agriculture, as they suggest training and assistance programs that have the potential to ease transitions in these directions for farmers.

Integration of Farm Businesses with Other Businesses

Integrating businesses into a ‘web’ is helpful—if we extend the web analogy—to help prevent farm-based wealth from ‘leaking’ out of the foodshed. Indeed, it has been argued that the more tightly woven the web of inter-connected locally based businesses, the greater the likelihood that the multiplier effects of local economic activity will be experienced locally and that wealth generated within the community will remain there. Connecting businesses can also help with value-added production, marketing, and improving the efficiency of the local food system.

A Vermont study of vital communities (Vital Communities of the Upper Valley, 1999) showed that the most sustainable communities were those that included a variety of businesses, industries, and institutions that were environmentally sound and financially viable, provided reasonable wages and benefits to workers, and provided those workers with opportunities to develop their skills through training, education, and other forms of assistance to prepare for the community’s future needs. The study authors generated a number of questions designed to focus attention on economic vitality and generating and circulating wealth at the local and community level (Tables 30 and 31 below). A systematic investigation of these questions in Nova Scotia and PEI communities could form the basis of a future update to this report, and of a potential survey and way of measuring economic self-reliance more rigorously than is presently possible based on available data.

Table 30: Economic Vitality: Questions to Ask

How diverse is the economic base? Is one sector or one employer dominant or is there a wide variety of sectors and employers?
Are the existing businesses environmentally sound?
Are there locally available education opportunities to provide residents with the skills needed to match the needs of local businesses?
What can be done to improve the economic climate and tax base of the community?
What non-financial transactions help make community business work?

Table 31: Generating and Circulating Wealth: Questions to Ask

What percentage of the community’s businesses, industries, and organizations are locally owned/run? How has this changed over time? To what effect?
To what extent do local businesses purchase products from each other?
Is there an adequate supply of locally owned, locally controlled credit available for local business?
Do employees have a voice in the decisions of their employer?
Is there a reasonable distribution of wealth across the population or is there a wide gap between the haves and the have-nots. How has this distribution changed over time? To what effect?

Source for Tables 30 and 31: Vital Communities of the Upper Valley, 1999.

Other questions raised during the 2003 GPI farm interviews (Scott et al. 2003) show that interviewees were concerned about the relationship between farms and other businesses and infrastructure. A number of interviewees mentioned the importance of having schools, food stores, or farm supply stores in farm communities both to reduce isolation of farms and to make farming less expensive. Some interviewees noted that the presence of this kind of infrastructure brings people to the farm communities. Following is a sample of descriptions offered by interviewees of the kind of relationships that presently do and do not exist between farms and other farm-related and non-farm businesses and initiatives in Nova Scotia and PEI.

One PEI farmer noted that he depends on the local abattoir, where he gets his animals processed, for the success of his farm. He personally inspects and watches as each of his animals goes through the killing and dressing process. If his animal had to go to a large killing plant, he says, he would lose control of the animal, because once the hide is taken off in a large plant, he would no longer have control of the process and therefore no way to identify the meat as attached to his farm. Therefore he would not be able to provide assurance to consumers, as he now can, guaranteeing that the meat they buy is really from the animal he raised. This farmer expressed concern over changes in regulations and facilities required for small abattoirs, such as the need for an inspector to supervise the killing. If there are small numbers of animals being processed in a local abattoir, as is often the case, the cost of an inspector becomes prohibitive.

Another farmer from Brooklyn, near Montague, PEI, remarked that there is no longer any community centre, store, or focus in his community, which in turn has major economic implications for farm viability. His farm is six miles from Montague, which provides very few agricultural services. When he was a boy at Kilmuir, he recalled, MacGowan’s store—a family run enterprise just two minutes from the family farm—had nuts, bolts, fence wire, hay mowers, tractors, and even cars. When that business moved 15 km away, he had to change his whole attitude to stocking farm machinery, which in turn affected the economics of farming. In the early days, when his family worked on some farm project and were short a bolt or other item, they went to MacGowan’s and got any piece needed. Now he has to keep a considerable inventory of items on site because he cannot afford either the time or expense of driving over just to get a few things. When essential services and infrastructure are not handy to the farm, he noted, this affects farm business management in significant (and often costly) ways. Thus, there

are spare parts he keeps in the machine house, like a spare tire for a wagon, that the previous generation would not even have thought to keep on hand.

Another PEI farmer told a very similar story that typifies changes in many rural Maritime communities. In this case, the general store near his farm closed down in May, 2003, so that local people now have to travel a considerable distance to O’Leary just for a loaf of bread or other necessities. He recalled that he used to buy all the baler twine, feed supplies, bolts, nails, rubber boots, snacks, and almost everything else he needed at this store. But, since baler twine and other necessities are now bought in O’Leary, he noted, the money now goes there instead of staying right in the community.

This farmer remarked that a community with strong resilience has services available within the community to supply the needs of local residents. In this case, he recalled, the general store was part of the community for more than a hundred years, and the couple who ran the store were over 80 when it finally closed its doors. But increased mechanization and farm input costs, retail concentration, inadequate farm product prices, and an exodus of young people for urban areas all gradually made the economics of farming and rural living more and more challenging. So this general store would likely have closed 15 years earlier had it not been that the storekeepers were so stubborn and determined to stay open. The farmer recalled wistfully that the store was there for the farmers, and it was the farmers buying their supplies from the store that kept it going.

By contrast, one Nova Scotia farmer reported that his community remains strong and viable largely because of the presence of farm-related local businesses:

They used to say that when the economy was in rough shape, you needed to get some big industry to come in... but I always took my hat off to small businesses. I think that’s what is still needed in Nova Scotia. I think grassroots businesses are really important. For example, we used to have a farm machinery dealer [where] we used to go to get our machines fixed. But right in this community within six miles, we had two mechanics who opened up their own shops to service the machinery. I think that makes a difference. Another thing that has made this community viable is the diversification of farming in this area. Ours is stronger because of the diversity—not like in PEI.

And another Nova Scotia farmer reported the conscious challenge and effort required to sustain local businesses:

I really try to support local things. But I find people just jump in their car and drive to wherever. I’m not used to that. I grew up; my family owned a little butcher shop, a little retail store. We’d go to the bakery, we’d go to the butcher shop, and we’d go to the place where you buy vegetables. That’s what I like. Now everybody wants to go to Wal-Mart. I’d rather go to the little shop. And my father tells me on Long Island that they’re going back to that, that it’s becoming popular again, that people like to be going to a community, and do their shopping, where you have some sort of a conversation with somebody about what you’re buying.

A small businesswoman, who lives in an area of high unemployment on Isle Madame, Cape Breton, remarked that small businesses like hers are more resilient and ‘fit into the heritage of the community’ more effectively than ‘retraining’ people for jobs that may never exist. She noted that everyone in her community does more than one thing, and all the small businesses try to support each other.

The community of Clam Harbour on Nova Scotia’s eastern shore was described by one interviewee as highly resilient, largely because of the variety of activities and infrastructure that existed there. There is an sand castle contest that attracts visitors from far and wide, a beautiful beach, regular community dinners, a genealogy centre, an annual ‘loop sale’, and the new Memory Lane Heritage Village that also attracts visitors. All these activities have strengthened community bonds:

It started out as a dream and has become a huge reality, and that has brought together huge numbers of people in the community who would not normally volunteer for things, and they’ve really hung together, and a lot of people have gotten to know other people who would not normally come in contact with each other. And that’s been pretty good.

Several Nova Scotia farmers pointed to the vital importance of available infrastructure to ensure farm economic viability. One Kings County farmer remarked how very thankful he is for the veterinary service in Kings County: “As soon as you have a problem, you just make a call.” And another commented: “To be viable in organic, the infrastructure has to be developed: the processors, the packers, the mills, the abattoirs, the number of farmers and customers to make delivery channels work.”

The importance of delivery infrastructure was particularly emphasized by many interviewees, with some noting that recent changes had markedly increased the challenges facing farmers, while others gave credit to the tenacity of those maintaining small business services to farmers. According to one farmer: “West Colchester was once a booming agricultural area. The market flow changed and the infrastructure followed the flow (to Moncton). This centralized infrastructure increased costs for farmers, especially those far from the centre.”

One woman, who runs a small government inspected abattoir in Margaree, Cape Breton, remarked that she had never advertised her custom poultry processing service, but the business has grown over the years just by word of mouth. “People are really glad it’s here,” she noted. “It’s the only one on the [Cape Breton] Island.”

Few systematic studies of integrated food web systems exist in North America, but a landmark study of local food systems in the U.K. quantified some of the concrete benefits associated with a well-integrated network of local food businesses, and compared these benefits to those generated by conventional (non-local) food systems (Table 32).

Table 32: Economic Benefits of the Local Food Sector in the UK

Economic benefits	
Increased retention of money in the local economy	Every £10 spent in a local food business is worth £25 for the local area, compared to just £14 in local benefits for every £10 spent in supermarkets
Generating greater employment opportunities at a local level	26% of local food businesses had created jobs during the last 12 months compared to 8% of non-local food businesses
Securing farm employment at a local level	Farms in the South West of the U.K. that produce food which is sold locally, employ an average of one additional employee per farm compared to farms that mostly ship food out of the area
Creating increased commercial opportunities	By early 2002, 395 Farmers' Markets were in operation across the U.K.
Support for local agricultural services and suppliers	25% of local food businesses had increased the value of their local purchases during the last 12 months
Diversification of the farm and local economy	At the time of the study, at least 2,143 enterprises were listed in local food directories
Making greater use of co-operation and collaboration between businesses	Nearly twice as many local food businesses were involved in collaborative ventures compared to non-local food businesses

Source: Brown et al. 2002.

While the benefits outlined in Table 32 above suggest potential indicators and measures of rural economic self-reliance that could be highly relevant to the Maritimes, they are by no means the only ones that might be considered as this important subject area is further developed. It has been suggested that distributive issues are highly relevant to assessments of economic self-reliance, so that income polarization and the poverty rate might also be useful measures in this field. As well, the fifth chapter of Bill McKibben's provocative 2007 book, *Deep Economy*, suggests other important areas for exploration. In sum, the systematic study of rural economic self-reliance is still in its infancy, so the discussion here is intended to stimulate further research in this field rather than to provide definitive conclusions that are not yet possible in the absence of reliable data.

Resilience—Durable Economies

As noted previously, resilience is the ability to move through change or stress and to recover effectively from it. It by no means denotes resistance to change or carrying old patterns and structures into a future in which outdated structures may no longer be appropriate or relevant. On the contrary, analysts have noted that times of stress or 'crisis' may often actually constitute opportunities to move towards a better future—even if those opportunities may not seem apparent at the time.

One example is the BSE (bovine spongiform encephalopathy or "mad cow") crisis in 2003, when the U.S. closed its border to exports of Canadian beef after a cow in Alberta died of the disease.

Canadian consumers, however, responded by eating more Canadian beef (Jeanne Cruikshank, pers.com, January 21 2008), indicating that resilience could actually be enhanced by the longer-term development of a favourable local market infrastructure for local beef.

From the discussion that follows, based in part on responses to the 2003 GPI farm interviews, it appears that resilience is enhanced by deep appreciation for the heritage of a place combined with a willingness to be adaptable and face change. One Prince Edward Islander emphasized the latter qualities: “Where there are difficulties in the agriculture industry, I think that being honest and up front about the problem shows that people are ready and do not fear change. That is positive.”

‘Self-determination’—including both decision-making and active civic participation—was also found in the interviews to be a key feature of communities that respondents considered to be viable in the long term. Interviewees noted that with some regularity that if people in communities do not have the ability to create a vision and to participate actively in the realization of that vision—whether through organizations, government, or businesses—then there will likely be little energy for shaping the future of those communities. By contrast, a community with strong social capital, in which active participation and community decision-making are the norm, appears to have good potential to be viable and resilient.

One Prince Edward Islander, noting that “stress” includes poor weather, disasters, or poor prices (Scott et al. 2003), explained: “When you see people pulling together to help each other like after a fire, this is resilience. It includes help with cleaning up, materials and/or labour donated to help rebuild. Another example is people volunteer to provide meals and offer general support.”

And another Islander applied the same principles to crises that have afflicted Island potato farmers: “After PvyN [a potato virus], people continued to have hope and use the resources they had. After potato wart, people continued to work through the issues.”

Measures of Community Resilience

Three potential measures of community resilience emerged from the GPI farm interviews conducted in 2003 (Scott et al. 2003), as indicated in Table 33 below.

Table 33: Measures of Community Resilience

Participation and Self-Determination
Community Vision
Locally Controlled Business

Participation and Self-Determination

It is important that people enjoy their contributions to society. When summed across all people, it can grow without limit. There are no limits to this kind of growth.

—Richard Layard, 2003

Participation and self-determination are here considered together, because the literature in this field indicates that these two qualities are mutually dependent and reinforcing. Thus, a degree of self-determination (including the capacity to have a role in decision-making) is an essential prerequisite for effective participation. Indeed, without such genuine decision-making capacity, participation becomes a sham, as in the mass rallies staged by totalitarian regimes and dictators. The reverse is also true. Without readily available avenues to participate in community activities and organizations, there are no opportunities for decision-making and self-determination.

Sections 2 and 3 of this chapter provided several community profiles both of communities in Nova Scotia and Prince Edward Island considered to be viable and of others that were struggling. The profiles—based on the 2003 GPI farm interviews (Scott et al. 2003)—revealed that viable communities generally (a) engaged members actively in a wide range of activities, and (b) encouraged all community members to contribute.

In Emerald, PEI, for example, enjoyment was recognized as a key factor in encouraging community participation, and residents were often asked directly to participate in activities. In Woodville and Scotsburn, Nova Scotia, interviewees noted that community members were gently asked or even told to show up and help in activities—which was generally well received and provoked positive response. In Hunter River, PEI, a respondent noted that older people are more likely to volunteer and show leadership because they understand what they might lose if they do not participate, including good neighbours, trust, and an environment in which everyone knows everyone else. Protecting those values and bonds can therefore be a strong motivation for active participation in community activities.

Other interview comments (Scott et al. 2003) pointed to the close relationship between participation and leadership. Thus, participation in farming and rural communities often requires initiative in order to generate effective actions. If a barn burns down, for example, the community may gather together to do a fund-raiser for the benefit of the household suffering the loss. But someone has to take initiative to begin the effort. Interview comments made it clear that communities considered resilient have such leaders. One Islander commented that it was particularly important for people who are directly affected by any issue to be involved in the decisions around that issue. Such comments again point to the close relationship between participation and self-determination.

According to the Centre for Community Enterprise (2000) one key criterion of community resilience is that community members are involved in *significant* community decisions. Indicators used by the Centre to assess both avenues for such participation and its effectiveness in influencing key decisions are: 1) meetings are advertised, open to the public, and well attended; 2) public input into decisions has been pro-actively encouraged and solicited; 3) the

degree to which people perceive that public input has influenced major decisions in the community.

Potential additional questions for future consideration that might well be incorporated into a comprehensive survey on the level of participation and self-determination in communities include:

- Do residents feel enthused and excited about participating in their community?
- Do residents feel they have some control over the future of their community?
- What percentage of the population is actively engaged in community planning and activities?

In Vermont, the study on Vital Communities of the Upper Valley (1999) includes ‘Informed Citizen Participation’ in its list of key qualities that help a community work well. In this subject area, salient questions for investigation identified by that study include the following (Table 34).

Table 34: Informed Citizen Participation: Questions to Ask

Is participation pro-active or reactive?
Do civic organizations and local businesses actively contribute to community functions?
Do citizens have the information they need to make good decisions?
Do civic education efforts involve the entire community?
What is the level of volunteerism and do people volunteer because they feel good about their community?
Do schools, churches, youth and civic groups provide citizen education and promote community service?

Source: Vital Communities of the Upper Valley, 1999.

Henderson (1996) argues that meaningful participation works best when certain design principles are in place. These include *prevention* (foresight); *co-operation* (finding consensus and balancing the emphasis of markets on competition); *acceptance of diversity* (a basic principle of living systems); and *clarification of underlying assumptions* (including beliefs, goals, and values). According to Henderson, the ethics for such participation include respect for life, fairness and equity, aspirations for future generations, openness and freedom of information, and a love of one's community as part of the earth.

According to Putnam (1996), participation, or *engagement with each other* and *strength of peoples' engagement in their communities*, is a most important indicator of social capital. Putnam finds that people born between 1910 and 1940—i.e., those over 55—are more socially engaged than any other group.

Putnam presents evidence on the relationship between hours of television viewed and level of social engagement, and concludes that TV appears to be a prime culprit in undermining social capital, since more hours of TV viewed are strongly and directly correlated with less social

engagement. Examining different correlates of social engagement, Putnam concludes that TV is the only identifiable leisure activity that seems to inhibit participation and social engagement outside the home, especially social gatherings and informal conversations. This, according to Putnam, is because television privatizes our leisure time. Jacobs (2004) just as convincingly argues that social engagement is diminished by ownership of cars.

There is emerging evidence that Prince Edward Island remains an exception to a more generalized trend to privatize life and leisure. Statistics Canada's 2003 General Social Survey on Social Engagement (Cycle 17), for example, found that the percentage of respondents who reported having no close friends or family members was lowest in Prince Edward Island (4.1%) among all the provinces. Islanders were also more likely to express trust in others (68.1%) than any other Canadians.¹⁰⁸

In his book *Land of the Red Soil. A Popular History of PEI*, Baldwin (1998:15), observes that "local political meetings are well attended and the province traditionally has one of the highest voter turnouts in the country." In the 2000 federal election, 76% of Islanders cast a vote compared to just 62% of Canadians.¹⁰⁹ Further investigation is required to examine what it is about PEI that would explain Islanders' high participation rate?

Robertson (1998) argues that education systems can have a great influence on participation because education

determines whether the next generation will be groomed to be active citizens, compliant workers, or needy consumers. Education teaches kids what to believe they are entitled to expect from the world, and what they must give back in return. In short, they learn whether the future is something you are stuck trying to cope with (training), or whether you have a right to participate in its creation (education).

McKibben (2007:170) reports that in Vermont, town hall meetings make the people into citizens (as opposed to consumers). In a village of 300-400, he reports, about 40% of voters show up for the once a year meeting, while in a town with 4,000-5,000 voters, only about 10% show up. In a smaller town, he hypothesizes, there is more social pressure to be a good citizen if one knows most of one's neighbours. McKibben goes on to argue (p.217) that people need a sense of what is possible, and a role in choosing a future. Each community, he says, needs to figure out what its particular mix of tradition, resources, and hopes, allows, and its members must then work together to develop a vision for the community and its future.

¹⁰⁸ Human Resources and Social Development Canada, *Indicators of Well-being in Canada*. These two results are available at: <http://www4.hrsdc.gc.ca/indicator.jsp?lang=en&indicatorid=73>; and <http://www4.hrsdc.gc.ca/indicator.jsp?lang=en&indicatorid=72>. Accessed 4 August, 2008.

¹⁰⁹ Canadian Broadcasting Corporation, "P.E.I. tops voter turnout," 28 November, 2000. Available at: http://www.cbc.ca/news/story/2000/11/28/pei_voteturnout20001128.html. Accessed 4 August, 2008.

Community Vision

As reported above, where communities considered viable by respondents in the 2003 GPI farm interviews are briefly profiled, one particular community in PEI had a ‘visioning session’ in which it took the initiative to chart its own future (Scott et al. 2003). A large number of community members gathered in an auditorium, organized themselves into groups, and brainstormed about their vision for the area and how the community could look in the future. All those who chose to be involved had a say in how their area could be revitalized. They then followed up on their visioning sessions by joining together to do work that was needed to invigorate their community and to implement the plans that emerged directly from the input of interested people in the community.

In the Community Profiles above, it was also noted that the Minister of Agriculture’s Panel for the Future of Agriculture presented a positive opportunity for Islanders to become involved in the ensuing discussions and hearings, and to test possibilities and new solutions to challenges. The community of Victoria, PEI, also created a vision for the community (see the example above) and, as a result, adopted standards for agricultural practices in the area that exceeded existing regulations.

The evidence indicates that a significant part of developing a vision for the future of a community involves not only thinking ahead with some sense of imagination and openness, but also having a thorough knowledge of the community’s heritage and history. Without such knowledge, future plans are unlikely to be rooted in a realistic appraisal of the community’s actual assets, strengths, and weaknesses. It has been observed that local traditional knowledge can also help prevent mistakes from happening and from being repeated, based on lessons learned in the past. In these ways, knowledge of history and heritage provide context for the way forward.

In order for this to happen, analysts have noted that there need to be ample opportunities for exchanges of information and experience among community members, and particularly a strong belief in, and support for, education at all levels (Centre for Community Enterprise 2002; Milestead and Darnhofer 2002).

This understanding of the importance of traditional knowledge and of heritage was confirmed in the 2003 GPI farm interviews (Scott et al. 2003). According to one Islander, community resilience is improved when the heritage of a place is understood. This respondent remarked that practical community-building skills based on location-specific knowledge, observation over time, and experience, are necessary to improve long-term viability. He also observed that an awareness of the main characteristics, functions, and processes that produce and maintain a high quality of community life, and an attempt to support and enhance these processes, will further improve community viability.

The strong feeling that heritage and continuity play an important role in creating a vision for a community is confirmed in other interviews (Scott et al. 2003):

Thus, one PEI farmer remarked that he feels it is important to get youth involved in community activities in order for them to understand why the community is the way it is today; and to have the history of the place explained so the younger ones gain understanding and appreciation of the values held by the older generation. He observed that this educational process also helps to avoid mistakes that might have been made in the past. He noted that older people in his community uphold a strong vision of agriculture as the foundation of the community, which he would like to see passed along to future generations.

Another Island interviewee also expressed that a sense of heritage and knowledge of the community's past is critically important for future development. She remarked that apathy (lack of desire to work together on a cause) may well stem from a lack of understanding of community history, and thus from a lack of interest in seeing the community continue.

And yet another Islander commented that in Hunter River, PEI, older residents connected with farms have a particularly strong understanding of the heritage of the place. They have been around so long, she observed, that they know the benefits of keeping their farming community alive, and they also understand what they might lose—good, dependable neighbours, a place where everyone knows almost everyone else, and a sense of trust of the people in the area—if community values are not preserved.

Two Islanders both observed that most local people still maintain a connection with their communities of origin even after they move away, and that they like to come home to events in their hometown in order to stay connected and particularly to take part in special events that might have been part of their growing up years. Islanders, they noted, generally value a sense of belonging, and a sense that they have a relationship not just with the community but also with the place itself. This, the interviewees said, gives people something to live for, and something for which they are willing to exert effort to overcome obstacles.

These sentiments were confirmed by farmers and other rural Nova Scotians interviewed in the 2003 GPI farm interviews. One Nova Scotia respondent reported that he lives in a close-knit community where church and community were “built from our fathers and forefathers who have been here a long time. There's lots of ties. Everybody automatically knows each other's families.” The community works, he says, because

it has a lot of history of farming. You can see by the landmass the homesteads have. Farming was one of the major industries here at one time. But now they're getting pushed out by government because they want urban development of these landmasses. But it's a lovely place to live because you have quiet, community involvement, it's a good place to raise kids, there are places for them to play.

Another Nova Scotian interviewee remarked that she does not choose her role models from among the well-known. Rather, she said:

In rural communities if you ask us that question, we will say someone in our family. I grew up in a home where there was myself, my parents, my grandparents, and my great grandmother, all in that one home. My grandmother was in her nineties and I followed her wherever she went—picking blueberries together, visiting—and I can remember her telling me: “You can’t live your future until you know your past.”

One’s family role models, she said, affect “what route you take, how you treat people, how you live in your community.” She admitted worrying that some of the young people in her community are “losing some of that connection.”

Cultural heritage was identified by a group of communities in Vermont and New Hampshire as an important indicator of community vitality (Vital Communities of the Upper Valley, 1999). As documented in that study, cultural heritage in the form of arts, theatre, festivals, celebrations, and simply knowledge of the heritage and history of a place can build a community’s positive sense of itself and strengthens the fabric of all social interactions within the community. Again, questions for investigation in that particular subject area are presented in Table 35 below. As with other questions posed by that Vermont study (see Tables 30, 31, and 34 above), these questions could be most useful in constructing a comprehensive survey of community vitality and viability for the Maritimes.

Table 35: Cultural Heritage: Questions to Ask

Does the community preserve and enhance what is special and unique about its cultural heritage?
Are children encouraged to participate in cultural events?
In what ways does the community celebrate itself?

Source: Vital Communities of the Upper Valley, 1999.

According to the Centre for Community Enterprise (2000), one key criterion of community resilience is that the community feels a sense of pride. The two indicators suggested by the Centre in this area are: 1) the degree to which people describe feelings of pride in (and attachment to) their community, and 2) the number of local celebrations/festivals in the last year. A third and related criterion might be whether people feel optimistic about the future of their community, which could be assessed by an indicator on the relative level of optimism expressed by community members.

While such indicators, and others considered in these chapters, have conventionally been regarded as “soft” measures that are difficult to quantify, Statistics Canada’s groundbreaking 2003 General Social Survey on Social Engagement demonstrated that it is indeed possible to produce meaningful, quantifiable results on issues like trust, sense of belonging, and social networks. Thus, it is certainly also possible to collect reliable data on issues like sense of pride and optimism. While this work, as noted, is still in its infancy, it is hoped that raising these issues here, demonstrating their salience by reference to the 2003 GPI farm interviews (Scott et al.

2003), and suggesting potential indicators, will contribute to an investigative process that eventually leads to a thorough and comprehensive survey on community vitality and viability.

Indeed, the 2003 GPI farm interviews demonstrated that, in PEI in particular, there is a real sense of pride among many communities in retaining their distinct identity as small individual communities (Scott et al. 2003). Tignish, for example, has demonstrated its determination to sustain itself, along with the infrastructure required to keep it viable, by its ability to fundraise to keep its hospital and rinks going.

In the small community of York, east of Charlottetown, community members have created a particular sense of identify in which they pride themselves on taking great care of their properties, making the community a beautiful place. In this case the shared sense of genuine care about York and its appearance that community members feel and express is itself an example of residents working together to achieve a common goal—even if that goal is perhaps less tangible than particular buildings, activities, and events.

In sum, in numerous interviews, it was quite clear that a vibrant and alive community is marked in large part by residents' sense of pride in where they live. Interestingly, a common feature that many such communities share is that they tend to have good signage designating their community in some unique way. In some cases, that pride is signified through particular events. In Emerald, PEI, for example, residents are proud of their community and want to share it with others through such events as the Irish Festival.

These sentiments were also echoed by many Nova Scotia respondents in the 2003 GPI farm interviews (Scott et al. 2003). For example, in the Sheffield Mills area of Kings County, the Eagle Watch has become a major activity identifying the community and attracting visitors. Nevertheless, one resident remarked, somewhat nostalgically, that such relatively new large events—while they certainly helped diversify the region's economy and put the community on the map, so to speak, were often geared largely to attracting tourists and did not fully compensate for more the intimate and frequent community gatherings that he recalled from times past: "The farmers feed the eagles and that attracts a lot of people from all over. There is also a Harvest Fair. In the old days, however, there were more community events."

In the Preston area, one interviewee reported:

One of our traditions is going to the river to be baptized. But the government put a stop to that. They said that people were contaminating the river. They had to fight for that to come back. You could come out here on the second of July every year and the whole community would be at the water.

Again the Vermont study, *Vital Communities of the Upper Valley* (1999), is invaluable in asking salient questions for further investigation in the subject area of how a community actually looks and feels, and how it relates to its natural assets. Such questions are particularly relevant to examples like that of York, PEI, noted above (Table 36 below).

Table 36: Community Look and Feel: Questions to Ask

What are the community’s special water and land assets?
Is there broad community interest and participation in maintaining these?
How healthy are the natural systems within the community?
Do people feel content living in the community their whole lives?

Source: Vital Communities of the Upper Valley, 1999.

Based on the discussion above, questions for future consideration and investigation in this area might include:

- How many communities in the province have gathered for the purpose of creating a plan for the community?
- How many communities have vision documents, and how often do they revisit the goals in those documents?

Locally Controlled Business

The 2003 GPI farm interviews (Scott et al. 2003) found a significant number of interviewees connecting the presence of locally owned businesses with resilience. Further study is required to assess whether this is actually the case.

Indicator development in new and emerging areas of investigation often begins with qualitative research (like stakeholder focus groups or, in this case, wide-ranging interviews with members of farm communities) to assess what matters and is important for those most affected. Here it is significant that many interviewees perceived or experienced a connection between local business ownership and resilience. But the outcomes of such qualitative research must always be verified through further investigation and—to the extent possible—by quantitative research. The importance of the two representative comments that follow, therefore, is that they identify key issues and questions for such further investigation. Interviewee names are included here to facilitate potential follow-up on particular perceptions and the reasoning behind them.

In PEI, Mitch Murphy observed:

Until recently we were more resilient because we were masters of our own destiny and it was Island companies who were the (agricultural) exporters, the marketers. We have lost some of that because the control has gone to companies outside the Island and to the large conglomerates.

Eric Frank, who has worked in the Annapolis Valley, Nova Scotia, agriculture sector for over 35 years, noted the loss of locally owned processing capacity to out-of-province companies during that time—a loss that, in his view, has adversely affected local self-reliance and resilience.

Kim Tilsley farms in Margaree, Cape Breton, where she has seen a decline over time in numbers of farms. While not commenting directly on locally owned businesses, she did point to the versatility and ingenuity required to sustain local rural communities like hers and to adapt to changing and sometimes challenging circumstances:

There are still a lot of families that—to survive—do a little of everything. You still see that very strongly there. So you have a lobster license, but you also have several head of cattle, and you also do a little of this, a little of that. Everybody's really good at doing a variety of things, because that's basically what you have to do to survive in rural Cape Breton, well, rural anywhere. People are very versatile.

Questions for future consideration and investigation in this subject area include:

- What percentage of business activity is locally controlled?
- Does local control of business help communities recover from stresses or crises?
- What is it about locally controlled business that might make it more adaptable to changing conditions?

While the first question suggests a straightforward and quantifiable indicator, the second two are more explanatory and explore the nature of the possible connection between locally owned business and community resilience.

Community Culture

“Why are people in PEI so friendly?”

“Because we need each other.”

—From 2007 conversation between J. Scott (author) and sales clerk in York, PEI

This brief exchange succinctly encapsulates the essence of what might be called ‘community culture’. Whether consciously or not, we recognize that we need each other, and because we need each other, we try to collaborate. But the collaboration rarely ends with the satisfaction of simple survival needs, and generally produces many unintended side benefits. Social scientists, and recent surveys—like Statistics Canada’s landmark 2003 General Social Survey on Social Engagement (Cycle 17)—have attempted to investigate that simple reality, and even to quantify it to the extent possible, in an effort to assess the extent and depth of collaboration and the benefits it yields.

Documented benefits and side benefits of social engagement and collaboration include the provision of tangible help and support when it is needed (e.g., in times of crisis), a sense of security, comradeship, learning, enjoyment, and the satisfaction that comes from groups of individuals working together for a common purpose or to get a particular job done.

These ‘side benefits’ may create real and substantial value and social wealth that remains largely unmeasured and unrecognized in conventional accounting mechanisms. But this social wealth

not only produces measurable economic benefits, as Putnam and others have shown, but also has intrinsic value that contributes directly to community resilience and viability. For example, the appreciation of community culture and social wealth in their own right is often at the heart of individual decisions to stay in a Maritime community, even though economic opportunities are not as plentiful here as in other regions, and it is often what brings Maritimers back home after being lured away by economic opportunities elsewhere. Since such choices are the subject of substantial anecdotal evidence among Maritimers, it seems particularly important for this region to assess and measure the value of its community culture and its contribution to the region's social wealth more systematically (see below).

Beyond the documentation and measurement of community culture, this discussion also raises important explanatory questions of considerable interest to social scientists and others. Returning, for example, to our opening quotation from the York sales clerk, it is clearly important to take the next step in assessing *why* “we need each other”? To what extent are the reasons financial and economic, and to what extent are they emotional, spiritual, practical, and health-related? Some analysts have suggested that such ‘need’ is at least partially rooted in the co-creation of arts and culture, while others have argued that it stems from the simple reality that humans are social beings.

But while such explanatory factors are universal, there remains a particular need to investigate what it is about the Maritimes that characterizes the mutual ‘need’ in this region, and that might differ from needs in other places? Indeed, such investigation can have very practical utility for policy makers. For example, it is worth exploring whether the need to which the York clerk refers is related to the reality that this region is not as economically wealthy as others in the country. Thus, one documented benefit of a strong community culture and of a high level of social wealth in general is that people may be able to ‘get by’ more easily and satisfactorily without having to earn large sums of money than in regions where community bonds and social supports are weaker. This can be as practical as the provision or sharing of goods and services that might otherwise be purchased.

The particular characteristics of Maritime community culture that may differ from economically wealthier regions have also been associated with lifestyle choices that are also amenable to more systematic survey-based investigation. For example, it has been suggested that ‘unhooking from the treadmill’ and from the pressures associated with high-earning jobs may provide the freedom, time, and flexibility needed to spend more time with family and children, to enjoy nature, and to pursue hobbies and personal interests.

There are also ‘security’ considerations underlying the particular definitions of mutual need applicable to different communities. For example, while an individual with lower income may have less security in terms of pension funds or investments, he or she might have more security in terms of close family ties or supportive friends. In this regard, new evidence—not included in this study for reasons of time and resources—allows investigation, for example, of the degree to which Maritime families might rely more than others on unpaid family caregiving in the event of sickness and disability.

It has even been suggested by some social capital theorists and other social scientists that higher incomes may—at least in some cases—serve to insulate individuals and households from each other and thus diminish social capital, since high incomes allow them to buy what they need rather than to collaborate with others for the fulfilment of particular needs. For example, a higher income household is more likely to buy fuel to heat its home than to work with neighbours to harvest fuelwood, and it may be more likely to buy home entertainment systems than to organize dances or participate in community jam sessions.

The potential correlations between income, community culture, and social capital require further investigation and the hypothesis above by no means implies that all economically wealthy people are likely to be socially poor or that all economically deprived people are socially wealthy. What it does mean—and what is particularly important for investigation in the Maritimes (since it may constitute one of this region’s greatest assets)—is that a socially rich community culture can provide a wide range of options for a fulfilling life, even when individuals are not high earners.

Indeed—as the Genuine Progress Index as a whole demonstrates—we literally ignore the value of human, social, and natural capital to our peril. If social wealth steadily unravels over time—in part because its value has been inadequately documented, understood, appreciated, and supported—we may gradually need much more money just to get by than was the case at times of greater mutual reliance and support, as evidenced by several comments from the 2003 GPI farm interviews referenced above.

In fact, information in this area is of vital importance to policy makers. If community culture and social capital remain unconscious, unmeasured, and unrecognized, then they are very easy to lose, and may well be in decline below the radar screens of policy makers. By contrast, finding ways to measure and social wealth can shine the spotlight on the value of social capital, bring any decline to the attention of policy makers while remedial action is still possible, and generate action to support what may be a highly valuable Maritime asset.

As indicated in many comments from the 2003 GPI farm interviews (Scott et al. 2003), community culture appears to be strong in some PEI and Nova Scotia communities while apparently declining in others. As robust measures of community culture are developed, it will therefore be very important to pinpoint both positive and negative changes over time. For example, some interviewees indicated that particular rural organizations like the Women’s Institutes are not as active as they once were in their communities, while other evidence points to improvements in social capital, such as the upsurge and growing popularity of farmers’ markets, Open Farm Days, and other initiatives that have strengthened farmer-consumer bonds.

In the previous chapter on social capital, numerous examples of strong informal social supports were documented, based on interviewee comments in the 2003 GPI farm interviews. Having identified key issues in this study, based on the qualitative interview process reported here, more systematic surveys are now needed to track the health over time of the kinds of beneficial activity described, and to begin to assess the actual value of social capital in this region.

In sum, this brief discussion indicates that awareness of community culture and of its benefits and value is the first step to keeping it alive and providing it with the necessary supports. The second step is to assess the degree to which this community culture is contributing to the achievement of particular community goals and to the vision that communities hold of their own future.

The ways in which Canada and the Maritimes choose to measure community culture will be important in determining the range and scope of investigation in this important subject area. For example, it will be useful to assess whether some social institutions have become redundant or too restrictive, whether greater diversity and bridging social capital is required in particular communities, and whether prejudice and certain hierarchical structures constitute obstacles to effective development and resilience in some communities. Such questions will not be answered here, but they should be addressed both in measures and assessments of the strength of community culture and on the ground, in communities, as they develop their vision and development goals.

Measuring Community Culture

Measuring community culture is challenging though, as noted, Statistics Canada's groundbreaking General Social Survey on Social Engagement (Cycle 17) demonstrated that key aspects of social capital are indeed measurable and quantifiable through well-designed surveys. Table 37 below proposes a number of potential measures of community culture that are amenable to data collection through surveys. More details on each proposed measure are discussed in the sections below.

Also included in this section, as in previous ones, are stories from farm people in Nova Scotia and PEI as gathered in the 2003 GPI farm interviews (Scott et al. 2003). Because those interviews were conducted with a view to identifying issues of concern for the subsequent purpose of developing indicators, these stories directly informed the selection of indicators and measures proposed here. They also serve to provide additional detail and context for the proposed measures. Where data are available for a particular measure, they are included. However, it must be acknowledged that data in this subject area remain very scarce at this point in time, so this section should be seen as part of a new developmental effort to track these important issues.

Table 37: Proposed Measures of Community Culture

Measure
Number of farms in each community
Activity in the community <ul style="list-style-type: none"> - Learning (schools, including folk schools and community schools; libraries) - Economic activity (businesses, shops, farm markets, post office, co-operatives) - Social activity (e.g., BBQs, dances, fairs, sports, events, baby showers, kitchen parties) - Healing and wellness (hospitals, clinics, places to exercise, trails, safe ways to walk or bicycle to work or school) - Places to meet (community halls, parks, rinks, other places where people meet informally) - Opportunities to participate in decision-making (watershed groups, agriculture federations, community councils) - Proximity of work (closer is better)
Friendly and welcoming <ul style="list-style-type: none"> - Time spent visiting and dropping in on friends and neighbours - Time spent engaging in and caring about community children - “People skills” (can be specified) prevalent in community - Do newer community members and outsiders feel welcome?
Volunteer activity <ul style="list-style-type: none"> - Do volunteer fire departments have enough people for size of community? - Is community infrastructure (like halls, parks, or sport facilities) regularly and adequately maintained and used? - Do major relevant community organizations have enough people contributing?
Degree of reliance on each other <ul style="list-style-type: none"> - Is there a team approach to meeting challenges, making decisions, and organizing events? - Do people feel comfortable asking each other for help? - Do people help each other out on farms? - Do people share knowledge / resources? Do they compare ideas and learn from each other? - Do people help each other in times of crisis? - Do people help each other get large jobs done? - Do organizations and groups help each other through sharing resources, etc? - Are there opportunities to save money by sharing and bartering resources and relying on each other, and are these opportunities actualized?
Trust <ul style="list-style-type: none"> - % of people who lock car, home, workshop doors; % of people with security systems - Number of unattended roadside sales tables with a jar for leaving money - Do people of all ages and both genders feel safe walking in their neighbourhoods after dark? - Do people work together to solve problems and seek mediation rather than hire lawyers? - Do people feel confident that, if they lose a wallet or purse, it will be returned?
Social diversity <ul style="list-style-type: none"> - How much communication is there among diverse interest groups? - Do formal and informal forums exist for sharing ideas and resolving public issues? - How is social and cultural diversity celebrated in the community? - Are there opportunities to meet people with whom one would not normally socialize? - Do community members with divergent interests work together on community initiatives?

Farms at Heart of Communities

It appears—from the 2003 GPI farm interviews (Scott et al. 2003) and other evidence—that, as farms in a community are lost, living conditions become increasingly difficult both for the remaining farmers and for farm-related and non-farm enterprises and organizations. Even though each farm is operated independently, the interviews pointed to an understanding among farm people that they need and depend on each other for practical and moral support, advice, help at critical times, borrowing equipment, custom work, a political ‘voice’, and more. As well, farms require a supporting infrastructure, which becomes less viable as there are fewer farms.

Unlike many workers who leave their homes to go elsewhere to work, farmers remain on their land, and therefore in their communities through the day, and thus act as an ever-present physical anchor for their communities. According to a PEI farmer: “The farmers are the workers in the community. They are foundation people in the churches and fire departments and exhibitions. As you lose the farmer, other community activities are lost too” (Scott et al. 2003).

Lyson et al. (2001) showed that rural communities in the U.S. with ample numbers of family farms had more economically independent people, more civically motivated people, and greater community viability than communities without such family farms.

Aggregate data on farm numbers in Nova Scotia and Prince Edward Island from 1921 to 2006 appear in Figures 1 and 2 of the accompanying report on farm economic viability. What is needed for this particular exploration of community culture and viability, however, are similar data and trends at the community level to allow an assessment of which communities have effectively maintained farms and which have seen a decline in numbers of farms. Time and resources do not permit this kind of investigation for this particular study, though it would certainly be possible at least at the county level, as Census of Agriculture data on farm numbers over time are available at the county level.

Activity in the Community

Many of the 2003 GPI farm interview comments identified regular and inclusive community activities as a key indicator of a strong community culture. Interviewees noted that the energy and vitality of rural communities depended on having conducive places for people to gather and meet, and a wide range of constructive activities occurring in those places at which community members felt welcome (Scott et al. 2003). Interviewees identified these meeting places and activities both as formal (like a designated visioning or planning meeting in a community centre) and informal (like socializing in a storefront). Sample comments follow:

One PEI rural resident remarked: “We need to be able to *learn* in the community; to do economic transactions in the community; to be able to socialize. Community is not just about where I sleep and mow my grass.” Another commented: “Local neighbourhood stores had a group of chairs around the stove where people socialized as well as bought groceries.” And yet

another noted: “Places where people meet are important to healthy communities. Community halls, clubs, centres where people meet and care for each other encourage alliances and loyalties through friendship and trust.”

One PEI interviewee identified the presence of certain businesses and institutions as particularly important for strengthening community culture: “The feed mill, gas station, post office etcetera” are still in her village and provide important services to the people. “These people [who run the businesses] feel needed and valued. This must continue or people get tired, give up, and move away.”

Community halls seem to play a vital integrative function in many communities. One respondent reported that in one PEI community,

the community hall is used an amazing amount. It is rented out for many functions. It is a centre for activities like anniversary parties, showers and BBQs. It is located across from the church, so it is used for church social functions also (the church doesn’t have a kitchen). The church families help maintain the community hall and the grounds around it by helping with fundraising.

Other interviewees credited a range of community-based institutions—including sports arenas and clubs, hospitals, schools, libraries, and institutions like community councils that encouraged participation in decision-making—as performing vital roles in strengthening community culture. Some representative examples from the interviews follow:

One woman near Souris, PEI, mentioned the Strider’s Ski Club, which started off as small community effort and developed into a six-mile, groomed, fully lit, community owned trail that is open all winter, and that attracts visitors from far away to ski. She reported that the founding members of the club built a community centre, of which the bottom level functions as the gateway to the ski area and the top level is a big community hall that is used for year round events and that has become a great gathering place for community activities and socials. From a simple idea, she said, this whole project grew to become a wonderful resource available to a large geographic area.

Some interviewees noted the important function of sports in bringing community members together. Thus, one PEI rural resident remarked that hockey rinks and sports facilities encourage community members to work together on a mutual cause, and observed that the community gets ‘larger’ through a shared interest in meeting children’s needs.

Another PEI interviewee noted that arenas are tremendous sources and maintainers of ‘vibrancy’ in communities, not only because hockey is so important, but because arenas are places to gather together and also to hold other events during the year. He suggested that most vibrant communities in PEI do in fact have an arena. Similarly, he said, communities that have a hospital really value that resource, which seems to go right to the “core and fibre” of the community. He remarked that trying to take a hospital away from a community is like trying to take away someone’s first born child.

Some of those interviewed felt similarly about learning resources and decision-making processes as key to community vitality. Thus, one PEI woman felt that schools, community schools, and other opportunities for education or transfer of knowledge were all important for community resilience. And Karen MacInnis, cited in chapter 2 above, noted that the Hunter River library instils a desire for more learning in that community. In addition, she remarked, there are plenty of opportunities for participation in planning the future of the community—such as the community council, the watershed group, and the healthy community alliance.

A Woodville, Nova Scotia, interviewee remarked that his is

quite an active little community. We have a community centre, we built a hundred thousand dollar addition on it, we have a double paved tennis court and a ball field, and it's all done with volunteer work. We have our own Brownies and Sparks, and Cubs and Beavers and Scouts, and the churches. We used to have a princess for the Apple Blossom parade. And the kids all go to school here, so the kids all know each other.

At Woodville barbecues, she noted, new people in the community are asked to contribute, or even gently told to show up to help out—requests that are met with good responses and even appreciation. Similar remarks were made by interviewees in Scotsburn, NS, and Emerald, PEI, where requests to participate are supplemented by special efforts to ensure that activities are enjoyable, which also “gets people participating.”

And another Nova Scotian interviewee saw the weekly Farmers' Market as an event that connects people in his community: “I think its important that if people can come here, not see each other all week, and just reconnect with them again, like clock-work, all summer long, I think we are serving a wonderful purpose.”

Residents of Vermont's Upper Valley communities (Vital Communities of the Upper Valley 1999) listed the following features that they credited with making their communities 'vital':

- Access to good health care nearby;
- Affordable housing;
- Children's ability to play outside and their ability to walk or bicycle to where they need to go safely;
- Ability to ski or hike close by;
- Feeling of pride in their schools as integral parts of the community;
- Good after-school programs from which children come home satisfied;
- Gathering places where people often run into each other, like a farmer' market, a general store, or a post office; and
- Thriving town centres where people can do business and meet neighbours.

Studies of social capital have also identified proximity to work as important for community vitality. According to Putnam's research, each ten minutes of additional commuting time cuts all

forms of social capital by ten percent—which means 10% less church-going, 10% fewer club meetings, 10% fewer evenings with friends, etc. (Putnam 2000).

In the U.K., studies have shown that the presence of local shops, post offices, credit unions or banks, and other meeting spots are important as the ‘glue’ that holds a community together. Thus, loss of local retail outlets can lead to a “rapid loss of ‘social capital’” as a result of which the community may even “become victim to vandalism and more serious crime” (New Economics Foundation 2000: 3). The most direct and frequent cause of such loss, according to the New Economics Foundation (NEF), is supermarkets. The NEF reports:

When the number of local retail outlets falls below a critical mass, the quantity of money circulating within the local economy will suddenly plummet sharply as people find there is no point trying to do a full shop with an impoverished range of local outlets. This is particularly true if people can no longer withdraw cash because of bank branch or cash point closure.

As a result of its investigation, the NEF recommended (p.53):

- Local authorities should grant planning permission for supermarkets with conditions that a significant percentage of what they sell should be sourced locally.
- Government agencies and public sector bodies should review and reform their procurement policies and practices to include clauses that encourage local purchasing and employment creation.
- Tougher competition legislation should be introduced outlawing predatory pricing strategies, particularly selling food at a lower price than it was bought.

NEF also recommends monitoring (using multiplier analysis) to “distinguish between public expenditure that simply seeps out of areas and spending that achieves a double dividend because it carries on circulating locally” (p.53). In a comment that is particularly pertinent today, at a time of sharp energy price increases, the NEF (2000) notes that local production

is going to require that energy costs are not artificially low as they are at the moment. The failure to price in the real cost of road or air transport simply encourages big producers to ignore local resources on their doorstep—and have also contributed to wasteful production systems that involve trucking food across Europe just for packaging. (p.53)

Friendly and Welcoming

Another measure of community culture is how friendly and welcoming people are. Interviews in PEI and Nova Scotia (Scott et al. 2003) illustrate how important ‘people skills’ are for holding communities together. Reading the following comments, it is again important to recall, as noted above, that such seemingly ‘soft’ causal factors have been demonstrated not only to have vital importance in reality but also to be increasingly amenable to measurement and quantification

through survey instruments like Statistics Canada's landmark 2003 General Social Survey on Social Engagement (Cycle 17).

One PEI interviewee said he knows that any time you work with people, there is the chance to offend or cause hard feelings, but he has observed that the smart people are those able to overlook being offended or snubbed a bit and still pull together for the common good. He said, "Any time you can raise people's level of discussion to talking about issues rather than personalities, then you are on the right track. It is the same with all relationships, especially when working with volunteers."

Another PEI respondent reported that during 4-H cheese sale time, his family plans on only two house calls per night, because the standard neighbourhood fall visiting time is about two hours, so his family generally spends that amount of time at each place it visits for a sale. Last year, he skipped going to one of the neighbours because that neighbour's wife had bought the cheese from someone else. But the neighbour was 'wild' that he hadn't visited. So he invested in that friendship by going to the ADL plant, buying 10 more pounds of cheese and charging the neighbour 4-H prices (so that the neighbour actually got three times as much cheese for the price).

He did this, he said, partly to keep a good 4-H customer and to maintain good will. But he noted that people in his community really look forward to the fall 4-H cheese sale not just to buy cheese at good prices, but also to get a visit from the family. So this process strengthens the resiliency of the community and provides a means for communication and relationship-building. The interviewee added that housing all the 4-H dairy calves at his family's farm brings children from the whole area into his community and adds to the value placed on Brooklyn as a centre for learning and growing.

One Nova Scotia interviewee recalled how he was welcomed to the community of Sheffield Mills, Kings County: "I came here 45 years ago as a complete greenhorn and I still remember how well I was welcomed by people here. There is that close feeling in the community still."

And another reported that his own community has lost some of that same quality:

[Lapland] really isn't a farming community anymore. When we moved here you couldn't have wanted a better community. [People] were very welcoming. I find that it has changed through the years tremendously....unless you make an effort through the Fire Department and the suppers we put on. People work in Bridgewater and that takes away from community.

One Nova Scotia respondent remarked that a wholesome, welcoming, and warm community—or even some individuals with those qualities—can function almost as an extended family:

When you have really dysfunctional families, you can still have a kid come out of that who is whole and healthy and resilient. It all seemed to boil down to there was at least

one adult in that child's life—a neighbour across the street, a granny—who cared passionately about that child.

Another Nova Scotia rural resident said she appreciates the casual sense of belonging that people in her community have: “Even today in our family,” she said, “we never know on Sunday how many we're going to have for supper. They just drop in.” And another remarked that an important thing about his own community is that there is very little hierarchy. He felt it was helpful for everyone to be treated with the same respect, no matter what their occupation was.

But aside from the specific characteristics that many interviewees attributed to welcoming and friendly communities, one Nova Scotian said he thought there was simply a certain skill associated with the art of visiting that had to be nurtured through practice. He said:

Before we know it we've lost skills. When we were young our parents would go visiting people. This was a skill you developed. If you lose that skill, you don't do that anymore, it becomes difficult. You don't know how to approach your neighbours any more, how to be allowed into their little world and allow them into your little world.

Volunteer Rate

The 2003 GPI farm interviews indicated that it takes a lot of volunteer effort to keep a rural community functioning optimally. Thus, rates of volunteerism may be used as one key measure of the strength of community culture.

Results from the GPI farm interviews (Scott et al. 2003) indicated that, while it is not unusual for volunteer fire departments in PEI to have waiting lists of potential volunteers, this is not the case in some rural Nova Scotia communities where there are insufficient volunteer firefighters. One Nova Scotia caller to CBC Radio on November 6, 2003, said he observed that volunteer fire-departments are crucial to the viability of a community, and he lamented that in some areas vacated by farmers and where farmland had been bought up and developed, no one was now willing to run the volunteer fire departments. While such anecdotal and interview reports require systematic independent verification, they do point to the potential importance of this indicator both for comparative purposes and for assessing trends over time in an area of considerable importance for rural community culture and viability.

Women's Institutes and 4-H

While the Women's Institute (WI) and 4-H are two very different farm-based organizations, both contribute significantly to community culture in farming communities and both rely largely on volunteers.

In Nova Scotia, the first Women's Institute branches were formed in 1913. Since then, WI has focused on many different activities relevant to rural community life, including rural household skills, promotion of locally produced food, folk schools, emergency relief, handcrafts, wellness,

environment, day care, safety, seniors’ issues, and support to other rural community groups and institutions such as schools, community halls, hospitals, and 4-H (WINS 1997).

In the 2003 GPI farm interviews, Jean Palmeter—a long-time member of the North Grand Pré WI—reported a drop in participation among women younger than her (Scott et al. 2003):

We can’t get the young people because they are too involved in the activities of their children. When my children were growing up, I would be taking them to 4-H and maybe to soccer and music, but not so frequently as it is now. They used to have a late bus to bring kids home after after-school activities.

Provincial statistics kept by the Nova Scotia WI confirm that, although the organization remains very active, there has been a sharp drop in the number of both branches and members since the 1950s (Table 38 below).

While comparable provincial statistics do not appear to be available for PEI, other evidence points to a similar decline in that province, with membership dropping by nearly 40% between 1992 and 2003 alone. Thus, in 2003, the PEI Department of Agriculture and Forestry reported 130 active WI branches in PEI, with a combined membership of about 1,700 women.¹¹⁰ In 1992, the PEI Cabinet Committee on Government Reform (1992:36) commented: “Women’s Institute has strengthened the social fabric and communities of PEI. Today [1992], its 2,800 members continue to be active on a range of projects to help their communities.”

Table 38: Women’s Institute Membership, NS, 1949–2007

Year	Membership	Branches
1949 ¹¹¹	4,205	200
1951 ¹¹²	-	220
1992 ¹¹³	1,547	107
2007 ¹¹⁴	756	63

In 1992, the PEI Cabinet Committee on Government Reform commented (1992:36) that, “through 4-H, thousands of rural youth have achieved personal growth and leadership skills. The organization continues to be strong and vibrant, with over 1,000 members and 400 volunteers today.”

¹¹⁰ PEI Department of Agriculture and Forestry. 2003. *Corner Post* May 26(4):6.

¹¹¹ WINS 1997: 25.

¹¹² WINS 1997: 27.

¹¹³ Raw data were provided by Linda A Munro, Women’s Institute of Nova Scotia, March 4, 2008.

¹¹⁴ Ibid.

According to the PEI 4-H website, the PEI 4-H groups are “in the business of developing well-rounded, responsible citizens—tomorrow’s leaders. 4-H members practice their public speaking skills and learn to work together as a team.”¹¹⁵

4-H is known for teaching young people confidence through public speaking. Ruth Grant, Senior Program 4-H Co-ordinator in Nova Scotia, remarked that high school teachers often tell her they can easily pick out the 4-H members because they are good at public speaking (personal communication, March 12, 2008).

Another key strength of 4-H identified by many interviewees in the 2003 GPI farm interviews (Scott et al. 2003) is that it is an intergenerational organization, where older youth help younger children, and where older community members volunteer their time to work with the younger 4-H members. The contributions of 4-H to community culture are more fully addressed in Part 3 of the previous chapter on Social Capital.

Table 39 below shows the number of participants and volunteer leaders in both Prince Edward Island and Nova Scotia over time. Although the organization remains vital and active today, Table 39 indicates that participant numbers are dropping—with a one-third decline in members in PEI since 1984, and a 20% membership decline in Nova Scotia since 1988. The number of provincial clubs has dropped by one-third in both provinces.

¹¹⁵ Available at www.pei4H.pe.ca. Accessed February 2008.

Table 39: Membership in 4-H, PEI and NS, 1984–2007

Year	Number of members	Number of leaders	Number of Clubs	Number of Census Farms
Prince Edward Island				
1984 ¹¹⁶	977	384	42	3,154
1990 ¹¹⁷	910	350	42	2,833
2000 ¹¹⁸	779	364	36	2,217
2004 ¹¹⁹	860	380	36	1,845
2007 ¹²⁰	655	355	28	1,700
Nova Scotia				
1988 ¹²¹	2,933	962	131	4,283
1992 ¹²²	2,954	1,108	122	3,980
1994 ¹²³	2,813	1,110	115	3,980
1995 ¹²⁴	2,827	1,071	110	3,980
1996 ¹²⁵	2,893	1,076	106	4,453
1997 ¹²⁶	2,751	1,033	109	4,453
2003 ¹²⁷	2,398	936	87	3,923
2007 ¹²⁸	2,356	829	88	3,795

In a study of farm families in Canada (Martz and Brueckner 2003), 40% of youth stated they are actively involved in youth farm organizations, such as 4-H, agricultural societies, or junior farmers' organizations. The study also found that parents in farm families see farm clubs such as 4-H as an important way to socialize their children into farming culture and as places where youth can gain an interest in agriculture. Parents and other youth also said they encouraged children to be a part of clubs such as 4-H as they teach youth practical skills about various aspects of farming such as how to care for animals, how to do book-keeping, and how to market their produce and animals. The study found that other rurally based organizations in which youth are frequently involved include education-related groups (29%), church groups (24%), youth groups (18%), and organizations involved in arts and culture (12%).

¹¹⁶ Information from the 1984 PEI Department of Agriculture Annual Report

¹¹⁷ Information supplied by the PEI 4-H, March 19, 2008

¹¹⁸ Information supplied by the PEI 4-H, March 19, 2008

¹¹⁹ Information from the PEI 4-H web site. www.pei4h.pe.ca. Accessed February, 2008.

¹²⁰ Information supplied by the PEI 4-H, March 19, 2008

¹²¹ Information from the 1988 NS Department of Agriculture and Marketing Annual Report.

¹²² Information from the 1992 NS Department of Agriculture and Marketing Annual Report. Note: 1992 appears to be a peak year for 4-H membership in Nova Scotia, even though the number of clubs is diminishing.

¹²³ Information from the 1994 NS Department of Agriculture and Marketing Annual Report.

¹²⁴ Information from the 1995 NS Department of Agriculture and Marketing Annual Report.

¹²⁵ Information from the 1996 NS Department of Agriculture and Marketing Annual Report.

¹²⁶ Information from the 1997 NS Department of Agriculture and Marketing Annual Report.

¹²⁷ Information from Liz Crouse, Manager of 4-H and Rural Organizations, Nova Scotia Department of Agriculture and Fisheries, Personal communication, December 2003.

¹²⁸ Information from Ruth Grant, Senior 4-H Program Co-ordinator, Nova Scotia Department of Agriculture. Personal communication, March 12, 2008.

Degree of Reliance on Other People

A key aspect of farm life that emerged during the 2003 GPI farm interviews in PEI and Nova Scotia (Scott et al. 2003) was reliance on others. Thus, in response to the question, ‘what is the glue that holds the community together’, a large number of respondents talked about people relying on each other. Indeed, many farmers expressed that it would be impossible to farm effectively without a strong network of people helping each other out. This simple but vital component of rural community culture emerges in many of the following comments extracted from the 2003 interviews:

One PEI farmer remarked: “A resilient community is characterized by a team approach. Everyone is working together and getting everyone involved in some way.”

And another commented: “Islanders have a tendency, especially at the farm level, where extended family has played a more predominant role than perhaps elsewhere, to move less quickly to the nuclear family. That reliance on each other has helped with resiliency.”

One PEI respondent gave the example of fighting mosquitoes together: A few people contact everyone in the community yearly, and tap into a strong willingness to work together on the common goal of controlling mosquitoes in their area. Through that process, he noted, many got to know some new people who actually were neighbours. The interviewee remarked that the building of the local community centre was another example of the community pulling together to accomplish a widely felt wish for a community hall. He noted that community members relied on each other to raise the funds for the building, to cut the lumber, and to work together to build the centre.

Another PEI farmer commented that resilience depended on the ability of people in the community to share knowledge, get and give advice, compare ideas, and share resources. He said, “There is a strength in this knowledge developed as a group. It requires trust and openness. It makes people feel there is always someone there when help is needed; it makes them want to live and stay in the community.”

One Island respondent noted that in small communities people naturally reach out to those who are sick or have lost a loved one. He remarked that his own family experienced that personally when it had a death in the family. It was very humbling, he said, and he wondered, in hindsight, how his family would have survived the ordeal if it had not been for the community support that was generously provided. He has observed that in urban centres, where he has relatives, sometimes only a handful of people attend services that are usually held in a funeral home, where as in PEI, people are lined up for three blocks at a funeral to offer support to the family of the deceased. That, he said, is what makes PEI what it is and such a “great place to live.”

Other PEI interviewees also commented on the degree to which Islanders rely on one another for support in times of difficulty. One remarked how important it is to bring food for people recently

home from the hospital or for someone having a problem. And a woman, whose family had the misfortune of experiencing two fires in recent years, recalled how community members brought food, clothes, and furniture, and offered to milk the cows in the barn.

Another Islander remarked:

People from other provinces are constantly amazed. When people are visiting here, especially from large centres, they read in the paper on any given night that there might be three or four benefits for people in need—people who are sick or have a hard time come upon them. People in a community get together to offer support and help. There is very impressive support for each other.

And a Nova Scotia farmer recalled that when he was growing up his family would never refuse to help a neighbour:

In the spring of the year, we would all have eight-foot lengths of wood to saw up. So everybody would get together and go from place to place. You would go to one neighbour's place, cut up his wood and have a meal there. We spent about three weeks doing that until everybody in the neighbourhood was sawed. Of course you still had your chores to do after you were finished. We did the same thing with grain. So we shared the machines—we would trade back and forth, thrashing grain.

Another Nova Scotia interviewee affirmed her experience of community residents supporting each other in times of need: “If you have lots of people feeling needed, that they belong, that this is *their* place, I'm sure that the community as a whole is more resilient because you know other people. When tragedy strikes, one of the most important things is to know that you're not alone.”

And another Nova Scotia farmer noted that this mutual reliance and support is no longer as strong as it once was: “We're all dependent on each other more than we'd like to think. I think we've had a little experiment where we have become less community minded, and I think our collective psyche is... bothered by that now.”

One Nova Scotia organic farmer describes the group of organic farmers in his region as a very interdependent group, “and,” he noted, “it's that very dependence that makes it strong. With the organic community, we're all doing our own thing *and* we're working together.”

Another Nova Scotia farmer noted the unique combination of self-reliance and mutual reliance that was essential to rural living. Pride, he said, is important for a community to survive, but at the same time it's important not to have so much pride that one doesn't ask for help when one needs it: “That's when you're off to yourself and that hurts the whole community because no one wants to deal with you any more. If you got pride *and* you're working with everybody, that's beautiful.”

One Nova Scotia farmer remarked how much respect she had for the Mennonite community living around him:

They really take care of people in the community. If something happens, they're there, they help. We had an emergency and we needed 18 cords of wood moved and they were right here, no questions asked. We'd had a house fire. And when the contractor came to do the renovations, we had to move the 18 cords of wood out of the basement. It was just beyond anything that we could do in the time that we had to do it. They came down. I built huge pots of beef stew and massive amounts of biscuits. They were all here when the house was burning down—people bringing us tea and coffee, quilts just to get us through.

A farmer in Grand Pre, Nova Scotia, noted that there are remnants today of the former community spirit she once knew: "People do come together around tragedies though, like when my husband died. The food—I don't know where it all came from."

Another on the Eastern Shore feels Clam Harbour is still a resilient community because of the unspoken rules of comradeship: "When things happen, people support each other. In terms of negative events, like fires and terrible accidents, there's a basic unspoken understanding, that whatever happens here, your neighbours will be there for you."

That willingness to provide assistance and support in times of difficulty was echoed by many rural Nova Scotia interviewees. One recalled: "Stacy, who used to work here got into an accident on his way to work and everyone was right here to help him. Regardless of who it is, the help is always there. If there's a death in your family, everybody's there."

And another felt the spirit of mutual reliance and support had historical roots:

Uncle Mort's house burned down on Christmas Day and it was only a few weeks and they had a house up. That was like that right from the beginning because they couldn't have survived as settlers if everyone did things on their own. They couldn't put up a building alone.

One Nova Scotia farmer reported that in his childhood

there were other farms but they were at least a mile apart. There was one thing beautiful about it:—if anyone had a hardship, everyone else was there to help. I know just before I was born our house burned down in February. Everyone was there to help. They [parents] had lost everything and had six children.

And yet another Nova Scotia farmer presented a vision of the 'economy of care' that still exists in rural communities, and which all of these examples (and his own) typify:

One of the writers I read a while ago used the term that instead of an 'economy of growth', which is the one we function under, perhaps we are going to be forced to go to an 'economy of care', where we consider other things, so that economic activity takes on a different perspective in terms of its role in our community, in our nation and even in our

world. It starts with people, so when people become more informed and begin to understand some of the dynamics at play, then change becomes possible.

When I was ill I had been slow making hay because I just didn't have the energy. One Sunday morning, three guys came down around 10:30 and said, "Tom, we've heard you're not doing good. We're going to help you." You wouldn't hear that in the city. Rural communities are special places.

This farmer's wife also remembers "the time you were in the hospital and they arranged a bake sale for us. They brought all the stuff here. That was really nice. They supported us financially."

Along the same lines, another Nova Scotia farmer recalls the night his dairy barn burned down on Christmas Eve, 2002:

The next morning, other dairy farmers from all over the province showed up to pick up the milking cows. They took them home to their own farms, milked them and cared for them until we were ready to take them back when the new barn was built. Without a word or any expectation, they just showed up to help out.

And yet, despite the many very positive and affirmative comments that abounded in the 2003 GPI farm interviews, attesting to the strength and value of mutual self-reliance and support in rural PEI and Nova Scotia communities, there was also a strong awareness among respondents that something has shifted in the nature and type of community engagement. As the last story about a barn fire at the Centre Burlington, N.S., dairy farm indicates, those who helped out were other dairy farmers from all over the province. The farmer commented that, had the same thing happened years ago, it would have been the community of *neighbours* who would have taken in the milking cows, while we now seem to have 'communities of interest' rather than geographic communities.

The sentiments expressed by rural residents of PEI and Nova Scotia are also echoed in the 1999 rural Vermont study—Vital Communities of the Upper Valley. There, a real sense of neighbourliness was identified as a key example of a community 'Vital Sign'. Marks and examples of such neighbourly behaviour identified by those Vermont residents were to "borrow things or ask for help; know and care about our neighbours but also respect each other's privacy."

In British Columbia in 2000, the Centre for Community Enterprise published *The Community Resilience Manual: A Resource for Rural Recovery and Renewal*, which identified one key criterion of community resilience as a spirit of mutual assistance and co-operation in the community. Two indicators of the existence of this spirit chosen by the Centre were (1) the degree to which people perceive that mutual assistance and co-operation exist in the community; and (2) organizations in the community have developed partnerships and collaborative working relationships (Centre for Community Enterprise 2000).

The density of community networks could also be identified as an important criterion of mutual reliance and support. In this regard, a key indicator of such density is the degree to which local and regional networks provide goods and services to community members. Conversely, dependence on large centralized retail outlets and on service providers instead of other community members might be regarded as a sign of a compromised community culture. One possible variation of this indicator—also linking community collaboration and mutual support with livelihood and economic outcomes and exploring possible explanations for higher rates of mutual reliance—might be the degree to which rural residents are able to live on less money in cases where resources are shared and bartered more frequently, and where community members rely more strongly on each other.

Trust

Another measure of community culture—widely referenced in the literature on social capital—is the degree to which people can trust each other. This might be demonstrated comparatively by indicators like the proportion of residents in different communities who lock their doors, or the percentage of the population that has security systems installed.

Statistics Canada's 2003 General Social Survey on Social Engagement (Cycle 17) was the first systematic pan-Canadian statistical effort to examine a wide range of aspects of social capital, including levels of trust among Canadians. Explaining the purpose of the survey, Statistics Canada noted that "'social capital' has attracted the interest of researchers and policy-makers. Many of them wish to develop a better understanding of how social networks and norms of trust and reciprocity may contribute positively to individual and social outcomes."

An analysis of results from this survey found that rural Canadians were much more likely to trust their neighbours than residents of large cities, even though general levels of trust did not differ so sharply.¹²⁹ In response to the question—"Generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with people?"—59% of rural Canadians said they trusted most people compared to 52% of those in large cities. However twice as many rural Canadians (40%) as large city dwellers (20%) said they trusted their neighbours a lot, and two-thirds of rural Canadians said they trusted most people in their neighbourhood compared to only 38% of those living in cities of a million or more.¹³⁰

Because of the importance of this survey in demonstrating the potential for measuring and quantifying key elements of social capital, including levels of trust, some key rural-urban differences are reported below in greater detail to indicate some of the nuances in the findings. In particular, the results indicate the importance of exploring the relationship between trust and

¹²⁹ Statistics Canada, *The Daily*, [Tuesday, June 21, 2005](http://www.statcan.ca/Daily/English/050621/d050621b.htm). "Study: Social relationships in rural and urban Canada." Available at <http://www.statcan.ca/Daily/English/050621/d050621b.htm>. Accessed 9 August, 2008.

¹³⁰ Turcotte, Martin, Statistics Canada. "Social engagement and civic participation: Are rural and small town populations really at an advantage?" Statistics Canada. *Rural and Small Town Canada Analysis Bulletin*. Vol. 4. No. 4. June 2005. Catalogue no. 21-006-XIE. Available at: <http://www.statcan.ca/english/freepub/21-006-XIE/21-006-XIE2005004.pdf>. Accessed 9 July, 2008.

other elements of social capital, like knowing one's neighbours, having close friends, volunteering, and helping one another—all factors examined above in the context of the 2003 GPI farm interviews.

According to the Statistics Canada social engagement survey, Prince Edward Islanders have the highest level of trust of others in the country—68.1%, compared to 61% of Nova Scotians and just 56% of Canadians. Conversely 44% of Canadians maintained that other people could not be trusted, agreeing with the statement that you can't be too careful when dealing with others. Residents of Quebec were the least trusting, with only 35% agreeing with the statement that 'most people can be trusted.'¹³¹

Some Rural–Urban Comparisons on Trust and Other Aspects of Social Capital
From a Statistics Canada analysis of results from the 2003 General Social Survey on Social Engagement (Cycle 17)

The more rural a place, the greater the proportion of individuals who said they knew all or most of their neighbours, the study found.

In small rural communities, between 52% and 61% of individuals reported that they knew all their neighbours. This was three times the proportion of only 16% of those in the largest urban centres, that is Toronto, Montréal, Vancouver and Ottawa, who said they knew all their neighbours.

In addition, the more rural the place of residence the more likely individuals were to say they had a very strong sense of belonging to their local community. Almost one-third (32%) of rural residents who had lived in their community for five years or more expressed a very strong sense of belonging to their local community. This compares with only 20% of residents of cities with a population of 500,000 to one million, and 19% of those in cities with a population over one million.

Rural residents were much more likely to say that their neighbours could be trusted a lot. They were also more likely to say that they trusted most people in their neighbourhood. However, these differences in rates of feelings of trust and numbers of neighbours known were not fully reflected in terms of help received from, and help given to, neighbours.

¹³¹ Human Resources and Social Development Canada, *Indicators of Well-Being in Canada*, “Social Participation — Trust in Others”. Available at <http://www4.hrsdc.gc.ca/indicator.jsp?lang=en&indicatorid=73>. Accessed 9 August, 2008.

Some Rural–Urban Comparisons (continued)

Among people who had received help in the month prior to the survey, 20% of Canada's most rural residents reported being helped by a neighbour. This was only slightly higher than the equivalent share of 16% for residents of the largest cities. Among those who gave help, 23% of Canada's rural residents said they had helped a neighbour, compared with 17% in the largest cities.

The study examined rural and urban differences in civic participation by looking at volunteering. The more rural the place of residence, the greater the likelihood of an individual having volunteered over the 12 months prior to the survey. About 41% of people in the most rural areas said they had done so, compared with 29% of residents in the largest cities....

The level of trust within groups or communities is often considered as an important element of "social capital." While this report showed that residents of smaller places were significantly more likely to trust their neighbours, there was only weak evidence to support the idea that rural residents express higher levels of trust toward people in general. About 52% of residents in large urban centres said that most people could be trusted, slightly less than the 59% of people in most rural areas. However, the proportions were virtually identical in rural areas and medium-sized cities....

An important indicator of social isolation is the absence of close friends, that is, people who are not your relatives but with whom you feel at ease, can talk about what is on your mind or call for help. The study found that the proportion of individuals reporting having no close friends did not differ significantly in rural and urban areas of Canada. Only 6% of both rural and urban residents reported that they had no close friends. Also, the proportion of individuals who reported that they did not have relatives they feel close to was not significantly different in urban and rural areas.

The share of Canadians who reported having three to five close friends was also similar in rural and urban areas. However, 34% of people in the most rural areas said they had six or more close friends, slightly higher than the proportion of 28% in the largest cities.

The study looked more generally at help provided by Canadians. Across Canada, 78% of individuals said that they had helped at least one person in the past month and there were no significant differences between rural and urban residents.¹

1. Statistics Canada, *The Daily*, [Tuesday, June 21, 2005](http://www.statcan.ca/Daily/English/050621/d050621b.htm). "Study: Social relationships in rural and urban Canada." Available at <http://www.statcan.ca/Daily/English/050621/d050621b.htm>. Accessed 9 August, 2008.

The trust issue was woven through many of the comments in the 2003 GPI farm interviews (Scott et al. 2003), but only two respondents—both from Nova Scotia—addressed it directly. A farmer near Antigonish said that what he likes about his community is that he can leave his tool shed unlocked: “People come and borrow my tools all the time and I don’t have to worry about it because I know they will be returned.” And another Nova Scotia farmer commented: “I would measure trust by the number of tables by the road with produce offered and a jar where people can leave their money.”

In the Vermont Vital Signs project, in which community members listed ‘what we value’ and ‘how we will measure it’, community wellbeing was assessed partly on the level of trust people had for each other (Vital Communities of the Upper Valley 1999). Among the measures of trust identified, community members said they valued:

- children feeling safe, and teens feeling optimistic
- being able to walk around after dark and feel safe
- feeling confident leaving cars and houses unlocked
- working together to solve any problems rather than hiring lawyers
- honest neighbours: “We want to know that if we lose a wallet or purse, it will get returned.”

Social Diversity

A number of farmers and other rural residents interviewed by GPI Atlantic in PEI and Nova Scotia in 2003 indicated that diversity of interest and people brings strength to communities. Several interview comments seemed to point to the reality that when people who do not know each other or who do not have common backgrounds can form an understanding or work on an initiative together, this process weaves a community fabric that has some real strength to it.

This particular characteristic of social capital was also recognized in the Vermont Vital Communities of the Upper Valley study (1999), in which it was noted that

a community is made up of many different people with different interests, experiences, and backgrounds. These characteristics may divide a community into natural groups, but there must be co-operation among them if the community is to work well. Increasing social complexity presents challenges to reaching consensus or resolving conflicts but also provides opportunities for cultural enrichment.

In the previous chapter on social capital, we noted that such co-operation among diverse groups is known as **bridging social capital**, as opposed to **bonding social capital**, which refers to relations among like groups. The Vermont study asked a series of questions about inter-group relations, including the first three in Table 40 below, which can be used as the basis for survey questions and development of indicators and measures of social diversity and bridging social

capital in communities. The last two questions in Table 40 are based on work by Boody and Krinke (2001).

Table 40: Bridging Social Capital: Questions to Ask

How much communication is there among diverse interest groups?
Do formal and informal forums exist for sharing ideas and resolving public issues?
How is social and cultural diversity celebrated in the community?
Are there opportunities to meet people you would not normally socialize with?
Do people with divergent interests work together on initiatives?

Conclusions: Farm Community Viability

A Warning and a Recommendation

Qualman and Wiebe (2002:14) describe farm communities, particularly in Saskatchewan, in a way that provides an important contrast to the descriptions of farm communities in Nova Scotia and PEI that emerged from the 2003 GPI farm interviews (Scott et al. 2003) and portrayed in the pages above:

The most keenly felt losses in farming communities are the absence of neighbours and communal life. Although this aspect is not quantifiable, and hence seldom taken into account, the restructuring of agriculture has led to a radical change in the culture of farming communities. With fewer people, and with the exodus of most of the young people, community activities are necessarily reduced. In many villages, the centres of community social life—the churches, halls, arenas, clubs, and schools—have disappeared altogether. The loss of cultural diversity and vigour in the countryside parallels the loss of biological diversity, and may pose similar inherent dangers to the long-term sustainability of human survival.

This description may be taken as a warning. Based on all the evidence presented in this present report, Nova Scotia and PEI farm communities appear to remain much more vital, resilient, and viable than depicted in Qualman and Wiebe’s description above, and with much stronger networks, bonds, institutions, farm diversity, and other key elements of social capital than apparently exist today in the Prairie Provinces. However, several PEI and Nova Scotia interviewees did describe signs of potential disintegration and adverse comparisons with earlier times that they recalled, which together might possibly constitute the beginning of the process described by Qualman and Wiebe (2002) above.

This is the reason that this report must be read in close conjunction with the accompanying report on the Economic Viability of Farming in Nova Scotia and PEI. That companion report shows serious and disturbing signs of a sharp decline in farm economic viability, which is forcing

farmers off the land and which threatens the future of farming in this region. Indeed, it was hypothesized in the introduction to this study that only the strong social capital that has traditionally existed in PEI and Nova Scotia farm communities can explain many farmers' determination to keep farming in the face of economic conditions so adverse that they have rendered at least the non-supply managed farm sectors unviable.

Yet social capital cannot be separated or isolated from other forms of farm viability, and there are clearly economic and financial limits to the losses that farmers can absorb before they abandon the occupation or begin to sell off portions of their land. If the rather grim scenario portrayed by Qualman and Wiebe (2002) in their description of rural Saskatchewan is to be avoided in Nova Scotia and Prince Edward Island, and if the strong social capital that has traditionally characterized rural regions in the Maritimes is to be maintained, urgent steps must clearly be taken to strengthen farm economic viability.

The indicators, measures, and actions described in this chapter relating to strengthening local food webs, including local food procurement policies and support for direct marketing, constitute one of the most practical and cost-effective paths *both* to improving farm economic viability in particular *and* to strengthening social capital and farm community viability in general.

For that reason, if we had to choose one single keynote or headline indicator of rural viability and resilience for this region from among the dozens of potential indicators and measures described in this report, it would be the *proportion of food consumption that is locally produced*. In the view of the report authors, and in light of all evidence examined, that constitutes the best and most important indicator of farm viability, and it should be tracked assiduously, rigorously, systematically, and regularly. Unfortunately, this is not yet the case, but it constitutes the most important single recommendation of this study.

How to Build Community

Despite the strong connection between social capital and economic viability, the evidence examined also pointed to the intrinsic value of social capital, and of the vital importance of the human, social, and 'people' skills required to build and strengthen community bonds. These skills seem particularly important in rural areas where services are more limited than in cities, and where mutual reliance and support may therefore be key to practical survival.

With that intrinsic value in mind, the Syracuse Cultural Workers in Syracuse, New York State, created a poster entitled *How to Build Community*, that lists day-to-day actions ordinary citizens can undertake to build and strengthen community bonds. In order to focus attention again on that fundamental human component of social capital, it is appropriate to reproduce that list which, in itself, contains some provocative ideas for potential indicators of social capital.¹³² The list is modified slightly from its original form to make it relevant to a rural community:

¹³² Available at www.syrcculturalworkers.org. Accessed February 2008.

*Turn off your TV ❖ Leave your house ❖ Know your neighbours ❖ Greet people
❖ Look up when you're walking ❖ Sit on your front porch ❖ Use your library ❖ Plant
flowers ❖ Play together ❖ Buy from local merchants ❖ Share what you have ❖ Help a
lost dog ❖ Take children to the park or the farm ❖ Honour elders ❖ Support
neighbourhood schools ❖ Fix it even if you didn't break it ❖ Have pot lucks ❖ Pick up
litter ❖ Garden together ❖ Read stories aloud ❖ Dance at the hall ❖ Talk with the mail
carrier ❖ Listen to the birds ❖ Put up a swing ❖ Help carry something heavy ❖ Barter
for your goods ❖*

*Start a tradition ❖ Ask a question ❖ Hire young people for odd jobs ❖ Organize a party
❖ Bake extra and share ❖ Ask for help when you need it ❖ Open your shades ❖ Sing
together ❖ Share your skills ❖ Take back the night ❖ Turn up the music ❖ Turn down
the music ❖ Listen before you react to anger ❖ Mediate a conflict ❖ Seek to understand
❖ Learn from new and uncomfortable angles ❖ Know that no one is silent though many
are not heard ❖ Work to change things.*

In addition, the following conclusions emerge from the evidence presented in this Farm Community Viability chapter, and particularly from comments on this subject offered during the 2003 GPI farm interviews (Scott et al. 2003).

All the Capitals Merge in Farm Communities

The evidence examined points to the reality that agricultural communities intrinsically link economic wellbeing with natural, human, and social capital perhaps more unequivocally and viscerally than is the case in urban centres, where livelihood is generally less directly dependent on a healthy natural resource base and strong communities. As well, food is such a basic and important product and survival need that it inherently provides a direct link between economic, social and environmental issues at every level—local, regional, national, and global (Brown et al. 2002).

If even one of the capitals is being severely depleted or degraded in a rural community, it becomes increasingly difficult for the other forms of capital to fulfil their potential and to provide the flow of benefits they are capable of producing. Conversely, enhancing the value of one capital has the potential to strengthen the entire productive and social system. For example, it was noted above that the simple closing of a community general store that might go almost unnoticed in an urban centre can severely undermine social capital in a rural region and deplete infrastructure necessary for farm economic viability. Conversely, strong bonds of mutual support and reliance may effectively compensate for lower incomes and enhance overall viability.

This chapter began with profiles of rural communities that are thriving and others that are struggling and even in decline. Though each community is a product of its own unique circumstances and conditions, these profiles, as offered by respondents in the 2003 GPI farm

interviews, are extraordinarily revealing of the particular characteristics that appear to make some communities viable while others are not.

Among the many characteristics of viable communities highlighted by interviewees, the following seem to stand out:

- The presence of community members who provide an ‘anchor’ or a living memory of the heritage of a place.
- Pride both of place and of the particular contribution that each community member can offer, which makes them want to share what they know, have learned, and are doing.
- Public places and events are important, so that community members can meet by chance and by common interest.
- As noted in the Social Capital chapter, it is also critical for individuals of different generations, backgrounds, and interests to meet and work together. Collaboration based on such diversity weaves a strong social fabric and challenges community members to extend themselves beyond their usual way of thinking.
- A well-integrated diversity of farms and farm businesses, linked through a strong local food web, can create a healthy local food system that strengthens farm community viability.
- A vibrant community also focuses on its assets rather than its deficits.

Opportunities for Building Bridges between Farm and Non-Farm Populations

Abundant evidence now indicates that farmers’ markets

- are excellent incubators for starting and testing farm businesses;
- are excellent tools to connect producers and consumers; and
- build bridges between farming and non-farm populations.

The evidence also indicates that, in general, bridge building between farm and non-farm populations requires a certain threshold level of farm people relative to total population. If farms diminish in number and are replaced by a few large industrial farming enterprises, that threshold may no longer exist, and the population may increasingly lose direct contact with its food sources.

Proximity of farms to towns was also found to be important so that farms are not isolated, and so that the general population has the opportunity to develop some kind of understanding of farming through access to Open Farm Days, agricultural fairs, and other contacts.

Self-Reliance, and Reliance on Each Other

Much of the discussion in this chapter is about ‘reliance’—and on the importance of assessing levels of both community and food self-reliance, and mutual reliance within farm and rural communities. Questions raised in this chapter include the following:

- On whom and on what do farm community members rely?
- To what extent do farm community members rely on each other and on the services they can provide for each other?
- Or do they rely more on earnings and spending money to meet most of their needs?
- In terms of farm products, do farmers rely primarily on local or foreign markets, and on local or foreign inputs? And how do such alternative forms of reliance affect their viability?
- Do farmers rely primarily on other farmers and people in their community for materials, services, advice, and support, or do they rely on consultants and agriculture companies?
- Do consumers buy mostly local or foreign food?
- Do farm communities have a healthy combination and balance of self-reliance and other-reliance?
- Among all the self-reliance and mutual reliance options available, what strategy or strategies would keep Maritime agricultural economies and farms durable in the long run?
- And which strategy or strategies will most effectively promote the healthy functioning and development of ecological, human, and social capital, so that all these capitals reinforce and strengthen each other optimally?

Conventional economists measure prosperity by the number and market value of the things we buy and sell. But this analysis of social capital in agriculture raises the possibility that prosperity may also be highly dependent on both the number and quality of *connections* that we have and make with each other—including both barter and banter; social support networks; sharing of equipment, services, time, and effort; co-operation on many levels—from economic activities to working together on community projects; and the creation and maintenance of a ‘community of care.’

As energy sources have become increasingly expensive and are likely to become more so—raising the costs of transportation and imported food—bioregional self-reliance will become an ever greater priority. The production of most food in a defined bioregion close to population centres will likely mean that a smaller percentage of the food dollar is spent on transportation, packaging, preservatives, and warehousing. Since farmers are currently experiencing very low net returns (and in many cases negative returns, as the accompanying report on farm economic viability indicates), a food system that increases the portion of the food dollar going back to the farm has the potential to increase farm economic viability.

The evidence both in this report and in the accompanying report on farm economic viability has examined a number of options tried and tested by farmers to improve both economic and community viability. A growing portion of the farm population, for example, has benefited

considerably from direct-marketing its food products and thus fetching higher prices for farm products by eliminating the middle man, while others rely on a healthy selection of processors to buy and market their products.

Based on all the evidence examined, one of the most important needs that emerges is the development of appropriate indicators of farm community viability and resilience. And among all the potential indicators examined in this study, perhaps the most salient are those that have the potential to assess how healthy the local food system is and to what degree ‘food sovereignty’ has been achieved. Indeed, the primary purpose of this study, and of the extensive 2003 GPI farm interviews (Scott et al. 2003), has been to identify potential indicators of farm community viability that will enable the Maritimes to track (and thereby improve) the health of the agricultural sector in a comprehensive and meaningful way

Unfortunately, data for most of the potential indicators examined in this study do not presently exist, even though many are highly amenable to quantification and tracking through regular survey materials. Due to the present crisis in Maritime farming, as clearly demonstrated in the accompanying economic viability report, the need for such systematic tracking is truly urgent at this time in order to provide vital evidence for policy makers, if we are not to lose farming as a Maritime institution.

Wherever data do exist for particular indicators, they have been presented in this study, even though they are generally not complete, and lack adequate comparable time series. However, preliminary estimates based on available data appear to show that the percentage of Nova Scotia’s food dollar going to farmers is in decline, even while, the farm sector is becoming more diversified over time, and the number of farmers’ markets and direct market opportunities are increasing. In PEI, by contrast, preliminary estimates appear to show a higher proportion of the food dollar going to farmers, while the farm sector is becoming less diversified over time.

It is unclear whether these variables are related, and it would be unwise to speculate on these mixed results until more complete data are collected and analysed. However, even such preliminary estimates do point to the importance of tracking key indicators of bioregional food self-reliance consistently and systematically. As noted above, such indicators would include:

- the proportion of the consumer food dollar spent on local food;
- the proportion of the food dollar going to farms as opposed to retailers, processors and packagers, transportation, and other components of the food system;
- diversity in the regional farm sector;
- numbers of farmers’ markets and other direct market opportunities, and revenues generated.

Consideration of bioregional self-reliance raises the inevitable question of why we import food that we can grow here. Generally the reason is price, which prompts food distributors to source goods from wherever they can be obtained most cheaply and where farm labour is cheapest, even if there is a wide range of hidden costs associated with those imports and hidden benefits in local production that are not recognized or accounted for in conventional accounting mechanisms.

For example, indirect or hidden import-related costs include:

- time delays that compromise freshness and increase reliance on chemical preservatives that in turn may have adverse health impacts;
- increased reliance on cheap labour that may erode human capital;
- greater reliance on industrial farming that has serious environmental impacts and that also frequently undermines food self-sufficiency and self-reliance in developing nations;
- greenhouse gas and pollutant emissions associated with long transport routes, which in turn erodes natural capital; and
- the loss of family farms in rural communities in the Maritimes and other parts of Canada, which in turn erodes social capital.

By contrast, the evidence presented in this study and elsewhere indicates that greater support for local production can help enhance human, social, and natural capital, and thereby wellbeing in general.

Efficiency is often cited as a key reason for increasingly high levels of food imports. Thus, it is conventionally considered more efficient to grow and process particular foods in large quantities where the factors of production are cheapest and then to transport them long distances, than to rely on smaller and more diverse production units domestically.

This points to the key challenge in this area, which is to create a food system that is both efficient and also fulfils the “genuine progress” goals of enhanced food self-reliance and security, vital community life, and viable farms and farm communities. Such an efficient locally based food system might be organized on a ‘foodshed’ basis—similar to the concept of a watershed, but based on efficient webs and networks of food production, processing, and consumption. Such thinking and planning might well prepare the Maritimes for a post cheap oil world that will require greater reliance both on local partners and on local food production abilities, instead of on a food system that may become increasingly vulnerable to price and supply shocks. Enhancing food self-reliance through a new food web that meets the region’s most important needs may help stem the erosion of food sovereignty that evidence indicates is already under way.

According to Jules Pretty in the U.K., a self-reliant food system will reduce economic “leaks” from farming communities:

If policies and processes are designed to plug these economic ‘leaks,’ the renewable asset base can grow while also increasing the flow of desirable goods and services. There are five principles for plugging the leaks in rural economies. First, use local renewable resources. Second, recycle financial resources by spending locally. Third, add value to primary produce before it is exported from the locality. Fourth, connect stakeholders to

create trust and new linkages. And fifth, build human capital.¹³³

Historical accounts of agriculture in the Maritimes indicate that, through the intersection of key social and economic initiatives, Nova Scotia did have greater food self-reliance than it has today. In a self-published book, *We Fought for the Little Man: My Sixty Years in Agriculture* (1976), Waldo Walsh, a former deputy minister with the Department of Agriculture, describes agricultural development in Nova Scotia from the 1920s to the 1970s. He notes that the government sometimes resisted “big business” attempts to undermine government agricultural policies designed to enhance food self-reliance and diversity through creating supportive infrastructure such as slaughter facilities and affordable livestock feed.

Walsh (1976) also describes the importance of co-operatives; 4-H; and the original ‘production clubs’ to farming, and he acknowledges the human capital component of farming in Nova Scotia by praising the ‘fine people’ who came from the province’s farms and recognizing them as anchors for their rural communities. The book also acknowledges the value of social capital in agriculture in describing the attention, care, time, and great efforts required by farmers and others to build beneficial institutions and relationships conducive to effective farming in Nova Scotia.

Walsh’s account is particularly important during the present farm economic crisis in the Maritimes, as it details the intensive effort required to build an effective, productive, and viable farm sector in Nova Scotia. As one young dairy farmer in PEI pointed out in the 2003 GPI farm interviews (Scott et al. 2003): “If you know what went into making something, you’ll think twice before letting it be dismantled.”

In her book, *It all Started with Daisy* (1987), former Peninsula Farms CEO Sonia Jones makes several observations of direct relevance to local food producers and suppliers today, and the company’s own hard experience provides some important lessons for today’s producers. Jones notes that independently owned stores were very important to help Nova Scotia businesses like Peninsula Farms Yoghurt get their start. However, she also observes that quality suffers with a ‘bottom line’ approach, and that conventional thinking about price has to be revisited if we care about quality.

In comments that well describe the hurdles facing small and medium sized farmers today, Jones remarks that distribution in a place like Nova Scotia is one of the major hurdles that small, local food businesses face. And she strongly acknowledges the value of social capital—and particularly of co-operation between producers and consumers—in repeatedly stressing the importance of direct contact with customers that provided the feedback and energy that kept the company going.

In 2000, Peninsula Farms found its all-natural yoghurt squeezed out of mainstream grocery stores (Sobey’s and Atlantic Superstore) by large multinational companies that could better afford to pay the grocery stores high rebates for shelf space. As a result of the resultant sudden

¹³³ An essay available from the Leopold Centre for Sustainable Agriculture, at www.leopold.iastate.edu/pubs/nw1/2003/2003-4-leoletter/commentary.htm. Accessed January 2008.

drop in product sales, the company quickly had to lay off nearly 30% of its employees.¹³⁴ The Peninsula Farms experience is echoed today as large retailers stock their shelves with U.S. produce at the height of the province's growing season.

Resilience and Community Culture

Finally, the 2003 GPI farm interviews (Scott et al. 2003) summarized in this study appear to indicate that the farm communities that exhibit the greatest resilience are those that have a strong community culture. This particularly means:

- that the population is pro-active rather than reactive to outside stresses,
- that the community has created a vision for itself and put that vision into practice,
- that it has a culture in which community members rely on each other and work and celebrate together in a wide range of community activities; and
- perhaps most importantly of all, that the community has an effective local food web that supports local production, distribution, and consumption.

These summary conclusions are by no means intended to be a comprehensive summary of all major issues raised in this important subject area. But they do highlight some key areas for further investigation in efforts to assess farm community viability.

¹³⁴ CBC News, "Peninsula Farms pushed out of grocery stores." 5 April, 2000. Available at http://www.cbc.ca/news/story/2000/04/05/ns_peninsula000405.html. Accessed 9 August, 2008.

Appendix I: Farmers' Markets and Farm Museums

This appendix offers profiles of some specific initiatives that have helped farms and farm communities to increase viability. Two text boxes attempt to generalize from these specific case studies in order to highlight the conditions and qualities of the profiled initiatives that appear to have enabled them to thrive, that have contributed to their success, and that may be more widely applicable. In particular, the initiatives that follow encapsulate and bring to life many of the indicators discussed in previous sections.

Farmers' Markets

Halifax City Farmers' Market

Fred Kilcup, who manages the Halifax Farmers' Market, provides many examples of the market's benefits, including:

- the face to face contact between producers and consumers;
- the opportunities to 'market test' new products;
- the access to the market web site; and
- the opportunity for farmers to network and co-operate with each other.

Fred Kilcup notes that there is a wide diversity of customers who come to the market every week to do their shopping: "Thousands of people come to this market, which gives the vendors a large enough economic base to be viable. They all go back to their communities and spend the money they've earned. So they take the economic power of the centre and disperse it."

He notes that there are 120 vendors each week in the summer, and 110 through the winter—up from just 25 in 1986, so that the market has now become a viable year-round retail venture. He also remarks that the market is very long-lived (in fact the oldest continually functioning farmers' market in North America), with a couple of families having passed their stalls down through the generations: "250 years and they're still here," he says.

Fred Kilcup is very dedicated to the network of farmers' markets throughout Nova Scotia, which he feels makes all the markets stronger as they learn from each other. He notes that the network could also potentially lead to efficiencies in terms of moving products around to where they are needed and in demand, in ways that avoid duplication of effort and travel time. In time, he said, the full network of markets could experience the same kind of close-knitted quality that the Halifax Market itself exhibits.

In a testimonial to the value and power of social capital described in this study, Fred Kilcup says he has observed an amazing loyalty and closeness among the vendors themselves—even though they are a very diverse group. When one vendor, a long time farm family, was hit hard by Hurricane Juan in 2003, the other market vendors rallied together to support that family.

Claire Doyle is one of the newer vendors at the Market, but Fred Kilcup managed to secure a table for her as soon as she made the request, because her product exactly fit the criteria for new vendors: Her Duke of York cranberry juices and other products did not duplicate anything else that was already at the market, and it was made directly on the farm. She started with 30-40 bottles of juice and a few jars of jelly. “They were gone in an hour!” she recalls.

Claire Doyle’s experience indicates the potential for farmers’ markets to incubate a new local business and to help it expand. Customers liked the fact that her cranberry products were locally produced and they came back regularly for more. The strong customer support was very encouraging to her, particularly as they offered to help her develop contacts and market ideas and recipes, and when they went to stores asking for the Duke of York juice. She refers to one woman who bought the juice at the market and then went to her boss and asked him to stock it in his health food store. Now, she reports, demand exceeds yields, and it is a full-time business with distribution in many stores in the province. She now has a full line of cranberry products, including fruit leather, dried cranberries, granola, muffins, and a selection of unsweetened and sweetened juices.

Farmers’ Markets

- The farmers’ markets are places where farmers attempt to get a fair price through direct marketing and product differentiation (often based on quality, freshness, and/or being locally produced)
- Cooperation among producers, and between producers and consumers
- Markets circulate wealth back to rural areas from urban areas
- Network of farmers’ markets—rely on each other: interdependence; food miles reduced, therefore promoting efficiencies.
- Customers can help a vendor incubate and promote a new business or product line
- Vendors take time to explain product: meaningful opportunity to increase understanding of farming, production
- Recognition that Wolfville Market circulates wealth in the town of Wolfville
- New people are welcomed at the Sydney Farmers’ Market
- Farmers’ markets need a diverse group of vendors—mostly of farm products—to attract customers

Wolfville Farmers’ Market

Jeannine Wilson is a regular customer at the Wolfville Farmers’ Market. She says she comes to the market regularly as part of her weekly routine because she wants to eat healthy food, likes the ready-made products that save her time preparing meals, learns a lot from the vendors, and enjoys the socializing and seeing a lot of people. She is impressed that the vendors take time to explain things to her. She says:

It brings you back to the market every week, and makes you feel special that someone will give you the time.... Even though there are more options within the grocery stores now, I still don’t know if it’s grown locally, and whether it was picked before its

maturity, so am I getting all the nutritional value I could? Here I know those things, I know the growing practices, and I can really talk to the producers.... I can get up feeling tired and bagged out, come to the market, and feel a resurgence of energy.... I know if I come up with a gardening question during the week, I know I can ask someone at the market.

She remarks that the market has lots of parking and is in an outdoor grassed area near the library which gives it a picnic feeling, makes it seem safe for children to be roaming about, and enables people to stop for a while and sit around.

Pia Skaarer Nielsen has a regular spot at the Wolfville Market, which has provided her with the contacts and opportunities for direct feedback she needed as she developed her woollens business, from which 60% of sales now go through the market. Her 13-year-old son also has a stand selling coffee: "It's a learning experience, and it's been really good for him." She says she has been pleased to see the market grow from six booths to forty because "it's an opportunity for more producers in the area to bring their goods here, and for people to know that they don't only have to go to Sobeys and Super Store.... The Market brings them back to earth." She is also pleased the market location is outside. Having been a vendor in arenas and other big rooms, she is convinced this outdoor market is better, because "people cannot avoid seeing us!"

Alan Stewart characterizes the Wolfville Market customers as three different groups: those who have retired here, and been able to slow down and thus do a little research on their food; those who are strongly committed to alternative ways of doing things; and native sons and daughters, like himself, who know enough about what it's like to farm to support the market vendors.

Kelly Redcliffe, Wolfville Market manager, describes it as a place of vitality, where the community meets and where vendors "make their dreams come true." She notes that vendors generally have at least two sources of income, but the market source helps them live their lives the way they want to live: "You have that feeling of people saying 'yes' to something," she says, "and it's shared with the customers." She describes the 500 or so customers who visit the Wolfville Market weekly as people who believe in local economies; believe they should shop locally; and want to know who they're buying their food from.

In terms of the business of the Wolfville Market, Kelly Redcliffe notes that the vendors are organized into an association with an executive and committees that take care of the various tasks. "These are incredible people!" she says. As manager, she 'cultivates' their responsibility and gets input from them, and also takes care of promotions through an electronic bulletin every month to the 200 customers who have signed up for it. The bulletin, which features market events, new vendors, and the music schedule, spreads news about the market by word of mouth, she says, as many of the 200 who receive it likely tell their friends about it. She also notes that the town of Wolfville is very supportive of the market because it draws people to the downtown businesses as well.

Kelly Redcliffe remarks that the market vendors are a diverse group, with some depending on the market for a major part of their livelihood, and others using it to supplement their income.

Growth has been dramatic: In 2001, there were 25 vendors; in 2002 the number jumped to 35; and in 2003, there were 40. By 2007, there was an average of 47 vendors and in the first week of August, 2008, Kelly Redcliffe reports that there were 58.¹³⁵

She remarks that whenever there have been big leaps in the number of vendors, there have also been big leaps in the number of customers, with the increased diversity making the market a more attractive place to shop for a range of produce and other needs. “People could just feel the success,” she notes. The available products now include organic produce, ready-made snacks, coffee, bread, meats, herbs, and a range of gifts, although there is a policy that the farmer comes first, and that a minimum of 60% of the market offerings should be farm products.

Kelly Redcliffe confirms the experience of other farmers markets that the Wolfville Market provides small (and especially organic) farms an opportunity to start marketing their products, to test ideas, and to develop relationships. But she remarks that this ‘marketing’ has to do with more than just economics, that the vendors are saying ‘yes’ to people, to organics, to the music, and to each other, and that whole market experience is a positive, creative initiative for both vendors and customers in an otherwise increasingly homogenous and cynical world. She observes that the market makes people aware of the seasons, as the abundance of each week’s harvest changes through the year: “It’s a celebration of abundance,” she says. “You get to witness it and be part of it.”

Sydney Farmers’ Market

The Sydney Farmers’ Market is located in a parking lot with shelters, where vendors can pull up their vehicles and even plug in their freezers. A unique feature of this market is that it has an unofficial “welcomer,” Charles MacDonald, who remarks that it’s just in his nature to say “hi” to everyone, and to make new people feel welcome. He and his wife, Sharon, primarily sell beef and eggs, and have worked hard to make the Sydney Farmers’ Market a year-round venture. In 2003 they obtained an indoor location for the winter market, which they have found to be beneficial because they do not have to rebuild their customer base in the summer. The couple has a regular group of customers who buy beef and eggs, and Sharon MacDonald also provides cooking instructions for the Highland beef they sell, because it is leaner than the commercial beef available in grocery stores.

Kim Tilsley has a stand next to the MacDonalds, where she sells frozen poultry products. People pick up their pre-ordered meat or choose items from her list on the table. She describes the benefits of the market in this way:

It’s a great way for the producers to be in direct contact with their customers—no middleman. You’re getting the full price. We’ve got a really neat group of vendors. After we had the opportunity to be indoors for this winter, I find that the group has really come together. Outside we don’t get as much chance to socialize together as we did indoors.

¹³⁵ According to the Wolfville Farmers’ Market website, there are 54 producers at the Wolfville Farmers Market now. http://wolfvillefarmersmarket.com/index.php?option=com_wrapper&Itemid=52. Accessed August 10, 2008.

It's a diverse group, and great people to chip in and help. There's a real sense of community developing here in the farmers' market too.

I think we're still growing. The farmers' market has been going on for a number of years, and it's gone through peaks and valleys, and I'm hoping that it's on the upswing right now. We're attracting more vendors, people are getting excited about it, we're seeing more customers every week, we're seeing regulars come back, and new people. So it's exciting that way. This year [2003] moving it indoors for the winter is really positive. We can build on that this year, and get people used to it. We had a really faithful core group of customers that came every week all winter, if they could get out their door.

Kim Tilsley agrees with the remark of another vendor that her frozen chicken and beef products are very important in attracting customers to the market:

I would say that is probably accurate. I had someone express that to me about the market in Antigonish as well. The fact that I was there was a draw, and brought people in. You've got to have a strong group of core vendors, whether it's the chicken or the beef. But you also need diverse vegetable producers too. We've got a nice mix now with the baked goods, and the produce, and a couple of people doing the meat. I certainly get a lot of people that come specifically here for me and I get a lot of pre-orders now. And that's good, because they continue the rest of the way around the market and become loyal customers for some of the other vendors.

From her experience at the Antigonish and Sydney farmers' markets, Kim Tilsley has observed that it is important to have a good mix of vendors. In Antigonish she found that the ratio of food producers and growers to crafts people was gradually becoming skewed too heavily towards the crafts, and she had some customers ask her where the rest of the farmers were last year. For this reason, the Sydney, Halifax, and Wolfville Farmers' Markets all restrict the percentage of vendors who are not primary producers.

Farm Museums

Ross Farm Museum

The original Ross Farm was established in 1816 —at a time when farms were small and most farm work was done by hand. The primary purpose of establishing a farm in the early 1800s was for families to be able to feed themselves, so the emphasis was on self-sufficiency. Thus, Ross Farm in the 1800s raised a mixture of livestock, vegetables, grains, and herbs, and it collected maple sap to make syrup. Five generations of Ross family members lived and worked on the farm from 1816 to 1970.

Most of the farms in the area were built on drumlins, which had the best soil, deposited by melting glaciers. Today the area has a few farms that mostly raise beef, though some families

still grow vegetables and other food, raise chickens, and perhaps keep a dairy animal for the family.

Ross Farm Museum, established by community members in 1970 on 60 acres of the original Ross Farm purchased by the New Ross District Museum Society, is one of 27 provincial museums and is now billed as “Nova Scotia’s Living Museum of Agriculture” because it remains a working farm using the implements, tools, and farming methods of the 1800s.¹³⁶ It offers workshops to school children and others in blacksmithing, woodworking, wool spinning, open hearth cooking, candle making, farm chores, and farm animal care, and employs 25-30 people almost year-round most wearing period costume.

The farm museum generates a great deal of economic value for the community, and has a budget of about \$750,000 per year, of which a considerable portion is raised from entrance fees, selling items in the museum store, doing renovation contracts for other museums, and selling excess livestock and horses.

Most of those who work at the museum are from the immediate area, and many have worked there a long time and are descendants of early settlers in the area. They can tell visitors their own stories of growing up on a farm, and transmit their own strong feeling that the museum is important because it keeps the heritage and the skills of this farming community alive.

Farm Museums

- Heritage and skills; education—keep it alive for farming
- Sharing knowledge
- Community effort; community benefits
- Keep farms as working farms
- Celebrating heritage; volunteer commitment

Gail Larder of New Ross says that the Museum is a source of pride for her because it is “everything from the people to the information to how well it is looked at by everybody who comes here... the good comments.” Her husband, Walter, remarks:

The fact that it’s a working museum is important. That’s a source of pride... and the skills of the people that work here. In other museums, you just don’t have that. That is my biggest source of pride.... That’s the whole difference between looking at a plough and using a plough. There is a whole base of knowledge there—you may look at a plough and know its dimensions and how it’s supposed to work, but there’s another base of knowledge as deep as the soil when you get hold of those handles and try to make it work the way it’s supposed to. How do I get it to do what it’s supposed to? That’s where that base of knowledge comes from that you can get from the older people—all the tricks and tips that will make it work the way it’s supposed to. Keeping that part alive is our biggest challenge.

¹³⁶ Nova Scotia Museum, Ross Farm Museum website. Available at <http://museum.gov.ns.ca/rfm/textpage/history.asp>. Accessed 10 August, 2008.

Spry's Field: An Urban Farm Museum

Marjorie Willison was instrumental in working with other community members to establish an urban farm museum in her own community of Spryfield, a suburb of Halifax, which used to produce a lot of food. She hopes that going back to the roots of the community in this way will also teach locals and visitors about food security: “One of my biggest concerns about food security in the future is that it not become an individual issue. It has to stay grounded at the community and society level.”

To that end, she wants the museum to communicate the shortcomings of thinking “I can afford to do this and I’m not going to worry about my neighbours as long as I’m all right.” That way of thinking, she says, is a “complete negation of community, which is why I’m so passionate about the urban farm here because it’s for the community.” She explains:

We started it in part to celebrate Spryfield’s agricultural heritage and to preserve this old farm field that is still in existence because so much of the farmland here has been built on. One of the things we need to do as our cities develop is to identify land that is arable and zone it ‘agricultural’ so that it doesn’t get built on. ... The urban farm is not only about reviving an old farm field and returning it to food production but also being an education centre. We produce brochures about ‘planting times for vegetables’ and ‘how to grow soft fruits’ so that farming starts to happen in an urban farm like we’re doing, but also in community allotments and community gardens, in back yards, on balconies, patios and rooftops—wherever we can. The seed is there and it’s germinating.

Marjorie Willison finds it interesting that Spryfield recently received two awards—one for being a sustainable community, and another for being a model volunteer community. She thinks this is because Spryfield has a long history of being a community before it was annexed to Halifax in 1969. She noted that there are family names that go back for generations, so that there is a sense of continuity that contributes today to a celebration of the community’s heritage.

Appendix II: Data Tables and Trendlines

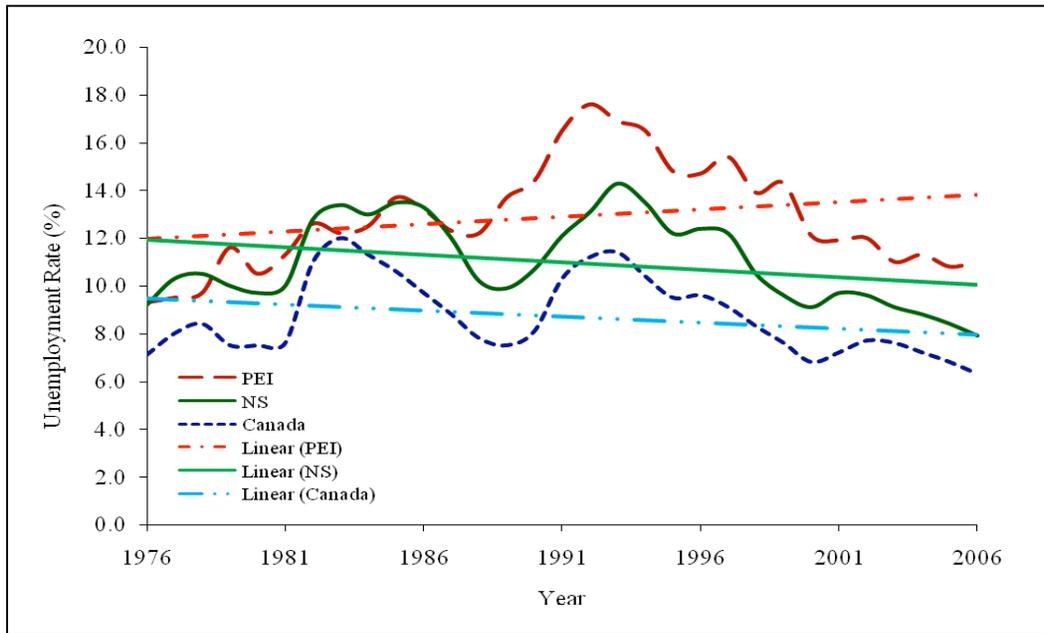
Human Capital

Appendix Table 1: Unemployment Rate (%), Canada, NS, and PEI, 1976–2006

Year	Canada	NS	PEI
1976	7.1	9.2	9.3
1977	8.0	10.3	9.5
1978	8.4	10.5	9.7
1979	7.5	10.0	11.6
1980	7.5	9.7	10.5
1981	7.6	10.0	11.3
1982	11.0	12.8	12.6
1983	12.0	13.4	12.2
1984	11.3	13.0	12.5
1985	10.6	13.5	13.7
1986	9.7	13.3	13.2
1987	8.8	12.0	12.3
1988	7.8	10.2	12.2
1989	7.5	9.9	13.7
1990	8.1	10.7	14.4
1991	10.3	12.1	16.5
1992	11.2	13.1	17.6
1993	11.4	14.3	16.9
1994	10.4	13.5	16.5
1995	9.5	12.2	14.8
1996	9.6	12.4	14.7
1997	9.1	12.2	15.4
1998	8.3	10.5	13.9
1999	7.6	9.6	14.3
2000	6.8	9.1	12.1
2001	7.2	9.7	11.9
2002	7.7	9.6	12.0
2003	7.6	9.1	11.0
2004	7.2	8.8	11.3
2005	6.8	8.4	10.8
2006	6.3	7.9	11.0

Source: Derived from Statistics Canada Labour Force Survey. CANSIM Table 282-0002.

Appendix Figure 1: Unemployment Rate (%), Canada, NS, and PEI, 1976–2006, with Trendlines



Source: Derived from Statistics Canada Labour Force Survey. CANSIM Table 282-0002.

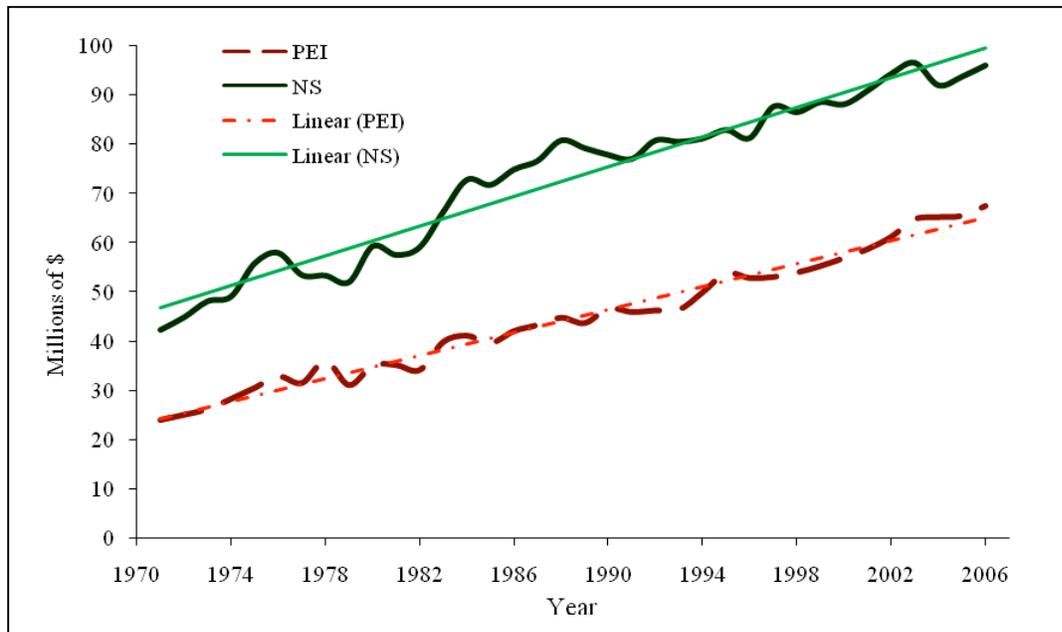
Appendix Table 2: Amount Farmers Spend on Wages (millions of \$2007), NS and PEI, 1971–2006

Year	Total NS farm wages	Total PEI farm wages
1971	42.38	24.11
1972	44.94	25.17
1973	48.19	26.33
1974	49.17	28.41
1975	55.91	30.63
1976	57.98	32.95
1977	53.50	31.60
1978	53.40	36.09
1979	52.07	31.17
1980	59.34	35.13
1981	57.59	35.22
1982	59.15	34.23
1983	66.34	39.92
1984	72.82	41.17
1985	71.77	39.67
1986	74.91	42.12
1987	76.65	43.32
1988	80.79	44.81
1989	79.21	43.73
1990	77.85	46.66
1991	77.03	45.96
1992	80.79	46.28
1993	80.52	46.45
1994	81.17	49.94
1995	82.90	53.80
1996	81.26	52.85
1997	87.63	53.05
1998	86.50	53.94
1999	88.54	55.26
2000	88.10	56.89
2001	90.88	58.69
2002	94.26	61.16
2003	96.51	64.72
2004	91.95	65.15
2005	93.69	65.42
2006	95.99	67.41

Source: Statistics Canada. 2003. *Farm Operating Expenses and Depreciation Charges. Agriculture Economic Statistics*. Cat. No. 21-012-XIE. Latest Update November 2007.

Note: Total wages = cash wages + room & board.

Appendix Figure 2: Amount Farmers Spend on Wages (millions of \$2007), NS and PEI, 1971-2006, with Trendlines



Source: Statistics Canada. 2003. *Farm Operating Expenses and Depreciation Charges*. Agriculture Economic Statistics. Cat. No. 21-012-XIE. Latest Update November 2007.

Note: total wages = cash wages + room and board.

Appendix Table 3: Wages and Salary Expenses (Per Farm Reporting) (\$2007), Canada, NS, and PEI, 1980–2005

Year	Canadian farm wages	NS farm wages	PEI farm wages
1980	18,979	27,517	21,583
1985	19,718	30,286	23,662
1990	23,181	35,023	32,886
1995	28,543	37,556	43,499
2000	37,304	44,122	54,125
2005	44,559	47,455	59,722

Sources: Statistics Canada. 1997. *Historical Overview of Canadian Agriculture*. Cat No. 93-358-XPB; 2000 and 2005 data from Statistics Canada. 2006. *Census of Agriculture*. Table 7.8-10.

Note: Converted to constant \$2007 using the Bank of Canada Inflation Calculator www.bank-banque-canada.ca/en/rates/inflation_calc.html.

Appendix Table 4: Full- and Part-Time Jobs in Agriculture and Related Services (thousands of people), NS and PEI, 1976–2006

Year	NS agriculture and related services		PEI agriculture and related services	
	Full-time employees	Part-time employees	Full-time employees	Part-time employees
1976	6.7	1.1	4.9	0.9
1977	6.2	1.1	4.8	0.8
1978	6.4	1.2	4.0	0.7
1979	6.0	1.1	3.9	0.8
1980	5.6	1.2	4.1	0.6
1981	5.7	1.2	4.8	0.9
1982	5.3	1.2	4.6	1.0
1983	4.9	0.9	4.6	0.9
1984	5.4	1.1	4.6	0.8
1985	7.4	1.3	4.8	1.0
1986	6.7	1.3	5.0	1.1
1987	6.2	1.5	5.0	0.9
1988	6.2	1.3	4.9	0.9
1989	5.2	1.3	4.6	0.8
1990	5.8	1.5	4.3	0.7
1991	5.5	1.5	4.0	0.8
1992	5.9	1.8	3.5	0.6
1993	5.1	1.3	3.1	0.6
1994	5.1	1.4	3.1	0.5
1995	5.6	1.1	3.2	0.5
1996	5.6	1.3	3.5	0.7
1997	5.7	1.3	3.6	0.5
1998	5.4	1.2	3.7	0.5
1999	5.6	1.1	3.4	0.6
2000	5.8	1.1	3.8	0.7
2001	6.0	1.5	3.5	0.5
2002	5.5	1.2	3.3	0.4
2003	5.6	1.1	3.1	0.4
2004	4.5	0.9	3.2	0.5
2005	4.6	1.3	3.1	0.4
2006	3.6	1.1	3.6	0.3

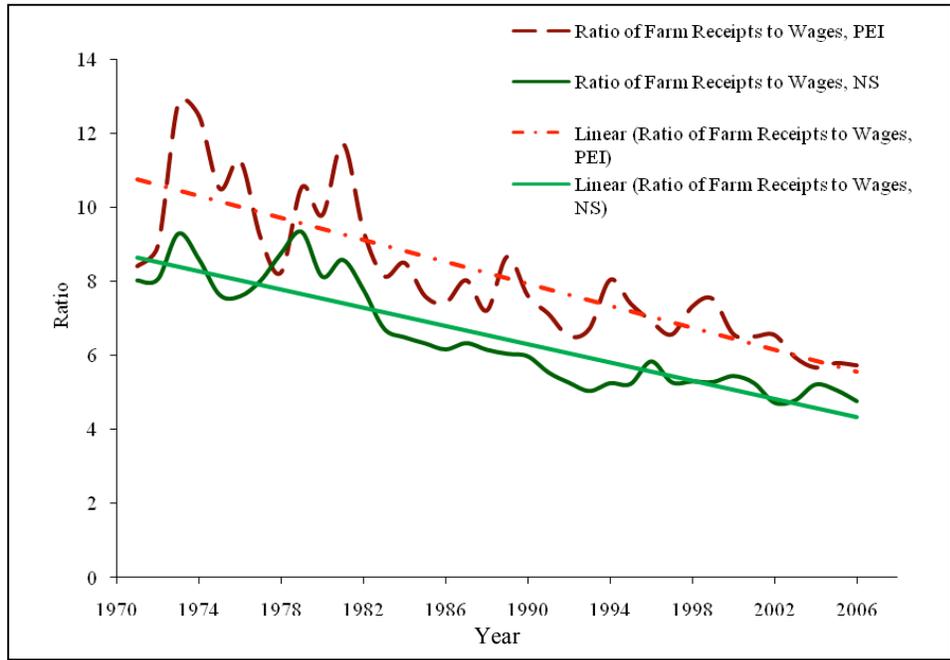
Sources: Derived from Statistics Canada, 2007. CANSIM Table 282-0008. Labour force survey estimates by NAICS (1100-1129, 1151-1152), sex and age group.

Appendix Table 5: Ratio of Farm Receipts to Wages, NS and PEI, 1971–2006

Year	NS farms	PEI farms
1971	8.03	8.42
1972	8.07	8.97
1973	9.30	12.84
1974	8.60	12.48
1975	7.64	10.52
1976	7.61	11.28
1977	8.03	9.18
1978	8.77	8.26
1979	9.34	10.55
1980	8.14	9.80
1981	8.59	11.73
1982	7.78	9.38
1983	6.73	8.16
1984	6.50	8.51
1985	6.33	7.61
1986	6.17	7.43
1987	6.34	8.04
1988	6.16	7.22
1989	6.05	8.68
1990	5.98	7.62
1991	5.55	7.13
1992	5.27	6.53
1993	5.05	6.73
1994	5.26	8.05
1995	5.24	7.41
1996	5.84	6.93
1997	5.28	6.57
1998	5.30	7.33
1999	5.29	7.53
2000	5.45	6.58
2001	5.26	6.52
2002	4.73	6.56
2003	4.79	5.96
2004	5.22	5.68
2005	5.07	5.80
2006	4.77	5.74

Sources: Statistics Canada. 2007. *Farm Operating Expenses and Depreciation Charges*. Agriculture Economic Statistics. Cat. No. 21-012-XIE. Latest Update November 2007; *Farm Cash Receipts*. Agriculture Economic Statistics. Cat. No. 21-011-XIE. Latest update November 2007.

Appendix Figure 3: Ratio of Farm Receipts to Wages, NS and PEI, 1971-2006, with Trendlines



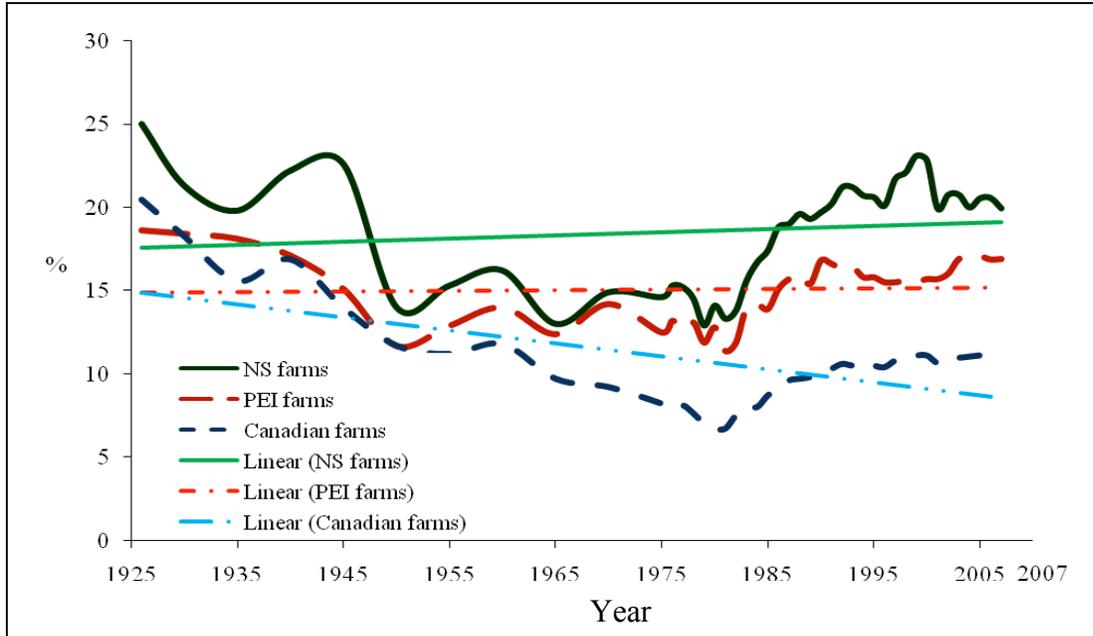
Sources: Statistics Canada. 2006. *Farm Operating Expenses and Depreciation Charges*. Agriculture Economic Statistics. Cat. No. 21-012-XIE. Latest Update November 2007; *Farm Cash Receipts*. Agriculture Economic Statistics. Cat. No. 21-011-XIE. Latest update May 2008.

Appendix Table 6: Ratio of Amount Spent on Wages (Including Room and Board) to Total Expenses (Including Depreciation) (%), NS, PEI, and Canada, 1926–2007

Year	NS farms	PEI farms	Canadian farms
1926	25.0	18.6	20.5
1930	21.3	18.4	18.3
1935	19.8	18.1	15.6
1940	22.2	17.1	16.9
1945	22.6	15.1	14.0
1950	14.0	11.7	11.7
1955	15.3	12.9	11.2
1960	16.2	14.0	11.8
1965	13.0	12.4	9.7
1970	14.9	14.2	9.2
1975	14.6	12.5	8.2
1976	15.3	13.2	7.9
1977	15.2	12.7	8.1
1978	14.5	13.1	7.6
1979	12.9	11.9	7.0
1980	14.1	12.8	6.7
1981	13.3	11.4	6.7
1982	13.8	11.9	7.5
1983	15.6	14.0	8.0
1984	16.7	14.2	8.0
1985	17.4	13.9	8.7
1986	18.8	15.1	9.1
1987	19.0	15.7	9.6
1988	19.6	16.0	9.7
1989	19.3	15.4	9.8
1990	19.7	16.8	10.0
1991	20.2	16.6	10.3
1992	21.2	16.3	10.6
1993	21.2	16.4	10.5
1994	20.7	15.8	10.7
1995	20.6	15.8	10.5
1996	20.1	15.5	10.4
1997	21.7	15.5	10.8
1998	22.1	15.6	10.9
1999	23.1	15.5	11.1
2000	22.8	15.7	11.1
2001	19.9	15.7	10.7
2002	20.8	16.0	11.0
2003	20.8	16.9	11.0
2004	20.0	17.1	11.0
2005	20.5	17.1	11.1
2006	20.6	16.9	11.1
2007	19.9	16.9	10.7

Source: Derived from Statistics Canada, 2002. *Agriculture Economic Statistics*. Cat 21-012-XIE. Updated May 2008.

Appendix Figure 4: Ratio of Amount Spent on Wages (+ Room and Board) to Total Expenses (Including Depreciation) (%), NS, PEI, and Canada, 1926–2007, with Trendlines



Source: Derived from Statistics Canada. 2002. *Agriculture Economic Statistics*. Cat No. 21-012-XIE. Updated May 2008.

Appendix Table 7: Number and Proportion (%) of Farm Operators, Three Age Categories, NS, 1961–2006

Year	Under 35 years		Aged 35 to 54		Aged 55 and over	
	Number	Proportion	Number	Proportion	Number	Proportion
1961	1,083	8.7	5,844	46.7	5,591	44.7
1971	602	10.0	2,776	46.2	2,630	43.8
1976	769	14.2	2,417	44.5	2,248	41.4
1981	868	17.2	2,352	46.6	1,825	36.2
1991	870	16.8	2,610	50.5	1,690	32.7
1996	765	13.4	3,080	53.8	1,880	32.8
2001	480	9.4	2,675	52.7	1,930	38.0
2006	360	7.1	2,425	47.5	2,310	45.3

Appendix Table 8: Number and Proportion (%) of Farm Operators, Three Age Categories, PEI, 1961–2006

Year	Under 35 years		Aged 35 to 54		Aged 55 and over	
	Number	Proportion	Number	Proportion	Number	Proportion
1961	-	-	-	-	-	-
1971	645	14.2	2,117	46.6	1,781	39.2
1976	553	15.0	1,718	46.7	1,406	38.2
1981	642	20.4	1,453	46.1	1,059	33.6
1991	630	20.1	1,460	46.6	1,040	33.2
1996	490	16.7	1,520	54.9	925	31.6
2001	265	10.8	1,390	56.6	800	32.6
2006	210	9.0	1,205	51.7	910	39.1

Sources for Appendix Tables 7 and 8: Derived from Statistics Canada. n.d. *Who's Minding Atlantic Canada's Farms?* Census 2001 release. Available at <http://www.statcan.ca:80/english/agcensus2001/first/profiles/01atl.htm#top>. Accessed December 2003; Marketing Branch, PEI Department of Agriculture. 1982. *An Economic Profile of the Agricultural Industry of Prince Edward Island*; Statistics Canada. 1982. *1981 Census of Canada. Agriculture*. Cat. No.96-904; Statistics Canada. *Census of Agriculture*.

Social Capital

Appendix Table 9: Absolute and Relative Farm Population, NS, PEI, Canada, and SK, 1931–2001

Year	Nova Scotia		Prince Edward Island		Canada	Saskatchewan
	Farm population	Farm as percent of total population	Farm population	Farm as percent of total population	Farm as percent of total population	Farm as percent of total population
1931	177.69	34.6	55.48	63.0	31.7	61.2
1941	143.71	24.9	51.07	53.7	27.4	57.4
1951	115.41	18.0	46.86	47.6	20.8	48.0
1956	98.94	14.2	43.30	43.6	17.1	41.1
1961	58.02	7.9	34.75	33.2	11.7	33.0
1966	46.28	6.1	31.04	28.6	9.8	29.4
1971	25.59	3.2	21.04	18.8	7.4	33.0
1976	21.45	2.6	15.79	13.4	5.5	22.0
1981	19.07	2.3	12.62	10.3	4.7	22.5
1986	15.48	1.8	10.77	8.5	4.0	19.7
1991	12.54	1.4	8.67	6.7	3.2	16.1
1996	13.06	1.4	7.81	5.8	3.0	14.7
2001	10.48	1.2	6.06	4.5	2.4	12.6

Source: Derived from Statistics Canada. 2001. Table 14. *Farm and Non-Farm Populations*, 1921–2001. Available at:

<http://www.statcan.ca/english/freepub/95F0303XIE/tables/html/agpop14.htm>. Accessed December 2003.

Appendix Table 10: Percentage of Farms over 400 and 760 Acres, Canada, NS, and PEI, 1976–2001

Year	Canada		Nova Scotia		Prince Edward Island	
	Farms > 400 acres	Farms > 760 acres	Farms > 400 acres	Farms > 760 acres	Farms > 400 acres	Farms > 760 acres
1976	36.1	18.9	15.2	3.8	9.5	1.8
1981	36.3	20.1	15.8	3.7	12.7	3
1986	31.4	22.5	18.1	4.3	15.5	3.8
1991	38.9	23.5	18.8	4.7	19.9	5.1
1996	37.5	23.1	17.4	4.7	22.8	7.7
2001	38.8	24.4	19.4	5.4	25.9	10.7
2006	38.5	24.8	20.4	6.5	26.5	12.1

Sources: Derived from Statistics Canada. 1997. *Historical Overview of Canadian Agriculture*. Cat. No. 93-358-XPB; and Statistics Canada; Statistics Canada. 2007. Available at www.statcan.ca/english/freepub/95-629-XIE/1/1.3.htm.

Appendix Table 11: Prevalence of Low Income, Men and Women, Canada, NS, and PEI, 1997 and 2000

Year	Canada		Nova Scotia		Prince Edward Island	
	Male	Female	Male	Female	Male	Female
1997	12.6	14.5	10.3	15.8	6.7	9.8
2000	9.9	11.9	9.7	11.1	7.6	8.3

Source: Colman, Ronald. 2000. PEI Quality of Life Indicators.

Farm Community Viability

Appendix Table 12: Major Agricultural Products (Animal) (%), by Cash Receipts Generated, NS and PEI, 1972 and 2002

Year	Province	Beef cattle	Hogs	Sheep / lamb	Chicken	Turkey	Dairy	Eggs
1972	PEI	21.8	18.4	-	0.8	-	14.1	2.1
2002	PEI	7.1	7.5	-	-	-	14.4	0.9
1972	NS	14.5	9.2	-	9.1	0.9	27.4	9.0
2002	NS	7.1	7.3	0.4	12.6	1.6	22.8	5.8

Appendix Table 13: Major Agricultural Products (Plant) (%), by Cash Receipts Generated, NS and PEI, 1972 and 2002

Year	Province	Grain	Potatoes	Vegetables	Fruit	Nursery plants	Forest products	Other crops
1972	PEI	-	27.0	2.6	0.4	-	-	5.8
2002	PEI	3.4	52.6	3.2	0.8	-	-	0.6
1972	NS	-	1.7	3.9	9.4	5.3	2.5	-
2002	NS	1.6	2.6	5.3	8.3	8.8	6.0	-

Source for Appendix Tables 12 and 13: Derived from Statistics Canada. 2004. *Farm Cash Receipts*. Agriculture Economic Statistics. Cat. No. 21-110-XIE. Available at www.statcan.ca. Accessed February 2004.

Note: “Major agricultural products” constitute the ones with the highest percentage of cash receipts, adding up to at least 90% of total cash receipts. Therefore, the products do not add up to 100%. The tables show the proportion of each product’s contribution to total cash receipts, not volume of production. The percentage contribution changes from year to year.

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GLOSSARY OF TERMS AND ACRONYMS

“Agriculture and Related Services”: This is a phrase used by many sources, including Statistics Canada, to refer to the sector of the economy comprised of farms, horticultural specialties such as mushroom products, greenhouse products, and nursery products, as well as services used by farmers where the service provider comes to the farm. Examples of service providers include veterinary services, farm animal breeding services, custom field work services, and agricultural management and consulting services. “Agriculture and Related Services” covers Standard Industrial Classification (SIC) codes 011 to 023. This sector does not include farm input industries, distribution, processing, or retailing of food, unless that happens on a farm and unless the business is classified as a farm. (From Statistics Canada, <http://www.statcan.ca>. Accessed July 2003.)

Appreciative Inquiry: As described by one of the interviewers in the 2003 GPI farm interviews (Scott et al. 2003) who has experience in this technique, appreciative inquiry is a method of learning how to pay attention to what has heart and meaning. It is a provocative approach to life, inquiring into the “art of what’s possible,” beginning with a discussion of what works for some person or group (appreciation), leading to a positive image of the future, and inspiring collective action. The appreciative inquiry model affirms people, identifies what is compelling, and thereby accelerates learning. Appreciative inquiry is a rigorous approach that does not gloss over problems but uses them as learning opportunities (Wendy Johnston, personal communication).

Capital (as applied to farms): Farm capital value includes the value of land and buildings, livestock and poultry, and machinery and equipment. (*Statistics Canada Agriculture Economic Statistics—Value of Farm Capital*. Cat. No. 21-013-XIE.)

Census farm (summary definition): A census farm is an agricultural operation that produces at least one of the following products intended for sale: crops (field crops, tree fruits or nuts, berries or grapes, vegetables, seed), livestock (cattle, pigs, sheep, horses, exotic animals, etc.), poultry (hens, chickens, turkeys, exotic birds, etc.), animal products (milk or cream, eggs, wool, furs, meat), or other agricultural products (greenhouse or nursery products, Christmas trees, mushrooms, sod, honey, maple syrup products). The definition of a census farm was expanded for the 1996 Census of Agriculture to include commercial poultry hatcheries and operations that produced only Christmas trees. Across Canada, a total of 138 commercial poultry hatcheries and 1,593 operations producing only Christmas trees were counted for the first time as census farms. (From Statistics Canada, <http://www.statcan.ca>. Accessed July 2003.)

Efficiency: This is one of the most important indicators in agriculture, particularly in reference to economic and ecological issues. Some measures of production provide information only on gross income, or gross production, while other measures look at production in terms of the inputs needed to sustain it. Therefore, net income may be seen as an indicator of economic efficiency, while net production is an indicator of ecological efficiency. Net income is calculated as gross income minus expenses. Net production is production minus purchased inputs.

In both cases it is important to remember that the resources upon which the production depends must not be compromised if productive capacity is to be maintained in the long term. This is recognized in most net income calculations by including a depreciation figure as an expense. Including depreciation of buildings or equipment as an expense recognizes the need to re-invest constantly in these productive tools. Likewise, in net production calculations, monitoring of and investments in soil quality, water quality, or livestock health should also be included. Otherwise the drive to achieve greater net production can lead to degradation of the resource base upon which production depends.

Many farmers recognize that productive efficiency can be improved by an increase in the internal cycling of resources on the farm or in the neighbourhood, which in turn can lead to a reduced requirement for purchased inputs. Examples include use of manure instead of synthetic fertilizers, or encouragement of beneficial insects to reduce use of toxic insecticides. Because it so directly affects livelihood and farm viability, there has been much debate and discussion about efficiency in agriculture, as seen in the 2003 GPI farm interviews (Scott et al. 2003: *Farm and Community Viability: Report on Interview Results*. Available from <http://www.gpiatlantic.org/pdf/agriculture/farmviab.pdf>).

As the GPI report on social capital in agriculture demonstrates, social capital in the form of cooperation among farmers and between farmers and consumers and communities also presents opportunities for gaining efficiencies on farms and in communities that are often invisible in conventional economic indicators of production efficiency. For example, when farmers cooperate to rotate land or share equipment, this can significantly increase both economic and ecological efficiency.

The following definition of ecological efficiency emerged from the 2003 GPI farm interviews: To remain viable, farms have to be “productive.” Ecological efficiency, therefore, is the ability to maintain or increase that productivity in the long term, while minimizing synthetic inputs and pollution, and maximizing system cycling of nutrients and other benefits.

The 2003 GPI farm interviews attempted to elicit as broad a view and understanding of efficiency as possible that included a wide range of factors of production—including human resources. The interviews therefore also explored the concept of *human capital efficiency*. As with economic or ecological efficiency, efforts were therefore made to assess how human capital efficiency might be properly evaluated.

Measures of human capital efficiency will differ significantly if the goal is more production per person or if it is to involve as many people in agriculture as possible. If the goal is the latter—to involve people—then efficiency measures will need to account for the trade offs between human capital and other capital inputs (equipment, mechanized process). As well, such measures will need to consider the best uses of time, in order to make the most efficient use of human contributions.

In sum, a consideration of indicators of efficiency in agriculture produces various ways of measuring efficiency, as seen in the table below. As noted below, different types of efficiency

will have priority depending on particular conditions and circumstances, and on the supply, availability, and cost of different resources and factors of production.

Various Ways of Measuring Efficiency

Types of efficiency	Details	Emphasis on
Feed conversion efficiency	Decrease in feed required per unit of animal product	Very controlled breeding, environment and feed
Lower mortality rate	Decrease % mortality of livestock	Breeding, handling, etc.
Labour efficiency (or productivity)	Increase product output per worker hour (important where labour is expensive or unavailable)	Mechanization, automation, capitalization
Land efficiency (or productivity)	Increase product per acre (important when land is expensive)	Intensive use of land
Animal unit efficiency	Increase production per cow or per sow, etc. (important when cost of feed is low relative to investment in each animal)	Intensive animal feeding
Price efficiency	Increase earnings per unit of product (important when margins are low)	Food quality, direct marketing, product differentiation
Energy efficiency	Increase product or earnings per unit of energy use (important when cost of fuel is high or to reduce energy impacts on climate change.)	Efficient designs, technologies, alternative energy
Waste efficiency	Decrease landfill waste and nutrient losses; increase use of safely re-usable and recyclable materials	Minimize off-farm inputs, optimize use of on-farm resources
Design efficiency	Waste from one production area used as a feedstock or input for another production area	Efficient designs, minimize excess work and off-farm inputs
Input use efficiency	Increase production earnings per unit of off-farm input expense, <i>while maintaining productive capacity</i>	Reducing use of socially costly inputs such as synthetic fertilizer or plastic
Transportation efficiency	Reduce total amount of km shipping required for inputs and outputs	Local sourcing, local markets
Ecological efficiency	Optimum use and conservation of nature's services for nutrient recycling, pest control, water recycling and filtration, etc.	Design, habitat, ecological knowledge

Farm Operating Expenses and Depreciation Charges: These include gross operating expenses (including crop insurance and stabilization premiums), minus rebates, plus depreciation on buildings and machinery. Depreciation or appreciation on land is not included.¹³⁷

Gross Domestic Product (GDP): The market value of goods and services produced by labour and property within the country in question, regardless of the nationality of the producer. In 1991, GDP replaced Gross National Product (GNP) as the primary measure of production in the U.S., and is today the principal measure of economic activity globally. Gross National Product (GNP) is the market value of goods and services produced by the labour and property supplied by the residents of a country, regardless of where they are located. (Bureau of Economic Analysis, <http://www.econmodel.com/classic/terms/gdp.htm>. Accessed December 27, 2003.) Thus, a Canadian working overseas contributes to Canadian GNP, while a Japanese firm with a plant in Canada contributes to Canada's GDP.

Growth and Development—the Difference: Growth refers to the quantitative increase in the scale of the physical dimension of the economy, the rate of flow of matter and energy through the economy, and the stock of human bodies and artefacts, while development refers to the qualitative improvement in the structure, design and composition of physical stocks and flows, that result from greater knowledge, both of technique and of purpose. (Daly 1994)

Indicators: Here we cite a definition of indicators used by Charles et al. (2002) in the GPI Fisheries and Marine Environment Accounts, since it represents one of the most comprehensive approaches to indicators in the literature. Although the following refers to marine and fishery-related indicators, we have tried to apply the following approach to the GPI Soils and Agriculture Accounts.

In the GPI Fisheries and Marine Environment Accounts, indicators are described as tools used to help managers, scientists, fishery participants, other ocean users, and the public to visualize the state of the marine environment and the fishery, and to discuss issues of common interest and concern. The indicators used in these Fisheries accounts are intended to enable policy makers and the general public to track the state of Nova Scotia's fisheries and marine ecosystems over time, with these trends providing insight into where current practices may lead in the future.

Each indicator in the GPI Fisheries and Marine Environment Accounts measures one particular aspect of the overall system—some dealing with the state of the marine ecosystem, others with the socioeconomic aspects of the fisheries and the wellbeing of coastal communities, and others with the institutional integrity of fishery and ocean management. Some of the referenced indicators are “observable” and “measurable” (such as fish stock population size or the employment rate in the fisheries industry), while others are more subjective (as in a survey, in which results may be reported on a scale from 1 to 10).

In the GPI Fisheries and Marine Environment Accounts, ecological indicators incorporate (a) the long-standing concern of ensuring that harvests are sustainable, in the sense of avoiding

¹³⁷ Statistics Canada. *Agriculture Economic Statistics*. Cat No. 21-012-XIE.

depletion of the fish stocks, (b) the broader concern of maintaining the resource base, non-commercial species, and overall biodiversity at levels that do not foreclose future options, and (c) the fundamental task of maintaining or enhancing the resilience and overall health of the ecosystem.

Socioeconomic indicators in the GPI Fisheries and Marine Environment Accounts focus on measuring how well society is maintaining or enhancing overall long-term socioeconomic welfare—with measures based on a blend of relevant economic and social indicators. These indicators deal with such aspects of socioeconomic welfare as generation of sustainable net benefits, reasonable distribution of those benefits, and maintenance of the system’s overall viability within local and global economies. Each indicator in this grouping is typically measured at the level of individuals, and aggregated across the given fishery system.

Community indicators in the GPI Fisheries and Marine Environment Accounts revolve around the desirability of sustaining communities for their contribution to sustainability in the marine environment and the fishery system, as valuable in their own right, and as more than simple collections of individuals. Hence, indicators in this grouping focus on the maintenance or enhancement of the economic and socio-cultural wellbeing of coastal and fishery-dependent human communities, as well as on their overall cohesiveness and long-term health. (Charles et al. 2002.)

This model has been applied in these GPI Soils and Agricultural Accounts—to the extent possible—to rural and agricultural communities in Nova Scotia and Prince Edward Island. This application not only allows a broad and multi-dimensional analysis of the region’s agricultural sector but in the future will also facilitate sectoral comparisons within the GPI framework itself.

Input-Output Model: Based on Statistics Canada’s Input-Output tables, ATi Consulting (2002) developed an input-output model for the purpose of determining the impacts of the agriculture sector on the Nova Scotia economy and on employment in the province. Results from this ATi study are reported in the accompanying Economic Viability report for the Nova Scotia GPI Soils and Agriculture Accounts. According to ATi Consulting (2002: 13-14), its proprietary model was

derived from Statistics Canada’s Input-Output tables that are, in turn, based on the Canadian System of National Accounts [. . .]. The model [. . .] is based on data from the System of Accounts at the Large Level aggregation, using 161 industries or sectors. Expenditure data is entered into the model, which is then run to extract retail, wholesale, and transportation margins. The expenditures are then reallocated to the appropriate industries according to the national accounting framework.

All expenditure data entered into the model is adjusted by an import coefficient. This is done to remove or “leak” those portions of industry expenditure that are not produced in the province being analysed. The remaining expenditure made in the province is further allocated to the industries that produce the given commodity. In turn, producing industries will consume other commodities to produce the given good or service.

Through successive rounds, the model continues to run until there is no money left as a result of the leakages through imports, taxes, and savings. At this point, all calculations stop and the total impacts, by industry and by province, are added up from the results of where some proportion of a Nova Scotia expenditure is accounted for by “imports” from other areas of Canada. The proportions, or import coefficients, are accounted for by the model and based on the system of National Accounts.

In the simulation for the effect of agriculture expenditures, the

data from Statistics Canada’s Agriculture Economic Statistics, Farm Operating Expenses and Depreciation Charges for 2000 [were used]. The beginning expenditure of \$327 million was allocated through the modeled sectors as indicated above. Individual expenditures in any one sector were then adjusted downward to reflect portions of the given expenditures that occur in NS and the proportions that occur outside of the province. Once all adjustments were made to the input data, direct NS spending was reduced from \$327 million to \$313.5 million. The products not produced in NS are left in the model to enable the model to capture the retail, wholesale, and transportation margins that accrue.

The results of this input-output model are then reported by ATi Consulting (2002: 14) as direct effects, indirect effects, and induced effects. In the case of expenditures, the following definitions were applied.

Direct expenditure “refers to money spent directly by the sector on goods and services. Farm industry examples of a direct expenditure are the wages and salaries paid directly to the farm’s employees or the fees for veterinary services, paid directly to a supplier of those services.”

Indirect expenditures “are those that occur when the direct supplier of goods and services, in turn, purchases goods and services that are necessary to produce their particular good or service.”

Induced effects “result from the spending of income (wages and salaries) earned through direct and indirect effects on goods and services for the consumer.”

These terms (direct, indirect, induced) were also applied by ATi Consulting (2002) to employment, GDP, and other measures without similar explanations.

Labour Force: The number of people 15 years and older, estimated through surveys to be working in a particular industry or in the economy at large, or actively seeking work. Because the labour force includes both employed (full-time and part-time) and unemployed persons, it yields quite different results from measures based on “person years of employment,” which refers to the total annual hours worked in a particular industry or in the economy at large, divided by 2000 hours/year (40 hours over 50 weeks). According to Statistics Canada, “those neither currently supplying nor offering their labour services are referred to as persons not in the labour force.” (Statistics Canada. 2008. *Guide to the Labour Force Survey 2008*. Catalogue no. 71-543-

G. Available from <http://www.statcan.ca/cgi-bin/downpub/listpub.cgi?catno=71-543-GIE2008001>. Accessed 27 July, 2008.)

Monetization: The Genuine Progress Index attempts to assign monetary values to key components of natural, human, and social capital that are not generally valued in conventional economic accounts. But what is the economic value of strong community bonds, or of equipment sharing between farmers, for example? Neither of which is currently valued in GDP-based statistics but both of which are seen in this study to have significant economic and social value.

Because market values are not designed to capture such “intangibles,” estimation efforts in the field of social capital will necessarily be rough. Nevertheless, the effort is necessary, since failure to count such presently unvalued benefits produces even grosser inaccuracies and resulting policy distortions, as these benefits are currently given an arbitrary value of zero in the conventional accounting ledgers. The GPI valuation efforts at least attempt to count and thus acknowledge the existence of those benefits, thereby bringing them to the fore to allow proper discussion.

In a sense, the necessity to assign monetary values to non-market benefits for the purpose of bringing attention to such benefits may be seen as a sad commentary on the priorities of our society, since it reveals the extent to which material values dominate the policy and public arenas. Nevertheless, such economic valuation is essential in this day and age—and in these GPI Soils and Agriculture Accounts—in order to highlight and acknowledge those aspects of farms and of farming communities that have in fact been demonstrated to have vital value to Maritimers.

The GPI assesses the economic value of social and environmental assets by imputing market values to the services provided by our stock of human, social, and environmental capital. However, this valuation effort should be understood as a strategy rather than goal, since monetization itself does not have any inherent value. Indeed, money is designed to capture market transactions and must be acknowledged as a poor tool to assess human, social, and ecological values. Until such values are fully integrated into the decision-making process in their own right, however, monetization has temporary *strategic* utility in order to ensure that such vital non-market values receive proper policy attention. It is a temporary measure, necessary only as long as financial structures, such as prices, taxes, and monetary incentives, continue to provide the primary cues for the actual behaviour of businesses, consumers, and governments. From this perspective, monetization is a useful tool to communicate with the world of conventional economics, not a view that reduces profound human, social, and environmental values to monetary terms.

In sum, monetization is a necessary step in light of the dominance of the materialist ethic, in order to overcome the tendency to undervalue the services of unpaid labour, natural resources, and other assets conventionally regarded as “free”; to make their contribution to prosperity clearly visible; and to bring these social and environmental assets more fully into the policy arena. Monetization also serves to demonstrate the linkages and connections between non-market and market factors, such as the reality that depletion of a natural resource will eventually produce

an actual loss of value in the market economy. Despite this utility, monetary values can never be taken as a literal description of reality.

As the grip of market statistics on the policy arena is hopefully and gradually loosened, the desired direction for the GPI is to return to the direct use of a wide range of key time use, environmental quality, economic, and social indicators as direct guides to decision-making. This will also allow for greater accuracy and precision than reliance on derivative economic values. For this reason, all economic valuations in GPI reports are based on underlying physical indicators, and the Nova Scotia GPI includes a wide range of non-monetary assessments, such as an ecological footprint analysis, in which no attempt at monetization is made. To assess the impact of human activity and consumption patterns on the environment, for example, the use of land values in the footprint analysis is actually a far more direct method of assessing environmental impacts than the use of monetary values.

While the assignment of monetary values to non-market assets may appear absurd and even objectionable from many perspectives, it must be acknowledged that we do currently and conventionally accept economic valuation for a range of non-market values in a number of areas. For example, society accepts the necessity for monetary court awards for grief and suffering due to crime or accidents, and insurance companies assign monetary values to life and limbs as necessary measures to compensate actual human losses. We pay higher rents for dwellings with aesthetically pleasing views, and we sell our time, labour, and intelligence often to the highest bidder—even though the value of all such assets is clearly far beyond what can be captured by the monetary prices assigned to them. Yet prices are assigned, nevertheless, in order that value is at least acknowledged. Similarly, in a world where “everything has its price,” monetizing social and environmental variables in the GPI assigns them greater value in the policy arena and provides a more accurate measure of progress than excluding them from our central economic accounts and core measures of progress.

Multifactor Productivity: While *productivity* is defined as how much output is produced per unit of input, *multifactor productivity* is defined as the increase in output relative to the increase in a bundle of inputs that include both labour and capital. (Statistics Canada, *Productivity Growth in Canada*, 2001.)

Multiplier: This is the number used to multiply a dollar amount in order to develop an estimate of economic impacts beyond the original expenditure. It can also be used with respect to income and employment. Please see the entry on Input-Output Model to see how the multiplier is determined.

Employment multipliers increase with the size of the local economy specified. Thus, larger jurisdictions tend to have higher multipliers than small jurisdictions, as there is greater scope for self-sufficiency and therefore fewer economic leakages (Robinson 1999: 9).

Fullerton and McNeil (2004: 25) report that the economic impact of Farmers’ Markets [in Nova Scotia] was originally determined using customer surveys to estimate likely economic multipliers, which were then applied to the customer sales data. Vendor data were used to verify

the results, although vendor sales data were not very detailed (and thus not terribly accurate), due in part to confidentiality issues. According to Fullerton and McNeil:

Multiplier effects account for the additional results of an economic activity through direct, indirect, and induced impacts. [The multiplier] measures the additional effects of an economic activity elsewhere in the economy. For example, a sale of a farm product at the market has upstream effects of employment and purchases for the farm and effects through purchases of goods and services as a result of this employment. Economic multipliers are calculated using input-output models and are specific to economic sectors and geographic regions.

According to one simple definition of direct, indirect, and induced impacts:

Direct impact is the increase in the output of a commodity, as producers react to meet an increased demand. As these producers increase their output, there will also be an increase in demand on their suppliers and so on down the supply chain; this is the *indirect impact*. As a result of the direct and indirect impacts, the level of income throughout the economy will increase, [and] a proportion of this increased income will be re-spent on final goods and services: this is the *induced effect*. (Fullerton and McNeil, 2004)

See also **input-output model** (above) for a more detailed description of these impacts and how a multiplier was calculated by ATi Consulting (2002) for Nova Scotia agriculture.

Net Farm Income: Defined as total cash receipts minus operating expenses after rebates plus income in kind minus depreciation charges plus value of inventory change. (Statistics Canada, 2003. *Agriculture Economic Statistics*. Cat. No. 21-010-XIE.)

NFU: National Farmers Union.

Non-farm work: Income-generating work that either takes place off the farm or that takes place on the farm property but is not related directly to the farming operation. Examples of work that takes place on the farm but is not related to the farm operation could include construction, hairdressing, accounting, and many other types of home-based businesses. (Martz and Brueckner 2003)

NS: Nova Scotia.

PEI: Prince Edward Island.

Person Years of Employment: Total annual hours worked, divided by 2000 hours/year (40 hours multiplied by 50 weeks).

Productivity: “[A] measure of how much output is produced per level of input. *Multifactor productivity* is the increase in output relative to the increase in a bundle of inputs that include both labour and capital.” Statistics Canada, *Productivity Growth in Canada, 2001*.

Solvency Ratio: Equal to total liabilities divided by total assets. It is very similar to the debt to equity ratio.

Wealth: The origin of the word “wealth” derives from “weal” (well-being) and “th” (the condition of). Today, people associate the word with simply monetary assets, or items that can be sold for money. However, the standard definition of wealth, as used by Statistics Canada and other agencies, is assets minus debts. In other words, wealth can be defined as those assets that remain after all debt has been paid off.

Anielski (2003) seeks to measure “genuine wealth.” He notes:

We currently measure economic well-being according to how much money we spend either as individuals or publicly, often on regrettable things like prisons, cleaning up environmental spills, or constructing missiles and tanks. Yet, we fail to account for the assets (life capital) that “make life worthwhile” nor do we account for their depreciation.