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MEASURING SUSTAINABLE DEVELOPMENT

APPLICATION OF THE GENUINE PROGRESS INDEX TO NOVA SCOTIA

Measuring Genuine Progress: Indicators, Accounts, and Policy

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After 12 years of research and development, the Nova Scotia Genuine Progress Index (GPI) is ready for use. Over more than a decade, about 100 in-depth reports on various dimensions of the GPI have been released, containing thousands of spreadsheets, tables, and charts, to provide the Province of Nova Scotia with more detailed, integrated information on its social, economic, and environmental wellbeing and progress than is available to any other jurisdiction in North America. On 30 October, 2008, a comprehensive summary report was released updating key indicators and economic valuations in all 20 GPI components with the most recent available data. It is accompanied by systematized GPI database that will allow easy updating of the most important data sets and replication of the GPI for other jurisdictions.

But all the research, number-crunching, and wide-ranging literature reviews of the last 12 years are no mere academic exercise, and the years of developmental work will have been in vain if the GPI work sits on a shelf and gathers dust. Its entire purpose is to provide the evidence base for good policy that seeks to integrate and harmonize social, economic, and environmental objectives with a view to enhancing wellbeing in the largest sense both for this and future generations. If Nova Scotia can use the evidence for this purpose to forge genuine progress, then it will provide a real gift to the world—a gift that the world needs now more than ever.

It is fortuitous that the view, approach, and practice of the GPI are in harmony with Nova Scotia's 2006 Opportunities for Sustainable Prosperity development strategy that undertakes to value natural, human, and social capital alongside produced and financial capital; with the Province's new Weaving the Threads strategy outlining social goals; and with the 2007 Environmental Goals and Sustainable Prosperity Act that vows "to make Nova Scotia one of the cleanest and most sustainable environments in the world by the year 2020." As well, in 2007 and 2008, the Nova Scotia Government demonstrated its commitment to the new development path by hosting leading edge Power of Green conferences, sponsored by Nova Scotia Economic Development, with the most recent October, 2008, conference focussing on the business case for sustainability. Speakers and invitees to these conferences have included some of the world's most forward-looking thinkers and practitioners of sustainable development.

These four key government initiatives of the last two years, backed by the practical measurement tools of the Genuine Progress Index, have the potential to set the Province on an integrated development path that effectively balances and harmonizes social, economic, and environmental goals and objectives. Perhaps most significantly, all these initiatives, along with support for development of the GPI, have transcended the usual political partisanship and rivalry and been undertaken with full all-party support—representing as they do the broader consensus vision and goals of the Province and its people at large.

We now stand at an extraordinary and crucial historical juncture. On the one hand, the world is faced with an economic crisis of epic proportions, constituting the greatest challenge to the conventional economic paradigm since the Great Depression. The old solutions are not working, and the so-called experts and prophets of the old system not only failed to see the crash coming but are stymied in finding an exit strategy. On the other hand, this small Province has a remarkable once-in-a-lifetime opportunity to demonstrate a new way forward—an integrated and holistic path of development that goes far beyond the bounds of the conventional economic paradigm with its narrow and limited obsession with economic growth.

The jury is still out on whether the Province will seize that opportunity or let it slip. But this paper is designed to ease the challenging transition from measurement to practice by outlining some of the key principles of the GPI, their potential applicability to policy, and their particular relevance to present economic conditions and circumstances. Quite simply, the next stage in GPI development is its application in practice, and the use of the GPI evidence to craft informed policy. I am delighted that the Province has undertaken some concrete steps to begin to make that happen:

- The Nova Scotia Statistics Agency of the Department of Finance has expressed its considerable interest in integrating the GPI data into its Nova Scotia Community Counts reporting system. To that end, GPI Atlantic has now transferred its entire database to the Agency. Particular thanks go to Fred Bergman, NS Statistics Director, and to Malcolm Shookner, NS Community Counts Manager, for their vision, understanding, and strong collaboration in making this happen.

- Following the release of the comprehensive GPI report on 30 October, the Nova Scotia Government requested an afternoon technical briefing for civil servants on the GPI results. This took place on 13 November, 2008, hosted by Nova Scotia Economic Development, and was very well attended by representatives of virtually all government departments.

- The Nova Scotia Government has now appointed an interdepartmental task force to study the GPI in detail over the 2008-09 winter months. This is an excellent and most important step. The cake has been baked, and before it is consumed, it is most wise to examine and understand the ingredients closely—the GPI components, principles, methods, data sources, and results.

- Following this study period, Nova Scotia Economic Development has suggested a more in-depth 2-3 day training and discussion ‘retreat’ on the GPI in April or May of 2009, where its methods, results, and implications can be examined in much greater detail, and where questions that arose during the study period can be carefully examined.

- Simultaneously, beginning in February, 2009, the Nova Scotia government will support GPI Atlantic's development of two practical GPI training manuals for users—one designed for provincial civil servants, and one for communities interested in using the GPI methods to measure their own progress at the local level. The applicability and relevance of the GPI to community development has already been indicated by the pilot Community GPI work undertaken in Kings County and in Glace Bay in industrial Cape Breton. These two manuals are expected to be complete by the summer of 2009.

- For the longer term, discussions have been initiated with Dalhousie University professors interested in seeing the development of a full year GPI methods course designed to train future GPI researchers, who in turn can play a role in maintaining and updating the GPI, and replicating it for other jurisdictions. Such a course, along with its accompanying curricular materials and research training manuals, would be unique in North America and has the potential to attract students internationally.

  Indeed, GPI Atlantic has already received requests from as far afield as New Zealand, Bhutan, Thailand, and Brazil for such a training program that would be designed to build research capacity in this emerging measurement field. In fact, GPI Atlantic will be delivering an intensive GPI methods training course in Bangkok, Thailand, in January, 2009, for adult and youth leaders and practitioners from throughout the Mekong Delta region (including Thailand, Cambodia, Laos, Vietnam, and Burma), has worked with a tertiary institution in New Zealand on the design of a GPI accounting course, and has active, working partnerships with the Government of Bhutan and with various agencies in New Zealand on development of measures of progress. If Nova Scotia chose to do so, it could become a global hub for such training.

- There has even been preliminary discussion on the establishment of a university-affiliated GPI Institute that would be responsible for regular updates of the GPI, and for the publication of periodic in-depth analyses of particular GPI components.

- Perhaps most significantly, the Nova Scotia Government has demonstrated its commitment to forward movement in this field in the most practical way, by helping fund the completion of the Nova Scotia Genuine Progress Index—including the final 14 reports—through 2008. Without the Nova Scotia Government's $188,000 financial contribution, GPI Atlantic could not have paid the research staff required to complete the GPI.

All this bodes very well indeed. Just as Nova Scotia became a global leader in sustainable solid waste management and the first jurisdiction in all of North America to succeed in diverting 50% of its waste from landfills through state-of-the-art composting and recycling programs, Nova Scotia now has the opportunity to become a global leader in the measurement and practice of genuine progress towards integrated social, economic, and environmental development.

All that said, it is only fair to point to one major question mark and one major caveat that will ensure we not get carried away by lofty aspirations that are not grounded in reality.

First the question mark: Following the present, highly encouraging study phase on which the Nova Scotia Government has willingly and eagerly embarked, a daring and courageous leap of political will still be required to implement the new measures in practice. 'Business as usual' will no longer be an option if Nova Scotia is to shift genuinely and whole-heartedly from the conventional GDP-based growth paradigm that has dominated the political and economic arena for more than half a century to a properly integrated development path that truly balances social, economic, and environmental objectives.

At that implementation stage, challenges to existing institutions, interests, policies, programs, and taxation and incentive systems built on the old economic paradigm are inevitable, and their re-shaping in significant ways will be required. All this is possible, and can certainly be undertaken gently, compassionately, efficiently, and wisely to ensure that harm to particular sectors, individuals, and groups is minimized, and so that benefits at each stage outweigh costs. The process may be eased by the current collapse of the old economic paradigm under the weight of its own contradictions, since the pain is more clearly than ever seen to emerge from the structure of the old, narrow, and materialist growth-based system itself rather than from the new solutions that promise a brighter future.

Just as Nova Scotia's new, leading-edge solid waste management system emerged creatively from a complete crisis in the old system and its incapacity to offer a forward solution, so the present economic collapse and the incapacity of traditional fiscal stimulus packages to offer viable solutions that do not plunge governments into deeper debt, may actually provide the best opportunity for the new development path to emerge.

Nevertheless, it is only fair to note, as mentioned above, that the jury is still out on whether the political will be there to implement the new development strategy, backed by the GPI measures of progress, in practice. We have baked the GPI cake and offered it to the Province and people of Nova Scotia with the best of intentions and in the hope of ensuring a brighter and more sustainable future. Whether Nova Scotia will step forward and eat the cake is entirely unknown.

Second, the major caveat: Despite GPI Atlantic's 'completion' of its 12-year research and development process, and its production of a so-called 'final', 'comprehensive' summary report and database, truth in advertising requires that we acknowledge that the Nova Scotia Genuine Progress is neither 'complete', nor 'comprehensive', nor 'final'. All aspects of wellbeing and sustainable development are not yet properly represented, and further work is required to develop components and indicators on arts and culture, governance, sustainable and affordable housing, and other key dimensions of quality of life. As well, the GPI is never a 'final' product, and should always be modified and

improved over time as better methodologies, measurement techniques, and data sources are proposed and developed.

At the same time, we do not have to wait for perfection before applying the GPI in practice, and indeed we do not have the luxury to do so. Twelve years of developmental work have now created a set of measures for the Province that is sufficiently representative and usable to be entirely ready for application while further developmental work continues. As Samuel Johnson famously pronounced: *"Nothing will ever be attempted if all possible objections must first be overcome."*

In presenting the Nova Scotia Genuine Progress Index to the Province and people of Nova Scotia, we at GPI Atlantic are the first to acknowledge the shortcomings, data gaps, and measurement challenges that still exist in developing these new measures. Indeed, our 100-odd reports are replete with such caveats, recommendations for future research and developmental work, and frank and humble acknowledgements of the tasks that still lie ahead. In that spirit, we welcome constructive input that can help improve the GPI over time. Indeed, application and improvement naturally go hand-in-hand. The more that the GPI is applied in practice and its evidence used to craft informed policy, the more that needed improvements and further development of the measures will become apparent. That in turn should give added impetus to spur the creation of the GPI Institute mentioned above, whose task and mandate it would be to meet those demands.

To ease the transition from measurement to practice, this paper attempts to make transparent a few of the key assumptions, principles, and structural foundations of the Nova Scotia Genuine Progress Index, and to demonstrate its potential utility and relevance to policy formation in the current economic conditions. This paper is by no means 'comprehensive' and does not attempt to cover all such underlying assumptions and principles, such as why, for example, we do not attempt to aggregate all results into a single number, and other key questions. However, this might be seen as the first of a series of policy papers designed to answer such questions as they arise, as they emerge naturally from the initial efforts to apply the GPI in practice, and as we move now from the 12-year research and development phase to the application phase.

We begin this analysis with a description of what makes the Genuine Progress Index different from other wellbeing indicator systems—namely its layering of an accounting framework and system of economic valuation on top of its indicator foundation. This is by no means a dismissal of other wellbeing indicator systems, all of which have played a crucial role in moving us beyond the narrow, economic growth-based indicators of progress that have too long served as a proxy for societal wellbeing and progress and thus skewed policy formation in entirely unsustainable ways. Those wellbeing indicator systems have laid a firm and important foundation for the new measurement methods, and the GPI has quite frankly borrowed from and built on that foundation.

At the same time, these wellbeing indicator systems have major limitations in their capacity to influence policy—not because they are conceptually flawed or

methodologically unsound, but because they undertake only one component of the measurement challenge. To influence policy effectively, it is essential to create both an indicator framework and an accounting framework. As the following analysis intends to demonstrate, both forms of measurement are essential in policy formation, and it is this dual approach that distinguishes the Genuine Progress Index from other indicator systems. Since policy makers, in examining the ingredients in the GPI cake, may wish to compare the GPI with other measurement and reporting systems, it is necessary to begin by making this distinction and its reasoning entirely transparent.

1. Measurement and Policy: Why go beyond indicators?

Globally in the last two decades, major progress has been made in developing indicators that measure progress towards a wide range of important social, economic, and environmental objectives. In particular, there has been an unprecedented development in the data sources required for such measurement, vast improvements in measurement methodologies, and construction and administration of new survey instruments designed to collect the appropriate data in areas never previously monitored or tracked. Following development of initial baseline data in new areas, reliable and comparable time series are now beginning to become available that for the first time allow measures of progress over time in a wide range of social and environmental dimensions.

To take just one illustrative example from the population health field: Three decades ago there were no reliable time series allowing an assessment of obesity trends, even though obesity is linked to a wide range of serious illnesses, including diabetes, heart disease, hypertension, stroke, and some cancers. Since that time, international and national health agencies have established widely accepted measurement definitions, standards and thresholds for overweight and obesity based on ‘body mass index’ (BMI). Self-reported measures of weight and height in population health surveys gradually allowed development of time series in this area. Nevertheless, self-reported statistics were widely accepted to be unreliable, with respondents frequently tending to over-report height and under-report weight. In 2004, Statistics Canada for the first time administered a new survey measuring respondents’ height and weight, and allowing for considerable improvements in data accuracy, though time series are not yet available for these new objective BMI measures.

This example well illustrates the developmental process that has occurred in a wide range of new areas—first identifying key new indicators; then developing definitions, standards and thresholds to allow for comparability; then collecting data in new survey instruments and questions; reporting trends over time; and then refining and improvement data collection and measurement methodologies. To its credit, Statistics Canada has been on the leading edge of such developmental work globally, using the most rigorous statistical methods and carefully designed survey instruments, and earning it a well-deserved reputation as one of the best statistical agencies in the world.

The emerging indicators and the new evidence that has become available through their development have been an absolutely essential first step in bringing vital new issues onto the policy agenda, and in directing policy attention to a wide range of pressing social, health, and environmental concerns. As well, the new indicators have played a key role in 'objectifying' and bringing into the mainstream issues like poverty, income distribution, and greenhouse gas and pollutant emissions, that were once confined to the domain of advocacy or dismissed as the marginal concerns of 'social justice' and 'environmentalist' lobby groups. The indicators have even helped ensure that enduring social values and issues of concern remain on the policy agenda through the unpredictable vagaries of party politics.

In this process, people often ask—but what is the precise nature of the relationship between measurement and policy, and in what ways can a new set of measures like the Genuine Progress Index constructively affect and help shape policy? In fact, measurement and policy are intimately and naturally connected in several key ways:

- Good evidence is essential for informed decision-making. Without reliable, comprehensive measures, policy making would be blind, and have no understanding where the greatest needs are, and which population groups need to be targeted with which programs. Good measurements can also send early warning signals to policy makers if key indicators begin to trend downward, and they thus allow and encourage timely remedial action before a crisis develops.

- The new GPI measures—spanning 20 social, economic, and environmental components in five different domains[1]—enable policy makers and the general public to be aware of the practical trade-offs involved in each decision. If we make progress in one area, is it at the expense of another, or can we advance all GPI domains harmoniously?

- Because the new measures reflect consensus social values, and embody a vision of where we want to be 5, 10, 20, and 50 years from now, they can help set specific goals and targets and mobilize the population behind that common vision. Any measure of progress is normative by nature—always value-based and assessing progress towards an agreed set of goals. The consequent target setting is not theoretical or conceptual but very practical. For example, if we know what the crime rate, smoking rate, poverty rate, or waste disposal rate is, we can set the goal of reducing those rates by 20% by a certain year, and halving them by a subsequent year, and we can measure our progress in getting there.

[1] ***Living Standards:*** Income and its distribution, economic security, debt and financial security. ***Time Use:*** Paid work, unpaid household work, voluntary work, free time. ***Human and Social Capital:*** Population health, education, community safety and crime. ***Natural Capital:*** Forests, fisheries, soils and agriculture, water resources, air quality, energy. ***Human Impact on the Environment:*** Ecological Footprint, greenhouse gas emissions, transportation, solid waste.

- The new measures can help evaluate which programs are working and which are not, according to whether or not they are achieving the goals and targets established through the GPI indicators. Ineffective programs can be scrapped and better ones put in their place.

- The indicators will enable Nova Scotians to hold their government accountable according to agreed standards. At election time, for example, the people can assess the degree to which their elected representatives made progress towards the goals and targets established through the GPI indicators, and they can cast their votes accordingly. They can also assess their own personal commitment and that of their communities in making progress towards those goals. In fact, the new measures can ensure that—whichever political party gains power—all elected representatives are held to a set of common principles and consensus goals, and they will all be judged by the same standard.

- Perhaps most fundamentally of all: What is measured literally shapes the policy agenda of governments and determines what does and does not make it onto that policy agenda. To take just one example, the massive nationwide decline of volunteer work in Canada has never been debated in any provincial or national legislature, and is barely known to policy makers, because unpaid work is not part of our conventional economic growth-based measures of progress. Quite simply, what is not measured and counted does not get policy attention.

  My favourite example is an experiment I tried on a university class. After an impassioned pep talk on the importance of the term paper in honing students' independent research skills, and its consequent much greater academic importance than the final exam, I informed them that the paper was worth 5% of their final grade. Needless to say, any half-intelligent student ignored my entire speech and put all their effort into the final exam that was worth 50%, because the real message they correctly discerned was that if I was not properly counting the term paper, it had no value. Next semester I gave no speech but simply noted on the course outline: "Term paper = 50%." Not surprisingly, the students immediately put all their effort into the term paper. What we count and measure quite literally creates value and changes behaviour.

  No wonder it is so difficult to take effective action on climate change when our dominant conventional GDP-measures of progress tell us that burning more fossil fuels and shoring up the auto industry contribute to economic growth and, by implication, to prosperity and wellbeing. We have yet to see one national leader of any political stripe urge Canadians—for the sake of future generations—not to buy a gas-guzzling SUV or minivan, but to favour small fuel-efficient vehicles or, better yet, to carpool and use public transit.

  Just as with the term paper, we would much rather give passionate speeches about the need to act on climate change than to change our behaviours and do something

about it, so long as the health of the oil and auto industries remains like the final exam, trumping all other values. Adoption of the GPI as Nova Scotia's core measure of progress would bring greenhouse gas reductions into the very centre of the policy agenda, and help shift policy priorities and behaviour in significant ways.

In all these ways and more, the new indicators can be very practical policy-relevant tools that can shape the policy agenda in new ways, provide good evidence for informed decision-making, help set goals and targets, clarify trade-offs, evaluate programs, help hold governments accountable, and spur an integrated, holistic development path. Best of all, the development of new data sources and improved measurement methods in the last quarter century means that the new measures are now ready for application and use. This is an historical achievement, credit for which goes to innovators in statistical agencies, creative scholars, ecological economists, and indicator practitioners worldwide, whose combined work over more than two decades has finally brought this work to the point where it can be applied in practice. GPI Atlantic has simply used and built on the work of those innovators.

But are the new wellbeing indicators that have gained increasing prominence worldwide all that is needed to embed a holistic development model firmly in the institutional structure of Nova Scotia for the long haul? I don't think so. For that to happen, and for effective integration of social, economic, and environmental objectives into policy and planning scenarios, a second key measurement step is essential. Resting on the firm foundation of the new indicators, the second essential measurement step is the development of a set of GPI Accounts—by whatever name.

Why is this necessary? Why are indicators not enough? Why go beyond them to create a new set of Provincial Accounts? And what does that mean? This necessity can only be explained by reference to the current dominance of GDP-based measures. Recall that Gross Domestic Product (GDP) measures the total quantity of goods and services produced and sold in the domestic market economy. It is a totally materialist measure that counts only goods and services exchanged for money.

But here is the key point: ***GDP is not an indicator; it is an accounting system***. So if the power—I would say close to "stranglehold"—of GDP as a measurement system is to be broken or at least weakened, that will not happen through indicators alone. And if GDP is to be dislodged from its present throne as King of all measurements, then we need to take aim at our materialist GDP-based accounting system and to reshape that accounting system entirely to reflect the constituents of the GPI, with its broader social, economic, and environmental components and concerns.

Make no mistake about it—we are now entering into much more sensitive (and perhaps even dangerous) territory. Indicators—while an absolutely essential first step from which to proceed—and while they provide the physical measures on which the new accounting

system will be based—are still relatively safe, because they don't touch the view, approach, or measurement system that define our present economic paradigm.

Sometimes, with our indicator work, I feel like we are working so hard to pave the side streets. Not that the side streets are unimportant, mind you. That's where the people live! And so, our indicators respond to human concerns like safe neighbourhoods, health, clean air and water, and decent living standards. But somehow, the GDP steamroller still rumbles down the main highway, flattening everything in its path, and entirely oblivious to all our assiduous side street paving. Until we challenge the GDP-based accounting that underpins our conventional economic paradigm, we haven't yet ventured onto that scary highway and we haven't even drawn the monster's attention. In fact, the monster is quite happy to keep us distracted on the side streets while it continues to run the show.

Why does all our good indicator work fail, in the end, to change policy and behaviour? I think the answer is obvious. Nothing changes people's behaviour like price signals. All the preaching about greenhouse gas emissions and energy conservation and all the good energy efficiency and climate change indicators in the world didn't tempt North Americans to switch away from their gas-guzzling SUVs. But a doubling of oil prices very quickly stopped the SUV lust in its tracks and created an overnight demand for small fuel-efficient cars that the market could not meet. Then it took the economic bubble to burst to dampen the auto craze altogether.

In fact, all our growing global environmental awareness and activism of the last two decades have not stopped growing global consumption that depletes our natural wealth and resources, and dumps wastes and poisons into our atmosphere at ever more dizzying rates. Sad to say, and despite the pain it will cause, nothing will be better for our natural world than the current economic downturn—and the deeper the recession, the better chance our natural world will have to provide some support for future generations. ***The economy***—nothing else, not our environmental movement, our sustainability charters, our Rio and Johannesburg and Bali conferences, and our best indicators—will stop people and businesses and governments from spending and consuming at rates far beyond the capacity of the Earth to support.

And this is equally true for social and cultural realities. In 1999, Nova Scotia had the highest smoking rates in all of Canada, and all the anti-smoking messages in the world didn't seem to make a difference. But when the provincial government massively increased tobacco taxes, consumption fell like a rock. Within a few years, the rate of teenage smoking dropped from one in three teenagers (33%) to one in five (20%). A simple price signal has saved hundreds of lives and sharply diminished a huge burden of needless suffering.

In short, we won't begin to send price signals that are in accord with sustainability and wellbeing values and principles until we change the present produce-and-spend economic accounting system to reflect the true social and environmental costs and benefits of economic activity. And yet…. If we do not dare to take that scary next step onto the main

highway of the economy, we face the real danger that all our wellbeing and sustainable prosperity aspirations will become a wonderfully inspiring set of principles, reflecting Nova Scotians' deepest aspirations—the fodder for countless ministerial speeches—but they will become ever more divorced from behaviour and action.

Now here's the good news. We *can* rebuild that economic accounting highway, and we have the tools to do so. We *can* face down the GDP accounting monster head-on and create a sane accounting system that not only fully reflects our values as Nova Scotians but also protects against the kind of insane boom and bust cycles that our present economic system and its growth-based accounting system inevitably produce. Most importantly—unlike our present winner-take-all-and-future-generations be-damned accounting system—such a new GPI accounting system can actually shape an economic infrastructure capable of supporting future generations and of ensuring long-term sustainable prosperity in harmony with the natural world and with our deepest human and social values..

And here's the even better news. It wouldn't take much to start the ball rolling in a new direction. That GDP steamroller is so monstrously unwieldy and primitive that it will quickly stumble and be derailed by a few well-placed accounting tricks. Think of this as guerrilla warfare. This paper will be about venturing from our indicator side-streets where the people actually live onto the economic accounting highway that seems to govern their behaviour regardless of their deeper aspirations, and it will be about creating just enough creative GPI-inspired curves and twists to deconstruct that GDP steamroller.

> No government in the world has yet taken this step. And the government that first does so will truly earn the world's first "good governance" award, and be deeply thanked by future generations of humanity. But this shift in the economic accounts has to happen quickly for the world and future generations to stand a chance against the juggernaut of endless and excessive consumption. A small Maritime Province in Atlantic Canada might just be uniquely placed to set the example the world needs and is waiting in adopting and implementing the new GPI economic accounting framework..

Let's start at the beginning. What are indicators and what are economic accounts, and what is the difference?

2. Indicators and Accounts: What is the Difference?

Indicators assess ***progress*** and are based on physical measures (e.g. employment, crime, poverty, and illness rates, levels of educational attainment, greenhouse gas and air pollutant emissions, etc.) The units of measurement are unique to each indicator, with rates generally measured in per capita terms (e.g. number of jobs, crimes, smokers, graduates per 100,000 or as percentage of total population, or in tonnes per capita for pollutant emissions). Indicators tell us if things are getting better or worse. And they perform vitally important policy functions, sending early warning signals to policy

makers, and assessing which programs are working and which are not in attaining agreed targets.

Accounts assess ***value***, with units of measurement expressed in common monetary terms (dollars) to the degree possible, and with evidence describing and pointing to economic value when monetization is not possible. Accounts form the basis of government financial incentives and penalties—including taxes, subsidies, and investments in particular sectors of the economy. And those financial incentives and penalties in turn affect price—which, as we saw, is the most immediate, powerful, and effective determinant of behavioural change.

Here are some examples of the difference between indicators and accounts:

- Crime rates (an indicator) tell us—in criminal incidents per 100,000 population—whether crime is going up or down, with lower rates signifying ***progress.*** Accounts tell us the ***cost of crime*** to society—how much we spend in dollars on courts, prisons, burglar alarms, security guards, hospital costs due to assault, replacing victim losses, etc. This can be expressed as the amount we would ***save*** and have available for more productive investments in wellbeing if there were no crime. We found that crime costs Nova Scotia more than $700 million a year.

- Trends in volunteer work can be a good indicator of generosity and community strength, and tell us—in hours—whether volunteerism is increasing or declining. Accounts tell us the ***economic value of volunteer work***—by assessing what it would cost to replace for pay the services presently provided free by volunteers. If volunteerism declines, as it has in Canada, accounts tell us the lost economic value of those missing volunteer hours. We found that voluntary work contributes the equivalent of $1.8 billion a year in services to the Nova Scotia economy. (Of course this figure is invisible in the GDP statistics and conventional economic accounts, which ignore the value of unpaid work and only measure paid work.)

- Smoking rates (an indicator) tell us—in number of smokers as a percentage of total population—whether we are making progress in avoiding the high rates of premature death and illness attributable to smoking. Accounts tell us the cost of smoking to society which, in Nova Scotia, we found was $171 million a year in direct health care costs and about $700 million more in lost productivity.

  Of course, there is a good news side to all these stories. The sharp decline in smoking rates translates into a long-term saving of hundreds of millions of dollars. We calculated that if Nova Scotians didn't smoke, had healthy weights, and exercised regularly, the Province would save half a billion dollars a year in avoided excess health care costs.

  Needless to say, all these examples make very clear the ***relationship*** between indicators and accounts, and why the latter depend on the data and evidence provided

by the former. It is the change in the ***rates*** of smoking, crime, volunteer work, etc, that allow the calculation of the related economic costs and the savings (in dollars) that will accrue from an improvement in the indicator.

- One more example of the relationship between indicators and accounts: A climate change ***indicator*** tells us—in CO_2 equivalent kilotonnes—whether greenhouse gas emissions are increasing or not and therefore whether we are making ***progress*** in combating climate change. ***Accounts*** tell us the economic costs of climate change damages and the costs of controlling and reducing greenhouse gas emissions by a certain amount. By comparing those damage costs with those control costs, accounts enable us to assess the cost-effectiveness of particular measures to reduce emissions.

  Just that kind of accounting was undertaken recently in the United Kingdom by Lord Nicholas Stern (former chief economist at the World Bank), leading him to conclude: "The benefits of strong, early action on climate change outweigh the costs."[2] Stern found, through actual economic accounting mechanisms, that reducing greenhouse gas emissions sufficiently to stabilise atmospheric GHG concentrations will cost a lot—about 1% of global GDP per year. But he also found that doing nothing will cost the world very much more—the loss of at least 5% of GDP per year "now and forever" according to the best case scenario of climate change damages. Accounting for all risk factors raised the figure to as high as 20% of GDP.[3] Stern wrote: "The costs of stabilising the climate are significant but manageable; delay would be dangerous and much more costly."

  I wonder what will be the first government in the world actually to include the costs of its greenhouse gas emissions in its provincial accounts and its annual budgets.

I think those few examples illustrate the difference between indicators, which measure ***progress*** in physical units of measurement (crime incidents, smoking rates, greenhouse gas emissions, etc.), and accounts which assess ***value*** in economic terms. An effective set of sustainability and wellbeing measures requires both, with the former (indicators) providing the basis of the latter (accounts). Now that so much excellent work has happened globally in recent years in developing wellbeing indicators—and now that these new indicators have even started to become 'mainstream', as for example in the OECD's new Global Initiative to Rethink Progress—it may be time to consider the next step, which for the first time can confront GDP directly and truly turn the world on its head in the best possible way. In creating the new accounting mechanisms, I do believe we can begin to dethrone GDP-based measures from their current dominant position, and to penetrate the policy realm in a way that has not previously been possible.

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[2] Government of the United Kingdom, HM Treasury. *Stern Review: The Economics of Climate Change: Executive Summary.* Available at: http://www.hm-treasury.gov.uk/d/Executive_Summary.pdf. Full report available at: http://www.hm-treasury.gov.uk/6520.htm. Accessed 24 October, 2008.

[3] Atkisson, Alan. Stern Review: How Climate Change is Revolutionizing Economics. World Changing. 31 October, 2006. Available at: http://www.worldchanging.com/archives/005210.html. Accessed 24 October, 2008.

3. Fundamentals of the New Accounting System—Stocks and Flows

Two types of accounts or systems of economic valuation are always needed—stock accounts and flow accounts. The former consist of national or provincial balance sheets that assess the value of a jurisdiction's assets, liabilities, and wealth (which is defined as assets minus liabilities). These stocks—also sometimes called capital accounts—represent value that has accumulated over time, and which can also depreciate over time. Flow accounts, by contrast, assess what we earn and spend, and represent a current snapshot. A house, for example, is a stock or capital asset, while monthly rent or mortgage payments represent a flow.

Unfortunately, our present conventional stock and flow accounts account for only a fraction of our true wealth and spending, and are therefore remarkably narrow and distorted—not surprisingly sending highly misleading signals to policy makers:

- Our conventional economic balance sheets (our present stock accounts) count only the value of our manufactured, built, and financial capital, and largely ignore the value of our natural, human, social, and cultural capital—though the latter are just as subject to depreciation and in need of re-investment as manufactured capital. If a forest is cut down or degraded, that is a depreciation of natural capital as surely as machines in disrepair or an unsafe bridge reflect a depreciation of manufactured and built capital. Similarly, a sick and uneducated populace reflects a depreciation of human capital; high crime rates reflect a depreciation of social capital; and a loss of Indigenous language speakers, traditional wisdom, or knowledge of traditional arts and crafts reflects a depreciation of cultural capital.

  Similarly, environmental protection and restoration, health promotion efforts, skills training, and preservation of Indigenous languages and knowledge (like Mi'qmaq and Gaelic culture) can rightly be seen as investments in the natural, human, and cultural capital that constitute essential components of the Province's wealth. In short, we need to expand our present narrowly based balance sheets or stock accounts, which ignore and therefore devalue our true wealth, into a full capital accounting system that properly accounts for the value of all our assets.

- Likewise, our present flow accounts—namely GDP—count only the value of market production (goods and services produced for pay), and take no account at all of the value of unpaid work or of the un-priced services to society provided by nature, culture, social networks, or knowledge—though these underpin the market economy itself. So we presently count what we earn and spend, but we take no account of the demands that our consumption and human activities place on nature and on our communities.

  Ironically, when those un-priced services become depleted or degraded and have to replaced for pay, we mistakenly count that replacement as growth and a

> contribution to prosperity. So if the water coming from our streams and taps is no longer safe to drink, we count what we pay for water in plastic bottles as a contribution to GDP. And when we have to pay for child care once provided for free, the economy apparently 'grows' again (according to GDP), even though there is no new production and nothing is actually growing, with child care simply having shifted from the unpaid household economy to the paid market economy.

In fact, our current accounting system has a convenient term for everything it excludes—it calls them "externalities," which is a handy way of ignoring the true costs of resource depletion, greenhouse gas and pollutant emissions, smoking, crime, cultural breakdown, and more. The more trees we cut down, the more the economy will grow, because GDP counts only what we extract from our resource base and send to market and takes no account of the health of the forest we leave behind. According to GDP-based measures, we can deplete our natural wealth and count it as if it were economic gain—bad accounting and bad economics, as any factory knows if he were to sell off all his machinery and count it as profit…. And bad financial management, as we now humbly recognize after a debt-fuelled decade of reckless overspending.

One reason we are so confused about the difference between indicators and accounts is that—contrary to the admonitions of its architects—GDP *has* been wrongly turned into an indicator of wellbeing and economic prosperity. Nobel prize winner, Simon Kuznets—primary architect of national income accounting—warned half a century ago that GDP should never be used as a measure of a nation's welfare. To measure how a country is doing, he said, you have to ask *what* is growing, not just *how much* is growing. After all, anything can make the economy grow—more sickness, crime, pollution, natural disasters, war, resource depletion…. So long as we are spending money, the economy will grow. And Kuznets broke from the U.S. Department of Commerce largely over its refusal to include the value of unpaid work in its calculation of GDP which, he argued, at least had to value all production.

But before saying a few words on the new accounting system, it is essential to add one key caveat: We are ***not*** seeking either to replace or modify GDP. Rather we seek to replace the widespread misuse of GDP as a measure of progress, wellbeing, and prosperity—a purpose for which it was not intended or designed. ***And*** we seek to replace the misuse of GDP-based accounting to assess what has value in our society. GDP will always be needed to assess the size of the market economy. But, confined to that role and put in its proper place, so to speak, it becomes far less important—and certainly not needed nearly as frequently as currently produced. Even logically, a quantitative measure of economic size cannot possibly assess *quality* of life. We know well what's wrong with GDP-based measures—no need to dwell further on that.

One further aspect of this caveat must also be mentioned. Though it takes aim at the narrow economic growth-based set of conventional measures, the GPI is by no means anti-growth. What it does do, in accord with Simon Kuznets' own critique, is ask *what* is growing. Denmark, in the 1980s, was foresighted enough to see that the future was not in

oil, and subsidized the creation of a robust wind energy industry that, within three years, was strong enough no longer to need any government support. As a leader in the field, Denmark has become the world's leading exporter of wind technology and wind turbines—a highly successful growth industry that is environmentally benign. In short, it is the type of growth that is at issue rather than growth per se and for its own sake.

But we cannot fix the problem or meet the challenge with indicators alone, though they are an essential *part* of the solution. An integrated, holistic set of measures like the GPI requires both indicators of progress ***and*** a set of full cost accounts that include valuations of all key forms of capital (stock or wealth accounts) and the services they provide (flow accounts). Only such accounts can properly assess the cost-effectiveness of alternative policy options, and balance the costs and benefits of particular actions against the costs of not taking action.

In our Nova Scotia experience, it is the accounts that have hitherto had a far greater impact on policy than our indicator work. To take just a few examples: It was our GPI assessment that preventable chronic diseases cost Nova Scotia $500 million in excess health care costs that led the Province to establish a new Department of Health Promotion and Protection with its own budget and its own Minister at the Cabinet table, with the specific purpose of improving the health of the population. The old Health Department has effectively become the department of sickness treatment—responsible for hospitals, physician services, and drugs.

Indicators like rates of sickness or smoking and obesity could not have had this effect. But when we found that Nova Scotia could save half a billion dollars a year if Nova Scotians didn't smoke, had healthy weights, and exercised regularly, we suddenly had the attention of the Finance Minister, who had never previously seen health promotion as falling in his jurisdiction.

And when we found that volunteers contributed $1.9 billion in services to the Nova Scotia economy annually—more than the combined value of all government services combined—volunteerism was suddenly transformed in the public mind from a fuzzy, warm-hearted, 'feel-good' thing to a powerful contribution to the economy. So when the Premier of Nova Scotia presented the annual volunteer-of-the-year awards, the community-based organizations welcomed him to the stage with the presentation of a huge cheque made out for $1.9 billion, announcing: "Mr. Premier. We are proud to present you with this cheque, which reflects our contribution to the Provincial economy in the past year." The economic valuation exercise was able to raise the profile of volunteer work in a way that simple rates of volunteerism (in hours per capita for example) could never have done.

There are many other examples: Our GPI full-cost accounting analysis of the costs and benefits of leading-edge solid waste management systems has been used by many jurisdictions as economic justification for introducing far-reaching recycling and composting programs. Our accounts have assessed the economic benefits of reducing the

Province's greenhouse gas and pollutant emissions, the economic impacts of introducing smoke-free workplace legislation, the full costs of motorized transportation in Nova Scotia, the economic benefits of shifts from road to rail freight, the costs of smoking, obesity and physical inactivity, the economic costs of traffic congestion, and more.

Remarkably, over 12 years of work in this field, it has become apparent that this accounting and economic valuation work has had far greater ability to shift and influence policy than our parallel indicator work, and it has had a far greater capacity to garner prominent media attention than our reporting on indicator trends.

4. Principles and Methods of Full Cost Accounting

There are basically three key principles of full-cost accounting, which together can actually function to make the market economy much more efficient if adopted in practice.

- First—from a flow perspective—full cost accounting internalizes 'externalities' like the social and environmental impacts of economic activity, and thus assesses the true costs of production, which in turn *should* be reflected in market prices. If, for example, the full costs of pollution and greenhouse gas emissions were included in the cost of production (and thus) in market prices, imported food might become considerably more expensive than locally grown produce, and driving an SUV would cost far more than it presently does.

  For those on the political right, such an accounting system should be particularly attractive, as government will no longer need to step in with heavy-handed regulatory mechanisms and expensive taxpayer funded environmental clean-up costs to compensate for the consequences of market failures. Instead the costs of pollution or profligate fossil fuel combustion, for example, will be reflected in higher market prices once these current externalities are internalized, and such unsustainable behaviours thus discouraged at the production stage in order to keep goods competitive. If steel had been made to pay its true price, including pollution costs, taxpayers and government would not have been on the hook for a clean-up tab of hundreds of millions of dollars to remediate the Sydney Tar Ponds.

- Secondly—from a stock perspective—full-cost accounting recognizes and accounts for the economic value of non-market assets that are not traded in the market economy, but which nevertheless have real economic value. In assessing the value of a forest, for example, a full set of natural capital accounts will value not only the market-based timber value of a forest, as in conventional balance sheets, but also the non-market value of the forest in regulating the climate and sequestering carbon from the atmosphere, in protecting watersheds, in preventing soil erosion, in providing habitat for many species, and in providing aesthetic and recreational enjoyment. From the perspective of a full benefit-cost analysis, a 'healthy forest' is one that performs all these functions optimally. Indeed, the scientific evidence clearly shows that when the non-market values of a forest are

compromised, timber quality also declines. In that sense, full-cost accounting is far more in accord with science-based evidence, the scientific method, and economic efficiency, than an accounting system that ignores the non-market values of natural, social, human, and cultural capital.

- And thirdly, a full-cost accounting system substitutes variable for fixed costs to the extent possible. To give a concrete example, fixed annual payments for car registration and insurance provide no incentives for conservation and no penalties for unsustainable behaviours. By contrast, varying such payments by type of vehicle, fuel efficiency, and number of kilometres driven annually reflects a far more accurate picture of reality and of the actual social, economic, and environmental impacts of driving. All three of these principles enhance market efficiency by pricing assets and economic activity more comprehensively and in ways that reflect actual benefits and costs to society.

One major caveat must be added here. Any system of full capital accounts and economic valuation is severely constrained by the inadequacy of money as a valuation instrument and common metric. Money was designed to facilitate market transactions and was never intended to price non-market assets and services. So 'economic value' in a full-cost accounting system must necessarily be defined far more broadly than in monetary terms alone. Monetization of non-market values and so-called 'externalities' ***is*** undertaken, where possible, but for strategic reasons—primarily because it creates a language and bridge to the world of conventional accounting. But it cannot and should never be taken as a literal or accurate description of reality.

And where monetization is not possible, as it often is not, economic value must be described in non-monetary terms by pointing to the social and economic functions performed by natural, human, social, and cultural capital. For example, there is no doubt that a coastal wetland is performing an economically valuable function by protecting against storm surges and coastal erosion, though it is not presently possible to monetize the value of that function with rigour or accuracy.

To illustrate the challenges inherent in the internalization of externalities and in the economic valuation of non-market assets, let us look briefly at a few full-cost accounting methodologies—replacement cost valuation, damage and control cost assessments, and contingent valuation.

To assess the value of volunteer work, the GPI looks at the actual work performed by volunteers and then assesses what it would cost to replace those volunteer services for pay in the market economy. The City of New York purchased a standing forest that naturally filtered the City's water supply. The consequent saving to the City of hundreds of millions of dollars that would have been spent on a hugely expensive filtration plant can be taken as a proxy (or replacement value) for the watershed protection value of that forest—demonstrating that a forest may be worth more standing than felled for timber

(contrary to the message sent by GDP). These are examples of replacement cost valuations.

It is possible to use climate change models—as former World Bank chief economist Nicholas Stern recently did in the UK—to assess in monetary terms the potential damage costs of each tonne of greenhouse gas emissions. In that case, the valuations are complicated by the wide range of assumptions underlying different climate change models—leading GPI Atlantic in its accounting work to provide ranges of estimates from low-end, highly conservative valuations to higher-end ones that account for positive feedback loops and potentially catastrophic consequences.

Just as the recurrent annual budget deficits of the 1980s and 1990s (a flow) gradually increased the accumulated value of provincial debt (a stock), the greenhouse gas emission example similarly illustrates the close linkage between stock and flow accounts. Every tonne of carbon emitted (a flow) has an atmospheric life of at least a hundred years, and thus continues to contribute to the stock of greenhouse gases in the atmosphere for a very long time. In short, that tonne of carbon emitted in 2008 will continue to contribute to climate change and to its damages and costs into the next century. Those potential damage costs can then be compared to the costs of controlling emissions to assess the cost-effectiveness of different greenhouse gas reduction strategies.

Contingent valuations are often considered more 'dodgy' and suspect, yet there is a strong argument that even indirect ways of assessing value are more accurate than assigning an arbitrary value of zero to non-market assets and services, as GDP does, and as would continue to happen if we did not at least attempt such valuations. In this contingent valuation method, behaviours are examined and surveys conducted to assess people's 'willingness to pay' for such non-market assets and services. What, for example, is the value of aesthetic enjoyment? Clearly money is a hugely inadequate tool to answer such questions. And yet, it is clear that a nice view ***does*** have real economic value, as evidenced by people's willingness to pay a higher rent for an apartment overlooking a beautiful and scenic park than for one overlooking a dump or polluted, scarred landscape.

The problem—if we don't at least attempt such economic valuations, however indirect and inadequate—is that the conservation and protection of our natural, cultural, human, and social assets will get inadequate attention and funding in the policy arena. This has never been clearer than at present, where all the talk of staving off recession, stimulating the global economy, and fiscal stimulus to spur consumer and corporate spending, virtually never references environmental concerns. And in Canada, a 12.3% decline in volunteer work was not a blip on the radar screens of policy makers because the value of unpaid work is ignored in conventional accounts, while a milder decline in the auto sector spurred immediate demands for a multi-billion dollar bailout. For strategic reasons alone, therefore, there is an absolute necessity to include human, social, cultural, and natural capital values in our new GPI accounting system.

Perhaps most importantly, the services provided by nature apparently for 'free,' are so taken for granted that their loss is barely noticed until it is too late. Hurricane Katrina that destroyed New Orleans provided a dramatic case study of the cost of ignoring and giving no value to the loss of non-market assets. Quite aside from the potential links to climate change, the loss of wetlands to development had removed a natural buffer to such severe storms and the surges they engender.

Properly valued, wetlands would be recognized fully for the vital economic functions they perform, including:

- Flood prevention
- shoreline protection and erosion prevention
- storm control
- water purification
- storage and recycling of human waste
- spawning and nursery habitat for fish and shellfish
- carbon sequestration and storage
- sanctuary, breeding grounds, and nursery habitat for terrestrial, near-shore, and migratory birds
- feeding habitat for terrestrial wildlife
- nutrient recycling, production, and storage
- recreation, education, and science
- waste treatment
- food production

Again, a 'healthy' wetland can be defined as one that performs all these functions optimally. If wetlands are to be properly recognized for the vital economic and social values inherent in these functions—and thus conserved and protected in order to preserve those values—some system of valuation is essential.

Despite the enormous challenges inherent in valuing natural, human, social, and cultural capital, and in pricing non-market assets and services, the good news is that the methods and data sources available to do so have vastly improved and expanded in recent years—making a full set of GPI Provincial Accounts more feasible than ever. Thirty years ago, we had no reliable measures of greenhouse gas emissions, few comprehensive forest inventories, almost no scientific monitoring of soil, water, and air quality, virtually no diversion of solid waste from dumps, almost no systematic monitoring of health risks like obesity and physical inactivity, no comparable international literacy assessments, and no time use surveys assessing time spent on unpaid work and free time. We now know how to measure these and other non-market values, and we have burgeoning databases and time series in these and other areas. Statistics Canada now regularly asks survey questions on social supports, and it recently conducted its first full-fledged national social capital survey.

If it chooses to embrace the new accounting mechanisms, the Province of Nova Scotia has the advantage of reaping the direct benefit of the last 12 years of GPI work in this

field—with key updated results already summarized in the GPI Accounts—and can thus save itself the considerable time and expense it would take to compile the data from scratch. Because of the detailed province-specific GPI data available to it, Nova Scotia is probably better placed than any other jurisdiction to take the leap and set up the new accounts without delay. Even updating both the indicators and accounts is not difficult given the new GPI database that has already been transferred to the Nova Scotia Statistics Agency. Even if we did have to start from scratch, discussions with Statistics Canada have led me to believe that the diversion of only a fraction of the resources currently devoted to collecting the regular GDP statistics would suffice to make considerable headway in developing usable and workable natural, social, human, and cultural capital accounts.

About seven years ago, Statistics Canada actually recommended the development of such expanded capital accounts in Canada, but our Government has yet to take the plunge:—Perhaps at the national level, we are considerably more constrained by our conventional GDP-based habits than a small Maritime Province that has already publicly proclaimed (in its Opportunities for Sustainable Prosperity) its intention of valuing natural, human, and social capital alongside the built and financial capital that are currently measured.

I once asked the Assistant Chief Statistician in Canada why we needed to devote tremendous resources to producing the Canadian GDP statistics on a monthly basis and whether there was any good macro-economic reason for doing so…. Whether, in fact, the markets might be more stable if GDP statistics were produced less frequently, since even seasonal fluctuations and special events like 9-11 and the SARS epidemic can create bumps that send an adrenaline rush down the veins of brokers and policy analysts but do not necessarily reflect underlying economic trends. He could think of no good macro-economic reason for needing the GDP statistics so regularly and so often, except that we have ‘always’ done it this way and that the Americans produce their GDP numbers monthly. Nova Scotia does not face such national constraints in putting GDP in its proper (and much less important) place.

In terms of feasibility, we often hear that economic valuations of human activity—even if not currently valued in conventional accounting systems—make more sense than valuations of natural capital and ecological services that are generally not replaceable or substitutable by other forms of capital and that are therefore literally ‘price-less.’ Thus, the use of market replacement values to assess the value of unpaid voluntary or household work makes intuitive sense to users, since similar work can be performed for pay. And monetizing the cost of crime is relatively straightforward since most costs are market-based—including direct victim losses, spending on police, courts, lawyers, prisons, security guards, and burglar alarms, hospitalization costs due to assault, retail losses due to shoplifting and employee theft, higher premiums due to insurance fraud, and productivity losses to the economy due to homicide or assault. Illness costs attributable to risk factors like smoking, physical inactivity, and obesity are also market-

based—either directly through taxpayer funded or private health care costs and economic productivity losses due to premature death and disability.

But how do we assign an economic value to natural capital like forests, agricultural soils, fisheries, water, and clean air? And how do we assess the costs of their depreciation and the returns on investment in natural capital. While valuations of natural capital and environmental services certainly pose particular challenges, and while money is a particularly inadequate valuation tool in this area, the attempt to undertake such economic valuation is essential to prevent the under-valuation of natural wealth and to bring the necessity for adequate conservation and protection properly into the policy arena. To illustrate the challenges and the methods used in GPI natural capital and environmental valuation, six brief examples are provided here.

5. Six Examples of Resource and Environmental Accounting Results

Please see the accompanying PowerPoint slides illustrating how results from the GPI 'full-cost' transportation, solid waste, greenhouse gas, air, and forest accounts look in practice. The following six case studies are chosen here because they reflect different key points of interest in implementing full-cost accounting methods.

5.1. Transportation Accounts — What are the true costs of driving?

The GPI private passenger transportation costs are divided into three categories:

- **Internal variable costs:** — These are direct costs borne by the driver, which vary according to conditions, vehicle type, and how much a person drives. Examples are vehicle operating costs (like petrol and repairs) and travel time.
- **Internal fixed costs: —** These are direct costs borne by the driver, which do not really change when driving habits and conditions change. These generally include vehicle ownership costs (car payments), registration, insurance, and fixed parking fees associated with residence and work.
- **External costs: —** These are costs imposed by drivers on others, such as climate change, air pollution, congestion, taxpayer-funded accident costs (like medical and hospital costs), and traffic policing expenditures.

Alternatively, costs may be classified as either **direct** or **indirect,** based on either objective criteria or subjective experience. If, for example, an employer subsidizes parking for employees or customers, those additional employer-borne costs may be passed on to all customers and thus indirectly favour drivers over non-drivers.

The GPI Transportation Accounts examine the per capita and total estimates for private road passenger transportation. The power and policy relevance of these cost estimates can be seen when looking closely at each cost, since each has the potential to lead to financial incentives and penalties rewarding sustainable behaviour and penalizing unsustainable behaviour, and may be the basis of road pricing policies. In fact, we have found that each

cost is a potential headliner in its communication potential. For example, our estimate that traffic congestion costs Nova Scotia $12 million a year scored a lead front-page story in our daily newspaper. And congestion costs have now been translated into policy in cities like London, England, where a significant congestion tax has kept cars out of central London and markedly improved both air quality and traffic flow—a perfect example of the use of pricing mechanisms to change behaviour.

Of course, each cost has its own assumptions, with the accounts almost naturally producing highly conservative estimates, since they generally only count what can be quantified and thus omit a range of less measurable costs. Thus, our congestion cost estimate counted only lost time, excess gas burned, and excess greenhouse gases generated. We were unable, for example, to assess the health costs of breathing in the fumes of idling cars stuck in traffic jams. As well, we counted only recurrent congestion occurring during the morning and evening rush hours between 7am and 9am and between 4pm and 6pm—not at any other time of day or attributable to any other cause (snowstorms, road works, accidents etc.). We only looked at passenger transportation costs, not costs to business attributable to freight delays, and we only counted congestion on major arterials, not on any side-streets. As well, we defined congestion as conditions in which traffic moves at less than half the posted speed limit, so we excluded consideration of time lost if traffic slowed say to 27 km an hour in a 50 km/hour zone, and so on.

The example is given just to illustrate the assumptions and exclusions built into each cost calculation, and to indicate our propensity always to err on the side of conservatism—which I think is essential in introducing such new accounting systems, in order not to discredit them through possible exaggeration. As seen in the accompanying PowerPoint slide, congestion constitutes only a very small portion of total driving costs. As indicated in the slides, average car costs (per vehicle-km) are then ranked by magnitude to indicate the aggregate distribution of costs for an average car.

What do the full-cost accounting results show? Overall, the full cost of private road passenger transportation in Nova Scotia in 2002 was between $6.4 billion and $13.3 billion, with the gap between the low and high cost estimates influenced largely by the use of different climate change models in assessing long-term greenhouse gas emission damage costs. At the low end, the true cost of driving is seen to be about $7,598 per capita per year. Of this, $4,562 are “invisible” costs of which the driver is largely unaware. This is because fixed and external costs account for over two-thirds of the total cost of driving.

These results indicate an inefficient, unsustainable transportation system where externalities conceal the full costs of private automobile use to society. Even the best indicators are not able to reach such a definitive conclusion based on economic analysis. More importantly, the results provide the basis for potential road pricing policies that may eventually ensure that driving pays its true costs, which in turn will enhance the efficiency of the transportation system.

5.2. Solid Waste Accounts

Lest anyone think that the internalization of externalities necessarily emphasizes costs over benefits, and thus leads only to gloomy scenarios and penalties, here is a good news story showing that a full-cost accounting system that includes social and environmental benefits and costs can point to strengths and advantages that are entirely unacknowledged in conventional accounting mechanisms. The following example also illustrates how different and even contrary the messages are that are communicated by the two different accounting systems.

In 1997, Nova Scotia implemented a leading-edge solid waste-resource strategy that included very high rates of composting and recycling. In less than five years, Nova Scotia went from almost zero diversion of waste from landfills to 50% diversion—the highest rate of any state or province in North America.

From a conventional accounting perspective, however, the new system looked costly, with operating and amortized capital costs increasing from $48.6 million ($53/capita) in 1997 to $72.5 million ($77/capita) in 2001—an ***increased cost*** of $24 million or $25/capita for implementing changes that included curbside pick up and sorting of recyclables and organics, and provision of compost bins for all households. The conventional accounts stop there, after tabulating these costs.

From a full-cost accounting perspective, however, the new Nova Scotia solid waste-resource system in 2001 produced ***net savings*** of at least $31.2 million, compared to the old 1996 solid waste-resource system. This translates into savings of $33 a year for each Nova Scotian, as opposed to a cost of $25 as indicated in a conventional comparison of the operating and amortized capital costs of the two systems. Let's look at why:

In the GPI accounts, the total benefits of the 2001 system were found to range from $79 million (low end) to $221 million (high end), or between $84 and $236 per person, with the breadth of the range again determined mostly by the assumptions built into different climate change and air pollution damage cost estimates. The benefits included:

- $3.3 - $84.3 million in avoided climate change damages due to greenhouse gas emission reductions
- $9 - $67 million in avoided health and environmental damages due to air pollutant reductions
- $18.8 million in extended landfill life due to high rates of diversion
- $28.6 million in energy savings from recycling compared to costs of production from virgin materials
- $6.5 - $8.9 million in employment benefits through new jobs created
- $1.2 - $1.9 million in avoided liability costs
- $1.1 - $1.7 million in export revenue of goods and services

- $187,000 in additional tourism revenues as delegations from around the world came to Nova Scotia to study the new solid waste system.

Again, to break down just one of these costs—energy savings—by way of example, the evidence indicates a saving of 2.4 million Btu for every tonne of glass recycled compared to production of glass from virgin materials, a saving of 8.5 million Btu for every tonne of paper recycled, a saving of 20.1 million Btu for every tonne of plastic recycled, and a saving of 166.9 million Btu for every tonne of aluminium cans recycled.

Compared to such benefits, the total costs of the 2001 solid waste-resource system were $96.6-102.7 million:

- $72.4 million in operating and amortized capital costs
- $14.3 million for the beverage container recycling program
- $2.7 million for the used tire management program
- $1.6 million in Resource Recovery Fund Board operating and administrative costs (the non-profit agency created to run and oversee the new system)
- $5 - $9.5 million to increase citizen participation in composting and recycling through education and other programs
- $220,000 - $1.8 million in nuisance costs (including the extra time required by households to sort their garbage).

When the costs and benefits were carefully compared and any potential double-counting eliminated, the new Nova Scotia Solid Waste-Resource Strategy was found to produce a considerable net benefit, both in monetary and non-monetary terms. Despite increased operating and amortized capital costs, the new system provided a net savings of between $31 million and $167.7 million compared to the operating and amortized capital costs of the old system. In keeping with our propensity to err on the side of conservatism, we only cite the low-end estimate of $31 million in our communications and public reporting of results.

Again, to illustrate the relationship between indicators and accounts, the GPI analysis also reached conclusions on the indicator front—namely that Nova Scotia had become a leader both internationally and nationally in solid waste diversion based on a wide range of international comparisons, and that the accessibility, comprehensiveness, and levels of waste being composted and recycled had all vastly improved since the introduction of the new Solid Waste-Resource Strategy. Following are examples of indicator results that were deemed to show “genuine progress” in this area:

- Diversion of waste from landfills increased from less than 5% before implementation of the strategy to 50% within less than five years.
- Access to curbside recycling in Nova Scotia jumped from less than 5% in 1989 to 99% today.
- 76% of Nova Scotia residents now have access to curbside organics pickup.
- These rates of access are by far the highest in the country.

This, we can confidently say, is "genuine progress."

5.3. Greenhouse Gas Accounts

Please see the accompanying PowerPoint slides on the GPI Greenhouse Gas Accounts. These point to the policy-relevant use of the GPI accounting methods to demonstrate the cost-effectiveness of investments in greenhouse gas reductions when compared to the climate change damage costs predicted to ensue from "business as usual" scenarios. Conventional accounting mechanisms count only the control costs (often as a percentage of or dollar decline in GDP), without consideration of either avoided damage costs or the costs of doing nothing. Please see also the earlier notes above on comparison of control and damage cost valuations and on the rigorous use of these economic valuations in the recent seminal Stern Report in the U.K.

5.4. Air Quality Accounts

Based on per tonne damage cost estimates from the literature, the GPI Air Quality Accounts conservatively estimated the health and environmental damage costs attributable to Nova Scotia's emission of five criteria air contaminants to be $529 million per year or $560 per Nova Scotian—costs that are entirely hidden in conventional accounting mechanisms. These accounts illustrate the utility of breaking down results by category and sector for policy purposes.

Broken down by air pollutant, therefore, the most costly pollutant emissions in Nova Scotia were found to be sulphur oxide emissions—accounting for 40% of total pollutant emission costs—largely due to the Province's overwhelming reliance on coal to generate electricity. Broken down by sector, electric power generation, not surprisingly, was found to account for 39% of total air pollution emission costs, followed by transportation (17%), industrial sources (16%), and fuel wood combustion (8%). To reduce air pollutant emission costs, therefore, the most cost-effective policy strategy is revealed to be conversion of electricity generation to wind and other renewable sources—a strategy that will also reduce greenhouse gas emission costs and other pollutant emissions like mercury.

5.5. Forest Accounts

The GPI Forest Accounts illustrate the close links and interdependence of indicators and accounts. In our GPI work, the connection is actually sequential. In assessing the health of a natural resource, for example, we begin by identifying the key functions performed by that resource, as defined in the scientific literature—as illustrated in the examples of forests and wetlands described earlier. The health of that resource is then assessed according to its capacity to perform those multiple functions optimally. Any diminution

of that capacity—through depletion, conversion (for development purposes for example), or unsustainable harvest practices—is described as a depreciation of natural capital and a diminution of its asset value.

Having defined these key functions, according to the scientific literature, our next step is to identify appropriate indicators—with particular emphasis on those key indicators that may denote capacity to perform multiple functions. In the case of forests, we found that age and species structure constituted such key indicators, so we examined historical forest inventories in order to assess the extent to which the age and species diversity of Nova Scotia's forests were being maintained, enhanced, or diminished over time. The reason we focussed on these indicators is that each provided multiple benefits relating to several key forest functions.

Thus, the science indicated that older forests with diverse age structure were more effective than younger forests in preventing soil erosion, protecting watersheds, storing more carbon, providing habitat for a wide range of species, and producing more valuable wide diameter, clear lumber that fetched higher prices on the market than the knotty, small diameter timber produced by younger forests. For example, the rich canopy provided by diverse older forests intercepts precipitation and thus stops it hitting the ground with force, while clear-cutting harvest practices provide no such protection and therefore accelerate erosion of forest soils, which in turn compromises future timber productivity.

Similarly, we found that species diversity is also an indicator of multiple vital forest functions and enhanced forest resilience. During a major spruce budworm infestation in Nova Scotia in the 1970s, for example, mixed hardwood-softwood forests had far lower rates of spruce defoliation than single species softwood plantations, largely because the hardwoods harboured and provided habitat for bird species that were natural predators of the budworm—indicating that we interfere with nature's intricate balance to our peril.

Only after tracking trends in these and other key physical indicators of forest function—with units of measurement in the physical terms appropriate to each indicator—do we proceed to the economic valuation step. Indeed, the economic valuations in the GPI accounts are always secondary—derived from and ultimately pointing towards the more primary physical indicators of function. In this way, we use the economic valuations for strategic purposes—simply because they are essential to garner policy attention and to challenge the dominance of the GDP-based measures that count the depletion of our natural wealth as economic gain. In the end, of course, it would be much more desirable if the physical indicators themselves were used for policy purposes, since they are far more direct measures than the secondary economic valuations that are essentially layered over the physical indicators. But in a world still utterly dominated by economic and material priorities, we are not yet at the stage where physical indicators alone effectively influence policy. So we use the language of economic valuation for communication purposes.

The intimate relationship between the indicators and accounts is illustrated in the results. The indicators revealed a sharp decline in the age and species structure and diversity of Nova Scotia's forests over time. The original forests of the Province were virtually all old-growth forests. But they were heavily logged over two centuries, so by the time of Nova Scotia's first systematic forest inventory in 1958, the provincial forests were by no means pristine, having already been systematically degraded through unsustainable practices like high-grading. However, even within the 50-year period for which systematic forest inventory data are available, we found a sharp decline in valuable species such as white pine, eastern hemlock, yellow birch, and oak. Since 1958, forests more than 80 years old declined from 25% of all provincial forests to just over 1%. True old-growth forests (more than 100 years old) have virtually disappeared, having been largely replaced by very young forests that became younger with each successive forest inventory.

The next step then is economic valuation. One forest function that can now be monetized is carbon storage capacity, since prices have now been placed on carbon emissions in accord both with climate change models forecasting long-term damages, and with carbon trading prices. The indicators and the scientific evidence tell us that Nova Scotia's forests presently store an estimated 107 million tonnes of carbon, and the economic valuations tell us that this carbon storage avoids $2.2 billion in climate change damage costs. Based on the 1958 Nova Scotia forest inventory (the first available), however, and using conservative climate change models, it was estimated that that the carbon stored in provincial forests 50 years ago would have been worth $3.5 billion. But increased cutting and the loss of old growth and mature forests since 1958 drastically reduced Nova Scotia's carbon storage capacity by 38%, costing an estimated $1.3 billion in lost value. Sadly, when considered as a flow related to harvesting, actual carbon loss in Nova Scotia's forests is now contributing to global climate change.

Unlike the good news on solid waste management, the conclusion of our Forest Accounts was rather grim, and was phrased first in indicator terms and then in accounting language. The two-volume, 450-page report found that excess clear-cutting and the loss of natural age and species diversity in Nova Scotia's forests have resulted in:

- the loss of valuable species
- loss of wide diameter and clear lumber that fetch premium market prices
- a decline in resilience and resistance to insect infestation
- diminution of wildlife habitat, accompanied by bird population declines
- a decline in forest recreation values, which in turn has diminished the potential for nature tourism
- a decline in forested watershed protection, contributing to a 50% drop in shade-dependent brook trout
- soil degradation and leaching of nutrients that can affect future timber productivity
- a substantial decline in carbon storage capacity and an increase in biomass carbon loss
- a decline in essential forest ecosystem services

In accounting language, the GPI report concluded that these losses represent a substantial depreciation of a valuable natural capital asset. It is important to note that the depreciation of a capital asset can occur as a result of both depletion (as in loss of equipment or machinery in a factory or over-harvesting in a forest) or degradation (as in a machine in disrepair or loss of age and species diversity in a forest). While not all aspects of depreciation can be measured in monetary terms, the results above indicate that value can be described and assessed in non-monetary terms when monetization is not possible.

When presenting grim statistics like these, we have found it particularly important to emphasize the positive opportunities and policy options that arise from an honest appraisal and analysis of results. Indeed, full-accounting can be effectively used to identify economic opportunities and cost-effective action. We are always fond of saying that in reality, there is no "bad news" in the GPI. The only bad news is when important information remains hidden and invisible, thereby denying policy makers access to the data they need to craft informed policy. As soon as the spotlight is shone on this hidden information—regardless of whether the results are 'good' or 'bad', policy options and solutions naturally present themselves.

To that end, the second volume of our GPI Forest Accounts highlighted case studies of the most sustainable and viable forestry practices we could find both in Nova Scotia and elsewhere. The analysis demonstrated that selection harvesting and uneven-aged forest management could increase forest values *and* provide more jobs than the dominant clear-cutting methods used in 94% of present forest harvesting in the Province. The study also found that a shift to greater value-added production could create far more jobs per unit of biomass harvested and four times the value per cubic metre harvested than the current emphasis on pulp and paper production. The analysis also found restoration forestry practices to constitute a sound investment in natural capital value, and it examined the potential of incentives like restructured silviculture credits to encourage such sustainable practices. In sum, the point of all this number-crunching is not to engage in a mere academic exercise, but rather to provide relevant and useful evidence for informed policy making.

5.6. Ecological Footprint

In some cases, as noted, monetization is simply not the appropriate tool to assess economic value. In such cases, the GPI does not hesitate to use other methods. This is particularly the case in assessing human demands on natural capital—i.e. the flow accounts that are the necessary corollary to the natural capital stock accounts. Despite the vital importance of rigorous natural resource accounts, they are not enough to assess sustainability, and may even—by themselves—send a one-sided message to policy makers and the general public by unwittingly letting the vast majority of the populace off the hook in terms of responsibility for sustainable practices.

By themselves, natural resource accounts implicitly put the responsibility for sustainability on the shoulders of producers, because they are essentially 'supply' accounts that assess the potential adequacy of the resource and, therefore, the sustainability of current harvest and production methods. By contrast, flow accounts include the essential 'demand' side of the sustainability equation, and allow reporting to the population on the environmental impacts of people's daily behaviour.

This perspective is particularly important because it naturally and inevitably links social and environmental considerations and highlights the equity dimension of sustainability. Thus, all humans and all countries do not place equal demands on the environment, with 30% of the world's population consuming 70% of its resources and producing 70% of its wastes and greenhouse gas emissions. In the case of forests, for example, the richest 20% of the world's people consume 84% of its paper, while the poorest 20% consume just 1%. So forest depletion and degradation, like climate change and other environmental impacts, are not the equal responsibility of all, but are more particularly the responsibility of those who consume the most resources and produce the most waste.

Understanding the direct relationship between income, consumption, and environmental impact is vital for policy formulation, as effective policy must necessarily target those sectors most responsible for actual impacts. In particular, examining human demands on the natural world cuts through the illusion that we can improve the living standards of the poor without also examining the consumption patterns of the rich, and it underscores the ecological reality that we cannot maintain current excesses if we also intend to alleviate hunger and poverty.

By far the most comprehensive and effective measurement tool for such a consumption or demand-based analysis of sustainability is the Ecological Footprint, which has now been developed by the Oakland-based Global Footprint Network into a set of National Footprint Accounts for most nations of the world. While these Footprint Accounts use a land-based rather than monetized measure—assessing how much bioproductive land and ocean a society requires to sustain its current consumption habits and absorb its wastes (particularly its greenhouse gas emissions)—we have no hesitation in using the Ecological Footprint as one of the 20 core component accounts of the Nova Scotia Genuine Progress Index. Since our GPI accounts do not attempt to aggregate all GPI components into a single number, there is no obstacle to using other methods of valuation where monetization is not possible or desirable for methodological or data reasons.

Because Ecological Footprint estimates include trade flow measures—adding imports to the domestic production statistics and subtracting exports—they effectively examine the global consequences of local consumption patterns. Thus, local consumption may involve natural resource depletion far away. In Canada, for example we indulge unsustainably high levels of consumption not only by depleting local resources but also by "appropriating the carrying capacity" of other countries through trade (to use Footprint language).

While methods are still being refined and improved, the Ecological Footprint is, in my humble opinion, one of the most important measurement tools of the century, and without a doubt one of the most powerful communication tools for practical behaviour change.

6. Policy Applications of GPI Indicators and Accounts

I think our prior discussion has already demonstrated the policy utility and relevance of both GPI indicators and GPI accounts in several ways, and I noted earlier that our accounting work and economic valuations have actually penetrated the policy arena far more effectively than our indicators. Please see Section 1, pages 9-11 above, for a summary of the potential policy applications of indicators, and Section 3, page 18 above, for examples of the policy utility of the new accounts. So here I will add only a few remarks on possible future directions in applying these measures to the policy arena.

6.1 The expanded capital model increasingly recognized.

First, it is highly significant that in 2006 the Nova Scotia Government officially adopted a five capital approach to its development, undertaking to value its natural capital, human capital, and social capital in addition to its built and financial capital.

While Nova Scotia has now embraced a five capital model, New Zealand Statistics has recommended a six capital model that includes cultural capital, largely because the preservation of Maori culture has become a high national priority in that country. The remarkable resurgence of Maori language in the last 25 years, after teetering on the brink of extinction, is a powerful testimonial that dedicated investment in cultural capital can yield a high return (to use accounting language), and that cultural assets can not only be preserved but strengthened in the most creative ways. The Maori instituted “language nests” in which toddlers were immersed in Maori language from a very young age. Not surprisingly, since language carries knowledge, Maori cultural institutions, practices, traditions, and even political assertiveness have also seen a most inspiring revival in the last two decades.

It is likely that the Nova Scotia Government has not yet fully grasped the implications of its undertaking and of what it has really committed to do by adopting the expanded capital model. It has actually made an enormously far-reaching and quite radical commitment that should eventually produce a new form of budget estimates and a new set of economic accounts. From my conversations with government officials to date, I do not think this awareness has fully penetrated policy circles in the Province.

But the fact that the commitment is on the official provincial books even as words is still highly significant, and can frequently be cited by folk like us to remind the Government that it shares our aspirations. The commitment to value all five capitals certainly indicates a new openness to integrating social, economic, and environmental objectives in the Province’s development, and it forms an excellent basis for forward movement.

6.2 Consensus goals and political debate

One of the most interesting and important aspects of this commitment—which ***has*** manifested in Nova Scotia—is that these new measurement tools have proved to be a remarkably unifying force that has the power to transcend partisan politics. While Nova Scotia politics—like most party political systems—is characterized by endless and endemic bickering, attack, and name-calling, the new measures, accompanied by specific targets designed "to make Nova Scotia one of the cleanest and most sustainable environments in the world by the year 2020," have received unanimous all-party support. Indeed, the 2007 Environmental Goals and Sustainable Prosperity Act setting out these targets was passed by the Nova Scotia legislature without a dissenting vote. In other words, the new sustainable prosperity commitment with its accompanying targets and measures can be a powerfully unifying force that expresses underlying provincial values.

I believe that good measures of progress themselves contribute greatly to this unifying role, since they necessarily reflect deeply held underlying values and express agreed goals. Indeed, any measure of progress is normative by definition, since—by definition—it must ask the question: "progress towards what?" As noted earlier, answering that question in turn requires some vision of the kind of society we want to see five, ten, or fifty years from now. In identifying our genuine progress indicators for Nova Scotia, we therefore took particular care to ensure that each indicator reflected consensus values. Thus, no political party of left or right will argue that more crime is better than less crime, that a sicker population is better than a healthy one, that higher rates of poverty are better than lower rates, that an ignorant populace is better than an educated one, that a polluted and degraded environment is better than a clean and healthy environment, or that social exclusion and alienation are better than inclusion in strong and safe communities. So long as our indicators and measures reflect such consensus values, they can effectively help to mobilize and unify a society behind common goals and targets in a way that transcends partisan politics.

Of course, this does not eliminate the need for debate. While consensus goals, shared vision, and non-partisan measurement can help unify a society and provide a strong basis for evidence-based decision making and informed debate, politics is about ***how*** to achieve to these goals and targets. Indeed, the appropriate role of democratic politics is to debate the best way to achieve the goals expressed in the GPI indicators, even while there is a consensus on what those goals are and on the agreed ways of measuring progress towards those goals. To take some practical examples, there can be complete consensus on the need to reduce poverty and greenhouse gas emissions and even agreement on specific targets, and at the same time vigorous debate on how best to achieve those goals. In other words, there should be consensus on goals—the realm of measurement, and debate on strategy—the realm of politics.

As well, to add fuel to the political fire, the new measures can and should be used both to hold governments accountable according to their success or failure in attaining or moving towards the agreed goals, and to evaluate the effectiveness of programs designed to achieve those goals. The political arena is the place to debate those programs and possible alternatives to them. But the benchmark of those debates and the reference point of all political parties will remain the consensus goals and the measures that assess progress towards them.

6.3 Urgency and predictive power

I mentioned early on that we have found—in our Nova Scotia experience with this work—that the GPI accounts and economic valuations have had a much more direct and powerful impact on policy than the GPI indicators, and they also grab media attention far more readily than reports on trends and rates. That said, however, I want to emphasize that we have only begun to scratch the surface of the longer-term potential impact of this economic valuation and accounting work.

In fact, I see us to date as having taken only the first step in a four-step process (described in the next sub-section below), the final fruition of which I fervently hope (but am not sure) I will see in my lifetime. Recall that GDP-based accounting has held sway for more than half a century, still rules the minds of policy makers, economists, financial analysts, and journalists worldwide. As the current obsessive focus on stimulating spending and economic growth to stave off recession clearly shows, this GDP-based economic paradigm is not close to being dislodged. How long will it take for the new expanded capital accounting system to take hold and supersede the existing narrow one as the primary method of economic valuation?

The reason I say I fervently hope to see that happen in my lifetime is not particularly for any personal satisfaction, but rather because—having done little else but crunch numbers and observe trends for the last 12 years—I am quite firmly convinced that the window of opportunity is very narrow indeed. If I had to guess-timate a number, I would say we have about 15 years to turn things around in a major way before certain destructive trends become irreversible—which means we have to begin to count things right now.

If we continue to assign an arbitrary value of zero to our natural, human, and social wealth; if we continue to ignore the costs of their depreciation; if we continue to treat the services these capitals provide as so-called ‘externalities’; and if the true costs of economic activity remain hidden, then I fear that the world we leave our children and grandchildren will be so depleted and uncertain that it may no longer be possible to salvage key components of our true wealth. Most dangerously, a domino effect will become apparent, where the collapse of one resource will trigger the diminution and eventual exhaustion of another, in a feedback loop that will become unstoppable. From that perspective, these present times are truly “the good old days,” and they will

increasingly be looked back upon with nostalgia mixed with astonishment that our generation could have been so wilfully ignorant.

Saddest of all is that—since we are not properly counting and measuring the depreciation of natural, human, social, and cultural—"collapses" are more likely to occur with a whimper rather than a bang, since we are simply not keep track of their demise nor heeding early warning signals. We will gradually become accustomed to a degraded world. When Nova Scotians drive down the highway today and look out their car or SUV windows, they think that what they see is a natural forest. Since they have never seen or walked in an old-growth forest, they do not miss it or have any idea of what this landscape was. Not accustomed to the sound of old-growth dependent song-birds, they think the silence of the forest is its natural state. They will not miss cod or tuna once they have disappeared. And so long as the store shelves are stocked with produce from California and Florida, they will never know that there were once local farms providing fresh-picked seasonal fruits and vegetables.

And the same is true in the social and cultural sphere. I don't think any politician in Canada is aware that voluntary work has declined by 12.3% in the last decade, because unpaid work is not measured in our national accounts or measures of progress, and therefore does not get proper reporting or attention. And because the politicians don't know the numbers, the issue never surfaces for debate in any legislature in the country, even while they pass multimillion dollar bailout packages for the automobile industry. So communities gradually weaken as the fabric of volunteer participation unravels, while those in need gradually get used to a diminution of voluntary services and to relying ever more on their own private resources—all unnoticed, gradual, beneath the surface, and away from the spotlight of regular measurement, monitoring, reporting, and debate.

And how many North Americans miss the fact that most Aboriginal languages on the continent have become extinct, with the remainder in rapid decline—though the loss carries with it a tremendous store of Indigenous knowledge that the world needs more than ever for the lessons it carries about living in harmony with Nature? In the GPI, we document this depreciation of cultural capital and the loss of Indigenous languages and knowledge as one of our key education indicators. But the loss is invisible in the conventional accounts, and so there is little dedicated policy attention or educational reform designed to preserve remaining Indigenous languages, and virtually no public awareness of the issue, despite ample early warning signals of their imminent demise.

And we won't even begin to talk about the mother of all dangers—climate change—where our conventional GDP-based accounts, and the indicators based on them, still count more fossil fuel combustion as a contributor to economic growth and progress. And when I say 15 years, I mean 15 years actually to turn things around, not 15 years before we start counting things right. In fact, if we keep counting natural resource depletion and fossil fuel combustion as gains to the economy and contributions to prosperity for the next 15 years, and thereby justify the continuation of our current growth patterns as if there were no tomorrow, then it will almost certainly be too late.

Irreversible changes will have been set in motion that generate their own feedback loops, until it is quickly beyond the capacity of governments to manage change, cope with shortages, and handle the ensuing chaos and flood of environmental refugees. So counting things right has to start without delay, so that at least the framework and paradigm for change are put quickly in place.

This is *not* fear-mongering—I don't believe in that at all—but a simple analysis of current trends based on the best available statistics and evidence. One thing we have found over the last 12 years of work in this area is that the GPI has remarkable predictive power. In 1998 we released our first report on the economic value of civic and voluntary work, in which we warned of certain trends that threatened the viability of the voluntary sector. Ten years later the numbers pointed to a massive decline in voluntary work, belatedly proving the earlier warning correct.

In 2000, our analysis of the agriculture sector pointed to a serious long-term decline in the economic viability of farming in Nova Scotia, based on five key indicators—net farm income, expense to income ratio, debt to income ratio, return on investment, and solvency ratio. We warned that if existing trends continued unabated, farmers would be forced off the land because they could no longer afford to farm. This year we updated that report and found that in four of the last six years, net farm income had actually dropped below zero. Put simply, it was costing farmers more to farm than they were earning. When we issued the warning eight years ago, net farm income was not yet below zero, but it was headed in that direction. For many farmers, it's now too late!

By contrast, Gross Domestic Product (GDP) sends no such warning signals, and in fact sends perverse and entirely misleading signals to policy makers. While all five of our GPI ***net*** farm viability indicators were trending seriously downward over a 36-year period from the early 1970s to the present, ***gross*** farm cash receipts (which are the primary input to agriculture GDP) have trended upward and show no problem at all.

Similarly, fishery GDP remained at record high levels and with the fisheries regarded as a 'boom' industry right up to the moment that the Atlantic groundfish stocks collapsed in 1992. As noted earlier, GDP is a gross rather than net approach that only counts what we extract from our natural resource base and takes no account of the health of the resource—in this case the fish stocks in the oceans—we leave behind. Reliance on GDP statistics actually encouraged over-fishing and natural resource depletion simply because it tracked only the nominator (fish landings) and not the denominator (fish stocks). This, quite frankly, is primitive and poor accounting practice.

Again, this is not rocket science, and is entirely in line with simple household budgeting practice, in which we count not only our gross income, but rather keep track of our expenses ***in relation to*** our income. Any ***net*** approach will have the predictive power described here and the capacity to send early warning signals that allow timely remedial action. That, in a nutshell, is one of the key purposes and practical functions of a set of GPI Accounts.

One final example of the predictive power of the new accounts and perhaps most poignant of all given the current economic circumstances: GPI Atlantic released a report on debt and financial security just a month before the current economic collapse, warning of unsustainable trends in the economy—like the fact that debt growth during the so-called economic boom period of the last decade had massively outpaced income growth for 80% of Canadian households, thus threatening the ability of many households to manage and service their debt. Only among the wealthiest 20% of Canadians did we find the rate of income growth exceeding the rate of debt growth—far too narrow a base for a healthy economy. We noted that more than 77,000 Atlantic Canadian households, in our small corner of Canada, had become so deeply indebted that they could not get out of debt even if they sold everything they owned, including their homes—not a good feeling with which to go to bed or wake up in the morning to say the least! That depth of financial insecurity can hardly be considered an ingredient in wellbeing.

We asked a top Canadian banking executive and respected financial analyst, to review our report and provide comments prior to its release. He took issue with our conclusions (though interestingly not with our statistics), saying (according to the conventional wisdom of the time) that Canadian household finances had never been healthier, and that Canadian households were more financially secure than ever. When the crash came a few weeks later, we at GPI Atlantic were not surprised—not even slightly. Were Canadian household finances just a few months earlier really so healthy, and were these households as financially secure as the conventional wisdom held? Certainly not according to GPI Atlantic's net accounting analysis.

But—and this is a very big but—the purpose of the GPI indicators and accounts is not to shake our heads in despair months or years later, or to say "I told you so!" The purpose is precisely to identify our strengths so that we can build on them and protect them rather than take them for granted while they weaken behind our backs, and it is precisely to identify our weaknesses so that we can work to overcome them as soon as we detect early warning signals. The good news is that we have not yet crossed the threshold of irreversibility or passed the point of no return, even though we are getting close. We do still have a chance to turn things around, so long as we don't hesitate but act decisively while the narrow window of opportunity remains.

And there may never be a better opportunity than the present, where the conventional system is in crisis and where the so-called experts are wringing their hands in despair and disbelief that they could have been so wrong. Alan Greenspan's chest-beating confession before Congress—the King of Economics utterly humbled—symbolizes a golden opportunity to present a new and saner economic paradigm and accounting system that accounts properly for true benefits and costs.

That moment of opportunity is probably not while the fire brigades are totally engaged at the scene of the fire and while so much adrenaline is pumping through the system with desperate trillion dollar fiscal stimulus packages and cash injections to re-stimulate

spending and growth. But the right moment may perhaps be six months or a year from now, when the stimulus has not only failed to stimulate, but when governments find themselves with their backs truly up against a wall, having racked up massive deficits and accumulated monstrous debts through their so-called fiscal stimulus and bailout packages. Sad that it always seems to take a catastrophe before eyes and ears open (—'catastrophe' only from our human perspective, needless to say. For the natural world, the more the stimulus fails to stimulate, the deeper the recession or depression, the greater the crisis in so-called 'consumer confidence', and the less spending and consumption that happen, the better the natural world's chances for recovery.)

But in the meantime, we can prepare the ground, and when the moment comes, simply quietly demonstrate through practice and action that a sane alternative is possible. How remarkable and inspiring it would be for folk in the depths of a global depression to notice that some jurisdiction (like a small Maritime province for example) was cheerfully prospering as a result of its integrated development model. Then, they might ask themselves with genuine curiosity—how did they manage that? And how did that jurisdiction escape the clutches of depression gripping the world?

6.4 A four-step process

These are the four steps I see in changing our systems of accounting and economic valuation:

1) We have begun to build the new accounting system by valuing natural, social, and human capital properly. Much more work is needed, including improvements in data sources and methodologies. But tremendous strides have been made globally in the last three decades in both data collection and measurement methods, so that it is now truly possible to identify, and in many cases to quantify, the true value of natural, economic, social, and cultural assets, and the full benefits and costs of economic activity. This is very good news. What was once just a concept and an aspiration is now feasible and measurable, and there is no barrier for a jurisdiction like Nova Scotia to construct, adopt, and implement the new indicator and accounting tools as guides to policy. That measurement work is so well under way that there is already no obstacle to step 2.

2) Some jurisdiction now has to adopt the new indicators and accounts fully and properly, and to take them as its core measures of progress and valuation, in order to demonstrate their feasibility, utility, and policy relevance. This is a matter of political will. Not to put any pressure on anyone, but I do think Nova Scotia could be ideally suited to take that leap.

   The Province, through its Opportunities for Sustainable Prosperity, Weaving the Threads, Environmental Goals and Sustainable Prosperity Act, and Power of Green conferences, and the commitments made in those documents, has demonstrated its

willingness to be on the forefront of the new integrated development path. It has even made an explicit commitment to move to an expanded capital system of valuation—which in itself places it well ahead of other jurisdictions in this field. And the fact that a GPI for Nova Scotia now exists, in all its rich detail and with a comprehensive database spanning 20 components, and is ready to use, makes the leap to application much more feasible in this Province than anywhere else.

There are other reasons for the Province's suitability as a leader in the field. Because the region has directly and painfully experienced a natural resource collapse and its economic consequences, it also has greater understanding than most other parts of the industrialized world that environmental conservation and economic prosperity go hand in hand and are mutually dependent. Because we lost 40,000 jobs when the groundfishery collapsed, we have no illusion that jobs and environmental protection are at odds with one another. We saw that a sustainable leading edge solid waste management system created new jobs, and so we know from experience that there are tremendous economic opportunities in sustainable and environmentally responsible development.

As well, I think it is fair to say that materialist values are simply less dominant in the Maritimes than in many other parts of the industrial world. Community still matters a lot, and Nova Scotians treasure their quality of life and their sense of community sufficiently to return home even after leaving for periods of time. In other words, the societal component of the new wellbeing measures has direct and visceral meaning and resonance here. In addition, a small and geographically distinct province actually has much greater capacity to act as a laboratory for innovation than larger jurisdictions more wedded to established institutions and mores. For all these reasons and more, Nova Scotia may be an ideal place to take the lead in adopting the new indicators and accounts as its core measures of progress.

This second step—which has to do with the political will to adopt and apply the new measures in practice—carries some dangers if there is not a whole-hearted commitment to adopt the measures fully and properly. In the last 12 years of work in this field, I have actually seen organizations and jurisdictions appear to adopt the new measures in some partial way, often for 'political' reasons or in such a way as to eviscerate them. This is probably the biggest danger of all—to seem to be saying the right words and having the right intentions, but implementing them half-heartedly or in ways that sacrifice integrity and meaning to convenience and form.

We've seen this happen so much with terms like "sustainability," but the danger is no less with the new indicators and measures. We have a large forest company in Atlantic Canada that has now adopted as its logo "The Sustainable Forest Company." It continues to clear-cut regional forests with abandon, but has conveniently defined sustainability as replacing the fibre it removes with at least an equal amount of fibre. From our expanded capital accounting perspective, however, we know that capital depreciation can be the result of resource degradation as surely as of resource

depletion. While this company is not quantitatively depleting timber, its definition of sustainability conveniently allows it to replace a diverse, rich, old-growth forest with a young single-species plantation.

And the well-meaning measurement folk buy right into that charade whenever they adopt indicators like "forest cover" as their primary measure of forest resource sustainability. This is tempting to do of course, as forest cover statistics are far simpler, more straightforward, and more easily accessible and available than qualitative data on age and species structure. This is serious business that can seriously set back the new measures by allowing people to carry on business as usual under the cover of what is now often called 'green-washing' and cosmetic changes that adopt the language and form of the new system without its meaning and substance. I've seen this happen often enough now in our measurement world—where the guts are removed while the form and language maintain all the right appearances—that I have to say it out loud, even at the risk of causing offence.

Whenever I see new measurement systems begin from the premise that our conventional economic statistics are not enough and that we have to "add" a raft of new social and environmental measures, I begin to worry and hear alarm bells ring. This "add-on" mindset fundamentally accepts the validity of the conventional economic measures, but pats itself on the back for being broad-minded enough to add a bunch of social and environmental statistics *on the side*—**always**, mind you, on the side. Rarely are the new statistics allowed to ***challenge*** the messages being sent by the conventional measures and through the existing economic paradigm.

And so we come back to the main highway / side street metaphor at the start of this paper. Indeed, I would go so far as to say that confining our measurement work to indicators alone without challenging the dominant GDP-based accounting system carries the danger of appearing to adopt something new and innovative while business as usual continues unabated. We need to be honest enough to acknowledge that the new measures constitute a new way of doing business, according to new criteria, and leading to new policies that advance economic, social, and environmental priorities simultaneously. Until that happens, every new and alternative measure must constitute, not an "add-on", but rather a running ***critique*** of our flawed existing measures that demonstrates and highlights their defects and failings.

In other words, "co-existence" in the sense of having the best of both worlds is not an option! That would be like thinking Apartheid or the Soviet Union could continue to co-exist with democracy. The genuine courage and political will needed in those situations included the willingness to let go of the old paradigm and to adopt a new one. Similarly, we cannot sing the language of sustainability without simultaneously challenging a materialist philosophy based on ever expanding consumption. And we cannot simply add on a bunch of new indicators to ones that are fundamentally flawed and that send highly misleading signals to policy makers. If we do so, we run the

danger in our indicator and measurement world of exacerbating rather than ameliorating confusion, however well-intentioned we may be.

But if Nova Scotia takes the leap fully and properly, it will rise to respond to a tremendous and widespread yearning that exists throughout the globe for a sane and balanced development path into the future—a path that truly nurtures our natural world for the sake of future generations. At present, the jury is still out as to whether Step 2 will happen, but I am enormously encouraged that the Government of Nova Scotia has taken the step of appointing an inter-departmental task force to study the GPI carefully with a view to understanding it thoroughly.

In short, Step 2 in this process is the genuine political will to adopt the new measures fully, properly, and with integrity—to implement the new indicator and accounting systems in practice, and to use them actively as the Province's core measures of progress and valuation, and as the evidence base for new policy.

3) There is not much point in talking in great detail of Steps 3 and 4 when we are only at Step 2. So a few words will suffice. Once the new accounting system has been adopted by government, it provides the basis for a system of financial incentives and penalties designed to encourage sustainable behaviours that contribute to wellbeing and to discourage unsustainable behaviours that undermine wellbeing. This includes very practical actions like shifting taxes from low-income households to carbon and pollutant emissions; subsidizing renewable energy development, public transit, local organic farming, and uneven-aged forest management, while increasing taxes and fees on gas-guzzling SUVs, synthetic fertilizers, and clear-cutting, for example. The underlying ***accounts*** provide an objective basis for determining the dollar amounts of such incentives and penalties, since the accounts assess the true and actual benefits and costs of economic activity to society.

4) And those incentives and penalties in turn will naturally affect consumer prices, thereby changing behaviour. It is absurd, at present, that organically grown local food is more expensive than chemically grown food imported from 2,000 miles away—a perversity only made possible by ignoring the true costs of soil degradation, transportation, greenhouse gas and pollutant emissions, and other actual costs of production, and ignoring the true value of enhanced nutrition, freshness, health, and resource conservation. Once goods are properly and accurately priced according to their true costs of production, not only will consumer behaviour change, but the market economy itself will become far more efficient—with profligate and wasteful energy use penalized for example, and rewards for energy conservation built into the price structure. We're a long way still from that kind of pricing system, but, as I said, I fervently hope to see it in my lifetime, as it the surest guarantee of widespread behaviour change.

7. Is such complication really needed, and if so, why now?

We have to be honest enough to acknowledge that all these complicated indicators, accounts, economic valuations, and measurement systems are entirely unnecessary if underlying wellbeing and sustainability values truly pervade and penetrate both the society and the political arena in a profound way. Good and wise policy that judiciously balances social, environmental, cultural, and economic objectives does not need to be justified with such measurement and accounting complexities.
Indeed, economic valuations would never be needed if the full social and environmental consequences of all policy actions were considered in every decision. In any case, we have already noted that such economic valuations are at best only a strategy designed for a materialist world and intended to point towards an underlying physical reality. Even indicators are only a "second best" tool that imperfectly describes reality. As the old saying goes, the finger pointing towards the moon is not the moon. And so indicators can only point in the general direction of a social reality and can never pretend to describe it fully and accurately.

Indigenous peoples did not need a complicated battery of charts, tables, and spreadsheets to live in harmony with Nature. In some of our native American traditions, there is a custom in which one tribal elder is required—in every major Council decision—to represent the interests of the seventh generation hence. How will this decision affect future generations? When decisions are made in that way, we do not need complicated spreadsheets or accounting mechanisms.

But we don't live in that kind of world today, and so there are three important reasons for adopting the new measures now with all their complications: First, they are a powerful insurance policy in a party-based democracy that holds no long-term guarantee that sustainability values will always pervade the decision-making arena regardless of the vagaries of elections and who holds power. Because they transcend partisan politics and represent consensus values, the new measures can serve as a highly effective touchstone of fundamental underlying principles—a standard against which actions can be judged, policies and programs evaluated, and governments held accountable.

Secondly, as we have become increasingly joined to the larger world through trade, the internet, television, tourism, and membership in international organizations, the new measures are ever more urgently needed to maintain our core values, to establish our own development path, and to avoid being swamped by the dominant global materialism. Until our own ways of measuring progress and valuing our wealth are firmly entrenched and well understood at home, our progress and wealth will continue to be measured for us according to outside standards and forces that do not appreciate what is of value here. Already, Canada's membership in NAFTA, the WTO, and other organizations subjects us to standards, measures, trade rules, and ideas of progress that may have little to do with sustainability criteria and what matters to Nova Scotians. Until we have our own clearly enunciated and officially entrenched measures of progress and accounting system firmly

in place, we will continue to be held entirely accountable to standards and rules not of our own making.

Let's take a concrete example of a likely scenario that may ensue if we fully and properly adopt the new accounting mechanisms. If we move towards a pricing system that includes the full costs of transportation, greenhouse gas emissions, pollution, and unsustainable harvest methods, we may impose a tariff proportionate to those actual costs on imported food that fails to meet our standards of sustainability, or we may proportionately subsidize local organically grown food that meets the highest sustainability standards and involves minimal transportation and carbon emissions. Such a practical application of full-cost accounting—despite being fully in accord with reality and reflecting the true costs of production and distribution—may be challenged by NAFTA and WTO as a 'trade barrier.' Political will includes the willingness to let NAFTA or the WTO challenge an official accounting system that does include the full costs of production and that values all forms of capital properly and comprehensively.

In short, the new measures and accounts are literally needed in order for Nova Scotia to protect its interests and sustainability path, to represent and justify itself accurately and with integrity in the international arena, and to avoid being classified, judged, ranked, and manipulated according to outside standards and measures that have no respect for what matters to this Province. The example illustrates that adopting the new measures does constitute a real challenge to existing, conventional norms. But in the longer term, the concomitant improvement in local self-reliance and in a balanced development path will also protect us and insulate us somewhat from major global economic downturns like the one we are presently experiencing.

And thirdly, the new indicators and accounts are needed if this Province has any aspiration to help the larger world and set an example of a sane and sustainable way forward that can protect the interests of future generations. If Nova Scotia chooses to set such an example, then it can only do so by communicating and engaging the world in a language the world can understand. Lofty words, principles and ideals will be less effective in getting others to watch, listen, and pay attention than the language of measurement, economics, budgets, and production costs. The new indicator and accounting systems—because they speak in a familiar and universal language—will allow the world to recognize the flaws in its own measurement and accounting systems, and in its consumption and growth-based economic paradigm, and will demonstrate its own potential to shift its view and approach.

From this somewhat altruistic perspective, therefore, the new measures—both indicators and accounts—constitute a tremendously useful communication tool that creates a bridge to the rest of the world and that starts the dialogue from where others currently are. In all this, it must be emphasized that Nova Scotia does not need to "sell" either itself or the new measures. So long as Nova Scotia genuinely puts a truly balanced development path backed by the GPI measures into practice at home, and so long as the Province uses the new measures to guide and explain its own policy, it will naturally be performing an

enormously useful and valuable function for the world that cannot help but set an example for a global system in confusion, disarray, and despair. But practice is everything. Talking or reading about an apple is not the same as eating it, and nothing will help the world more than a living, breathing example of sustainable prosperity in practice.

And if this third reason is operative, then there is absolutely no time like the present to adopt the new measures, since the current global economic downturn represents a unique historical opportunity to make the changes that are needed on a larger scale. I'd like to end this paper with just a few comments on this present historical moment, and its enormous potential to bring the new economic paradigm and development path to the larger world.

8. The current economic downturn and its opportunities

8.1 The language

The degree to which economic growth has become identified with wellbeing through habitual reliance on GDP-based measures, has never been clearer than in the health and sickness language used to describe the current economic collapse. Any day's newspaper is now full of references to the "sick," "bleak," and "ailing" economy and the need to "inject" billions of dollars of fiscal stimulus into the sick patient in order to spur a "recovery." The 'sickness', of course, is synonymous with a shrinking economy and decline in consumer spending, and the 'recovery' with renewed spending and economic growth. By contrast, the economic boom period of the previous decade and a half was characterized by a "robust" and "healthy" economy—terms unthinkingly equated with simple quantitative growth, regardless of whether that growth was fuelled by debt, resource depletion, and other liabilities.

Other favourite descriptors of our current economic downturn that now fill the commentaries include 'gloom', 'fear', 'panic', 'disaster', 'dire straits', 'dismal statistics', and economic sectors "under threat," with "disheartened" consumers plagued by 'resignation' and 'despair', as a "frightened population locks up its wallets" and "people hunker down for a period of austerity." These phrases are all culled from a single day's London newspaper.

Recall that when North Americans stayed home after the attacks of September 11, 2001, one of the first messages from the U.S. President and the Canadian Prime Minister was to go out and spend money—as if the biggest ultimate threat was an economic slowdown. I still recall the front page newspaper headline two days after 9-11: "Shopping is patriotic, leaders say." As the current rapid mobilization of national and international efforts and money show, economic growth has been so equated with societal wellbeing that it supersedes all other priorities.

Equally revealing is the language used to describe the "recovery" measures now being proposed and undertaken to "jump start" the ailing economy. Here again are samples from the same London newspaper:

- Following a fall in U.S. retail sales, measures are being considered to "keep U.S. consumers shopping."
- "Fiscal stimulus" is the basis of a "recovery" plan with the goal of "handing out enough money to get consumers buying and companies investing."
- Among the G-20 nations, there is now "a consensus about what is needed to put the global economy and financial markets back on track…[to] restore credit markets, keep slashing interest rates to stimulate growth and pour much more government money into fiscal stimulus packages."
- The long-term goal is to "reduce the likelihood that the global financial system will fall prey to another once in a lifetime catastrophe."
- Interest rates are being cut so that households and corporations will "borrow, spend and rejuvenate the economy."
- The goal of all this is to get the "economy booming, consumers spending [and the] stock market performing."
- The G-20 discussed "coordinated cash injections and tax cuts in order to kick start economic growth" and supported "using fiscal measures to stimulate domestic demand to rapid effect."
- IMF Managing Director, Dominique Strauss-Kahn, summarized the simple-minded view succinctly (Times of London, 17 November, 2008), when he called on nations to pump 2% of their GDP into "raising domestic output growth" in order to stave off a severe global recession. He said: "I welcome the emphasis on fiscal stimulus which I believe is now essential to restore global growth."

Personally I find the word "inject" (as in "inject billions of pounds into the economy") of particular interest, as it really does conjure up the image of a sick patient desperately in need of a life-giving medicinal infusion. As this paper goes to print, the United States has just decided to 'inject' another $800 billion into the ailing economy, on top of the $700 billion financial bailout package approved last month—massive, indeed astonishing, expenditures approved with little debate and with an urgency and rapidity not seen in any other sphere—and expenditures that will plunge the U.S. government into ever deeper debt. For those who ever doubted the extent to which GDP growth has become equated in the public, policy, expert, and journalistic mind with societal health and wellbeing, the language of these recent weeks, along with the almost blind and entirely non-partisan adherence to the limitless economic growth doctrine, should dispel all doubts.

What is also interesting is the extent to which environmental issues have fallen completely off the policy agenda. In all the hand-wringing about "plummeting car sales" and the "stricken car industry," I have yet to see one mainstream commentary acknowledge that a few less cars on the roads in an era of global warming might actually reduce greenhouse gas emissions and be helpful to the planet. Instead President-elect Obama is proposing a $50 billion bailout plan to the automobile industry to avert its collapse, which, he says, would be a "disaster." And I have yet to find one mainstream

commentary that questions whether "restoring global growth" might be problematic from the perspective of the Earth's natural carrying capacity, and the fact that the global Ecological Footprint already exceeds the bioproductive capacity of the planet.

Of further interest is the way partisan politics suddenly dissipated as Democrats and Republicans joined together to "combat recession" with a massive $700 billion bailout package for the financial industry, and now a new, additional $800 billion stimulus package. The GDP / economic growth dogma is clearly revealed as the ultimate unifying bond of modern society, overcoming party and national politics to bring almost immediate consensus on required action, with virtually no limits to available funding. The language above also reveals the extent to which GDP has morphed from an accounting mechanism to its total misuse as the ultimate indicator of wellbeing.

8.2 The timing

What is perhaps of greatest interest at this historical moment is the air of desperation that pervades this crisis moment. The so-called experts and bank chief economists, with all their intimate knowledge of the financial system, utterly failed to predict the sudden economic collapse, the failure of major banks, and the rapidity of the macro-economic decline. In all their statements up to just a couple of months ago, they truly seemed to believe the 15-year 'boom' period would last forever. Almost nothing reveals the bankruptcy of the current economic paradigm as graphically as the fact that these same bewildered and floundering "experts" (along with CEOs who had pocketed tens of millions of dollars in annual bonuses) are still being interviewed daily as they struggle to explain why their world is falling apart. They have no idea! At least Alan Greenspan, former head of the U.S. Federal Reserve, economic guru, and chief of all bankers, had the courage to admit before Congress that he'd been fatally wrong in his prescriptions for the economy and financial sector, even if he still cannot explain the chaos around him or offer hope for the future.

At the same time, it would be a bad mistake for critics like us to underestimate the strength and power of the conventional system when it is vulnerable, threatened, and under siege as at present. Like a wounded wild animal that doubles its fury, the natural reaction when weakness is exposed is to close ranks and hold on even tighter for dear life. No wonder we see an almost universal consensus among the powers that be to re-stimulate growth literally at all costs. Metaphors in the press include "life-saving," "emergency measures," "rescue packages," and bringing in the "fire brigade." The words are revealing.

In such a "life and death" struggle, what suddenly happened to all our wellbeing and sustainability indicators and measures so painstakingly developed over so many years? Suddenly they are a dilettante luxury no longer even on the horizon. Where is the difference between Democrats and Republicans, between Bush and Obama, between the American approach and the European approach, between the Chinese solution and that of

the west? Beyond subtle differences of detail, the unifying consensus is that a fiscal stimulus injection is needed to restore growth—the only way that the sick economy can recover.

It is well documented that a sick patient in a doctor's clinic is more open to suggestion and more likely to listen when he is desperate to recover from his illness than in so-called 'normal' times—more likely to restrict his fat intake and begin exercising if he has just had a mild heart attack, for example, than when he is ***apparently*** healthy prior to the attack. The operative word, of course, is "apparently." As we know, watching from our GPI sidelines, that so-called health was an utter illusion all along—conditional and dependent as it was on continuous injections of more spending, shopping, and goodies. It's not as if the moment of the heart attack was the onset of illness. We were watching the disease develop for a long time during the 15 so-called "boom years" of unprecedented (and seemingly endless) economic growth. So how could we be surprised by the heart attack?

But for the patient gorging himself during the glut, the shock of collapse may create a tremendous and unprecedented moment of openness that allows more sane alternatives (like not going back to a glut and bust lifestyle) to enter the human and social consciousness. It's actually an important historical moment for those of us who have long proposed a new balanced economic paradigm that integrates social, economic, and environmental objectives—a once-in-a-lifetime opportunity to present a more profound and far-reaching rescue package to a much, much wider audience—an approach to recovery that does not rely just on a one-time drug injection like the present fiscal stimulus package, but that actually creates a long-term sane path forward in a new direction. That package could actually be unwrapped, examined, and scrutinized by a doubting and curious patient if it is backed by a solid evidence-based GPI accounting system and if it is being practised in reality by the people of a small, Maritime province willing to share their treasure with a larger world in desperate need of help. This is a potentially important global moment for the GPI and the new economic paradigm it represents—a moment when it is really needed more than ever and can truly help the world—if the political will to act locally is there.

Actually, the best moment to communicate the GPI approach to that larger audience is probably not right now while the fire brigade is in the street, drugs are flowing through the IV, and the patient is on resuscitation in the emergency ward. As we noted above, the GDP ranks are closed now as never before, as all measures are tried to save the bankrupt system. Though the patient might indeed be more open to this new approach at this moment of crisis, every conventional doctor he has visited has hitherto recommended a 'life-saving' fiscal stimulus emergency operation. But the right moment for communication will come perhaps in 6-12 months from now, when all cash infusions have failed to resuscitate the patient, with the "stimulus spent and not stimulating" as one more far-sighted Times commentator predicts, and when the so-called "solutions" and emergency operations have actually made matters much worse by massively deepening government debt—leaving no further rescue and recovery options.

Indeed, fiscal stimulus cannot possibly work in the long term, simply because the sickness is so much deeper and more fundamental than currently acknowledged, and because it is simply fighting fire with fire—combating the fallout of excess debt-fuelled growth with an attempt to stimulate more debt-fuelled growth. As we here know from a saner GPI perspective, the sickness has nothing to do with a shrinking GDP and a decline in spending (as conventionally assumed and at which the current emergency operation is aimed), and has everything to do with having gorged ourselves on the basis of racking up debt—conventional consumer debt and mortgage debt, as well as ecological debt (as demonstrated in Ecological Footprint analysis), societal and cultural debt (as our community bonds shrink), and psychological debt (as witnessed by rising rates of stress and depression). Excuse me for reverting to accounting language, but it is applicable here.

But I see three really good pieces of news in the midst of this current economic turmoil and crisis, and a tremendous opportunity for the world if the timing is right. News that is so good in fact that we can very quickly and quite easily switch channels from the "gloom, panic, and despair" channel that currently dominates the airwaves to a channel that is truly warm, wise, gentle, encouraging, and full of life, vim, and vigour:

- First, the moment that the patient finally accepts the bad news of the failed operation and the reality that he is really, really (and profoundly) sick, will likely produce far greater openness than during the emergency operation itself in the midst of which we currently find ourselves. There is an opportunity for real communication here that has not existed in the smug and complacent world of the last 15 years. Since that moment is several months down the road at least, we have a bit of time to prepare.

- Second, despite the depth of the patient's malaise and sickness, it is suddenly revealed as totally baseless, and amenable to transformation on the spot, just by shifting the flawed underlying assumption. We can actually proclaim: "OK, there is actually no need to grow!" How incredibly liberating. No need for more trillion dollar emergency stimulus and bailout packages, cash infusions and injections. In sharp contrast to the panicky alarm bells of the politicians and bankers and auto industry executives and IMF chiefs, we could then tell the patient, "You can just relax now. Everything is going to be okay."

  Sure, we'll get some quizzical looks. "Really?" the patient will ask, having been brainwashed into the adrenaline pumping fire brigade and rescue mode. So we may need to explain and elaborate just a bit (see below). But the underlying message remains delightfully and refreshingly simple actually: "Instead of pushing ourselves to keep growing and growing, let's all just shrink creatively together, and create a better, happier world in the process." What is required has far more to do with creative redistribution of the richness we already have, to ensure that no one is deprived, than with adding ever more stuff.

At that moment, we could even introduce the environment and the natural world (off the agenda during the firefight and operation) back into the equation. "Maybe" we might venture to suggest, "the human economic enterprise has actually grown way too much, way too fast, for way too long, at the cost of the planet and future generations. We've over-fished our oceans, cut down our forests, seen species go extinct at a thousand times the natural rate, depleted our resources, changed our climate, and dumped wastes into the atmosphere, oceans, and land at such an alarming rate that we are leaving a massively depleted legacy for our children.

"What a splendid moment and opportunity to reduce our human footprint on the earth and to allow our natural world a little time and space to regenerate. In short, instead of emergency rescue and bailout packages designed to stimulate more growth and that haven't worked anyway, let's send home the fire brigade, and let's begin to ask ourselves the simple question: What do we actually need to live a decent life as human beings on this planet, and let's start from ground zero to create that life together." When all else has failed, and when our politicians, experts and so-called leaders have followed Mr. Greenspan's lead and beaten their breasts in despair and confession, I think our patient might possibly listen to this little voice of reason, even if it first appears to come from far out in left field.

- There is a third piece of potentially really good news in the midst of all this. At such an historical moment, a small Maritime province that deliberately chose a new and balanced path of development and that thereby more effectively rode out the storm, might actually present a living, breathing example and model of a new way forward—not particularly by making any great effort to extend itself, but simply by living and practising a sustainable lifestyle fully and properly itself, and by being willing to share its experience with those who are curious.

Of course, this whole line of reasoning will not go down well in the midst of the fire brigade trying to put out the fire. That is probably not the best moment to suggest: "Okay. Just relax. Let it burn." The rescuers are too pumped up and adrenaline-crazy to listen at that moment, and the patients—under the illusion that their most precious possessions are being consumed by the fire—too desperate to hold on to their burning mansions and SUVs. They might even get mad at the suggestion to relax, let it burn, and shrink their lifestyles. But when all efforts to save the burning house have failed and some real exhaustion sets in, a sane alternative and way forward could have tremendous power and appeal. Let's flesh out that alternative with just a few concrete details by way of example, to show that we are not preaching from on high, but suggesting some eminently reasonable and feasible steps that make practical and earthy sense.

8.3 A "balanced," multi-dimensional approach

I once heard David Suzuki, brilliant scientist and defender of the environment, argue that the only biological organism he could think of, which shared our economic dogma of limitless growth, was the cancer cell—which also thrives on unlimited growth till it destroys its host. I suppose we could add some other examples—like weeds or algal blooms that suffocate plants and water bodies. Suzuki's point is simple: In nature, limitless growth is inherently destructive. By contrast, he points out, nature always thrives on ***balance***. Plants, for example, do best when they have not too much water and not too little, not too much sunlight and not too little.

Indeed, I have often thought that if I had to choose just one single word to describe and characterize the GPI, it would be ***"balanced"***—in sharp contrast to the "extreme" view of GDP-based measures. What is the GPI if not a judicious balance between environmental, economic, and social objectives and measures? And what is the meaning of good policy if it does not effectively balance those priorities?

In the accompanying PowerPoint presentation, I flashed up some slides that well illustrate the balance in the GPI accounts. For example, while GDP, in its extreme mode, only counts gross cash farm receipts (that have actually increased over time), the GPI balances those receipts against changes in the cost and expenses of farming and against farm debt—pointing to a net decline in farm economic viability. Unlike our ***Gross*** Domestic Product accounting mechanisms (the name speaks for itself), the GPI is simply a net accounting system that balances the outcomes of economic activity against its full range of benefits and costs—economic, social, and environmental. If an economic activity like coal-fired electricity generation produces costs in the form of greenhouse gas, sulphur oxide, and mercury emissions, then the inclusion of those costs in the accounts constitutes a net approach that reflects reality far more realistically than a gross approach like GDP that only counts the benefits of electricity production while considering none of its costs.

And this balanced approach is why we at GPI Atlantic were not even slightly surprised at the economic collapse of last month. Instead of reporting only consumption, output, and income growth, as the GDP does, we showed that the economic boom was largely debt-fuelled, and that debt growth had far outpaced income growth in the past decade, raising serious questions about growing incapacity to service and manage debt. As noted earlier, this is not rocket science or even more complicated than managing a simple household budget—in this case we simply balanced income growth against debt growth and did the ratios.

And as we saw, this balanced approach is reflected in our entire approach to natural resource accounting. As we saw, GDP measures showed the fishing industry "booming" in the 1980s and early 1990s, and fishery GDP in Nova Scotia never looked better than on the verge of the collapse of the Atlantic groundfish stocks, simply because it only counted what we extracted from the oceans and failed to account for what we left behind. In sharp contrast, the GPI ***balances*** what we extract from our natural capital base with the health of that natural resource base itself—accounting as fully as possible for our natural

wealth in forests, soils, marine life, water, and other resources. We even balance our approach to sustainability accounting altogether by balancing supply-side natural resource accounts with demand-side or consumption based Ecological Footprint analysis and an accounting of human demands on the environment. We try to balance our stock accounts against our flow accounts to the extent possible, and our indicator work with our accounting work.

In fact, I would be so bold as to say we don't have to "sell" the GPI in any other way than simply to point out that it is a ***balanced*** or 'middle way' approach that looks at both sides of any equation, and which thereby provides far more accurate signals to policy makers than an extreme doctrine like limitless growth.

In applying the new multi-dimensional GPI measures spanning 20 components in five different domains, critics often baulk at their complexity, which they find daunting and challenging to interpret compared to the simplicity of the one-dimensional single number GDP / economic growth statistics. I think we should never apologize for this complexity. Would we prefer an airplane pilot to have only one gauge (say altitude) when piloting our plane? The pilot might have quite a difficult time taking off, landing, checking safety features, or ensuring that we have enough fuel to get us to our destination with such limited information. Would we not feel far safer and more secure if the airline pilot had a complex, multi-dimensional set of gauges on his dashboard providing him with all the varied information required to get us safely to our destination?

Piloting the ship of state is no less challenging or complex and requires at least the same multi-dimensional range of information as we would expect of our airline pilot. The very narrow fiscal stimulus fire-fighting currently under way to deal with the present economic downturn well demonstrates the limited tools available to policy makers who operate from within a GDP / economic growth framework alone. Let's see how the options naturally expand when we broaden our approach and embrace the complexity.

8.4 Example of a GPI-type solution to the current economic downturn

It is currently uncritically assumed that layoffs and rising unemployment rates are one of the key consequences of a recession. Indeed, layoffs are generally the knee-jerk response of employers to shrinking consumer demand and production slow-downs. However, a GPI analysis clearly points to alternatives.

First, because we link livelihood security to other domains like health and community safety, we have a far clearer understanding of the negative social consequences of layoffs and unemployment than do conventional economic analyses that often barely acknowledge the societal consequences of unemployment. In our GPI work, we tracked unemployment and crime rates over nearly half a century and found a direct correlation between the two. Whenever unemployment rates went up, so did crime rates, and whenever unemployment went down, so did crime. We found that two-thirds of the

prisoners in Nova Scotia prisons were unemployed at time of admission to custody. In a "business as usual" scenario, assuming that this recession (like those of the past) leads to massive layoffs, we can confidently predict that crime will rise in the months and years ahead. We don't see this prediction in current narrowly economic-based analyses and commentaries, though a wider societal-based analysis shows the historical links and trends to be very clear. In our GPI accounts, we also track and can predict the social and economic costs of these changes in crime rates (in increased spending on prisons, courts, security systems, victim losses, hospitalization rates, shoplifting, and more).

The same is true for illness. The evidence indicates that the unemployed suffer higher rates of a wide range of physical and mental ills than those with jobs. According to the literature, the mental and physical health of the unemployed is generally considerably worse than that of the employed population on a wide range of health indicators. For example, studies have found that unemployment can lead to severe chronic stress and cardiovascular disease.[4] The unemployed also tend to be less satisfied with their mental and physical wellbeing; they report more long and short-term disabilities; they are sick almost twice as often as the employed; and they visit physicians more frequently than those with jobs. A seminal Canadian study also found that the unemployed are 20% to 25% more at risk for heart disease, chest pain, high blood pressure, and joint pain than the general employed population.[5]

GPI Atlantic estimated the potential economic burden of the unemployment-attributable illness in Nova Scotia associated with the 2006 official unemployment rate of 7.9% to be $162.2 million—down from $202 million in 2001 when the jobless rate was 1.8 percentage points higher. When we included a portion of the hidden unemployed—including discouraged workers and those underemployed—we found the economic burden of illness associated with the 2006 supplementary unemployment rate of 11.9% to be an estimated $241 million—down from $285 million in 2001 when the supplementary unemployment rate was 2.1 percentage points higher.[6]

However, crime and illness are only two of a wide range of social and economic costs associated with unemployment. The available evidence indicates that loss of a job can have devastating social and psychological consequences for most people. Paid work fulfills crucial social functions for people, even beyond the main role of providing sustenance. According to one seminal analysis, work literally "shapes the experience of the employed," by imposing a time structure; by enlarging the circle of the individual beyond his or her family; by allowing the worker to participate in a collective purpose or effort; and also at some level by assigning the individual with a status or identity. According to Jahoda, the absence of these functions due to job loss can have highly

[4] Canadian Public Health Association (1996), p. 4. Cited in Pannozzo, Linda and Ronald Colman. 2004. Working Time and the Future of Work in Canada. A Nova Scotia GPI Case Study. GPI Atlantic. Halifax. Available from http://www.gpiatlantic.org., p. 309.
[5] D'Arcy and Siddique. 1985. Unemployment and Health: An Analysis of the Canada Health Survey. *International Journal of Health Services.* 15(4): 609-635. Cited in Pannozzo and Colman (2004), pp. 309-310.
[6] All estimates are in 2006 constant dollars unless otherwise stated.

"destructive" social and psychological consequences.[7]

Long-term unemployment has been particularly associated with livelihood insecurity, poverty, stress, poor health, and a range of social problems. According to Williams and Windebank: "Long average spells of unemployment tend to imply greater economic costs and social costs than shorter spells." These costs include the depreciation of skills, and loss of confidence, leading to eventual withdrawal and "exclusion" from the labour force.[8] Studies have also indicated that those who experience longer spells of unemployment are at greater risk of illness and even death.[9]

In the early 1980s, University of Toronto economist Frank Reid estimated that each percentage point increase in Canada's unemployment rate had an overall social cost of $270 million.[10] A 1993 Ontario Medical Association report estimated that unemployment cost the Canadian health care system $1.1 billion that year.[11] GPI Atlantic's 2004 *Work Hours* study conservatively estimated that illness associated with unemployment cost the Nova Scotia economy $202 million in 2001 ($2006). When a wider range of social and economic costs was added, including particularly the value of lost productivity and output and the fiscal costs associated with employment insurance, social welfare benefits, and reduced tax revenues, unemployment in Nova Scotia was estimated to cost the provincial and national economies at least $4.4 billion in 2001 ($2006).[12]

In short, a broader GPI-type analysis of the relationship between employment and social factors, and particularly an assessment of the true costs of unemployment, including the costs of lost production, employment insurance, social welfare, illness, crime, family breakdown, and other consequences of unemployment, reveal that layoffs are hugely expensive and socially costly, and should be avoided at all costs. Certainly, job loss should not be the knee-jerk reaction to reduced production and consumer spending that is currently assumed.

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[7] Jahoda, M. 1982. Employment and Unemployment: A Social-Psychological Analysis. Cambridge University Press. London. Cited in Pannozzo and Colman (2004), pp. 298-299.

[8] Williams, Colin C. and Jan Windebank. l998. "The Unemployed and Paid Informal Sector in Europe's Cities and Regions." In *Unemployment and Social Exclusion. Landscapes of Labour Inequality*. Paul Lawless, Ron Martin, and Sally Hardy (eds). Jessica Kingsley Publishers. London. p. 38.

[9] Pannozzo and Colman (2004), p. 209, and chapter 9 on "Costs of Unemployment."

[10] Frank Reid study cited in Sykes, Barbara, Peter Faid, and Henry Dembicki. 1985. Counting Costs. A Literature Review of the Social and Psychological costs of unemployment. Edmonton Social Planning Council. Edmonton. Reid and Sykes et al. cited in Pannozzo and Colman (2004), p. 301.

[11] Ontario Medical Association study cited by Canadian Public Health Association. 1996. Discussion Paper. The Health Impact of Unemployment. CPHA. Ottawa. Cited in Pannozzo and Colman (2004), p. 301.

[12] Pannozzo, Linda and Ronald Colman. 2004. Working Time and the Future of Work in Canada. A Nova Scotia GPI Case Study. GPI Atlantic. Halifax. Available from http://www.gpiatlantic.org. Cost estimate based on the official Nova Scotia unemployment rate in 2001 of 9.7% (which does not include discouraged workers or the underemployed) and a hypothetical 3.5% unemployment base rate used by the Canadian Centre for Policy Alternatives, which assumes that even in a situation of "full employment" there will always be some people between jobs who are on the unemployment rolls. The $4.4 billion figure includes lost output and fiscal costs such as direct payments to the unemployed and lost tax revenue.

On the other side of the equation, GPI time use analysis also reveals that there have been significant costs associated with the increase in work hours during the economic boom period of the last 15 years—including higher rates of time stress, particularly among women, and increased difficulties juggling the competing demands of paid and unpaid household work. Voluntary work has been squeezed out by longer paid work hours—with volunteer hours dropping by 21% in Nova Scotia between 1998 and 2005—while Nova Scotians lost 186 hours a year of free time (the equivalent of more than a month's full time work). A Statistics Canada study found that women moving to longer work hours had higher rates of smoking, physical inactivity, unhealthy weight gain, and depression than those working shorter hours.

When all this evidence and more is considered together in all its variegated and multi-dimensional complexity—just like the multiple gauges on the airplane pilot's dashboard—simple and straightforward solutions to the current economic downturn, which can easily avoid costly layoffs, present themselves. Why not simply shorten and redistribute work hours among a much larger portion of the workforce rather than lay off one portion of that workforce? Reducing work hours would spread the pain of reduced income among the work force at large (causing all to take a small income cut in exchange for reduced work hours) rather than placing the entire burden of the downturn on the much smaller segment of the populace being laid off—with ensuing social costs then largely paid for by society at large. In our present GDP-fired economic climate, such solutions are not even on the agenda, with layoffs simply assumed to be an inevitable consequence of the recession.

Shorter work time solutions would also allow more time for voluntary and community work, reduce time stress, and expand free time, thereby improving quality of life. There is no evidence to suggest that shorter work hours carry the kinds of costs that have been well documented and proven for unemployment. On the contrary, there is abundant evidence that shorter work hours lead to improved labour productivity, reduced absenteeism, improved worker morale, better health, and enhanced quality of life. In the Netherlands, part-time workers generally receive equal hourly pay to full-time workers, pro-rated benefits, and equal opportunities for career advancement, rendering part-time work much more attractive and desirable than in North America, where it is generally associated with poorer pay, lack of benefits, and much greater job insecurity. As a result, the Dutch today have the highest rate of part-time work among all OECD countries, the shortest work hours, and the highest labour productivity. In the 1980s, the Dutch reduced their unemployment rate from 12.2% to 2.7% largely through improvements in the quality of part-time work and a consequent voluntary redistribution of work hours. Quite obviously, when work hours are reduced among the employed, more jobs become available for those without work.

A shorter work time solution to the present economic downturn can not only avoid layoffs but also conserve resources and give the natural environment a chance to rest and recover by reducing production, consumption, and waste production. We would creatively shrink our lifestyles and consumption habits without compromising (and likely

enhancing) the quality of our lives. Cooperative solutions might well reduce individual needs through a greater sharing of resources, thus also enhancing and strengthening community. In short, a broader analysis that joins social, economic, and environmental objectives can present a far wider range of options and potential solutions to the current economic downturn—solutions that can quickly move us from the "gloom" "fear" "panic" and "sick economy" metaphors we noted above to the language of potential and opportunity. In other words, the current recession, which will undoubtedly get deeper in the coming months, does not have to be associated with pain and despair, but is more than amenable to creative solutions that simultaneously address social, economic, and environmental realities in a highly positive way.

This is just one example of the practical applicability of a GPI approach to current global conditions and circumstances. There are many others. For example, a reduction in global trade can be very good news if it creates new opportunities for enhanced self-reliance and local production. That in turn can lead to a significant reduction in the greenhouse gas and pollutant emissions associated with long-distance transportation, and lengthy refrigeration and warehousing. If we in Canada were willing to sacrifice our desires just a little—for example forsaking our tropical mango in February—and eating more local in-season produce, we would not only support local farming and enhance the viability of rural economies and communities, but would do the natural world and environment a big favour in the process.

It is ironic that while the recent financial collapse has prompted a major re-consideration of the hitherto accepted wisdom of leaving financial markets almost entirely unregulated, there has so far been no parallel re-consideration of the increasingly unregulated and unrestricted world of international trade. A trade slow-down might provide a splendid opportunity to favour a shift towards a "fair trade" regime that gives preference to goods produced in an environmentally sound way according to high labour standards and paying fair wages to producers. Again, we come back to the issue of balance. Rather than the simplistic, uni-dimensional criterion of "the lowest price" that is currently virtually the sole consideration in ever-expanding globalized trade relations, a more balanced GPI approach also accounts for the social and environmental costs of trade, and balances price against a broader range of social, environmental, and cultural considerations.

To begin this kind of dialogue, which can generate a range of creative and positive solutions to the current economic downturn, we must first allow the absurdity of fighting fire with fire to abate. At present, and as noted above, the current problems that stem from a hell-bent, debt-fuelled obsession with growth and consumption are being fought by efforts to stimulate more growth and more consumption through fiscal stimulus packages that are plunging governments ever more deeply into debt. This cannot help but fan rather than douse the flames—as is already evident as the so-called experts continue to wring their hands in despair and to revise their economic predictions ever further downward even in the midst of all the 'stimulus'. Our initial GPI response can only be "First, please put down the matches—then we can talk." And if that plea remains unheeded, as is likely in the midst of the panic-stricken current spending fervour, then the

dialogue can at least begin when the conventional house is burned down, and there is no option but to rebuild in an entirely new way.

8.5 Agents of change

It is noteworthy that the economic boom period that lasted from the mid-1990s to September, 2008, did not benefit large segments of youth. We found growing rates of low-wage labour and indebtedness among young Canadians during this period, and a growing wealth gap between older and younger households. Thus, the median net worth of Canadian households with income earners 65 years of age and older increased by 27% between 1999 and 2005, while households with income-earners younger than 35 years of age actually saw their median net worth decline by 8% from nearly $20,500 in 1999 to just $18,800 in 2005. Overall, therefore, younger Canadians are losing ground to older Canadians in terms of wealth, financial security, and prosperity. Indeed, the magnitude of debt owed by younger Canadians is unprecedented and increasing, particularly due to rising levels of student debt and credit card debt.

Nearly one-fifth of Canadian households with one or more income earners under 35 years of age now have zero or negative net worth (debts exceeding assets).[13] This means that they could not get out of debt even if they sold off everything they owned, including their homes, cars, and all their assets. For young Canadians with massive accumulated student debt, the prospect of paying off large debt loads make it difficult for them to gain a solid financial footing and may adversely affect their wellbeing and quality of life for many years to come. Not surprisingly, these data on declining financial security among many young Canadians are matched by declining levels of self-rated health and higher rates of depression among the young—pointing to a potential decline in overall wellbeing among young Canadians.

Since the conventional economic system does not seem to have served large numbers of youth, even during an economic boom period, they may well be key agents of change, since their stake in the existing order is frequently marginal. Declining rates of voting and political knowledge among the young—documented in GPI reports—also demonstrate what may be a growing alienation from the established order. As well, the threats of climate change and natural resource depletion have left an uncertain and degraded natural world and environment for future generations to inherit. The Ecological Footprint of the older generation has been so massive that younger people will carry the consequent ecological debt for generations to come.

By contrast, it has become apparent to me personally in presentations to students and younger audiences that young Nova Scotians and Canadians appear to be particularly fired by the GPI vision and the new economic paradigm it represents, and they see it as

[13] Statistics Canada, Pensions and Wealth Survey Sections. *The Wealth of Canadians: An Overview of the Results of the 2005 Survey of Financial Security*. (Ottawa: Minister of Industry, catalogue # 13F0026MIE, December 2006), Table 11, page 19.

reflecting their own aspirations for the future. Thus, the GPI approach and practice not only offer highly positive potential solutions to the current global economic crisis, but the most effective agents and standard bearers of the needed change are likely to be the younger generation whose stake in a sane, secure, sustainable, and balanced world is probably the greatest of any demographic group.

Including GPI measurement and accounting principles, practices, and examples in educational curricula, training our youth in the GPI measurement methods, and generally nurturing their participation in deliberations on the new economic order and in the wider sustainable development movement may well be the most effective and productive possible investment in moving towards the realization of the new economic paradigm in practice.