SUSTAINABLE DEVELOPMENT IN CANADA

A NEW FEDERAL PLAN

Canadian Institute for Environmental Law and Policy

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ACKNOWLEDGEMENTS

Dear Reader

The Canadian Institute for Environmental Law and Policy has worked hard over the past eighteen months to try to understand what is needed for a sustainable development plan for Canada. As you may know, Canada and other countries committed, in 1992 at the Earth Summit in Rio de Janeiro, to develop a sustainable development plan and to come back to RIO + 10 in 2002 and report on actions Canada has taken towards sustainable development.

CIELAP has found in its research that a great deal has been written and said about sustainable development and a great deal has been written and said about the need for indicators to measure sustainable development. But not much has occurred in Canada to put any plans in to action and to see concrete results.

This discussion paper is one attempt to analyze sustainable development, the steps involved and difficulties which may be encountered.

We recognize that a brief 40 page discussion paper, cannot cover sustainable development. We have left many things unsaid and hinted at others that require far more research and analysis. What we have done is provide an analysis of sustainable development and propose a new way of setting goals and making decisions about how to get there. We have acknowledged that it is difficult to develop an action plan for sustainable development when there are so many who have vested interests in the status quo. We know that we face many impediments in setting our sights on sustainable development: getting caught up in the right definition; is there enough political will and leadership; what about corporate interests which will not benefit; what about the plans of our neighbour to the south of us? These are all big questions, and any one, can hold us back.

But we felt it was important to put out — for discussion purposes — a possible framework for Canada. We know that Canada will be reporting on its efforts towards sustainable development in October 2002 at RIO + 10 in South Africa. We want to provide Canada with something to say.

Many people have helped with this Discussion Paper. We thank them all. The funders, TD Financial Groups, Friends of the Environment Foundation, who had the confidence and trust in CIELAP that we could prepare a credible discussion paper on such a huge topic; the JW McConnell Family Foundation for support through their *Education and Training for Environmental Leadership* program; the authors, Karen Clark and Jennifer McKay; and the reviewers, Don Dewees, Professor of Economics and

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Law, Department of Economics, University of Toronto; David Bell, Professor of Environmental Studies and Director of York Centre for Applied Sustainability, York University; Jack Johnson, CIELAP Board member; and Martin Whittaker, consultant and Managing Director, Innovest. We thank the reviewers for their many useful and critical comments but the authors take full responsibility for any errors or omissions in this discussion paper.

As well, David Crombie, former Mayor of Toronto; Elizabeth Dowdeswell former Executive Director of UNEP; Dr Joseph MacInnis, chair of the TD Friends of the Environment Foundation; and Denis Kemp, Director of Environmental Development with Falconbridge have indicated support for our efforts in sustainable development for Canada's future.

Sustainable Development in Canada: A New Federal Plan is a call to action. We need to act now to ensure that we have a healthy environment to sustain life and an economy for future generations.

We welcome your comments. I can be reached by telephone at 416-923-3529 ext 24; or by email at anne@cielap.org, as well, of course by regular mail. We will be putting a chat page up on our website — www.cielap.org — for those who wish to communicate their responses.

Thank you.

Anne Mitchell
Executive Director

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SD can only be achieved by changing some of the ways we do things today. The first step is to identify the greatest needs for change – an effective SD strategy will identify a short list of high-priority areas in which change is the most necessary and develop objectives for these areas. To be effective, SD objectives must be developed with a long-term perspective.

It's worth noting that while the NRTEE/Ministry of Finance Indicators program may provide more detailed information for developing objectives, the federal government already has good information in hand about many pressing concerns, such as climate change.

STEP TWO – SET GOALS/TARGETS AND DEVELOP RULES AND TOOLS TO MEET THE OBJECTIVES

Working back from long-term projections and objectives, the government should set short- and medium-term goals for changing behaviour in order to achieve results. Together with stakeholders, it should develop effective programs for providing the means and the incentive to achieve the desired short-term results. Mechanisms can be varied, wide-ranging and flexible; the targets, however, should be firm.

STEP THREE – MEASURE AND EVALUATE

Together with stakeholders, the government should develop or enhance indicators – either the existing indicators that gave rise to the change objective or a new set developed for the purpose of tracking the effectiveness of mechanisms developed to achieve SD objectives. Effective indicators should assess whether desired outcomes are arising from mechanisms and ascertain whether targets will be met over the short and medium term. If mechanisms are not working as well as anticipated, it may be necessary to develop alternative means.

STEP FOUR – TEST FOR SUSTAINABILITY

Even if goals and targets are met, the strategy must be tested for how sustainable its results actually are. All strategies should be subjected to the three-part sustainable development test – Is the environment better off? And what are the program's impacts on the economy and society?

4-STEP SUSTAINABLE DEVELOPMENT STRATEGY

STEP 1 – IDENTIFY SD OBJECTIVE

STEP 2 – SET GOALS/ TARGETS AND DEVELOP RULES AND TOOLS TO MEET THE OBJECTIVES

STEP 3 – MEASURE AND EVALUATE

STEP 4 – TEST FOR SUSTAINABILITY

> If the mountain will not come to Mohammed, Mohammed will go to the mountain – If one cannot get one's own way, one must adjust to the inevitable. In other words … if you cannot get a job done one way, do it another way.
>
> – ancient proverb[1]

EXECUTIVE SUMMARY

The Canadian Institute for Environmental Law and Policy (CIELAP) prepared this report to provide the Federal Government with a perspective on how Canada can put in place an effective national sustainable development (SD) program. The report provides a framework that can help Canada build a focused and effective SD plan to present at Rio +10 in Johannesburg, South Africa in 2002.

Our research is based on a review of SD theory and practice in both the North and South, existing initiatives in Canada, including the Guide to Green Government, and two generations of federal Sustainable Development Strategies. Regarding the latter strategies, we agree with the Environmental Commissioner's recent assessment that progress has been made in how federal departments and agencies are thinking about SD.

However, in terms of SD programming, while the federal government is engaged in numerous initiatives, the overall SD impact of these programs is unclear. In a single sentence, the federal government's commitment to SD is eloquent in how principles are articulated, but weak on putting plans into action. The Environmental Commissioner has also identified an "implementation gap" in "greening" federal government operations. This observation could well apply to the federal government's SD programs as a whole.

Part One of this report provides some explanations for why Canada is finding it difficult to implement SD. Part Two looks at the concepts of SD as they have been applied in Canada and seeks to provide a better understanding of these concepts as a way of making SD programs potentially more effective. The section reviews the debate over the definition of SD and discusses mechanisms and concepts such as indicators, innovation as a driver of SD solutions, and rules and tools (legal and other mechanisms), that can be employed to achieve sustainable outcomes.

Part Three builds on the analysis in Part Two to describe a Four-Step Plan to implement SD programs. (An abbreviated form of the framework precedes this summary.) The plan builds on the conclusion that a large part of the problem with current SD programs is an incorrect ordering of objective setting, program/rules-and-tools development, indicator development and assessment based on a misunderstanding of the roles of each of these applications, for example, the mistaken belief that indicators drive change.

CIELAP believes that this Four-Step Plan would be a good framework to take to Rio +10 – and to bring back home.

PART ONE

Sustainable development, that grand task set for humanity by the Brundtland Commission in its signal report *Our Common Future* is:

> … development that meets the needs of the present without compromising the ability of future generations to meet their own needs.[2]

At the 1992 Earth Summit in Rio, Canada undertook, along with most other nations in the world, to work toward sustainable development. The Rio conference raised great hopes that the world would rally as against a common enemy and forge a global society promoting "harmony among human beings and between humanity and nature."[3] Instead, one year before Rio +10, Canadians and all the peoples of the world still look for signs that the promise of Rio has not dissipated into thin air.

Canada has as poor a record as any developed country on sustainable development.[4] The most glaring example of underachievement is our failure to address the intense threat of climate change and to reduce greenhouse-gas emissions.[5]

In December 1997, Canada and more than 160 other countries met in Kyoto, Japan, and agreed to targets to reduce greenhouse-gas emissions. The agreement that set out those targets, and the options available to countries to achieve them, is known as the Kyoto Protocol. Canada's target is to reduce its greenhouse gas emissions to six percent below 1990 levels by the period between 2008 and 2012. The protocol will only become legally binding when it is ratified by at least 55 countries, covering at least 55 percent of the emissions addressed by the Protocol.

This report proposes that Canada's poor performance on sustainable development potentially arises from two separate problems. The first is a challenge confronting all of the Northern democratic states with capitalist economies: how to implement SD?

Brundtland articulated the concept of SD for the whole world, but for the most part, implementation of SD strategies has, to date, been limited to the South. Most implementation frameworks, methods and strategies, therefore, have been developed to operate in the context of highly compromised (if not fatally weakened) economies.[6] In the North, where economies are generally quite strong, the concepts and methods of SD present governments with more difficulties than solutions, leading to a distinct reluctance to act. (These problems are described in detail later.)

The second problem in implementing SD in Canada is idiosyncratic to the country itself. SD in both the North and the South requires strong government leadership. However, the Canadian federal government has not committed itself in this way. The comparatively weak stance of the federal government on SD arises from a complex mix of factors that are far beyond the scope of this paper. Three factors in this complex mix are worth mentioning, however:

Prime Minister Jean Chrétien reiterated a commitment to economic growth in his address at the closing ceremonies of the Summit of the Americas 2001. "Our meeting has also enabled us to discuss our plans for the economic integration of the Americas, and measures that we can take to translate the benefits of growth into greater prosperity for all our fellow citizens. With this in mind, our objective continues to be one of creating mechanisms and instruments of cooperation that will promote sustainable growth, increasingly equitable distribution of economic benefits and greater financial stability."

Demand for water has been growing exponentially. If world water demand continues to grow faster than population (as it has since 1950), it will double in 35 years. At the same time, it is getting harder to expand the accessible supply because of groundwater over-pumping and pollution of freshwater resources.

The Ontario Medical Association warns that "air pollution is a public health crisis in Ontario." Air pollution caused approximately 1,900 premature deaths in Ontario in 2000.

More than half of the forests in seven of the 10 major forest regions in Canada have been fragmented by roads and other access routes.

❖ Canada's federal structure limits federal government involvement in matters under provincial jurisdiction, such as resource management, land-use planning, public education, health care, primary jurisdiction over lakes and rivers and many other areas intrinsically connected to SD.[7]

❖ the current governing party, in power since 1993, follows a strategy of managing national-unity issues by 'treading lightly' on environmental issues that might impact provincial jurisdictions.[8]

❖ Canada's trade policies and relations – especially its trade relationship with the United States – exponentially increase the complexity of achieving SD.

While these issues pose detailed problems for the implementation of SD in Canada, we can address the overall issue of implementing SD in a developed northern economy. This report will focus on areas where the federal government may be able to break some of the logjams keeping Canada from participating meaningfully in SD.

THE CHALLENGE OF A VISION OF SD IN THE NORTH

The greatest challenge for countries such as Canada is that SD requires they take steps toward a destination they cannot currently imagine. In other words, while leaders from all parts of Canada can envision a prosperous economic future for the country, they cannot envision one that differs very much from the *status quo.*[9]

SD, by contrast, proposes that we find ways to live that meet our needs but that do not compromise the capacity of future generations to meet their needs. (Of course, current generations have already compromised the capacity of future generations to meet their needs. There is much less clean water[10], clean air[11] and untouched wilderness[12] than there was even a generation ago; there are far fewer viable fisheries[13], viable forests[14], accessible fossil fuel resources[15], and much less arable land.[16] (Even mother's milk contains toxic chemicals.[17])

A key objective of SD is the belief that we can restore damaged ecosystems while also preventing further damage to the ecosphere. But despite this hopeful vision, SD actually only evokes a clear sense of progress in Southern nations, where it can be seen as promising a tremendous improvement in living conditions for millions of people.

> The concept of sustainable economic development as applied to the Third World... is directly concerned with increasing the material standard of living of the poor at the "grassroots" level, which can be … measured in terms of increased food, real income, educational

services, health care, sanitation and water supply, emergency stocks of food and cash, etc., and only indirectly concerned with economic growth at the aggregate, commonly national, level. In general terms, the primary objective is reducing the absolute poverty of the world's poor through providing lasting and secure livelihoods that minimize resource depletion, environmental degradation, cultural disruption and social instability.[18]

The vision is much different in the North. Even though poverty, insecurity and social strife are too common[19] even in the North, the overall standard of living for most people in Northern countries is as high as it has been in the history of humankind. An average middle class family in a suburban three-bedroom home with municipal services, access to public education and health care, a vehicle, a cottage and a retirement fund lives in safer, healthier, more stable and comfortable conditions than even royalty did 200 years ago.

Therefore, the fundamental conundrum SD poses for governments is how to maintain this standard of living – let alone improve it – when to the best of our understanding it is simply not sustainable. To impose on the planet the burden of 8.5 billion[20] people living in the same way as 400 million North Americans do now would dramatically increase rather than reduce the threat to future generations.

The answer most often offered for solving this conundrum is to maintain current standards of living in wealthy countries while reducing the "footprint" created by this lifestyle through improvements in resource use, urban design, etc.[21] However, while this answer appears to be straightforward, there are no programs currently in place to reduce the Canadian "footprint." As noted in the description of Canada's performance vis a vis the Kyoto Protocol, Canada is having only limited success controlling what it emits, let alone what it consumes.

The ecological footprint is an accounting tool for ecological resources. Categories of human consumption are translated into areas of productive land required to provide resources and assimilate waste products. The ecological footprint is a measure of how sustainable our lifestyles are. The ecological footprint of the average Canadian adds up to 4.8 hectares. This is the total amount of land required for food, housing, transport, consumer goods and services. Energy is a large component of the footprint: some 2.9 hectares are necessary for the long-term provision of a biological substitute for fossil fuels. The second largest component, at 1.1 hectares, is agriculture for food and consumer goods. Forestry takes up 0.6 hectare to supply the fibre for housing and consumer goods. Finally, the built environment takes up 0.2 hectares for housing and transport.

Approximately half of the world's forests have been cleared, and another 30 percent have been fragmented, degraded, or replaced by secondary forest.

The North American fishing industry faces serious challenges to its sustainability, as illustrated by the recent near collapse of many New England fisheries, the collapse of the Canadian cod fisheries, and the reported overfishing of more than 100 fish stocks in North America.

The *BP Statistical Review 1998* predicts that known oil reserves are likely to last for 40 years at today's consumption rates, gas for 65 years, and coal for 219 years.

Between 1901 and 1996, Canada's cultivated land area (land under crops and summer fallow) expanded five-fold. In contrast, the supply of dependable agricultural land (Classes 1, 2, and 3 of the Canada Land Inventory Capability Classification for Agriculture) dropped by an estimated 16 percent over this period because of conversion to urban and other non-agricultural uses.

Breastfed babies receive 12 percent of the lifetime allowable dioxin exposure and seven percent of the average lifetime burden of PCBs in their first six months.

IMPROVING IMPLEMENTATION OF SD

The problem with developing SD initiatives further in Canada derives in part from the fact that as a country with a still largely resource-based economy, the "obvious answers" to SD (reduced consumption, for example) look too much like the opposite of 'growth' to public decision-makers. This makes these answers difficult to adopt either as a political position or a policy presumption.[23] Instead, governments appear to hope that sustainable solutions will arise largely through market forces and require no significant changes to the economic *status quo*. (As Herman Daly has said, "The growth ideology is extremely attractive politically because it offers a solution to poverty without requiring the moral disciplines of sharing and population control."[24])

> The level of wealth, institutional infrastructure and social safety nets in place in OECD [Organization for Economic Cooperation and Development] countries may appear to make the goal of environmental sustainability a more attainable one in those countries. However, recent experience has demonstrated that the required changes in policies and behaviour may be difficult to achieve in the face of *ignorance, inertia, and vested interests*.
>
> – OECD report[22]

In other words, the federal government cannot see a future that is both sustainable and as prosperous as today, so it opts for prosperity and gambles with the future.

The policy logjam that has resulted from this mentality needs to be broken. Canada needs to go to Rio +10 with a better action plan than it has now and it needs to make that plan a road map to the future. As hard as it may be for some Canadian political leaders to imagine a prosperous future based on ecological sustainability, the alternative promises to be a great deal worse.[25]

PART TWO – SD CONCEPTS

THE DEFINITION OF SUSTAINABLE DEVELOPMENT

The idea of "sustainable development" existed long before *Our Common Future*[26], but activity surrounding the concept has increased greatly since 1987 – most notably in the area of tinkering with the definition itself. There have been literally hundreds[27] of proposed definitions of SD.

In seeking a sustainable future for humanity, defining the objective seems like the first and most important step. However, the proliferation of definitions of SD and the accompanying debate over its meaning suggest that there may be a serious problem: The inability to arrive at a common definition suggests that people don't really know what SD is. It follows that it will difficult to reach an objective we can't define.

Some have sought to improve on the Brundtland definition by appropriating the language of financial advisors. These state that sustainable development lives off the "interest" of the natural world and leaves the "capital" unimpaired.

> The core of the idea of sustainability, then, is the concept that current decisions should not impair the prospects for maintaining or improving future living standards... This implies that our economic systems should be managed so that we can live off the dividend of our resources, maintaining and improving the asset base. This principle also has much in common with the ideal concept of income that accountants seek to determine: the greatest amount that can be consumed in the current period without reducing prospects for consumption in the future.[28]

Something is missing from this definition, however. It seems to assume that a society that preserves natural capital will also enjoy social benefits, such as equity and personal liberty.

By contrast, other definitions seeking to improve on Brundtland seem to jump to the future leaving the present undescribed.

> [Sustainability of development] is concerned with (a) the rights of future generations to the services of natural and produced assets and (b) whether the formal and informal institutions which affect the transfer of assets to future generations are adequate to assure the quality of life in the long-run.[29]

In 1932, Pigou noted "there is wide agreement that the state should protect the interests of the future in some degree against the effects of our irrational discounting and of our preference for ourselves over our descendants."

The Canadian Commission on Conservation stated in 1915 that "Each generation is entitled to the interest on the natural capital, but the principal should be handed on unimpaired."

But ignoring current realities leaves these definitions lacking.

> There would be, however, something distinctly odd if we were deeply concerned for the well-being of the future – and yet unborn – generations while ignoring the plight of the poor today.[30]

The Brundtland report itself placed great emphasis and priority on correcting the growing disparity between the global rich and poor.

> "the concept of 'needs,' in particular the essential needs of the world's poor, *to which overriding priority* should be given…"[31] [emphasis added]

The Brundtland definition says that achieving sustainability requires *first* that we achieve development that meets the needs of *current* generations.

> There are many dimensions to sustainability. *First*, it requires the elimination of poverty and deprivation. *Second*, it requires the conservation and enhancement of the resources base that alone can ensure that the elimination of poverty is permanent.[32] [emphasis added]

The Commission's emphasis on the elimination of poverty echoes in the following definitions:

> Sustainable development [is] development that is likely to achieve lasting satisfaction of human needs and improvement of the quality of human life.[33]

> Sustainable development is a complex of activities that can be expected to improve the human condition in such a manner that the improvement can be maintained.[34]

These definitions appear to assume that "lasting" "maintained" improvements in the human condition include as a prerequisite the preservation of the biological systems upon which human life depends.

Still other definitions of SD articulate both goals of thriving human communities (which assumes a thriving economy) and a thriving ecosphere:

> Ecologically sustainable development can then be thought of as changes in economic structure, organization and activity of an economic ecological system that are directed towards maximum welfare and which can be sustained by available resources.[35]

> A sustainable society implicitly connotes one that is based on a long-term vision in that it must foresee the consequences of its diverse activities to ensure that they do not break the cycles of renewal; it has to be a society of conservation and generational concern. It must avoid the adoption of mutually irreconcilable objectives. Equally, it must be a society of social justice because great disparities of wealth or privilege will breed destructive disharmony.[36]

> The sustainable society is one that lives within the self-perpetuating limits of its environment. That society... is not a "no growth" society... It is rather, a society that recognizes the limits of growth... [and] looks for alternative ways of growing.[37]

It is important to note that all the definitions cited here rely on something driving sustainable outcomes: either careful resource stewardship or equitable distribution of human welfare or some other force. It should be noted that behind all of these drivers are people – sustainable solutions arise from human beings.

THE NEED TO DEFINE MEANING

The debate about the definition of SD shows no signs of resolving itself soon. There are at least three ways to understand this preoccupation with defining SD. German novelist Günter Grass offers one explanation:

> "Only what is entirely lost demands to be endlessly named; there is a mania to call the lost thing until it returns."[38]

Grass means in this statement – taken from a short essay on loss – that the creative process arises from the need to replace or rebuild something that was lost. This understanding suggests that the struggle to define SD is part of a process where people try to reclaim a future that they fear has disappeared or is under threat of disappearing.

Another possible explanation for the unending debate on how we should describe SD is:

> Definitions tacitly shape the perception of problems, highlight certain solutions, and consign others to oblivion, feature certain types of social actors and marginalize others."[39]

This suggests that people will seek to revise the definition to suit their own understanding of who should act and what actions are right.

A third perspective suggests differences in conceptions of SD are unavoidable:

> The concept of sustainability is value-based, values that can vary between cultures and change over time. Thus, the nature of what is considered needed or desirable can also shift. For those seeking a crisp, unchanging definition, there will be frustration.[40]

These three perspectives can be paraphrased:

a) that our struggle to define sustainable development is an inevitable component of our struggle to attain the thing itself;
b) that the act of defining sustainable development will require we select certain strategies and participants over others and that these choices will have an impact on the eventual success of the endeavor; and
c) that the concept is necessarily relative and, to one extent or another, constantly changing.

Set out like this, it is evident that these three perspectives are not mutually exclusive. Together they convey the complexity and difficulty not just of achieving SD but of conceptualizing the goal itself.

THE TREATMENT OF THE DEFINITION IN CANADA

"Ultimately, sustainable development will result from our individual and collective efforts to find solutions to resource development challenges that are good for our communities, good for the economy and good for the environment."[41]

As the review of the debate over the definition of SD suggests, there will always be some disagreement about the goals and purposes of SD – disagreements over how SD should be implemented, what priorities it should address and what results it should seek.

Adding to the problem is the fact that this difficulty and complexity around goal and priority setting is only weakly acknowledged in federal programs. The *Auditor General Act* – the legislation mandating SD strategies for 28 federal agencies and departments – defines SD using Brundtland verbatim:

> "sustainable development" means development that meets the needs of the present without compromising the ability of future generations to meet their own needs[42]

In the section dealing with the purpose of the Environmental Commissioner, the Act also notes that SD is an evolving concept and provides a list of means by which SD may be achieved:

> **21.1** The purpose of the Commissioner is to provide sustainable development monitoring and reporting on the progress of category I departments towards sustainable development, which is a continually

> evolving concept based on the integration of social, economic and environmental concerns, and which may be achieved by, among other things,
> (*a*) the integration of the environment and the economy;
> (*b*) protecting the health of Canadians;
> (*c*) protecting ecosystems;
> (*d*) meeting international obligations;
> (*e*) promoting equity;
> (*f*) an integrated approach to planning and making decisions that takes into account the environmental and natural resource costs of different economic options and the economic costs of different environmental and natural resource options;
> (*g*) preventing pollution; and
> (*h*) respect for nature and the needs of future generations.

The debate around SD suggests that at this stage of the process we can know with only very limited certainty what, in fact, SD is and what the solutions leading to it will look like. However, this difficulty is not always acknowledged in the federal strategies:

> Ever since the World Commission on Environment and Development first popularized the phrase 'sustainable development' … there has been a consensus that sustainable development is the process of integrating and balancing the three 'pillars of sustainability' (economic sustainability, social sustainability and environmental sustainability) to improve the health and living standards of all people around the world.[44]

This passage somewhat overstates its case. The phrase "sustainable development" has not been "popularized." As recently observed by the Chair of the National Round Table on the Environment and the Economy, most people are not familiar with the term at all.[45] Moreover, there is no consensus in Canada or anywhere else that SD is the process described in this passage.

Based on the recognition that SD is actually an evolving concept, it is imperative that SD programs focus on areas that the public perceives to be of high priority. (The federal government has recently proposed an indicator project that may also help guide how priorities are set.) It is also advisable to set short-term and medium-term goals along with longer-term objectives. Finally, any strategy should be measured and evaluated for its SD effects within a reasonable time of its commencement. All of these steps can help keep the SD strategy on track and in tune with evolving priorities and goals.

The last section of this report sets out the four-step plan to test-drive *bona fide* SD solutions and discusses why defining a high-priority objective for action (as best as can be done) is the necessary first step. The next section

deals with the 'nuts and bolts' of SD – the component parts and mechanisms of SD programs and how they have tended to be construed and applied in Canada.

SD DRIVERS AND MECHANISMS

In previous sections, this paper briefly mentioned the concept of "drivers" of sustainable development. By "driver," we mean a force that compels action. Our research has revealed a tendency within the federal SD strategies to confuse the concepts of SD "drivers" and "mechanisms."

It has already been stated that SD requires that some fundamental changes be made to how we live. It is this perceived need to change that is the ultimate driver of SD.

However in Northern coutries, where the potential problems caused by unsustainable growth seem remote or solvable by ingenuity or substitution, these concerns have not been a strong driver of a public policy response to date.[46]

Accordingly, there are few strong drivers apparent in Canadian SD strategies.[47] Instead, innovation (which is more properly a *response* to a driver) is incorrectly identified as a driver in some SD strategies. Occasionally rules and tools (see discussion below) are identified as drivers of SD.[48] In fact, neither innovation nor rules-and-tools can be considered drivers of sustainable outcomes.

In the sections below, we discuss how Canada's SD performance and strategies could benefit from sorting these concepts out. We start with indicators, then innovation, then rules-and-tools, and, finally, actors.

INDICATORS

Early on in the development of SD programs, indicators – tools of measurement – took on a central role. Agenda 21 articulated a framework of indicators to assist countries in developing the framework of their SD strategies.[49] Grassroots indicator projects such as Sustainable Seattle have spread across North America.[50]

Indicators are valuable tools in achieving SD. They are useful communications devices and helpful decision-making aids. However, they also have their limitations.

> Those who have worked for years to develop better indicators have been frustrated by the *lack of success at achieving social change* or even institutionalizing social reporting. Much emphasis has been placed on the agenda-setting role of indicators and how descriptive

indicators can be used effectively in the public debate. Our concern is that advocates, especially at the community level, then wonder what comes next: How can they actually effect change in what they are describing? There may be an important rhetorical or persuasive role to be played by descriptive indicators in raising awareness but *one can not expect those same indicators to effect change in the conditions*."[51]

This statement identifies one of the most common mistaken assumptions about indicators: that once we have the information, we will act.

This is not to say that indicators cannot be put to good use and, in fact, Canada's performance in its SD initiatives could be improved if it focused on the real strengths of indicators.

INDICATORS AND SD – BASIC FUNCTIONS

In relation to the development of public-policy mechanisms designed to achieve the goals of SD, indicators perform three basic functions:

- they describe trends;
- they can provide enough information to identify areas for policy response;
- and they can, once programs have been put in place, assist in evaluating how effective the programs are in achieving sustainable outcomes.

DESCRIBING TRENDS

Indicators are forms of measurement that can inform decisions. They measure changes in amounts or qualities of things over time.

A major debate currently raging is how we should be measuring social well-being.[53] For many years, the Gross Domestic Product has been used to measure well-being and has been used as much to retroactively justify as to proactively formulate public policy.[54] Even economists know that the GDP is an imperfect measurement of the public good, but governments and industry associations still use it when it suits their purposes to support their actions and positions.

In reaction to the privileged position and inherent distortions of the GDP, an alternative measurement movement has sprung up. Redefining Progress,[55] an American economic and social policy think tank developed the Genuine Progress Indicator (GPI) in 1994. The GPI attempts to build a more comprehensive and accurate measure of well-being. The GPI starts with the GDP – which does not distinguish between "good" economic activity and "bad," so that money spent on environmental clean up, for

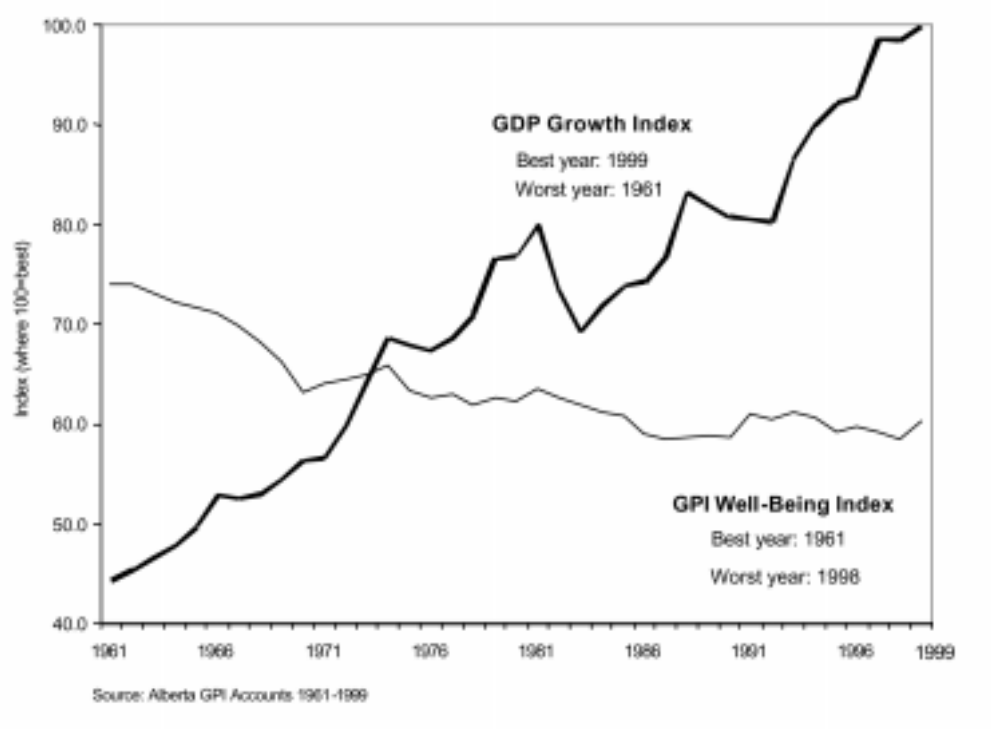
The discussion document for the Leaders' Forum held in Ottawa in April 2000 provides a long list of the potential powers of indicators:

> Indicators of sustainable development would enhance the capacity of Canadians to:
> - ❖ Improve planning and make better-informed and responsible decisions
> - ❖ Promote improved social, cultural and economic and environmental conditions
> - ❖ Anticipate, prevent or lessen environmental and social stresses and related problems that can be costly for society
> - ❖ Better allocate limited financial resources on activities crucial to achieve sustainable development
> - ❖ Contribute to international discussion aimed at advancing sustainable development
> - ❖ Advance our knowledge of the sustainable development process through the focusing of research and analysis on specific issues and processes
> - ❖ … and be capable of fuelling continuous improvement.[52]

However, this list is purely theoretical. Nothing in Canada's current SD programming or in any of the indicator projects that have proliferated throughout North America have achieved these results.

example, helps plump up the GDP – and then subtracts the costs of social "bads," such as sales of anti-depressant drugs – and uses the remainder as a truer indicator of how well things really are going.

In Canada, the Pembina Institute[56] in Alberta advocates alternative measurement of the social good. The Institute recently released a report on sustainability trends in Alberta. The following graph summarizes the report's results.



The report finds that, while the GDP index showed general improvement between 1961 and 1999, when corrected with information from other indexes measuring societal, human and environmental health, the Genuine Progress Index fell consistently over the same period.

The report also notes trends showing that genuine improvement has not occurred in real wages since 1982, that taxes have increased steadily, as has household debt, underemployment and unemployment. The gap between rich and poor continues to grow. "At the same time, suicide, divorce, crime, problem gambling and youth drug use are higher than they have been in the past, while voter participation is lower."[58]

Another example of a set of indicators that measure trends is World Wildlife Fund's annual "Living Planet" report[59], which shows trends in species populations and correlates them with global "footprint" (consumption) analysis. The intent of this analysis is clear. WWF wishes to demonstrate a causal connection between global consumption patterns and species and habitat loss.

While governments invoke the GDP to validate their policies and to vindicate the *status quo*, the alternative measurement movement invokes the GPI to challenge public policy and vilify the *status quo*. Their implicit argument is that public policy should change to reverse the trends their indicators show.

But even presented with the best information, we may choose not to act. The following quote describes one scientist's reaction to the resistance of organized religion to the concept of evolution. It serves the similar purpose in this discussion of describing the limitations of information as a driver of social-policy responses.

> We like to believe that if we secure adequate data bearing on any scientific problem, then anybody with normal intelligence who takes the trouble to become acquainted with these data will necessarily arrive at the same conclusion regarding the problem in question. We like to speak of conclusions demonstrated, settled, proved, and established. It appears, however, that no evidence is powerful enough to force acceptance of a conclusion that is emotionally [or politically] distasteful.[60]

It follows that credible information is only one of a number of elements required to build a new policy response to a particular problem. Alternative indicators of social welfare are rhetorically potent. However, indicators, "bad" and "good" all have their limits. They do not provide solutions. They do not explain trends. That is, unless specifically designed to do so, they do not consistently and truly reveal causal relations between indicators.

For example, if GDP goes up and suicide rates go up, how do we attribute with any certainty a causal connection between these two figures? More suicides may mean more funerals and, therefore, more growth in the GDP. Viewed this way, one could conclude that the increased number of deaths has influenced the growth in the GDP. Or the numbers could be understood to show that the stressful nature of people's work in the growing economy is driving more of them into suicidal depression. Viewed this way, one could conclude that the growth in the economy has caused the increase in deaths. Or the numbers could be interpreted to show that the benefits of a growing economy have apparently not prevented a growing number of people from choosing to end their own lives. Viewed this way, one might be able to point out the mistake in the assumption that a growing economy really increases human happiness. Or, simply, the data may support the finding that there is be no causal relationship between GDP and suicides. The increase in both indicators may just be a coincidence.

Indicators all on their own cannot *diagnose* problems any more than a thermometer can show whether a patient has the flu or yellow fever, let alone cure the disease.

Finally, it is a somewhat dubious assumption that once public policy makers (or, for that matter, the public) see the error in the GDP that their first and natural reaction will be to find solutions to all the problems the GPI reveals. One important aspect of the Pembina GPI report to note is that these alternative measurements are not news. The drop in real income for families across Canada has been documented by Statistics Canada for years.[61] The same is true for the increasing gap between rich and poor.[62] These trends have been known for a long time, yet public policy has not appreciably addressed them.

"Three key themes have emerged over the last generation among families with young children. First, a growing number of families have no earners. Second, most two-earner households have seen declining incomes over the last decade. Third, two-earner households at the upper end of the family income spectrum are commanding more through the market, but not by putting in more hours of paid work."

In 1996, the top 10 percent of families made 314 times as much as the families in the bottom 10 percent (an average $137,000.00 compared to an average annual market income of less than $500).

In summary, indicators are useful for measuring trends. However, there are a myriad other factors that must come into play in order to trigger a fully fledged, workable public-policy response – SD or any other kind. The alternative measurement movement has correctly noted that we need richer and more extensive information than merely the GDP to evaluate our progress. However, information itself is only one piece of the required machinery.

INDICATORS IN CONTEXT: USEFUL TOOLS TO MEASURE IMPACTS OF SD PROGRAMS

The previous section describes how indicators illustrate trends in amounts of counted things over time. We noted that indicators have no capacity to identify causal links – they do not diagnose problems and they do not prescribe solutions. The discussion also suggested that indicators do not compel public-policy responses.

This raises an important question. How can indicators be so limited and yet be considered so central to SD theory?

It seems that as indicators have moved from SD programming applied in the South to SD initiatives in the North, there place in SD programs has changed. In the transition, indicators transmogrified from a component part of wholly developed SD strategies to stand-alone initiatives where communities – Sustainable Seattle was the first widely-known example[63] – spend months and years developing lists of indicators and then tracking and reporting on changes in the indicators over time.

These indicators are supposed to make SD happen by influencing public debate and spurring public action, but most indicator programs identify the more modest goals of raising public awareness of SD and increasing public understanding of the linkages between social, economic and envi-

ronmental issues. Frustration often develops as communities find that the numbers continue to show negative trends and discover that they have limited recourse or power to change the trends.

These programs, including several in Canada, may be making progress in the area of public education about SD. They also show reasonably conclusively that indicator projects do not make SD "happen." The act of measurement – even when it is measurement of things like the number of salmon returning to spawn in a stream or the number of new housing starts in a downtown core – may or may not compel change.

So how are SD indicators supposed to work? To answer this question, we will use examples from the Hamilton-Wentworth Vision 2020 project. The Southern Ontario city on the shores of Lake Ontario began a process in 1989[64] in which they first consulted with the local community to develop a set of indicators that were meant to inform larger themes such as "Local Economy" and "Consuming Less Energy."

Since 1993 the project has tracked these indicators on the understanding that they will show progress toward the goals set for 2020. The actual results have been, for the most part, inconclusive or negative, with only about 30 percent of the indicators showing clear positive trends.

> This year's signposts point to some areas of concern. Transit ridership continues to decline and the number of cars *per capita* continues to increase. Agricultural land continues to be converted for other uses and we have yet to see a consistent increase in downtown housing starts…. All four of these indicators point to the complexity of these issues and show that we still have a long way to go.[65]

While public participation in creating indicator sets is obviously valuable and necessary, the indicator sets in the Hamilton case tend to be miscellaneous and complicated. For example, the Hamilton Vision 2020 set includes easily understandable indicators of environmental health – air and water quality – but also includes other indicators that are properly not indicators of environmental or economic or social health, but are, rather, means used to achieve improvements, such as "Consuming Less Energy," and "Changing Our Mode of Transportation." Part of this complexity arises from the fact that, for the Hamilton project at least, stakeholders had to craft indicators out of existing data.

However, that the Hamilton indicator project confuses means for ends is not as serious a problem for the undertaking as is the shortage of means by which to achieve the ends set out in its vision for 2020. There are some municipal, provincial and federal programs that should help to bring Hamilton closer to its vision, but there are some program gaps as well.

For example, among many others, Hamilton Vision 2020 identified two SD goals:

> In the area of Land Use, it set the objective "to curb urban sprawl" and selected as an indicator of progress toward this objective the number of housing starts in the Hamilton downtown core
>
> In the area of Agriculture and the Rural Economy, it set the objective "to ensure the preservation of sufficient agricultural land to grow food" and selected as an indicator if progress toward this objective the number of hectares of agricultural land lost each year to amendments to official plans.

Regarding housing starts in the downtown core, the data in 1998, tracking three years of activity, was inconclusive. Regarding agricultural land, the data showed the loss of about 100 hectares of agricultural land to other uses. Both indicators were approximate measures in that only new housing was counted in the Vision 2020 report (leaving uncounted how many housing units were created downtown through renovations of existing buildings) and the agricultural land indicator did not track amendments to regional plans (so losses may actually have been higher).

The significant point about these indicators and about these results is that, although they purport to be about tracking progress, there were for the period 1995 to 1998 no incentives to build residential units downtown or disincentives to prevent the conversion of agricultural land. In the case of these specific indicators, then, what is being recorded is not *progress* so much as the impact of no new programs or policies on these areas of activity. As such, the indicators could be used as the starting point for a rationale to develop incentives to develop housing downtown and to develop new protections for agricultural land.

The Vision 2020 program provides further proof that measurement by itself may achieve some benefits – increased public awareness, greater community involvement in SD – but it does not make SD happen.

HOW TO MAKE INDICATORS WORK – A HYPOTHETICAL EXAMPLE

There is a way to use indicators as component parts of a larger SD plan.

Let's use the Hamilton Vision 2020 project as a subject for a hypothetical example – for the thriving community of Hypothetica – and use the same indicators discussed above.

As part of the Hypothetica's SD project, stakeholders identified the SD objective of preserving agricultural land in order to protect the capacity of future generations to grow food. Working from population projections for the next 50 years, the stakeholders determined that there could be no loss of agricultural land at all if the region was going to meet its food needs. Using the same population projections, stakeholders also determined there was going to have to be a 50 percent increase in housing in the Hypothetica region over the same period. Finally, the stakeholders looked at density distributions in the developed areas of Hypothetica.

The stakeholders concluded from their research that the best way to provide housing and to preserve agricultural land was to make it more attractive to build in the city than on farmland. They also felt very strong disincentives would be required to keep people from converting agricultural land to other uses.

To achieve the sustainable outcome described by the stakeholders, the City of Hypothetica created some property-tax incentives to promote residential infilling and renovation. The permitting system it developed together with these incentives provided the data for the SD indicator "residential infill development."

It was more difficult for the City to implement disincentives to convert agricultural lands. Instead, it undertook, with other municipalities in important farming regions, to lobby the provincial government to enact amendments to the Planning Act that would provide stronger protections for agricultural land. The stakeholders agreed that they would track agricultural conversions in the meantime and see if the increased incentive to develop residential units within the city alleviated population growth pressures on agricultural land.

After tracking the indicators – 1) permits issued for residential infill development, 2) progress in the municipality's attempts to lobby the provincial government, and 3) Official Plan Amendments converting agricultural land to non-agricultural use – for three years the stakeholders noted that the infill development incentives appeared to be ➤

Step 1
Identify SD Objective

Step 2
Set Goals/Targets and Develop Rules and Tools to Meet the Objectives

INCENTIVES
Property-tax incentives to encourage residential building within city limits

TRACKING
Monitor the number of building permits issued

Create a direct link between the means and how it is measured

Step 3
Measure and Evaluate

RESULT
Residential infill development increases

CHECK FOR SOCIAL, ENVIRONMENTAL AND ECONOMIC IMPACTS

- ✓ more local businesses
- ✓ safer neighbourhoods/ lower crime rate
- ✓ increased transit usage
- ✓ no growth in car usage

Step 4
Test for Sustainability

The Hypothetica Example: Making SD Indicators Work

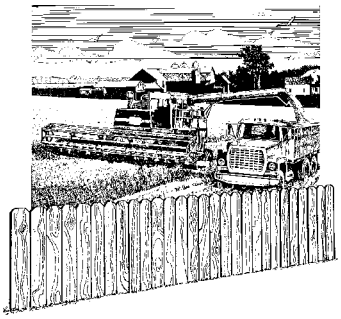
Select sustainable outcome first

SD OBJECTIVE
Preserve agricultural land to protect food sources

METHOD
Create incentives to build housing in urban areas and disincentives for building on agricultural lands

Create means to achieve the objective

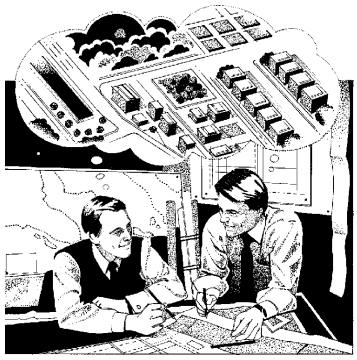
DISINCENTIVES
Difficult for city to influence land uses outside its borders



CAN'T DO
Can't restrict development of agricultural land

CAN DO
Can lobby provincial government to amend *Planning Act*

TRACKING
Monitor the number of development applications affecting agricultural lands



Be realistic about what can and can't be done

RESULT
Province refuses to amend *Planning Act;* agricultural land development continues

REFORMULATION OF SD STRATEGY
Work with other municipalities to lobby federal government to increase agricultural land protection

Check strategies for effectiveness

working. There had been a sharp increase in this kind of development. Density profiles showed a net growth in the population in the city core. Local businesses were benefiting from the increase in customers and new businesses were opening to serve the increased population. Hypothetica Neighbourhood Watch programs in some redeveloped areas reduced the crime rate and the cost of policing the streets. Other less conclusive but also promising signs were: increased ridership on public transit; the number of cars traveling into the downtown core each day held relatively steady even though population grew, and there was an increase in applications for home office permits.

However, none of these apparently positive outcomes had an appreciable impact on agricultural land conversions. Each year, another substantial piece of arable land was lost to other uses. The municipality's attempts to lobby the province were unsuccessful. Checking the population projections again and confirming that the region could not afford to continue to lose arable land at current rates, the stakeholders resolved to change tactics. They formulated a plan to partner with municipalities across Canada and engage the federal government in a program to protect agricultural land. They gave the plan a three-year time-frame and resolved to evaluate it for success at that time.

THE HYPOTHETICAL EXAMPLE EXPLAINED

In this hypothetical example, Hypothetica uses its indicators as part of an overall plan to achieve a sustainable outcome.

In particular, the following should be noted:

The stakeholders **selected the sustainable outcome first** – that is, to meet regional food-growing capacity requirements and housing requirements based on population projections.

Note also that the stakeholders picked two of the three fundamental human quality-of-life needs: food and shelter. They erred on the side of caution and assumed that all of the food grown locally would be consumed locally. This is wise because it may or may not be the case that 50 years from now imported food will be cheaply and readily available.

They **created a means to achieve the objective** – they created an incentive to encourage the desired activity of residential infill development

They **established a direct link between the means** (residential infill development) **and how it was measured** (number of permits issued for residential infill development) ➤

They were **realistic about what they could and could not do** – they could not create a disincentive to development on agricultural lands, so they chose instead to pressure the provincial government to provide greater protection through the planning act.

They did not establish a means to track "progress" in protecting lands, but did track agricultural land conversion rates to see if the area they could influence – infill development – would have any impact on development pressure on agricultural land.

They **checked their strategies for their effectiveness**.

Permit data indicated that the infilling program was working. However, the agricultural land conversion rate was unaffected and the province had refused to make changes to the planning act. They therefore changed the second part of their strategy to focus on the federal government and what it could do to protect agricultural lands and established a timeline for evaluating the effectiveness of this revised strategy.

Where available and applicable**, they used other information to check for the social, environmental and economic impact of their strategy.**

They evaluated corroborating evidence of the net benefits of higher residential density: better local business; more local business; safer neighborhoods. Less demonstrably connected, but probably related were the beneficial signs of no increase in the number of cars downtown and increased transit ridership. By making these comparisons, the stakeholders used existing data not as indicators themselves (which is what the real Hamilton did), but as additional information to test what the indicators they had developed were telling them.

They were **prepared to accept the limits of their strategy**. When they saw that the success of their residential infill development strategy had no appreciable impact on preserving agricultural land, they moved on to seek other solutions.

This hypothetical provides an example of how indicators can be used in a larger SD program. SD indicators measure the effectiveness and ongoing success (or lack of success) of SD strategies. Without a larger strategy, indicators may be just data. Inside a strategy, they are a crucial component showing trends and providing reasonably (but not perfectly) reliable signals that progress is really being made.

THE NATIONAL ROUND TABLE FOR THE ENVIRONMENT AND THE ECONOMY (NRTEE) NATIONAL SD INDICATOR PROJECT

The discussion in the previous section describes a method in which SD targets are set, tools to achieve the targets are developed and indicators are used to track the success or lack of success of the tools.

In a recent speech in Toronto, Federal Minister of Finance Paul Martin described another proposed use for SD indicators.

> I am speaking about the environmental indicators initiative – an initiative that seeks to advance the science of measuring progress towards a more sustainable economy.… I regard these indicators as a continuous call to arms – an ongoing protection against environmental complacency. …[B]ecause we lack the right measuring tools, we too often fail to take full account of natural capital in the decisions and choices we make. That is why environmental indicators are so important. … Measuring progress is about giving governments, companies – and indeed all Canadians – the information they need to ensure that the economic growth we enjoy is sustainable. … What is even more important is that they force decision making. They will act as a caution against inertia. That is – fundamentally – why indicators are so important. First, they will show us if we are using our natural resources properly, if our demand for renewable resources such as timber and fish is outstripping the environment's capacity to replenish them.… Second, indicators can tell us about the health of our ecosystems… Third, they can tell us what our demand for resources means for future levels of economic activity and for the prosperity of our children and grandchildren. Fourth, and most significantly, indicators allow us to track how key environmental factors are changing over time. This is important, for it is only by observing trends that one can acquire information that is truly meaningful. … In short, what these new tools will give us is the hard, quantitative data that will give us a sound basis for environmental and economic policy in the future.… But they can help us to chart a better course for the future. The advent of such indicators will permit, in turn, the development of tangible new targets for progress.[66]

The indicator project described by the Minister of Finance purports to perform one of the functions of indicators discussed above – to describe trends. According to the analysis in earlier parts of this report, the Minister of Finance's expectations of how the indicators may be used may not be met. There is, however, a substantial difference between this project and the "alternative" measurement projects such as the GPI and the Living Planet Report. That difference is that the federal government is using these indicators. The potential for seeing real change arise from their use is greater for that simple reason.

In order for the project to succeed, it must provide alternative measures and not simply perpetuate the distortions and omissions of the GDP. This may be where the project still needs some work.

Early in 2001, the National Round Table on the Environment and the Economy announced a two-day event in Ottawa that signaled a possible step forward in the implementation of SD in Canada. Over March 27 and 28 2001, the NRTEE hosted first a conference and then a workshop on a proposed national set of SD indicators. The draft discussion document for the workshop noted that "the Minister of Finance [stated] that these types of indicators 'could well have a greater impact on public policy than any other single measure we could introduce.'"[67]

The discussion document for the NRTEE Conference appears to understand some of the limitations of indicators reasonably well, even if it also overstates what indicators can do:

> Determining whether society is on a desired course requires both a clear goal and a system that supplies decision makers with the signals they need to make realistic choices. Indicators represent an important part of such a measurement system since they summarize key information about complex systems.[68]

The NRTEE SD indicator "framework" consists of three categories of "capital" for which the NRTEE proposes to develop indicators in order to see which may be running down due to the pressures of a growing economy. The chair of the Round Table, Dr. Stuart Smith, described the project's vision: "Another set of indicators, to set along side GDP, to show which of our capital stocks are declining to the point where they put our economy in jeopardy." He said that the idea behind the project was to have indicators in place that would sound a warning when current economic activity threatened to take one or another forms of "capital" past a particular threshold.

Some people at the workshop expressed concerns with the idea of thresholds. They noted that, as with the eastern cod fisheries, thresholds tend to reveal themselves only after they have been crossed.

Another point to the project, explained at the workshop by Mr. Robert Smith of Statistics Canada is that the indicators' purpose is to assist decision-making focused on sustaining Canada's economy.

The three forms of "capital" developed by Statistics Canada articulate a more expansive set of measures than the GDP. In other respects, however, the forms of capital are so constrained in what they measure that they could well perpetuate rather than correct the distortions of the GDP.

For example, one of the forms of capital is "human capital," but only that capital represented by Canada's paid workforce. The proposed indicators for this capital set are health and education, based on the understanding that a healthy, educated workforce is necessary to sustain the economy.

This proposed measure ignores the role of unpaid labour in sustaining the economy – the work people do to maintain households, raise children and contribute to the vitality of the community. It also ignores a problem in the current economy: that human capital is *under-exploited*, with many people working more than one low-paying, low-skilled job just to make ends meet.[69] By focusing on health and education of members of the paid workforce, the NRTEE indicator may obscure important information about the economy and emphasize misleading signals about the health of Canada's economy, just as the GDP does.

The NRTEE SD Indicator Project is still under development and certainly bears watching, but the public-policy response will be the acid test of the success of this initiative. In his speech in Toronto, Finance Minister Paul Martin analogized the public consensus over national debt reduction to the potential consensus over the actions arising from the NRTEE sustainable development indicators.[70] The comparison should properly set the standard of government action as well. Responses to cut the deficit were focused, swift and decisive. According to recent announcements of budget surplus and debt reduction, they were also effective. Similar results in achieving SD would amount to a substantial change in direction for the federal government.

> Let me give you an example of what I mean. The Government's fiscal situation is not the kind of subject that inspires people to poetic heights. However, in the 1990s, the Government was able to marshal the forces of public opinion towards eliminating our $42-billion annual deficit. How? We began by setting measurable, step-by-step targets for reducing the deficit – giving ourselves two years to get it down from 6 percent of GDP to 3 percent. This helped to solidify a broad national consensus that made necessary action possible. Having attained our interim targets and those that followed thereafter, by 1998 we were able to announce that we had eradicated the deficit from the national fiscal landscape. In fact, we were the first G-7 country to do so. This didn't just happen by accident. Rather, it was the consequence of a national consensus, a focused and determined effort on the part of a nation to strengthen a once ailing economy and better prepare itself for today's global reality. A consensus that did not end with the cleanup of our national balance sheet, but rather began with a revolution in the structure of our economy and in the mindset of our people. The ability to measure and account for progress using economic indicators was essential to this change in mindset. That is the kind of discipline that we must apply to our environmental challenges. Indicators will help us measure our progress in a way that engages the constituency that matters most – the public at large."

To capitalize on this potential substantial change, the analysis in the next section explores other areas where the federal government might improve its performance on achieving sustainable results.

INNOVATION, RULES AND TOOLS

> A step-by-step approach based on continuous, incremental improvement is required to make measurable progress toward sustainable development.[71]

In the previous section, this report examined indicators and how they can best support SD initiatives. It was noted that the federal government would increase its capacity to respond to the challenge of SD by using the indicator tool to best effect. The discussion in this section examines other elements of an SD strategy – innovation and rules and tools – and proposes how they may be most optimally structured to achieve SD.

INNOVATION

Without question, the human capacity to innovate is one of our greatest attributes and one of the reasons for the tremendous success of humans as a species. Given everything humans have accomplished – from the discovery of fire to building an international space station – it is an understandable assumption that our ability to innovate will help us achieve SD.

There are two important things to understand about innovation. The first is that innovation arises from perceived needs – the old saying that necessity is the mother of invention. The second is that it is by not necessarily benign in and of itself. While innovations can be solutions to problems, they can also create additional problems in the process. Pesticides are a good example of an innovation that has created problems. CFCs are another good example. Suburbs are a third. Therefore, in order for innovation to result in SD, there must first be a need to achieve SD and there must also be constraints on how that need is addressed.

Federal SD strategies tend to overstate the impetus of innovation as a driver of SD solutions.

> At its heart, innovation is a response to the demand to improve, to invent, and to challenge the norms. The continuous search for new and better ways to do things has driven Canada socially and economically.[72]

This statement in Natural Resources Canada's SD Strategy is half correct. Innovation can be a response to a demand to improve. The second statement is not as supportable as the first, however. It is unlikely, for example, that a "continuous search for new and better ways to do things" led to the introduction of invasive species in the Great Lakes or to the collapse of the east coast cod fisheries.

In a May 2000 report, the federal government described the achievements of ARET, focusing in particular on the overall emissions-reduction progress.

- ❖ Emissions have been reduced by 26,360 tonnes or 67 percent from base-year levels.
- ❖ 169 companies have submitted and are implementing ARET action plans
- ❖ 43 percent or 136 of 316 facilities have already met or exceeded ARET year 2000 targets for all categories of substances on which they report.
- ❖ Year 2000 targets have been exceeded for three of the five ARET substance categories.
- ❖ Year 2000 targets have been met or exceeded for 62 percent of ARET substances being reported.[86]

However, it's important to realize that only 316 facilities were involved in the ARET program. According to Friends of the Earth, that figure accounts for slightly more than one per cent of the 26,878 members of the regulated community subject to CEPA and approximately 15 percent of the more than 2,000 facilities reporting to the National Pollutant Release Inventory.[87]

A recent Environment Canada publication states that innovation is part of "Canada's new approach to environmental management – an environmental innovation agenda that is based on knowledge, incentives and partnerships."[73]

Both of these statements suggest that innovation arises as a response to a "demand," but the documents they are taken from are not completely clear on where this demand will come from.

By contrast, Michael Porter of the Harvard Business School has written supporting the hypothesis that well-designed regulation is an efficient driver of SD innovation.[74]

> Michael Porter talks about two mental models towards environment and SD. The first sees SD as a problem and a cost, and therefore sees a need for a trade-off between environmental protection and economic growth. Because of the costs involved, companies must be forced via command and control to take action. … Then there is a second mental model that says that pollution is waste, and reducing waste is an opportunity to increase efficiency. [Porter] stressed the importance of good environmental regulation and enforcement as a driver for innovation and resource efficiency.[75]

Porter's arguments are supported by the use of economic and regulatory instruments in the United States to achieve significant reductions in sulphur dioxide emissions, for example, and to avoid serious economic impacts on emitters.[76]

The general understanding in the literature and from lessons learned in numerous other jurisdictions is that governments can and should moderate the market with tools and rules (see following section) as well as creating incentives and setting limits so that business decision-making is competitive as well as efficient and sustainable. Moreover, rules and tools have the effect of focusing action in the short- and medium-term so that innovation happens comparatively quickly.

RULES AND TOOLS

The Brundtland Commission report's definition of sustainable development included within it two key concepts:

> "– the concept of 'needs,'… and the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs."[77]

Few discussions of SD omit a consideration of limits – limits of natural systems in their ability to sustain the effects of human development, limits on human population growth, limits in the carrying capacity of the atmos-

phere and global water systems.[78] While discussions assume that humanity will confront limits through the depletion of non-renewable resources such as petroleum, others[79] observe that real limits have already shown themselves in our renewable resources: fisheries[80], forests[81], soil[82] and groundwater.[83]

In Canada, the emphasis at the federal level has been on non-regulatory mechanisms, such as ARET and the newly proposed Environmental Leaders program. With this new program, Environment Canada anticipates that by recognizing and rewarding innovative "past-compliance" initiatives by industries already leading the way, other companies may be inclined to respond in kind and improve their own environmental performance.

Voluntary initiatives, however, tend not to drive strong responses from regulated industries. In the early 1990s, the federal and provincial governments entered a number of "voluntary agreements" with regulated industries as an alternative to regulation. CIELAP, among other organizations, expressed concern that these agreements diverted scarce government resources away from programs that improved the environment to programs that had little effect at all.[84] Recently, a report by the OECD affirmed CIELAP's arguments, concluding that "the environmental effectiveness of voluntary approaches … [is] modest."[85]

In the policy literature, and in other jurisdictions, there are many examples of innovative mechanisms to set limits on environmental and social stresses and to create the need and the potential for innovation in the private sector. These mechanisms include revenue recycling[88], tax shifting[89], various market mechanisms[90] and demonstrated successful programs such as the U.S. EPA SO_2 emission-trading system.[91]

It must be noted, however, for all the promise these mechanisms show, it appears that other mechanisms are still required. According to the World Wildlife Fund, Sweden is eleventh in the world in the size of its ecological "footprint" (just behind Canada, which is ranked as having the tenth-largest footprint in the world), its progressive rules and tools notwithstanding. The United States is ranked third (after the United Arab Emirates and Singapore) in spite of its extensive regulatory framework and innovative cap-and-trade programs.

While increased efficiency will make a tremendous contribution to a sustainable future, it is only one part of the solution:

> Eco-efficiency … is only one small portion of a richer and more complex web of ideas and solutions. Without a fundamental rethinking of the structure and the reward system of commerce, narrowly focused eco-efficiency could be a disaster for the environment by overwhelming resource savings with even larger growth in the pro-

The important environment legislation in Canada: the *Canadian Environmental Assessment Act* (CEAA), the *Canadian Environmental Protection Act, 1999* (CEPA 1999), the *Fisheries Act*, the *Arctic Waters Pollution Prevention Act* (AWPPA), the *Canada Water Act* (CWA), the *Oceans Act* and the *National Round Table of the Environment and the Economy Act*.

"Policymakers should charge greenhouse gas emitters, such as by taxing emissions permits, and return the revenue to the economy (a process referred to here as "revenue recycling"). Revenue recycling would help the U.S. economy, offset the cost to individuals of fossil-fuel price increases, and protect the most vulnerable members of society."

"Reducing taxes on things we want more of, such as savings, investment and labour, and replacing them with taxes on things we want less of, such as pollution, could yield economic and environmental benefits."

"Market-based policies can capture the positive qualities of a market system: competition and flexibility. The combination of competition and flexibility spurs innovation as companies seek to reduce their emissions at the lowest cost, thereby reducing the overall costs to the economy of meeting environmental obligations."

duction of the wrong products, produced by the wrong processes, from the wrong materials, in the wrong place, at the wrong scale, and delivered using the wrong business models. With so many wrongs outweighing one right, more efficient production by itself could become not the servant but the enemy of a durable economy.[92]

In light of all of the above, we note that "innovation" unsupported by strong regulatory signals and unguided by clear government policy is a weak and unreliable means to achieve SD. Innovation toward SD needs a driver and it needs direction to achieve desired results. Regulation is a more reliable and stronger driver of SD than voluntary programs. Furthermore, the footprint analysis by the WWF and other observations suggest that the response required extends far beyond eco-efficiency and clean production, the leading areas of "innovation" in Canada currently.

We therefore conclude that public policy SD objectives, and rules and tools in support of SD objectives are both necessary components of a successful SD strategy. We propose that the objectives should be developed first, then the rules and tools. Innovation that achieves the desired outcomes will arise as an outcome of these two drivers.

SPECIAL CONCERNS FOR CANADIAN CITIES

In Canada, cities are extraordinarily constrained in what they can legally do. When the founders of Confederation drafted the *British North America Act* and divided the power to govern between the provinces and the federal government, they created only two levels of government. That is, they created no governance powers for municipalities.

> In a constitutional sense, there are only two levels of government, federal and provincial, and municipalities do not constitute a level of government.[99]

Provinces delegate their powers to municipalities through legislation. Municipalities have only the powers delegated to them by the province.

> … a municipality may exercise only those powers expressly conferred by statute, those powers necessarily or fairly implied by the expressed power in the statute, and those indispensable powers essential and not merely convenient to the effectuation of the purposes of the corporation.[100] ➤

ACTORS

This section of the report discusses the different actors in SD programs and addresses what remains a perennial question in Canada: the question of what role the different actors, particularly government, should play in achieving SD.

The literature on SD identifies three basic groups that engage with SD: government (the public sector), business and industry (the private sector) and the community (the general public). A fourth group often mentioned is non-government organizations (NGOs), groups that represent special aspects of the public interest, such as advocates for the poor, the environment, women, public health, children's health, animals' rights and so on.

In the literature on SD, the roles of these various sectors of society are reasonably clear – they each lead according to their best abilities. Government leads in setting laws and policies – setting the playing field as it were. Industry focuses on what it does best – responding innovatively to the signals sent by government, protecting its own interests and responsibilities to shareholders while practicing corporate responsibility, increasing its efficiency and reducing its environmental impacts. The non-governmental sector, identified repeatedly in the literature as a rising force in governance issues, plays a special role as an unconstrained advocate for the public interest. However, communities play perhaps the most important role in SD theory. They are the threads of the social fabric, crucial to the success of plans to achieve sustainable outcomes.

In theory, each sector of society understands and performs its role. In real life in Canada, neither the roles nor the performances are so clear. The federal government appears most committed to showing leadership in terms of keeping its "own house in order" through green procurement and greening its operations. Other stances include sending "signals," developing "partnerships" and promoting "innovation." All of these are useful to one extent or another. However, these diffused signals and initiatives have neither singly nor cumulatively achieved much change.

Elsewhere this report describes a few parts of the Hamilton Vision 2020 project, in which community members developed a list of indicators and have been monitoring these indicators for signs of improvement since 1993. It has already been observed that there is a missing component in the overall plan. While the plan properly sets out where the city is coming from and where it wants to go – its baselines and targets – it has not incorporated adequate means to either set the course toward the goals or to correct the course over time. That is, the plan is missing the requisite rules and tools. The reason it does not have these crucial components is that it is missing crucial actors, specifically the provincial and federal governments who have the capacity to make the necessary rules. Without these parties, the SD program cannot be complete.

In Canada, communities all over the country from Nunavut[93] to the Annapolis Valley[94], from Toronto[95] to Calgary[96], from Prince George[97] to Niagara-on-the-Lake[98] have demonstrated a commitment to more sustainable communities, better urban environments, preserved agricultural land and complex, self-sustaining local economies.

Local communities, and the cities they exist within, have the potential both to commit themselves to SD strategies and to act as engines in the establishment of sustainability in Canada. However, they do not have the capacity to do this on their own. They have already shown themselves to be proficient at setting goals and identifying indicators to measure progress toward these goals. As in the case of Sustainable Peterborough, they can even develop some of the tools that can promote SD outcomes.

> a project called "Sustainable Peterborough" is using savings from reduced energy consumption to finance home and industrial/commercial/ institutional building retrofits, thereby creating employment and contributing toward greenhouse gas emission reductions in line with Canada's Kyoto commitments. [102]

More commonly, communities do not have the capacity to set the necessary rules to achieve SD goals (such as, for example, greenhouse-gas emission reductions) and by themselves cannot develop all the tools required to achieve the goals.

(continued)

This constitutional, statute-based empowerment is what is meant by the phrase "municipalities are creatures of the province."

At a recent conference of the mayors of Canada's largest cities in Winnipeg, author Jane Jacobs spoke about the special role of cities. She argued that cities are fundamental engines of Canadian society and economy and need a heightened legal status to preserve their capacity to improve life for everyone:

> Without immediate reform, cities will continue to struggle to maintain a healthy quality of life for residents and to remain attractive to employers.... Canadians will ultimately be poorer if their cities decline.... The present system makes infants of cities. They are wards, classed with taverns and asylums in terms of provincial responsibilities. This is very demoralizing to cities.[101]

INDUSTRY

As noted above, industry and other players in the private sector have been accorded a significant role in achieving SD. "Eco-efficiency" is a key industry-focused SD response, as are other initiatives such as the Triple Bottom Line, Factor Four[104], full-cost accounting, etc. All of these could potentially work as component parts of an overall SD strategy.

> Industry may have the most vital role in sustainability. Not only does it produce much of the world's waste and pollution, but its financial resources and extraordinary capacity for innovation make it the best – if not the only – candidate to lead the rescuing cavalry.[103]

Within the larger category of "industry" are two important sub-categories of actor: large, multi-national corporations (trans-national corporations, TNCs) and small corporations (small- and medium-size enterprise, SMEs).

TRANS-NATIONAL CORPORATIONS

Since the end of the Second World War, some of the world's biggest companies have grown exceedingly large. Of the top 100 economies in the world, 51 are the earnings of corporations.[105] Wal-Mart, to provide one example, is number 12 on the list of the world's top 200 corporations. The gross revenue of this company is greater than the total wealth (gross domestic product) of 161 countries. General Motors revenues are larger than the GDP of Denmark; Toyota is bigger than Norway and the revenues from Ford exceed those of South Africa.[106]

TNCs are powerful, wealthy and influential enough to effect gigantic changes in the world's economy. It follows that they are also potentially powerful enough to accomplish enormous strides toward sustainability. TNCs are candidates to implement SD mechanisms such as eco-efficiency, corporate responsibility, closed-loop production and the new "leasing economy." They may also have the capacity, as proposed by the Environmental Leaders initiative, to exert influence over their "supply chain" and positively influence the environmental behaviour of smaller companies that provide parts and services to the larger corporation.

SMALL-AND MEDIUM-SIZE ENTERPRISES

While their wealth and power make them forces to be reckoned with, TNCs are no more crucial in terms of the implementation of SD than small- and medium-size enterprises. SMEs employ between five and 50 people, have limited assets and can (but do not necessarily) have stronger ties to the communities in which they operate than TNCs. SMEs employ a higher proportion of the population than large corporations do. About 78 percent of Canada's one million businesses employ fewer than five people and 97 percent of all businesses have fewer than 50 employees. Businesses with more than 50 employees make up less than three percent of Canada's business population.[107]

At least over the short-term, the trend in Canada appears to be that even more people will be employed by SMEs. In 1997, SMEs accounted for 60 percent of total employment, up from 54 percent in 1989. During the same period, firms with 500 or more employees saw their share of total employment drop from 46 percent to 40 percent.[108]

Another statistic about SMEs that is very important from the perspective of SD is that most of these enterprises do the greatest portion of their business within their own region. According to a 1998 Canadian Federation of Independent Business poll, 84.9 percent of respondents indicated that their firm's major markets were located in their local city or region; while 33.4 percent and 18.5 percent said their major markets were in their own or another province, respectively.[109] This means that Canada's collective largest employers do the vast majority of their business within the country, and the greatest portion of that business is within the local region.

These characteristics of SMEs suggest that they have high potential for participation in SD strategies and of building vibrant, diverse local economies that are both self-sufficient and interconnected with the larger economy – a crucial component of *implementing* SD.

Through Asia-Pacific Economic Cooperation (APEC), Canada promotes the development of SMEs in Asian APEC countries.[110] The federal government has on-the-ground SME support programs in Quebec[111] and the Atlantic provinces.[112] Industry Canada's SD strategy focuses on eco-efficiency for SMEs, including the development of environmental technologies, assistance in adopting information technology[113] and voluntary pollution-reduction agreements for small companies. Other federal programs focus extensively on information technology, international trade and competing in the global economy. The strategies of the various programs intersect in the following statement from Industry Canada's SD Strategy:

> Exploiting our global trade opportunities is key to reaping the rewards of our productivity effort. Canada is the most open of the G-7 countries. Trade represents 78.7 percent of GDP, compared with 25.0 percent in the U.S.A. But we have major challenges still: our top five exporters account for 21 percent of Canadian exports, less than 10 percent of SMEs export, and about 80 percent of our exports go to a single market, the U.S. Opportunities to address these challenges exist in the growing global market for knowledge-intensive products and services. Industry Canada will work to foster an orientation to these global markets and encourage more companies to make their products and services export-ready.[114]

In summary, while SMEs have the potential to play a crucial role in a sustainable future by virtue of their presence in local economies, that may or may not be the role envisioned for them in Industry Canada's SD Strategy or the federal government's overall vision.

GOVERNMENT

The discussion in other sections of this report have proposed that effective SD strategies require as their first component an SD outcome or goal and, as their second component, rules-and-tools to direct innovative responses to achieve the outcome or goal. Of the three basic categories of participants in SD strategies – communities, businesses and government – government is the only legitimate rule maker. It follows, therefore, that while all three categories of actor may properly engage in the discussion of priorities and in seeking innovative solutions to achieve SD outcomes, it is the role of government to establish the mechanisms to achieve those goals.

The experience in other jurisdictions demonstrates that there are other regulatory responses besides command-and-control and that, as noted above, well-designed regulations have the effect of driving innovative responses to achieve sustainable results. While industries and communities may innovate in response to their idiosyncratic needs and/or signals from the market, only government regulation has the impact of compelling innovation across whole sectors within a set time frame.

The discussion above has also noted that the federal government has, for the most part, avoided regulatory initiatives such as economic instruments, income tax reform and other mechanisms used and/or proposed in other jurisdictions. In the introduction, we noted that the reasons the federal government has avoided strong regulatory responses are complex and beyond the scope of this report to discuss in detail. We can fairly observe, however, that confronted with these difficulties the federal government has opted for initiatives – voluntary programs and infrastructure initiatives – that have given rise to few decisively sustainable outcomes so far.

In our recommendations, we propose that the federal government construct a framework that will achieve outcomes that are more demonstrably sustainable. We make the case that better results will arise simply by putting some familiar tools and concepts – goal setting, indicators, innovation – in a different order. We also propose that by acknowledging the uncertainty of the undertaking and by identifying key SD priorities, the federal government may be able (particularly with its new indicator initiative) to act decisively on a few key issues. Twenty-eight sustainable development strategies have increased how much thinking has been directed to SD in Canada, but have also had the counterintuitive result of diffusing action and coherent focus.

The Federal Finance Minister has a new tool developed by the NRTEE to formulate policy responses to the threat of unsustainable development. We strongly recommend that the Minister build consensus around a short list of key concerns and focus on those. A smaller number of focused, large-scale programs will have a greater impact than a large number of smaller projects.

Finally, a crucial component of any strategy must be a sustainability test. Even when targets are met, a program must be evaluated for its impacts on the environment, the economy and society. Every journey begins with a single step, but even that first step must be evaluated to see whether it is a step in the right direction.

CONCLUSION

Overall, our research has shown us that achieving demonstrable success in SD initiatives in Canada may rely on nothing more radical than putting the steps of the process in the right order and permitting participants in the process – especially cities, local communities and SMEs – to play to their strengths.

CIELAP proposes that demonstrable results toward achieving SD can be achieved through the application of a four-step process of identifying the sustainable development objective, setting goals and targets and developing rules and tools to meet the objectives, measuring and evaluating the plan, and testing for sustainable results.

RECOMMENDATIONS – FOUR-STEP SD STRATEGY

STEP ONE – IDENTIFY SD OBJECTIVE

The SD objective will be an area of high priority, an area where the need to change is the largest because the threat posed to the future is greatest. There will be some inevitable debate around this priority-setting process and a short list of priority areas may be the result. Most important to the process is that priority is ascribed and that broad public consensus for action is built around the issue(s).

Means to identify high priority areas of concern:

- The National Round Table for the Environment and Economy SD Indicators
- International Obligations – for example, the Kyoto Protocol, Persistent Organic Pollutants Protocol, the Biodiversity Convention
- Scientific Research
- Public Opinion

What the objective will do: Articulate the long-term (50-100 years) goal. Shorter-term programs can then create momentum toward these longer-term goals.

For example:
The SD Objective is "Climate Change".

- The long-term objective is national CO_2 emissions reduced to 1930 levels by 2060, and 1890 levels by 2080.

(Note: These figures are hypothetical and do not reflect current targets or priorities. These figures serve to show only how the SD objective may be identified and how the long-term goal may be articulated.)

STEP TWO – SET SHORT-TERM GOALS AND DEVELOP RULES AND TOOLS TO MEET THE OBJECTIVES

Short-term goals should be set no further than six to twelve years in the future and interim evaluations of progress toward those goals should be done at three-year intervals. Rules and tools should stimulate behaviour change consistent over the long run with achieving both the short-term goals and the long-term SD objective.

Rules are limits. In an SD program, they may articulate the limits of natural systems and set lines that should not be crossed. Examples of these kinds of limits are: limits on bulk water removals from an ecoregion; limits on marine life harvesting; limits on emissions and so on.

Tools are the means by which the short-term goals may be achieved. Tools may create incentives; provide alternative methods; direct innovative behaviour; or all of these and other means to achieve the desired result as set out in the SD objective.

Mechanisms may be varied, wide-ranging and flexible in how behaviours may be changed. The targets, however, should be firm.

For example:
The SD Objective is "Climate Change".

- The long-term objective is national CO_2 emissions reduced to 1930 levels by 2060, and 1890 levels by 2080.
- The short-term goal is national CO_2 emissions reduced to six percent lower than 1990 levels by 2012 (the Kyoto targets). Tools to achieve this goal are built on stakeholder consultation and science identifying transportation and power generation as the two largest sources of CO_2 emissions within the country.
- Rules developed are: strong emissions limits on all new motor vehicles, including trucks and SUVs; strong emissions limits on all power plants; strict energy-efficiency requirements for all new buildings, etc.
- Tools developed are: incentive programs to trade in old cars and buy new fuel-efficient ones; subsidies to alternative fuels research; subsidies for public transit; incentives for residential infill development in Canada's largest cities; home-energy efficiency retrofit programs, etc.

(Note: These figures and programs are hypothetical and do not reflect current targets or priorities. These figures serve to show only how the SD objective gives rise to rules and tools that serve to achieve the objective.)

STEP THREE – MEASURE AND EVALUATE

The success of these programs must be measured, not in terms of the popularity of projects or the number of projects, but in terms of the impact of the projects.

Indicators – either the existing indicators that gave rise to the public-policy response or a new custom set – should be developed with stakeholders to track the effectiveness of the mechanisms in achieving the SD objective. Evaluation should assess whether desired outcomes are arising from rules and tools and whether targets will be met over the short and medium term. If mechanisms are not working as well as anticipated alternative means may be necessary.

For example:
The SD Objective is "Climate Change".

Stakeholders agree on a single indicator: national CO_2 emissions. After three years of concerted program application, the indicator shows no growth in CO_2 emissions. Evaluation of programs at this point shows that programs are effective at stopping growth in emissions, but not sufficient to reduce emissions. Results show that further tools are required to achieve short-term goals.

(Note: These figures and programs are hypothetical and do not reflect current programs or results. These figures show only how measurement of effectiveness of programs demonstrates whether programs are having desired result.)

STEP FOUR – TEST FOR SUSTAINABILITY

Even if goals and targets are met, the strategy must be tested to assess how sustainable its results in fact are. That the program met its goals and targets ahead of time is good, but it must also meet the three-part sustainable development test – Is the environment better off? And what are the program's impacts on the economy and society?

The sustainability test can employ a rich index of indicators, as the Genuine Progress Index does, to evaluate how sustainable the changes created by achieving the short-term goals are.

For example:
The SD Objective is "Climate Change".

Stakeholders agree on a single indicator: national CO_2 emissions. After six years, and through the development of new tools, CO_2 emissions reach the 2012 target five years ahead of schedule.

Examination of the state of the economy, the environment and social health shows that CO_2 emissions reduction has increased the cost of energy to consumers and resulted in some hardship for low-income families (this is assessed by calculating total power cuts to customers in arrears on utility payments) and for some small businesses (who have lost a competitive advantage due to higher power costs), but has also provided incentives for residential energy-efficiency retrofits (for those who can afford them) and has created a whole new market for energy-efficiency services. Other effects are measured and evaluated in a similar fashion: the benefit to the environment of reduced CO_2 emissions, gains and losses in the economy from the change, and the effects on families and vulnerable members of society.

The measures pass the sustainability test if the improvements to the environment have not imposed hardships on vulnerable sectors that cannot be alleviated, and if the economic activity arising from the change equals or is greater to the economic activity lost because of the changes caused by achieving the short-term goals of the long-term SD objective.

(Note: These figures and programs are hypothetical and do not reflect current programs or results. These figures serve to show only how the SD test shall be applied to assess the sustainability of a particular series of programs in aid of achieving a SD objective.)

FOOTNOTES

[1] "The legend goes that when the founder of Islam was asked to give proofs of his teaching, he ordered Mount Safa to come to him. When the mountain did not comply, Mohammed raised his hands toward heaven and said, 'God is merciful. Had it obeyed my words, it would have fallen on us to our destruction. I will therefore go to the mountain and thank God that he has had mercy on a stiff-necked generation.'" The saying has been traced back in English to 'Essays,' (1625) by English philosopher Frances Bacon (1561-1626). It was included in John Ray's book of English proverbs in 1678. First attested in the United States in 'Jonathan Belcher Papers' (1733)." From Gregory Y. Titelman. **Random House Dictionary of Popular Proverbs and Sayings** (Random House, New York, 1996).

[2] World Commission on Environment and Development**. Our Common Future**. (London: Oxford University Press, 1987) at 43.

[3] Ibid, at 65.

[4] Even more regrettable than England, which has carried through on the challenge of creating a national sustainable development strategy. See http://www.sustainable-development.gov.uk/index.htm

[5] See http://climatechange.gc.ca/english/whats_new/overview_e.html At Kyoto negotiations in The Hague, Netherlands, in December 2000, Canada (among other countries) was accused of derailing the talks by failing to come to a decision on a method for trading carbon credits. Lawton, Valerie, "Climate Talks Rescue Falters," **The Toronto Star** 8 December, 2000.

[6] Examples of recent development projects funded by the Canadian International Development Agency that follow this model are: CARE East Timor Development Project, Family Planning Support Project in Indonesia, and Environment Institutional Strengthening Fund in India.

[7] Estrin, David and John Swaigen (eds.) **Environment on Trial** (Toronto: Emond Montgomery, 1993). At pages 22-22-28.

[8] CIELAP, The Draft Environmental Management Framework Agreement and Schedules: A Commentary and Analysis, March 1995, CIELAP Brief 1/95. See http://www.cielap.org/infocent/research/emfa.html.

[9] See http://pm.gc.ca/default.asp?Language=E&Page=newsroom&Sub=Speeches&Doc=summitclosing.20010422_e.htm

[10] Postel, Sandra. **Last Oasis: Facing Water Scarcity**. (New York: W.W. Norton & Company, 1997). At page xii.

[11] Ontario Medical Association **The Illness Costs of Air Pollution in Ontario** June 2000.

[12] World Resources Institute. **Canada's Forest at a Crossroads: An Assessment in the Year 2000**. (Washington, World Resources Institute, 2000) at 11.

[13] Environmental Law Institute. "National Wetlands Newsletter" Vol. 22 no.1 Jan/Fed 2000.

[14] World Resources Institute. **Canada's Forest at a Crossroads: An Assessment in the Year 2000**. (Washington, World Resources Institute, 2000) at i.

[15] Dinning, R.J., "Energy for the future: the role of coal" **Proceedings of the ICE** Civil Engineering 138 November 2000, at 30.

[16] Agriculture and Agri-Food Canada website. "Soil Quality and Supply of Land" http://www.agr.ca/policy/environment/eb/public_html/ebe/soil.html

[17] Hormann, Elizabeth. "Breastfeeding in a polluted world: The fears, the facts, the solutions" Mothering May-June 2000. http://www.findarticles.com/cf_0/m0838/2000_May-June/62141683/print.jhtml

[18] Barbier, E. "The Concept of Sustainable Economic Development" 14 **Environmental Conservation**. (No.2) 1987.

[19] "Between 1981 and 1996 the earned incomes of the poorest 20% of households with dependent children was cut in half, from $12,000 to $6,000. About one in five jobs are part-time and the fastest growing segment of the labour market are "casualized" jobs – temporary, contract, and irregular." Yalnizyan, Armine. **The Growing Gap: A Report on Growing Inequality between the rich and poor in Canada** (Toronto, Center for Social Justice, 2000) at xi.

[20] "The 1998 United Nations "medium" projection suggests that world population will grow from the current 6 billion to 7.8 billion in 2025 and 8.9 billion in 2050 (It's "low" and "high" projection for 2050 are 7.3 and 10.7 billion respectively). But the medium projection doesn't necessarily represent the most likely outcome. Given recent fertility data, and given the very real possibility of higher mortality rates in poor countries than the UN projections anticipate, my guess is that the 2050 population will be closer to the low end of the UN's range - around 8 billion - than the high end." Homer-Dixon, Thomas. **The Ingenuity Gap**. (New York: Alfred A. Knopf, 2000) at page 50.

[21] See http://www.ire.ubc.ca/ecoresearch/ecoftpr.html and Mathis Wackernagel and William Rees. **Our Ecological Footprint; Reducing Human Impact on the Earth**, (Canada and Philadelphia: New Society Publishers, 1996)

[22] OECD. Policies to enhance sustainable development - Meeting of the OECD Council at the Ministerial Level (OECD, Paris, 2001, at pp. 13-14

[23] The best example of the threat posed by SD to current conceptions of viable public policy is the United Kingdom's slogan: "Sustainable development is a simple idea of ensuring a better quality of life for everyone, now and for generations to come."

[24] See http://www.cyberus.ca/choose.sustain/solution/guide.shtml. Accessed May 15 2001.

[25] See, for example, Jay Hanson's DIEOFF site at http://dieoff.org/index.html. "Envision a world where freezing, starving people burn everything combustible — everything from forests (releasing CO2; destroying topsoil and species); to garbage dumps (releasing dioxins, PCBs, and heavy metals); to people (by waging nuclear, biological, chemical, and conventional war); and you have seen the future." Less dramatic, but equally grim predictions of the unsustainable future can be found in David Korten **When Corporations Rule The World**, and Thomas Homer-Dixon, **The Ingenuity Gap.**

[26] Pigou cited in Anand and Sen, 2000, at 2034. The Canadian Commission on Conservation cited in **A Guide to Green Government**, (Canada: Minister of Supply and Services, 1995) at 5.

[27] More than 200 by one count. See S. Parkin, "Sustainable Development: the concept and the practical challenge," in 138 **Civil Engineering** November 2000, pages 3-8 at 3.

[28] Repetto, R. **World Enough and Time**. (New Haven: Yale University Press, 1986.)

[29] Norgaard. Richard, "Sustainability of the Economics of Assuring Assets for Future Generations." World Bank, Asia Regional Office, Working Paper Series No. 832. Jan. 1992.

[30] Anand, Sudhir and Amartya Sen, "Human Development and Economic Sustainability," in 28 **World Development** 12, pp 2029-2049 at 2038.

[31] WCED, 1987, p. 43, cited in Anand and Sen, 2000, at 2034.

[32] Prime Minister H. Gro Brundtland. "Sir Peter Scott Lecture," Bristol, 8 October, 1986.

[33] Allen, R., **How to Save the World**. (London: Kogan Page 1980), summarizing the World Conservation Strategy.

[34] Munro, David, "Sustainability: Rhetoric or Reality," in **A Sustainable World: Defining and Measuring Sustainable Development**. T. Trsyna, ed. (Sacramento: Published for IUCN by California Institute for Public Affairs, 1995).

[35] Braat, L.C. and I. Steetskamp, "Ecological-Economic Analysis for Regional Sustainable Development," in Costanza, R. ed. **Ecological Economics** (New York: Columbia University Press, 1991) at 269 – 288.

[36] Hossain, Kamal, "Evolving Principles of Sustainable Development and Good Governance," in K. Ginther, E. Denters and Paul J.I.M. de Waart, eds. **Sustainable Development and Good Governance** (Norwell, Ma.: Kluwer Academic Publishers, 1995)

[37] Coomer, "The Nature of the Quest for a Sustainable Society," in J. Coomer (ed). **Quest for a Sustainable Society**. (Oxford: Pergamon Press. 1979)

[38] Grass, Günter, "Losses," in 42 **Granta**, Winter 1992, pp. 99 –108 at 104.

[39] O'Riordan, Timothy and Heather Voisey (eds.) **From Agenda 21: The Transition to Sustainability: The Politics of Agenda 21 in Europe**. (London: Earthscan Publications, 1998) at 157.

[40] IISD, WorkShop Report: Beyond Delusion: A Science and Policy Dialogue on Designing Effective Indicators for Sustainable Development (Winnipeg: IISD, 1999) Section 4.1.

[41] Natural Resources Canada**, Sustainable Development Strategy 2001-2004** (Ottawa: Natural Resources Canada, 2001) at 4.

[42] *Auditor General Act*. 1976-77, c. 34, s. 1.

[43] *Auditor General Act*, 1995, c. 43, s. 5.

[44] Health Canada, Health Canada's Sustainable Development Strategy 2000: Sustaining our Health (Ottawa: 2001) at http://www.hc-sc.gc.ca/susdevdur/English.pdf, p. 3.

[45] Comments by the Chair, Dr. Stuart Smith, NRTEE Conference on Sustainable Development Indicators, Westin Hotel, Ottawa, March 27, 2001

[46] The National Round Table on the Environment and the Economy's SD indicators project measures assets that contribute to human welfare (such as produced, natural, and human capital) and suggests that different types of capital are substitutable (such as harvesting lobster after the cod fisheries collapse) , and so describing one way that people can see solutions to the dilemma that do not require a fundamental change of behaviour. National Roundtable on the Environment and the Economy. NRTEE Indicators Overview Paper Stakeholder Workshop. March 28, 2001.

[47] One exception is the federal-municipal climate change program, which has Canada's commitment under the Kyoto Protocol driving it.

[48] One of the showcased projects is "Environmental Operations for Government", led by Environment Canada. The mission of the program is "advocating sustainable government through example." They talk about drivers and list several, including the following: International Organizations such as OECD, APEC, OAS, UNEP; sustainable cities/ communities; Canada seen as a leader in greening government. In "Toward Sustainability: Some Canadian Initiatives," Sustainable Development Research Institute, Envision (Sustainability Tools, Inc.), Environment Canada. The "drivers" are actually tools or mechanisms with which to possibly achieve sustainable outcomes. See discussion below on rules and tools.

[49] The four sections and 39 chapters of Agenda 21 provide guidance for the development of local or national sustainability initiatives. Agenda 21 proposes a set core set of 142 indicators grouped in categories encompassing the social, environmental, economic, and institutional aspects of sustainable development. United Nations Commission on Sustainable Development. **Indicators of Sustainable Development: Framework and Methodologies**. (New York: United Nations, 1996).

[50] See http://www.scn.org/sustainable/. Accessed May 22, 2001.

[51] Cobb, Clifford and Craig Rixford, "Competing Paradigms in the Development of Social and Economic Indicators" Center for the Study of Living Standards, Conference on the State of Living and the Quality of Life in Canada October 30-31, 1998, Chateau Laurier Hotel, Ottawa, ON, at pages 18-19.

[52] "Discussion Document, Leaders' Forum on Sustainable Development," (Ottawa: Government of Canada, April 4, 2000) at pp. 16017.

[53] Many different indicator projects exist that measure social well-being, some in combination with environmental and economic information, and all with different methodologies. For a good overview see the International Institute for Sustainable Development website at http://www.iisd.org/measure/faqs.htm.

[54] See, among others, Rowe, Jonathan and Mark Anielski **The Genuine Progress Indicator: 1998 Update** (California: Redefining Progress, March 1999).

[55] See http://www.rprogress.org/

[56] See http://www.pembina.org/

[57] Source: http://www.pembina.org/green/gpi/.

[58] See http://www.pembina.org/green/gpi/ for the entire report.

[59] Loh, Jonathan, ed., **Living Planet Report 2000.** (Switzerland: World Wildlife Fund for Nature, 2000).

[60] Theodosius Dobzhansky, an evolutionary geneticist, reflecting on views of creationists. 1937. *Genetics and the Origins of Species*. New York: Columbia University Press.

[61] Yalnizyan, Armine. **The Growing Gap: A Report on Growing Inequality between the rich and poor in Canada** (Toronto, Center for Social Justice, 2000) At page 39.

[62] Ibid, at page 45.

[63] See http://www.scn.org/sustainable/

[64] See http://www.vision2020.hamilton-went.on.ca/indicators/95reportcard.html

[65] **The City of Hamilton's Sustainability Indicators, 1999 Background Report**, January 2001, at p. 2.

[66] Speech by the Honourable Paul Martin, Minister of Finance, at a Breakfast Organized by the National Round Table on the Environment and the Economy. See http://www.fin.gc.ca/news01/01-053e.html.

[67] NRTEE, NRTEE Indicators Overview paper Stakeholder Workshop, March 28, 2001, Draft, Feb 20, 2001 at 1. On file at the CIELAP office.

[68] Ibid, at 2.

[69] Compared to a generation ago, Canadians still work, on average, a 37-hour week. The difference is that a generation ago *the majority* of people worked those hours. Today the average masks a more polarized reality. In 1976 almost two thirds of Canadians (65%) worked between 35 and 40 hours a week. By 1997 only about half did. Part-time jobs make up almost one in five opportunities now, compared to one in ten in the mid 1970s. Yalnizyan, Armine. **The Growing Gap: A report on growing inequality between the rich and poor in Canada**. (Toronto, The Center for Social Justice, 1998) at page 26.

[70] See http://www.fin.gc.ca/news01/01-053e.html

[71] A Guide to Green Government at http://www.ec.gc.ca/grngvt/guide_e.htm

[72] Natural Resources Canada, **Sustainable Development Strategy: Now and For the Future**, (Ottawa: Natural Resources Canada, 2001) at 38.

[73] The Honourable David Anderson, P.C., M.P. Minister of the Environment, "Minister's Message to Canadians," in Tracking Key Environmental Issues (Ottawa: Minster of Public Works and Government Services, Canada, Inc., May, 2001) AT III.

[74] Porter, Michael E. and Claas van der Linde, "Green *and* Competitive: Ending the Stalemate," Harvard Business Review, September-October, 1995; Michael Porter, "Toward a New Conception of the Environment-Competitiveness Relationship, Journal Of Economic Perspectives 9, no. 4 (1995): 97-118; Michael E. Porter and Scott Stern, "The New Challenge to America's Prosperity: Findings from the Innovation Index", Council on Competitiveness, March 1999.

[75] Speech by Bjorn Stigson, President of the World Business Council for Sustainable Development, The EU Sustainable Development Strategy, Stockholm, February 23, 2001.

[76] Swift, Byron. "Allowance Trading and SO2 Hot Spots – Good news for the Acid Rain Program" Vol. 31 no. 19 **Environmental Reporter**.

[77] WCED, 1987, p. 43, cited in Anand and Sen, 2000, at 2034.

[78] The OECD recognizes the risks of irreversible depletion and degradation of a range of natural and environmental resources and that "The long term sustainability of economic growth itself depends on maintaining basic ecosystem services, a healthy environment and cohesive societies."

Organization for Economic Cooperation and Development. **Policies to Enhance Sustainable Development** – Meeting of the OECD Council at the Ministerial Level (OECD, Paris, 2001) at 5-6.

Agenda 21 recognizes the intrinsic dependence of humans on ecosystems in the preamble (section 1.1) which states: "We are confronted with a perpetuation if disparities between and within nations… and the continuing deterioration of the ecosystems on which we depend for our well-being." United Nations. **Agenda 21**. See http://www.un.org/esa/sustdev/agenda21.htm

[79] Ayres, R.U., and P.M. Weaver (eds.) **Eco-Restructuring: Implications for Sustainable Development**. (New York: United Nations University Press, 1998).

[80] "Many fishery failures reflect conscious decisions by government agencies to overexploit stocks, or to ignore the council of fisheries biologists." J. Roughgarden, F. Smith, "Why fisheries collapse and what to do about it," *Proceedings of the National Academy of Sciences*, 93:5078-83, 1996.

[81] Environment News Service, "World's Fragmented Forests Losing Ground," May 30, 2000, at http://ens.lycos.com/ens/may2000/2000L-05-30-01.html. Accessed 17 May, 2001.

[82] "Soil exhibits characteristics of an exhaustible resource. Any actions farmers take regarding soil conservation can have uncertain consequences and the effect of these actions cannot easily be reversed; therefore, farmers should make decisions carefully." Economics of Soil Depletion at http://www.aginfonet.com/agricarta/content/csale/paper1/eco.html, accessed 17 May 2001.

[83] "When a country's renewable water supplies drop below 1,700 cubic metres per capita, it becomes difficult for a country to mobilize enough water to satisfy the food, household, and industrial needs of its population. Countries in this situation typically being to import grain, reserving their water for household and industrial use." Sandra Postel, "Redesigning Irrigated Agriculture," in **State of the World 2000** (Washington, D.C.: The Worldwatch Institute, 2000) at 47.

[84] Clark, Karen, "The Use of Voluntary Pollution Prevention Agreements in Canada: An Analysis and Commentary," (Toronto: CIELAP, April 1995)

[85] OECD, op. cit., at 143.

[86] These figures are cited in the press release that accompanied the release of the report. A link to the report can be found at: http://www.ec.gc.ca/press/000724_n_e.htm

[87] Friends of the Earth Canada. An Assessment of Environment Canada's Delivery, Volume II: Ten Year Record of Environmental Prosecutions 1989 – 1999, (Ottawa: Friends of the Earth, March 2001).

[88] Brown, Paige. "Priming the Pump: How Pollution Charges Combined with Revenue Recycling help the U.S. Economy and Citizens" **Redefining Progress Backgrounder** No. 2. March 2000.

[89] Ibid.

[90] "Protecting the Climate while Safeguarding the Economy" **Redefining Progress Backgrounder** No. 3. May 2000.

[91] Swift, Byron. "Allowance Trading and SO2 Hot Spots – Good news for the Acid Rain Program" Vol. 31 no. 19 **Environmental Reporter**.

[92] Hawken, Paul et al, at x.

[93] See http://www.gov.nu.ca/sd.htm

[94] See http://www.gpiatlantic.org/index.shtml

[95] See http://www.sustainabletoronto.ca/

[96] See http://www.telusplanet.net/public/sustcalg/

[97] "A group of people from the Prince George area started work on a Land and Resource Management Plan (LRMP) in 1993. The approved plan will govern all land use activities on Crown lands within the Prince George planning area over the next ten years." See http://www.luco.gov.bc.ca/slupinbc/pgeorge/chap1.htm

[98] See http://www.niagara.com/~dmdorey/pals/pals.html.

[99] ***Chaperon v. Sault Ste. Marie (City),* [1994]**19 O.R. (3d) 281.

[100] Ibid.

[101] Immen, Wallace. "Cities want bigger slice of national funding pie" **The Globe & Mail**, Monday May 21, 2001

[102] At http://www.sustreport.org/background/sd_paper.html

[103] Frankel, Carl. **In Earth's Company** (Gabriola Island: New Society Publishers, 1998)

[104] In their book *Factor Four* (1997), Ulrich, Lovins and Lovins advocate a four fold improvement in resource productivity; the amount of wealth extracted from one unit of natural resource can quadruple in an efficiency revolution. This concept has expanded - companies and designers are developing ways to make natural resources – energy, metals, water, and forests – work four, five, ten, even one hundred times harder than they do today. Hawken, Paul et al. **Natural Capitalism: Creating the Next Industrial Revolution** (Boston: Little, Brown and Company, 1999) at page 12.

[105] Dobbin, Murray. **The Myth of the Good Corporate Citizen.** (Buffalo: Stoddart Publishing Company, Ltd. 1998) at page 10.

[106] Ibid.

[107] Statistics Canada 1997, *Employment Dynamics* (2000) cited at http://www.cfib.ca/research/reports/cda2000.pdf.

[108] Ibid.

[109] See http://www.cfib.ca/research/surveys/hrdfctsresults.asp

[110] See, for example, http://www.ic.gc.ca/cmb/Welcomeic.nsf/ffc979db07de58e6852564e400603639/0435abe6bc8e89e585256612004d907c!OpenDocument

[111] See http://www.bdc.ca/scripts/site/display-products.asp?&chk=1&language=eng

[112] See http://www.acoa.ca/e/index.shtml

[113] A 1998 poll undertaken by the federal government showed that, all on their own, almost 75% of small business owners were making good use of the benefits to their business offered by information technology. See: http://www.bdc.ca/scripts/site/display-publications.asp?&chk=1&language=eng&publication_ID=8&pubs_node_ID=140&volume_ID=18&issue_ID=1&issue_month=0&issue_year=1998&content_ID=150&pubs_current_ID=140&funct=archive&module_code=pubs_profit.

[114] Industry Canada. Industry Canada Sustainable Development Strategy 2001-2003. (Ottawa: Industry Canada, 2000) at 65.

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