

# SUSTAINABLE COMPETITIVENESS

LEARNING FROM THE FUTURE: NOVA  
SCOTIA AND THE CIRCULAR SOCIETY

June 2005

# Intentions

The intention of this discussion paper is to present a vision and high level strategy for growth that can...

1. Align the large number of provincial development strategies and those currently being developed in one common direction. At the same time, build on the province's past accomplishments, and extend present policy and strategy directions towards a new "destination" that will create a distinct market position for Nova Scotia that is consistent with global trends and demographic realities.
2. Provide a view of sustainability that unites the best interests of Nova Scotians in the areas of business, ecology and social development, and facilitates a more coordinated, consensus based path forward.
3. Create a compelling but achievable vision of a sustainable and increasingly prosperous Nova Scotia in a world constrained by international environmental regulations and material limitations, healing the split between economy and environment.
4. Provide basic principles that can, when understood and applied to the planning process, synchronize action in many different areas and levels without the need for central direction.
5. Translate NS Brand intentions and values into a policy and strategy framework to achieve sustainable growth and international competitiveness.
6. Promote a more integrated or systems approach to most aspects of general policy and strategy making in the provincial government.

## Definitions

***sustainable competitiveness*** - economic growth activities that enhance and restore the health of natural and social systems upon which present and future economic growth depends while, under fair market conditions, producing goods and services that meet the test of international markets and maintain and expand the real income of all its citizens

***circular economy*** - a structure of productive relations that move in a cycle of growth and renewal through eliminating waste and encouraging diversity in social, human and natural capital

***cradle to cradle*** - a term coined by authors William McDonough and Michael Braungart to describe the highly efficient process through which products are designed to biodegrade or be recycled safely at the end of their useful life and, in doing so, provide the raw materials for new products

***social, human, natural, built and financial capital*** - human, environmental and financial resources seen as the means of commercial enterprise and production

"The significant problems we face today cannot be solved at the same level of thinking we were at when we created them." Albert Einstein

## Sustainable Competitiveness

"Pollution is a form of economic waste."  
*Michael Porter*

### Perspective

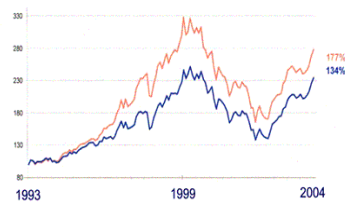
The prevailing model of economic development accepts that the impact of industrial activity is inevitably a harmful one, requiring elaborate regulations to keep it from damaging human life and the natural environment. To maintain this balance, governments deploy considerable resources to police industrial polluters and, in some cases, carry out costly remediation when their efforts fail.

The costs to productivity of reigning in commerce and employing government workers to monitor its impact, is considerable. As far back as 2000, Canada spent over \$3 Billion, and Nova Scotia spent roughly \$200 Million, on environmental monitoring and compliance. Even before this, environmental compliance in 1992 in the US cost \$115 Billion and remediation was estimated at \$700 Billion. Environmental intelligence is no handicap to competitiveness for companies or countries.

Estimating the true overall cost of environmental management and losses to productivity with any certainty is impossible, though some strong attempts have been made. However, it can be no coincidence that the most globally competitive economies and companies, as reflected in the [World Economic Forum's Global Competitive](#) and [Sustainability Indexes](#) and the [Dow Jones World and Sustainable World Indexes](#) among others, are those who make the most intelligent use of natural and human capital. (1)

Environmental, social and economic systems are increasingly inseparable. Government policies and strategies, if they have a fragmented view of these systems, can have a self defeating impact on them. When they fail to recognize and respect the integrity of what is a fundamental interdependence, their unintended impacts and consequences can contribute to serious problems. These problems then seem to either appear without warning, or to be so enduring they are accepted as inevitable or "facts of life". Solutions are difficult to achieve and often require expensive and unproductive remediation. They involve repairing problems that could have been prevented with a broader, longer view, better original design, clearer intentions and more effective collaboration.

### **Dow Jones Sustainability Index (DJSI) beats Dow Jones Group Index (DJGI)**



Enduring prosperity for a small region in a globally competitive marketplace is a complex process that demands all of its constituent parts be strong, mutually supportive and aligned. Productivity, in its fullest societal sense and, in the sense used here, is not just a measure of business output like single or multi factor measures; it is a reflection of overall social, environmental and economic well being.

## **Sustainable Competitiveness**

The concept of sustainability is now in widespread use by business and governments around the world. Virtually every jurisdiction has come to recognize that the future cannot support our current model of prosperity through growth. In response, they have tended to create inward looking sustainability strategies focused on a goal of minimizing the footprint of industrial activity.

By itself, sustainability implies that social, environmental and economic systems can be managed to support themselves and the continuance of life. In other words, the damage created by industrial activity can be sufficiently minimized to sustain the system at partial capacity or maintain the amount of degradation at sub-critical levels.

Sustainable competitiveness, as an approach to growth, in contrast to this, has a different intention. It aims to develop the twin edges of the province's productivity and competitiveness in a regenerative sort of way: looking outward to the best of emerging world standards and with a focus on the province's unique strengths, assets and opportunities for technical, scientific and cultural innovation. It aims to build a strong and wise process of development on our own terms. Sustainable competitiveness means investing in Nova Scotia's distinctive social, environmental and economic capacities in ways that will not only ensure their abundance and renewal but also their ability to continue to create value in the world markets we choose to challenge and explore.

Sustainable competitiveness recognizes that the challenge of global competitiveness must be met with the conscious management of both international membership and a celebratory awareness of distinctiveness. Our goal is to increase productivity, international presence and business opportunities to build enduring prosperity. To achieve this we must be a smarter, healthier, naturally abundant, more innovative, and enterprising population. We must invest our resources in niche opportunities where our natural strengths can allow us to dominate and be successful. The key to this is implementing social and economic systems that from their very design invest in our own diversity, adaptiveness and uniqueness in a way that constantly renews both our life supporting resources and our competitive edge. By investing in those things we value most we may ensure their survival and abundance. By improving our lot in skillful ways and with imaginative solutions, we are in a position to improve the lot of others. This is the circular economy and sustainable competitiveness.

Government is often pressured from many directions and has, historically, found this

integrated view challenging. However, the success of particular initiatives such as the Sustainable Communities Initiative, Coastal Communities Network and projects that empower regional talent and energy like them, point in the right direction. Managing and encouraging the kind of growth that occurs when social, environmental and economic systems work at peak output and work well together, producing both a vital healthy population and economic advantage will require governments at all levels to seek new ways of collaborating with each other and the private sector. It will also require a new systems view of its overall mandate.

Just as the performance of an Olympic athlete is the sum total of the quality of his or her personal and professional life at the moment of maximum effort – diet, sleep, emotional support, focus, ambition, attitude, technical training, even dental health - a competitive economy seeks maximum strength throughout.

From a systems point of view and in the sustainable competitiveness approach, living well is not only the best revenge, it is also the surest path to enduring prosperity. (Branding the qualities of a place, encouraging pride of place internally and showcasing the best externally can be a powerful tool in this process. Nova Scotia's "Come to Life " Program is an excellent example of this approach as it begins to find traction.)

This paper will focus on the stewardship of natural capital or environmental aspects of sustainable competitiveness with only passing references to the social and financial. They are, of course, inseparable and critically joined. Many of the same principles that support the well being of one are applicable to the other. This is an important principle of sustainable competitiveness. Thoroughly exploring these other dimensions of sustainable competitiveness in collaborative fashion, is critical to the future well being of Nova Scotia.

Understanding and practicing sustainable competitiveness urges us to meet world standards reflected in Nova Scotia's own unique strengths. It is a challenge and an invitation for Nova Scotia to find a strong and abundant place in the world and prosper in doing so.

## Uncovering Nova Scotia's Genius

"Intellectuals solve problems, geniuses prevent them."

Albert Einstein

"Nature does nothing uselessly."

Aristotle

Sustainable competitiveness will only be achieved after many barriers are overcome. Some are structural and some are attitudinal. In the long term, for government, it will require, at least, a fundamental review of the intent and impact of government policies, regulations, government procurement and the way they work together to fully understand future productivity. It will also require inspired leadership and public and private investment. It is a signpost pointing toward prosperity - not an easy solution.

To *maximize productivity* and push towards unrestrained growth a sustainably competitive economy must become both efficient and generative. It must, in the way it operates, support the development and growth of the living systems, natural and human, that support it and achieve technical sophistication. Products in common use (both synthetic and biological) must be biodegradable - safely decomposing into nutritional material. Toxic substances and those that can be recycled, such as metals and plastic, must be managed within closed loops that do not contaminate natural systems. Products must be redesigned so they can be efficiently assembled and disassembled into their constituent parts for easy handling. Energy must be used wisely until at some point in the future it all comes from renewable sources (and meet the challenge to be dispatchable on demand). In essence, the highly productive, innovative economy of the near and distant future will be one which has come closest to eliminating waste and wasteful and harmful practices in ways that optimize resources and support constant renewal and creative solutions.

Industrial systems and the built environment can be re-designed to support the renewal of resources and the elimination of waste. The challenge is great and so is the reward. This is the vision and design of an adaptable regenerative economy, from an environmental point of view, that will sustain high and virtually unlimited levels of productivity, and growth into the future. An economy that enriches its natural surroundings requires much less regulation and remediation.

We can fruitfully reflect on what ending wasteful practices and optimizing our capital resources in the social and the economic realms might mean to overall productivity. Such a successful society, while it will naturally create its own set of unique problems, can relinquish many of the barriers to growth we experience now and translate its productivity growth into wealth.

When all materials provide nutritional value or can be recycled there are no inefficiencies, chemical hazards in production, transportation and consumption, and no costly unproductive remediation required: when energy sources can be renewed

without creating an additional carbon burden there are, essentially, no limits to growth. Such a goal is ambitious and fraught with challenge, but profoundly worth aiming for and achieving. The seeds of such a prosperous system exist in Nova Scotia.

Where the First Industrial Revolution created products and buried them at the end of their useful lives at great cost to the public purse, “cradle to grave” style, the new industrial economy will create closed recycling loops, “Cradle to Cradle” style (C2C) where the end of one product’s life produces the materials for the beginning of another. In the 25 countries of the Europe Union, China and Japan, aggressive legislation requiring extensive recycling has already taken this concept far beyond imaginative thinking. An excellent example of this is the European Union’s regulations that all motor vehicles be 85% recycled by their manufacturers at no cost to the consumer by 2006 and 100% recycled by 2015.

In China , Cradle to Cradle is also known as “the Circular Economy”.

When production and consumption are actually good for the natural environment, when products decompose and harmful materials are safely managed, there is no need to be restrained or austere. Innovation can flower and with it abundance and economic growth. In an economy without waste, consumption is good for the natural environment. Throwing away becomes “good” in the same way that a tree dying and decomposing into food for many other species, as well as eventually its own replacement, is “good”. When a bio-plastic bag is disposed of on a compost heap it returns vital nutrients to the soil and disappears without waste disposal cost or liability.

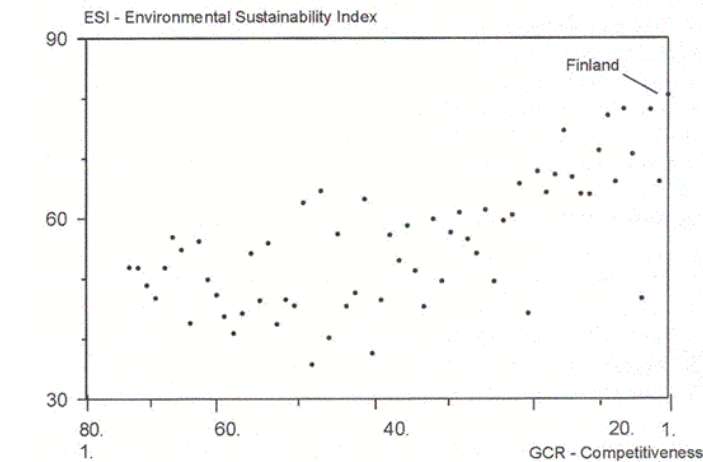
William McDonough and Michael Braungart, the authors of the book *Cradle to Cradle: Changing the Way We Make Things*, point out that this fundamental conceptual shift leads to design strategies that may be surprising, “instead of using only natural, biodegradable fibers like cotton for textile production (a pesticide-intensive agricultural process), why not use non-toxic synthetic fibers designed for perpetual recycling into new textile products? Instead of directing intelligence towards regulation compliance and liability reduction, why not design industrial processes and products so safe they do not need regulation, and direct creativity towards maximizing economic, social, and ecological benefits ?”.

## The Growing Reality of the Circular Economy

"We ran the numbers - and in every case so far the zero waste strategies have been more profitable than the more 'reasonable' strategies they were replacing." Dawn Rittenhouse, Dupont's Manager for Sustainable Development when the company agreed to its employees "unreasonable" request for a zero waste goal for the company.

Is such a circular, generative economy possible in a competitive, global, material and carbon constrained world? In fact, work towards this long term vision has already begun in the most competitive economies on the globe. In Nova Scotia, we can pay attention to this trend and find our own unique leadership role within it.

### Competitiveness goes with environmental sustainability



Source: World Economic Forum

Environmental intelligence is being seen in these countries as a spur to innovation that will result in better, more competitive products. Many countries are developing a strong design capacity and new materials and processes that support environmental health and save money.

Fifty percent of the country of Finland, which leads the world in competitiveness and sustainability (World Economics Forum) and ranks third in Europe for innovation, is heated by waste thermal energy from industrial and electrical power generation sources. The cost savings to business and a contribution to competitiveness is over 30%, which represents a saving of 460,000 tons of oil per year or about 4 million barrels.

A steel mill using recycled scrap reduces related water pollution, air pollution and mining wastes by 70%. For each ton of newspaper recycled, the cost of cutting 17 trees is avoided. When scrap iron is used instead of iron ore to make steel, mining wastes are reduced by 97%, air pollution effluents by 80% and water pollution by 76%. It takes 95% less energy to produce new aluminum from discarded aluminum pop cans than from raw materials. Recycling one glass bottle in the making of a new glass container saves enough energy to keep a 100-watt light bulb burning for four hours.



In 1996, DuPont's environmental compliance bill was \$1 billion which equaled its R&D expenditures. In the last decade, Du Pont has reduced its energy use by 7%, saved \$2 Billion and lowered its carbon emissions by 72%. Hewlett Packard in Roseville, CA reduced its waste by 95% and saved \$28 million. Epson in Portland, OR reduced its waste to virtually zero and saved \$73 million in 2005. Interface Inc. in Atlanta, GA has saved over \$260 million through waste reduction and aims at zero waste in 2020. Xerox Corp., Rochester, NY has had a Waste-Free Factory environmental performance goal since the early 1990s.

The criteria included reductions in solid and hazardous waste, emissions, energy consumption, and increased recycling. Savings were \$47 million in 1999. The oil giant BP reduced its carbon emissions and saved \$650 million over 10 years. GE, one of the largest corporations in the world, has committed to reducing its energy use by 30% .

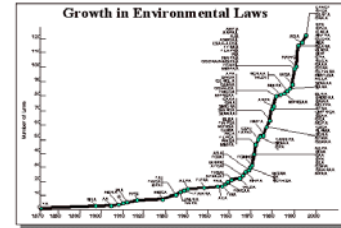
Increasingly these environmentally conscious companies are forcing their standards for frugality, cost savings and consumer-pleasing environmental performance downward to their suppliers around the globe.

But the benefits are not just available to large international corporations. Through the Eco-Efficiency Center in Burnside Industrial Park a [pilot project of business assistance for Nova Scotia small businesses](#) looking to improve their environmental and business performance has already helped to save over 7,000 tons of Green House Gas emissions, 4.5 million tons of water and over \$1 million in business costs.

Initiatives like The Carbon Disclosure Project (now in Canada), representing \$31 Trillion of investment capital, require companies to report on their Climate Change performance. The Equator Principles, launched by the World Bank, outlining principles for responsible investment, have been implemented by more than forty of the world's leading investment banks. These are indicators of the growing "smart money" concerns over our environmental situation and its impact on business futures.

To service markets where environmental concerns are being entrenched in progressively more stringent regulations such as [Europe](#), [Japan](#), [China](#) and countries like Brazil as well, new materials and processes must be developed to replace the old.

New products for new purposes to accommodate the huge numbers of new types of consumers must be found. Products must be put together and taken apart in different ways to allow them to be recycled fully to meet new regulations. New energy sources must be exploited that neither pollute nor diminish resources; and health and diversity in natural and social systems must be encouraged in order to sustain variety, innovation and creativity to meet the demands of business competition and technological advance. This requires long range scenario planning, design capacity, creativity, collaboration and an outward looking international approach with strong



This chart shows the increase in numbers of US environmental laws. [Click to access larger original.](#)

expatriate and alumni contacts and a good knowledge of markets. It means making our size work for us through clustering and developing design. Focusing on the development of all these capacities will be critical for export growth in Nova Scotia.

In 2005, the 25 countries of the European Union, representing the largest trading bloc in the world, introduced the first in a planned succession of new WEEE regulations that have banned 14 categories of electrical and electronic household devices including computer, communication, entertainment, health, leisure and sports equipment and large and small appliances from landfill sites. These products must now be returned to their manufacturers for disposal and recycling at the end of their useful lives in closed manufacturing loops. As well, through RoHS legislation, a number of toxic materials such as lead, cadmium and brominated flame retardants have been banned from products such as tools, toys, appliances, electrical and IT equipment.

Japan and China have introduced similar and some more stringent bans. Much of China's (2) newly aggressive stance on environment and economy is based on Japanese regulations on recycling and banning materials that has created huge opportunities for that country to export its expertise. Nova Scotia is currently considering somewhat similar regulation in the area of electronic waste disposal.

Despite some setbacks in the tougher regulatory positions, these waste elimination regulations have created a wave of innovation across the 25 countries of the EU both in materials and in the way these products are designed and manufactured. This will result in better products that are more competitive and more useful. The cost benefits will be considerable. As well, new services are springing up to accommodate the new business models compliance with the regulations require.

China has recently announced tough environmental import regulations that have sent American electronics companies into urgent negotiations (rather than innovation). In fact, in March 2004, the Premier of China noted that because China consumes 40% of the world's resources and is expected to grow ten fold in the future, his country's direction for growth is the "circular economy". The Vice Minister of Science and Technology stated more specifically that China will adopt a C2C approach to economic growth. In fact, they have hired the C2C authors Mc Donough and Braungart to develop 7 new industrial cities in China and the protocols for constructing new housing units for 400 million workers.

A number of the world's largest corporations have thrown their weight behind the circular economy vision in its various forms : companies like Ford, Nike, Herman Miller Office Furniture, Shaw Industries (the world's largest producer of carpets) the German chemistry giant BASF, Dow, British Petroleum, Shell, Steelcase Corporation Pepsico and many others.

Products consumed and recycled in the same location are usually more economically manufactured in that location. The strategic importance of design, good financial and

legal structures, vibrant work force, quality of life and intellectual property in general to wealth creation is also greatly magnified in this vision of the future.

The Circular Economy vision represents a tremendous opportunity for innovation and enterprise very much rooted in the present. Studies by several American cities, for example, have demonstrated that preventative measures where natural systems at risk affect humans have resulted in savings from 7.5 to 200 times the costs of remediation or end of pipe treatment. A particularly good example of this is the city government of New York which has avoided a capital cost of \$4 to \$6 billion and an annual cost of \$250 million to treat polluted drinking water by carrying out reforestation and providing \$100 million annually to support environmentally intelligent farming practices within its watershed catchment area.

Sony now produces CD's made of corn-based polylactic-acid polymer that decomposes into nutrition in 50 to 100 years. Sony produces Smart Cards from the same material that last 10 years before becoming compost. BASF, the German chemical giant a C2C company worth \$42 billion in annual sales produces a new range of green products including plastic wraps that become compost in 6 months and wall board that stabilizes room temperature through its basic composition.

Companies like the textile producer Milliken are close to zero waste manufacturers. Cargill-Dow has developed new materials that can allow a wide range of products from cars to candlesticks to decompose into nutritious "waste" and biodegradable plastics are readily available. Motorola's new cell phone body is made from a polymer which becomes fertilizer when immersed in water for a period of time and has sunflower seeds embedded in it, to reinforce the point.

Volvo has added a new coating to its car radiators that converts ground level ozone to oxygen on contact; a BMW is built to be completely recycled at the end of its useful life. Shaw Industries, the largest manufacturer of carpets in the world, now produces floor coverings that contain no toxins and can be completely recycled. The company provides a floor covering service instead of selling carpets.

New materials and architectural designs are creating buildings capable of generating more energy than they consume (the new RCMP headquarters in Amherst will sell electricity it generates back into the provincial grid. Springhill's use of geothermal is an excellent example. In Nova Scotia we have local expertise in a technology, being used now in Europe and Western Canada, that stores solar heat gathered during the summer and stores it underground in bedrock wells for winter use could reduce fossil fuel requirements by 70% or 80% or as much as 100% in the right location. )

## **The Circular Economy**

### **Implementation**

Sustainable competitiveness is a vision for an abundant future related to the need for a greater and more competitive presence for Nova Scotia in new markets. But it is

also a strategy for a broader view of prosperity and well-being to be pursued in the present. The task of putting natural and man-made systems into interlocking spirals of self supporting growth may seem either optimistic or daunting, but it is at the very least, an exciting invitation to innovate. It has to begin with clear intentions and appropriate structure. If our intention is to eliminate waste, all players need to know this and can focus their efforts. It also requires systems thinking on the part of those who design and steer. Peter Senge in the Fifth Discipline Workbook defines a system as " a perceived whole whose elements 'hang together' because they continually affect each other over time and operate toward a common purpose". Understanding how systems work and the importance of how they are designed to preventing later problems is key to success.

To achieve a sustainably competitive economy, while industrial activity continues to be on some level fundamentally harmful, it will be necessary to continue with our current strategy of reducing the impact of this activity in the interim. The path forward toward a waste free society will certainly be full of compromise and set-backs. But there are considerable advantages to having a clear, strong and shared intention.

Nova Scotia has already achieved world recognition for its progress on this path, particularly in the area of solid waste management. With a strong intention it can achieve even more.

Across the province significant progress is being made. We have one of the few tidal power projects in the world and more are contemplated, windmills can be found across the province and Nova Scotia's goals in green energy are growing, new programs encourage conservation, municipal governments are involved in some bold environmental initiatives as is the private sector, the management of waste and finding alternate energy sources; progressive local regulations have created companies that can export innovative services internationally, the work of the Resource Recovery Board continues to yield great benefits, the further development of smart regulations by government that support both innovation and well-being and a new focus on green procurement, new commitments to renewable energy, the internationally recognized Dalhousie Eco-Efficiency Centre and green research across our post secondary institutions (the discovery of chemicals beneficial to the nervous system in diseases like Parkinson in apple peel, an abundant waste in Nova Scotia, is a perfect example of some of the innovation opportunities), Clean Nova Scotia, Bedford Institute of Oceanography. These are just a few of the many who are contributing to a competitive advantage in this area.

Companies like Stora- Enso and Michelin have been recognized for their environmental leadership intentions internationally and a number of smaller Nova Scotia companies in the environmental industries themselves but also companies like C-vision with their environmentally conscious electronics; Solar Dynamics a world leader in solar technology; Pure Power Batteries making green electrical storage products, Ocean Nutrition producing biofuel from fish waste, Bebbington Industries and green cleaning products, M-I Drilling Fluids greening the drilling industry, Miller

Tire retreads, Minas Pulp and Paper recycling and green power, Advanced Glazing energy efficient windows and others have and are developing innovative and more sustainable products. ClimAdapt, a unique business alliance around Climate Change services and opportunities, is being studied internationally as a leader in its area of expertise .

Across government but also in many other areas there is an interest and commitment to sustainability. But this will not be a fully competitive approach without a shared and comprehensive vision: one that involves a commitment to design thinking and a subsequent redesign of critical systems to make them beneficial (rather than less harmful) to the natural and human environment.

Recognizing that the Circular Economy is the only option for a truly abundant future can provide the lead time necessary for government to assist Nova Scotia companies make the investments necessary to compete in this future world and its challenging demands. This is a process that requires time to implement.

## International Competitiveness

"Compliance is not vision."

Ray Anderson

"History teaches us that men and nations behave wisely once they have exhausted all other alternatives." - Abba Eban

In 2004/05 when Canada slipped from 12th to 15th place in the World Economic Forum's Index of most globally competitive countries, the prescription for improvement from world renowned Harvard economist Michael Porter and others conducting the study for the Forum was "... to become more competitive through unique products and processes and compete more on adding value to products and services in areas such as product design ...".

Canadian companies, like those of other nations, are increasingly looking beyond US borders to opportunities in new lucrative markets. There are a number of obstacles to selling in markets beyond the US for Nova Scotia companies. One of the non-tariff barriers to international markets is stringent environmental regulations and standards brought on by Kyoto commitments, geopolitical resource security and the cost of waste management. Also, many of these markets are design powerhouses themselves and produce very high quality products and services.

While sustainability implies more intelligent engagement with natural systems, competitiveness implies an increasing presence in world markets and an emphasis on trade as a generator of wealth and a driver of excellence.

This requires an intention to grow towards desirable international standards and an equal and opposite focus to bring this about through local improvement and well being. That is, improving local drivers of growth and capacity, such as innovation, good design of domestic and commercial systems, product design and management and development capabilities, creativity, health and confidence, enterprise culture, knowledge and particularly diversity and distinctiveness.

Economists are preoccupied with the relationship between productivity and wealth. Local productivity is a critical driver of wealth, but it is complex in its nature and needs to be understood within an overall context of the relationship between natural, social and environmental capital.

A sustainable competitiveness strategy reverses the commonly held wisdom to "*think globally and act locally*". Instead it urges us to "*Think locally and act globally*". This reflects the need to develop local capacity and vibrancy to support niche development and unique products and services; to be both efficient and effective. This is achieved by building on local strengths based on local conditions and supporting, where appropriate, local buying (especially food). It means improving standards and specifications to develop sophisticated and demanding domestic markets that will create a challenging test bed for exporters: promoting inherent distinctiveness which relates to, among other things, diversity in its many forms and at the same time understanding what elements of this hold inherent potential for commercial success. It requires innovation through "smart" progressive outcome-based policy making linked

to good design and business and innovation resources. It means exploiting niche opportunities and branding.

This is clearly not a strategy for every single business - each company will have its own individual strategy for market competitiveness - but it can be an overall guiding approach to economic development for government intervention: one that addresses market, community and industry development and turns the province's small size from a handicap to an advantage. Large corporations have been more able to respond to C2C ideas because of the investment involved. However, opportunities for action at a smaller scale (small business and communities) exist and can be explored, and governments may have a role to play in facilitating this investment by the private sector.

## Beyond C2C: The Five Capitals Model of the Circular Society

“The question is not growth or no growth. It’s what do you want to grow ?”  
Bill Mc Donough, The Next Industrial Revolution

Thus far in this paper, the concept of sound economic growth has been discussed largely in the context of the development and nurture of natural capital. But to understand the full implications for economic growth and develop practical means for implementation requires a more comprehensive view of the province’s productive capacity.

We can think of our capacity to create and recreate our livelihood in five categories. These are the raw materials of prosperity and wealth and can be understood as both stocks and flow.

**Natural Capital**- the water, air, flora, fauna, ecological relationships, place

**Human Capital**- health, attitude, creativity, skill

**Social Capital**- organizations, social fabric, culture, governance,

**Built Capital**- tools, machinery, buildings, infrastructure

**Financial Capital**- money, credit, financial contracts and agreements

In combination, they are woven together in the productive activity and resource development that characterizes our daily lives and labour.

### The Principles of Sustainable Competitiveness

In order to ensure the efficient and effective use and abundant renewal of these productive capacities we can approach their stewardship with the four principles of sustainable competitiveness.

- 1. Optimize resources** - add value to raw materials, pursue the highest use of resources, train, learn, educate, collaborate, preserve the best of the past by investing in it, create lush habitats, healthy buildings, “productivity by all means”, look for leadership opportunities for meeting and surpassing international standards.
- 2. Eliminate waste (waste=food)** - work to eliminate pollution and restore natural systems, eliminate financial, energy and material waste that increase costs and reduce productivity. Find opportunities in waste elimination. No wasted human resources, ideas, talent, lives.
- 3. Invite diversity** - encourage difference, innovation, creativity, immigration, multiculturalism, biodiversity, diversified economy, focus on niche opportunities where small size is an asset, focus on local solutions as global exports, import solutions where this creates local advantage
- 4. Build-in renewal** - design systems to be adaptive to change, start with the efficient consumption and renewal of all socially, environmentally and economically productive systems in mind, recognize demographics, focus on renewal of technical



knowledge, succession planning, refreshing competitive edge through international presence, awareness and understanding of trends.

This creates a possible matrix for thinking productively about growth and stewardship of the circular economy and developing strategies for action.

The Capitals	Natural	Human	Social	Built	Financial
The Principles					
Optimize Resources					
Waste=Food					
Invite Diversity					
Build-In Renewal					

## Opportunities for strategic thinking around sustainable competitiveness.

“The best time to plant a tree was twenty years ago. The next best time is right now.”

Chinese Proverb

A truly circular economy is on the far horizon and will only be reached by a complex path, but given current global realities, it is probably unavoidable if growth and increased consumerism are to be sustained. To place Nova Scotia well in this future international economy the time to prepare is now. Sustainable competitiveness proposes, with further exploration and elaboration, these principles can be as rich a source of growth

strategies in the social and economic realms as they are the environmental.

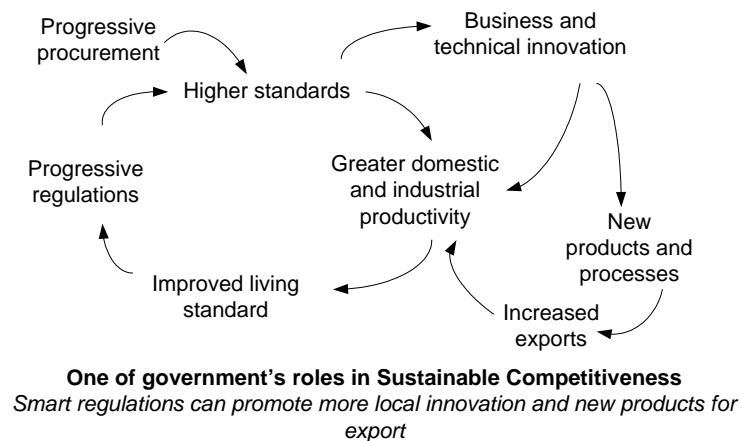
They create a vision of a circular, generative society – one where addressing the changing needs of all its people (and other species) is a

rich source of new products and services. Demographic and life-style changes represent real opportunities for the development of new products and new improvements and efficiencies.

Critical elements of a waste free society and economy rest on the image of “circularity” and renewal. This means a focus on the flow of learning and information, structural feedback and renewal between and among generations, efficiency and the elimination of waste in social and economic capital, coupled with more efficient social networks.

The circular society (and economy) is one in which there is great continuity between generations, an absence of waste of all kinds, succession planning, a focus on competence based on the renewal of skills and knowledge, integrated policies based on systems thinking, rich information flows and rapid feedback from initiatives, creativity and innovation through encouraging rather than eliminating difference, solving problems and creating efficiencies with ample foresight and good design rather than repair - leaders as designers and designers as leaders.

The elimination of waste in the social realm implies the retention of human capital in all forms, talent, energy, enterprise, - the construction of creative and adaptive developing qualities of citizenship, inclusiveness (no talent is wasted), inter-



generational dialogue, succession planning, lifelong learning, cultural diversity and tolerance, enhanced networks etc.

A number of these kinds of ideas can be explored :

- ✧ mentoring assistance for new and emerging enterprise (the emerging also mentor the established in what is new),
- ✧ promoting local growing and local buying where this is appropriate. Branding.
- ✧ connecting local spending by government with developing standards, linking innovation and business development resources,
- ✧ designing flexible buildings and a built environment for evolving life styles,
- ✧ investing in energy efficiency and design excellence in the built environment,
- ✧ the full exploitation of renewable energy opportunities, niche product development, assisted technology transfer from world sources,
- ✧ investing in lunar or green, marine technology,
- ✧ inter-sectoral innovation, emphasis on rich commercial “small-world” networks,
- ✧ a focus on promoting health, nutritional and learning for disadvantaged children (the next generation of enterprise on which our future depends) and in the population at large,
- ✧ adult career re-training on demand within convenient hours for those who need it,
- ✧ the development of a strong design capability in the province in all areas which may represent a cost effective source of innovation, (the development by NSCAD students of a number of new products that have gone into production based on observing the health care system, is a good example of this).
- ✧ a strong focus on leadership development particularly among the young, the disadvantaged and the marginal,
- ✧ an emphasis on micro-credit, business and enterprise development for the poor through social entrepreneurship.
- ✧ “feedforward” (vs feedback) - an emphasis on monitoring and understanding future trends, forces and emerging patterns.

These are some beginning points for discussion and exploration.

## Next Steps

“When there is a genuine vision (as opposed to the all-too-familiar ‘vision statement’), people excel and learn, not because they are told to, but because they want to.”

Peter Senge, MIT Sloane School of Management

In this circular economy approach, the vision is not so much of a final destination – these visions are usually shelved and ignored - it is a vision of a different and better way to journey.

Immediate action towards a circular, Cradle to Cradle, waste free economy and society could fall into 8 categories.

1. **Working Vision and Principles**
  - Establish a unifying, workable and compelling vision of future prosperity. Ensure its principles are widely understood.
2. **Sustainable competitiveness in the social and economic**
  - Define social and economic sustainability and how it can support productivity. Review programs.
3. **Structure in government**
  - Review integrated policy capacity in government and provide systems training.
4. **Procurement and Supplier Development**
  - Green procurement within government and supplier innovation. Link to business development and innovation system.
  - Improved design of macro and micro infrastructure systems
5. **Product Development**
  - Develop a C2C product and design centre of excellence among universities and agencies to develop new products and services for new markets.
6. **Education**
  - Increase design capacity in the province in all areas.
  - Remake government as an information provider.
  - Encourage management schools to incorporate design training and cradle to cradle management abilities.
7. **Energy**
  - Connect new energy strategies with innovation and business initiatives.
8. **Branding**
  - Explore how life enhancing systems communicate the “Come to Life” message.

## Vision and Leadership

"Insanity: doing the same thing over and over again and expecting different results."  
Albert Einstein

Nova Scotia has already received world recognition for the progress it has made with waste management. The benefits from this are accruing. It is now time to build on this hard won competitive advantage with a workable vision and plan of action for further development of the "circular" renewable economy through a small but important shift in expectations.

The people of Nova Scotia, from experience, understand what is required in order to become environmentally intelligent and understand the benefits of this kind of investment. The productivity advantages to a better designed system must also be understood and communicated. There is an opportunity to more widely exploit a no-waste strategy for productivity.

The Circular Economy approach is remarkably more ecologically positive in its outcomes than most "environmental" approaches and at the same time more business friendly than current industry views. It addresses with a concept easy to grasp (difficult to implement) a common path forward for those at the ideological extremes.

A broad based inquiry and applied creativity around two questions is required.

First, **what do we want to create together?** Not an "is the glass half full or empty" discussion about what compromise will we settle for, but what collectively will we create in order to prosper according to our most commonly held vision of living well into the future.

Second, **how can this be expressed in a society/economy that can continuously renew itself** as necessary and, thereby, amply meet the needs of present and future generations in a world of challenge, demographic shifts and competition?

Civil servants in Nova Scotia are looking for guidance and a vision that will ensure the value, dignity and meaning of their work on behalf of the public, themselves and their own families. There is a growing sense that the important questions of the day need to be addressed and cannot be solved in isolation. New tools and new ideas are needed to accomplish this.

The people of Nova Scotia are asking for a bold but workable vision of a future worthy of their best efforts and cooperation; a vision of a life well lived together that's safe, abundant and reachable ... for them, their children, and their children's children...

If not us, who?

If not now, when?

## Notes on Strategy

The concept of sustainable competitiveness proposes that the two challenges - international competitiveness and sustainability - are actually part of the same opportunity. In practical terms this could mean that...

A province or community that is sustainably competitive will:

- attract investment by developing local resources and productive capacity in ways that are distinctive, create competitive advantage and are adaptable or renewable
- build a culture of celebration, and invite diversity
- promote energy renewability, conservation and resource stewardship, turn climate change adaptation into competitive advantage
- encourage public sector research and development focussed on sustainable goods and services
- strive to meet (or exceed) international standards where this promotes a higher quality of life and more competitive local markets
- build advantageous relationships among External Initiatives such as foreign investment, tourism, transportation, universities and colleges, exports, immigration, trade; and its Internal Initiatives, such as business assistance programs, community economic development, regulations, taxation, resource management, skills development, procurement infrastructure
- use size to advantage by fostering small adaptive systems and high levels of collaboration
- create responsive systems that when evaluated provide not only feed-back but information about new emerging trends and patterns that may present opportunities
- promote the cluster development of industries and networks of excellence
- promote both sustainability and competitiveness through good policy stewardship, wise procurement and innovation
- understand the importance of good design in all areas of the economy to productivity
- actively invest in its brand
- look to partnerships to help get things done
- take a long term approach that promotes adaptability.

An industry or business that is sustainably competitive will:

- look to niche opportunities in new markets and new products for growth
- invest in research, development and training that builds on local solutions
- strive to meet (or exceed) international standards, finding niche opportunities and capitalizing on local strengths where this creates an advantage (think locally, act globally)

- work towards making products recyclable or biodegradable
- enhance and renew the capital resources, especially human and natural, needed to remain competitive
- look to alliances and partnerships to capitalize on aggregate skills and resources
- invest in productivity
- transform new or under-used capacity or waste into higher-value products through innovation
- conserve energy and be aware of climate change impacts
- understand the importance of design for creating globally competitive products, and increasing productivity
- build flexibility, adaptability and responsiveness into systems
- gather information about emerging trends
- take a long term view.

An individual who practices “sustainable competitiveness” will:

- invest and reinvest in their skills and education on a life-long basis
- encourage variety, balance and renewal in their families and communities
- find ways to enhance the natural and social environment
- support local companies and products that demonstrate excellence
- build-in energy conservation and use resources wisely
- save and invest in good local opportunities
- promote their own health and the health of others
- appreciate the value of good design in solving problems up-front and be a demanding consumer
- be creative, innovate and open to diversity
- take along term view that allows for adaption to changing circumstances.

(1) At the end of this presentation is a comparison chart of the performance of the two indexes [www.radtech-europe.com/download/weizsackerpaperjanuary2004.pdf](http://www.radtech-europe.com/download/weizsackerpaperjanuary2004.pdf).

(2) <http://www.iaer.org/summit/presentation2005/Ferris.ppt#7> This presentation by Holland and Knight is a rich source of environmental regulatory initiatives in China.