

The "GREDA" DOCUMENT

A Green Sustainable Development Strategy for Northern NB

A Vision for Sustainable Economic Development for the 21st Century

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Bathurst Sustainable Development wishes to apologize to the region for the lack of translation of this document. Bathurst Sustainable Development is a non-profit organization. Donations and or contributions in kind towards the cost of translation of this document will be greatly appreciated.

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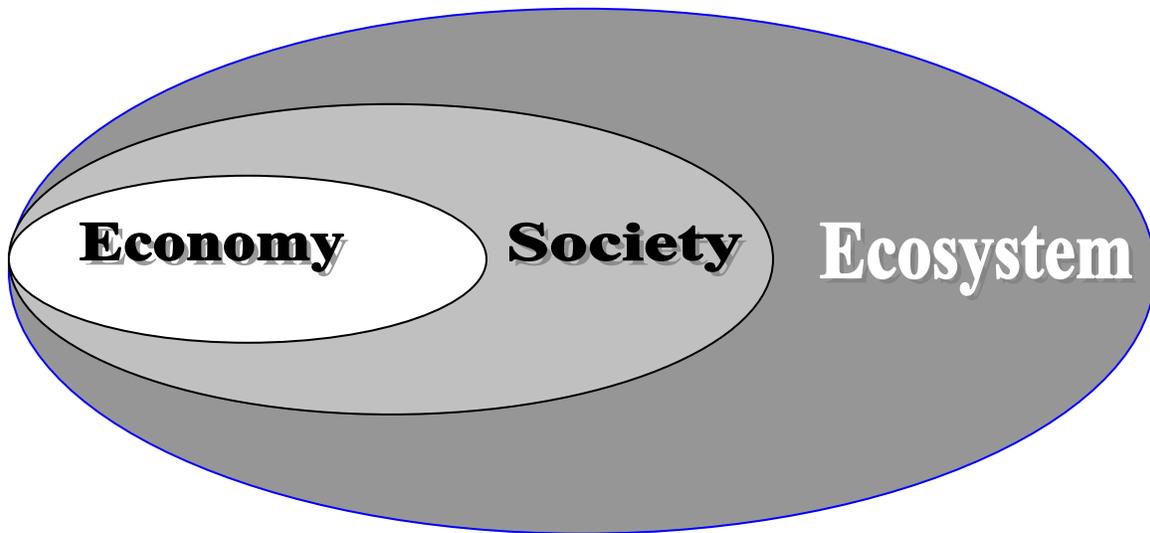
1.0 Introduction

The question of the century is:

How best can we shift to a culture of permanence, both for ourselves and for the biosphere that contains us!

Edward O. Wilson, the Future of Life, 2002

Vision of Sustainable Development



The Environment IS Our Economy

The environment of planet Earth contains all of the life support systems and eco system functions needed in order to sustain humans, all other species and plant life.

The most critical eco system functions are: air, water, atmosphere and land or terrestrial. If these life support systems are not able to function properly or kept in a healthy state, human life which includes our societies and our economies cannot function. All of the natural resources that we require for our lives, societies and our economy come from the eco systems on this planet. Our economies must work together with humanity to identify non polluting economic activities and to protect and sustain the eco systems we all depend on.

Some suggestions of non-polluting industries and their potential for economic development in this region are: (there are hundreds of others)

Micro Brewery

Winery

Wind Power Development

Solar Power Development and Distribution

Composting, Recycling

Organic Agriculture Expansion

Frozen, Fresh and Packaged Vegetarian Food Products

Sun-Dried Tomatoes Production and Products

Seniors Services

Retirement Villas

Health Services- various

Residential and Agricultural Rain Water Harvesters

University Campus

Television and Movie Production

Intellectual Events and Lectures

Gluten Free and Organic Bistros

A Cultural Village

A National Park

Greenhouse Food Production

Energy Home Retrofitting

Green Festivals

Chocolate Factory

Classy Evening Coffee Houses

Urban Transportation

Research

Health Spas

Specialty Schools

Training Centers

Research Stations

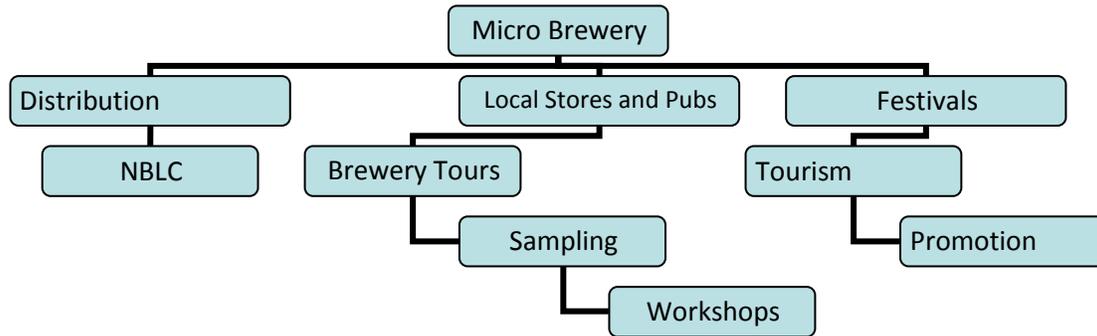
Ecological Tourism Attractions

An English University

Telecommunications

Potential Spin-off and Economic Activities

Example 1: Micro Brewery



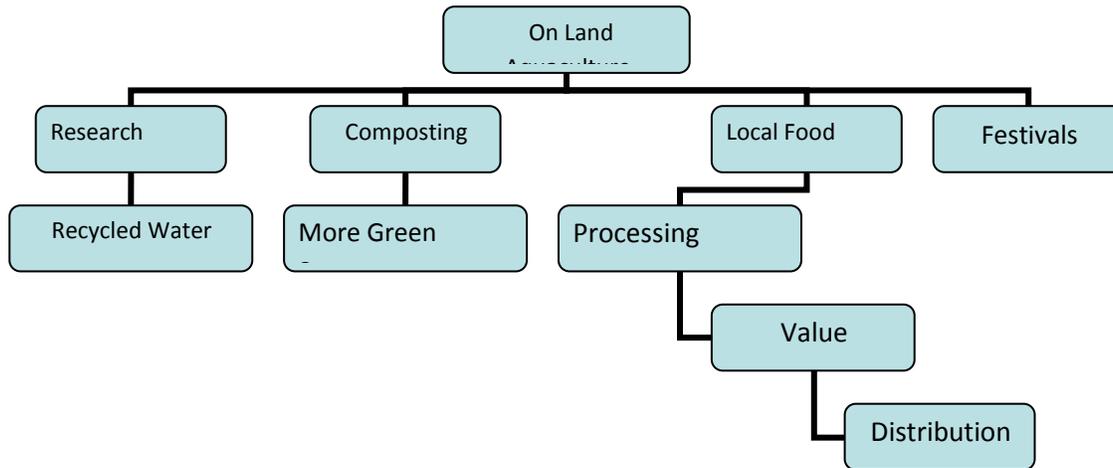
Example 2: INDOOR and ON LAND AQUACULTURE

Vancouver, B.C. - International Water-Guard (IWG) has made another sale of ultraviolet sterilizers to Connecticut Aquaculture, which is expanding its unique, non-polluting indoor aquaculture facility in Thompson, Connecticut. The follow-on order for three ultraviolet water sterilizers is representative of IWG's emphasis on aquaculture as an international growth market.

"Natural fish stocks the world over are either disappearing, or under stress, which means an increase in fish farming of all types is inevitable," said Bill Coote, President of International Water-Guard "We see that as a natural fit with our knowledge of water filtration and sterilization."

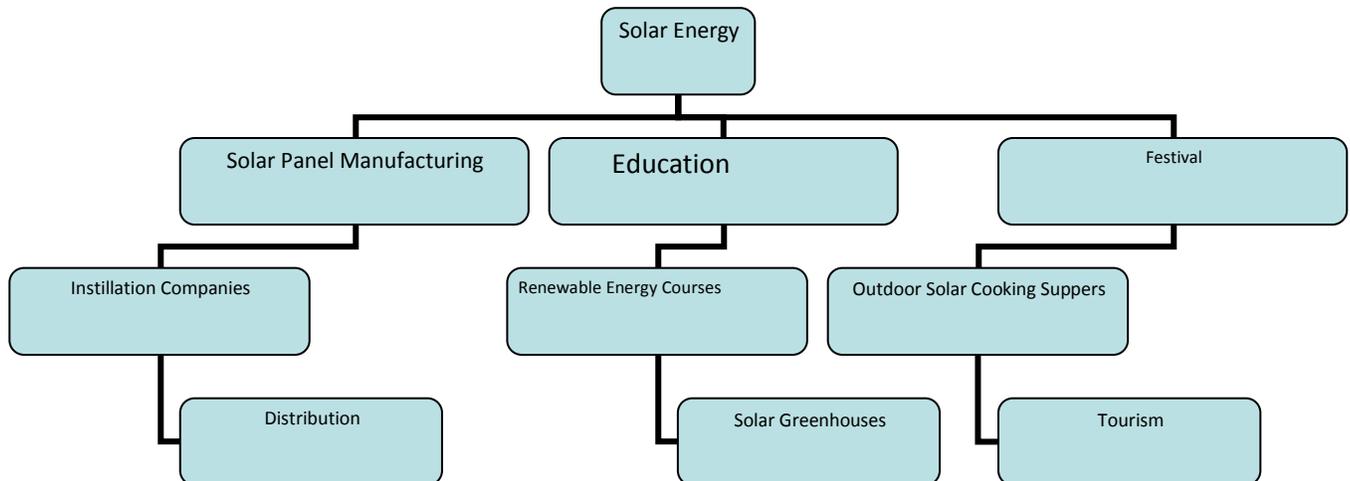
Richard Fahs, CEO of Connecticut Aquaculture also see a huge and growing global demand for fish. "With over-fishing and the impact of pollution, there is a worldwide fish deficit of 63 billion pounds per year," he said. "Our aquaculture technology has the potential to literally feed the world without impacting either wild fish stocks, or the environment."

Aquaculture Research



SOLAR

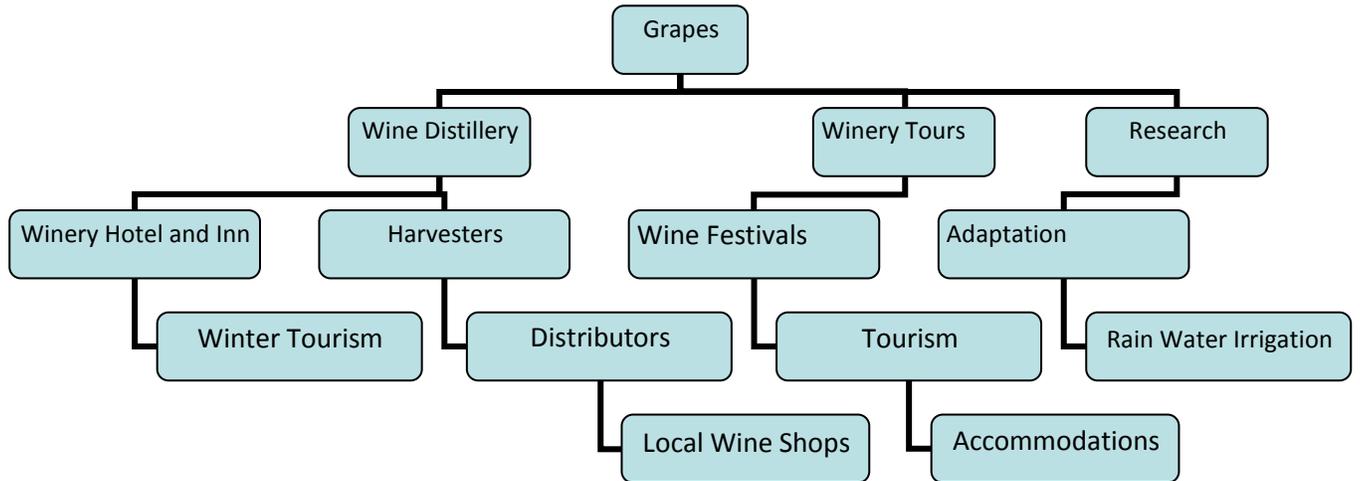
Since it is the initiative of the federal Government to retrofit 20% of all residential and commercial properties to a higher level of energy efficiency and or renewable energies, and since sustainable business and industries have the ability to draw all or a portion of their energy needs from Solar:



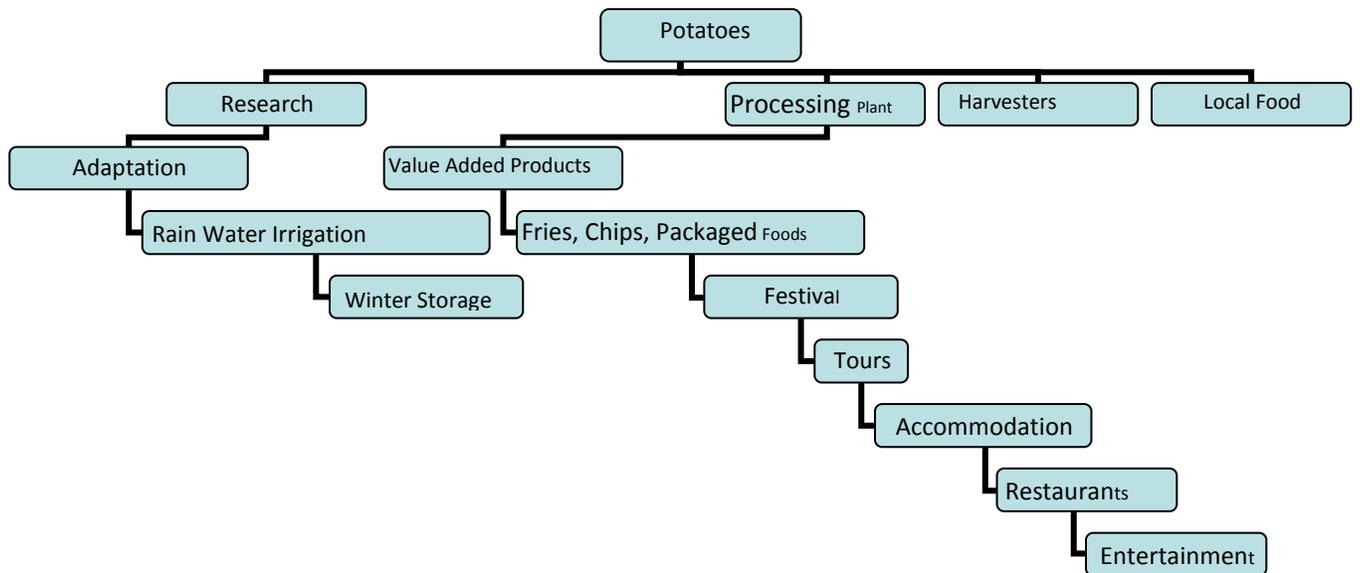
Organic Agriculture- Irrigated by Collected Rain Water

Potential Crops, Enterprises and Spin Offs

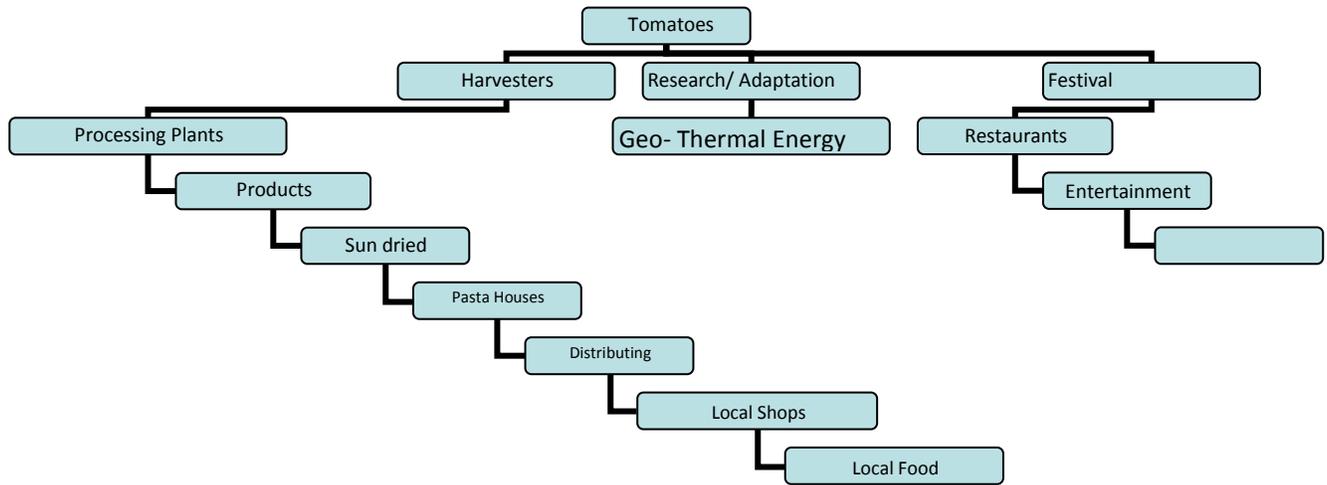
Grapes



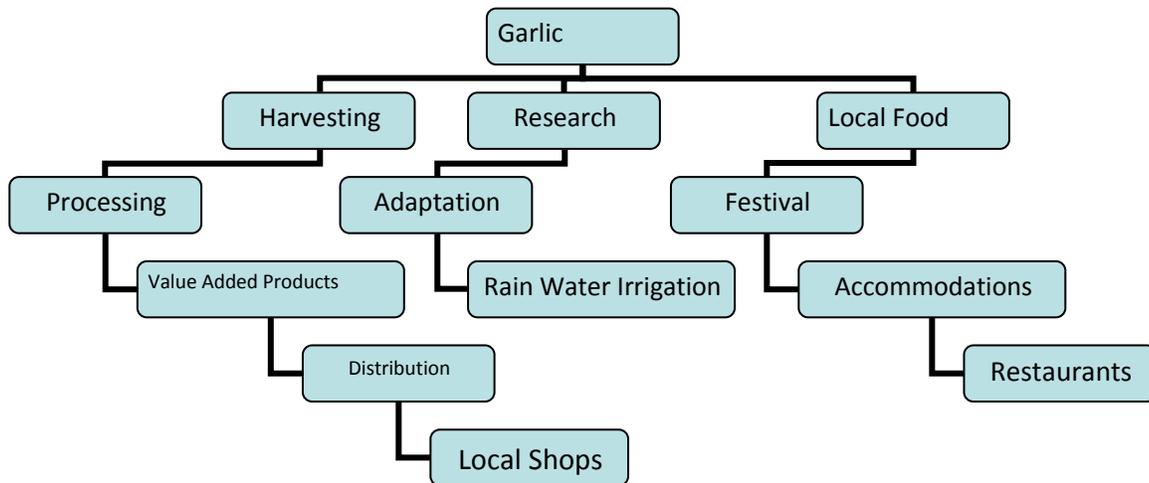
Potatoes



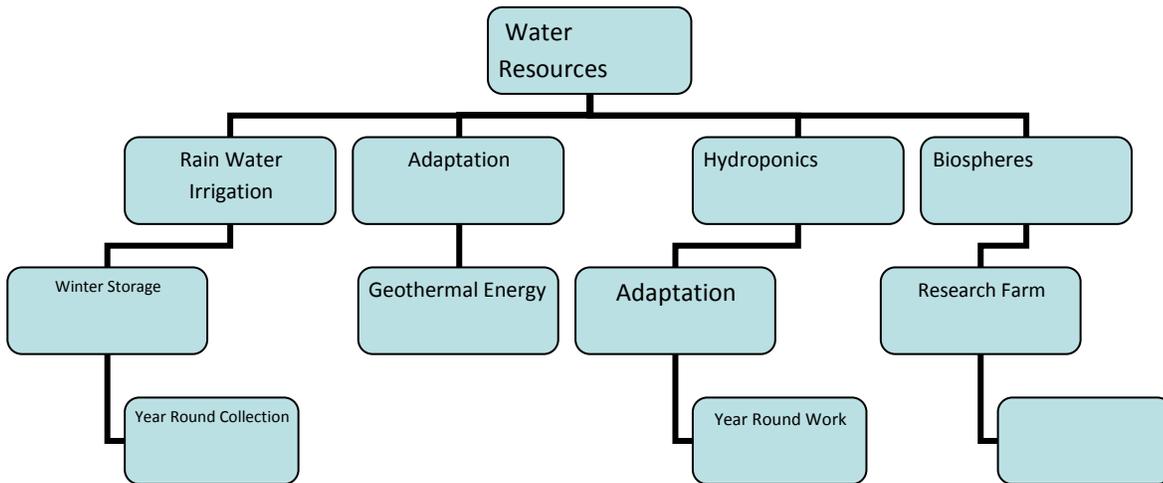
Tomatoes



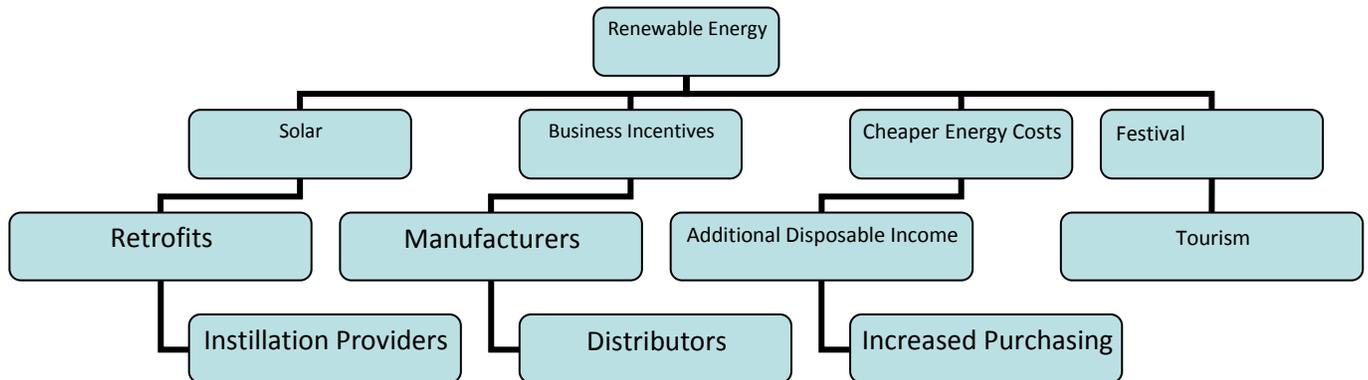
Garlic



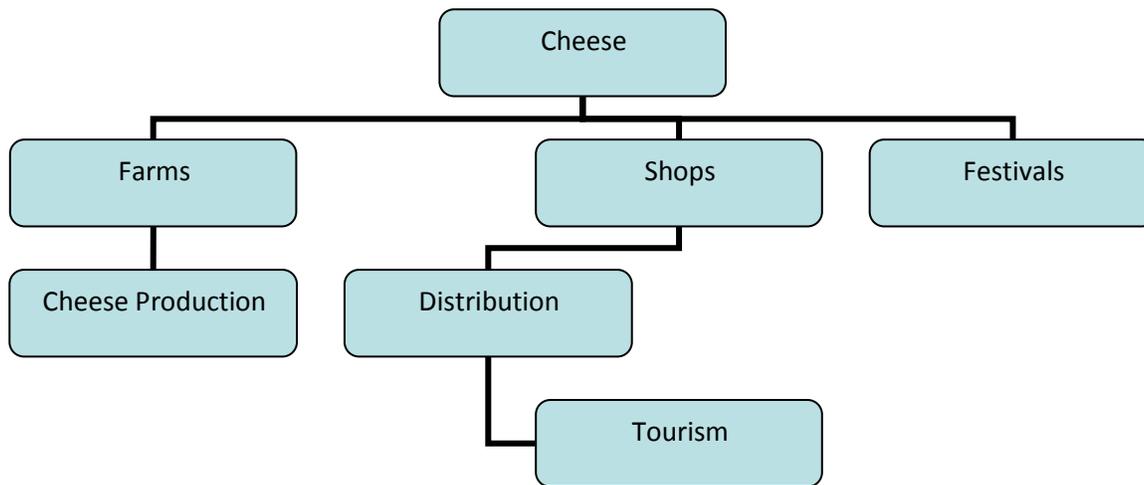
Agricultural Research/ Research Station



Renewable Energy:



Cheese:



The greatest obstacles to achieving green, sustainable economic development are:

- geographical isolation of the North-East from major markets
- a fragile natural environment requiring protection and restoration
- Variable weather conditions
- infrastructure limits (infrastructure for roads, rail, ports, harbours, water supply, and waste management)
- weak understanding of sustainability concepts, ecosystem needs, environmental health
- lack of creativity, foresight and vision in developing effective solutions
- A lack of access to renewable energy and clean energy such as natural gas, wind, solar, fuel cell, photovoltaic, low emission electricity
- gaps in the work of organizations encouraging economic development in the region
- Incentives
- Ecological leadership
- Gaps in training in agriculture development
- Gaps in specialized fields

To attain the goals of green, sustainable economic development, the following “Three G” goals have been identified:

- **Growing**—Encouraging success & growth of green enterprises already operating and encouraging the creation of new green enterprises from our current regional population.
- **Greening**—Aiding current enterprises to understand and apply sustainability concepts in their decisions and operations and retaining them in our region.
- **Getting**—Seeking the relocation of green businesses from other regions or franchises.

Additional ease and incentives, including financial financing, need to be available to the local entrepreneur or new service provider. A good GSD strategy should include **sustainability indicators** to monitor progress toward sustainable economic development. Funding and incentives from Provincial and Federal sources must be made a priority.

Delivering the “Three Gs” is suggested in the following format:

- 1. The Status Quo-** Current economic development organizations presently active in the regions Cities, Towns and Villages.
- 2. GREDA-** The creation of a **Green Economic Development Agency (GREDA)** to deliver “green” economic development services for the region which includes the hiring of staff, so that the fundamental understanding of environmentally “green” development and sustainable development is in place. This will ensure that a regional knowledge base is established and developed to provide services and knowledge on environmental advances, new green technologies, research initiatives, health, the needs of society, renewable energy and the needs of the ecosystems. **GREDA would have the major mandate of identifying “green” industries, businesses and services and identifying currently available or new sources of incentives, including financial, to encourage and assist them to locate in the region.**
- 3. GREDA** would also have the mandate of assisting current enterprises and new locally started enterprises with the “Greening” initiatives and recognition of achievements.
- 4. The Status Quo plus GREDA** would work cooperatively to support the “Greening” of initiatives delivered by existing organizations, businesses, and services as well as providing information and assistance to green industries, enterprises and new services wishing to relocate to the region.
- 5. Current Economic Development Agencies** in each Municipality, Town, Village or City would continue to deliver services in their communities, modeled on the **GREDA** approach, vision, strategy and unified policy.

Background

The North of New Brunswick is among Canada’s most attractive and diverse regions. Ecologically, the region’s richness is reflected in its number of rare and endangered species, its variety of aquatic and terrestrial habitat types, its coastal estuaries and salt water marshes, the Appalachian Range, remaining dense forest, old growth areas, remaining biological diversity and cultural diversity.

Socially and economically, the region is equally varied, supporting urban and rural lifestyles, and industries, small, medium and large, that include agriculture, mineral extraction and processing, power generation, chemical processing facilities, forestry, manufacturing, tourism, and education.

The region has been a home for aboriginal people for thousands of years, and a destination for Euro, British Common Wealth, Acadian and Canadian settlers since the 1800s.

Today the region features dozens of local and municipal jurisdictions. The North- Eastern, NB region faces substantial challenges in protecting values that make the region special while building a bright future for present and future residents.

The recent observances have identified some conflicting ideas on proposed goals and visions for the region between various groups of the regional communities. On the issue of environmental and human health, quality of life, protection of the eco systems and reduction in pollution levels, improvement will not occur within the

context of the goal of Northern, NB, becoming the industrial capital of NB, **unless**, the new industries, (large, small and medium), are “green” (non-polluting) in their activities, releases, consumption of natural resources, emissions, policies, processes, technologies, waste, water consumption and waste water releases, thus leaving no negative impact on the regions ecosystems while at the same time supporting services and economic activities for the regions society.

This goal of establishing “green”, “non-polluting” industries, enterprises and services is an obtainable goal in the 21 Century. It is also quickly becoming the commodity and choice of highest demand in much of the world. Emerging markets, consumer demand, renewable technologies and energies, recycled resources, research and development, demands for unmodified foods, depletion of wild marine species, adaptation to Climate Change, aging populations all provide a lucrative market for “green” value added products.

Within the goals of true Sustainable Development, communities seek activities and enterprises that do not contribute to the continuing pollution, over loading and existing burden on already threatened and stressed species, eco systems, natural resources and the receiving environment.

Regional Municipalities, which operate under the laws of the local Government Act, have jurisdiction in a variety of topic areas, some of which are specified in the Act and others that occur in response to local needs:

- Land use planning
- Regional Growth Management planning,
- Economic development planning,
- Resource management (including water and watershed management and air quality),
- Building inspection and building by law enforcement;
- Public works and services including water, sewage, garbage, recycling, pest control, public transit, street lighting;
- Parks and recreation services; and
- Animal control

First Nations or Aboriginal communities are not under the jurisdiction of regional districts, but have their own governance system. There are 3 First Nations reserves in the region, which provide a variety of land use, infrastructure, and social services in their communities.

Due to the unique influence they have on regional cooperation and planning, regional Municipalities are well suited for implementing the Green Sustainable Economic Development strategy.

2.0 Social Context

The increasing older population in the North-east of NB will affect the region’s economy in several ways. As the population ages, the dependency ratio increases and the proportion of earners decreases. With this aging of the population, the majority of adults in the region may not work, or work part time to supplement pension incomes. While retired people generally bring money into the region in the form of pensions and investments, they also place higher demands on certain services, especially medical care. Supporting other services, such as schools, may become more difficult in an economy driven by an older population.

The requirements of an aging population will also likely result in a shift in occupational structure toward the service sector. Demand will grow for staff to provide health care to the elderly. (nurses, physiotherapists, home

care attendants) and for persons providing home services (gardening, house retrofits for wheelchair access, handy-man services).

This will improve the diversification in the age groups of our communities. An aging population will also compete for use of recreational resources (e.g. public swimming pools and fitness centers) and will demand public transportation services with vehicle service frequency and with more extensive and personalized routes, especially to health and recreation centers. These demands will require expanded municipal services and employment. The job market will in turn be changed by growth in older cohorts, especially retirees, who will seek part-time employment in the service sector and will compete with other part-time job seekers (for example, high school and college students).

An older population may be less receptive to certain economic development initiatives, because they may perceive such development as a threat to their retirement lifestyle.

A large population segment of retired people results in a fairly stable economic base since fluctuations in industry, and especially natural resource based industry, have little impact on their incomes. Seniors' expenditures on retail goods and services, while often modest, are usually maintained over time. Retirees are also a valuable source of volunteers, because they generally have more spare time than the rest of the population. If properly organized, volunteers can provide valuable services to the community.

Some the greatest attractions such as beaches, linked to social and economic welfare; are the pillars of sustainability. Chemical releases from industrial activities, combined with sewage related effluents have resulted in high levels of phosphorus and other chemicals entering water bodies in the region which are threatening these attractions, plus fisheries activities, marine life and waterfowl.

Water, which is a major issue in the region, is expected to continue to grow as a major global issue in this century. The state of the environment is an indicator of quality of life.

The issue of water and water management is of paramount importance and should come above all others. Among the water topics related to sustainable economic development are:

- use of water for golf courses
- wasteful urban use,
- wasteful agricultural use
- agriculture-urban conflicts over water supplies and prices,
- water quality,
- global climate change, increasing evapo transpiration
- human use versus water for survival of aquatic life.

Growing water consumption per capita from residential, commercial, and industrial sectors combined with already taxed water systems in parts of the region is of concern. Many residents are already reporting dry wells in rural areas. This should be taken as an early "indicator" of a larger problem with surface and ground water resources. Drawing further upon lakes and rivers is one solution, but with serious consequences. Fish, wildlife, vegetation depend on the water levels of lakes and streams, and recreation and tourism activities also require adequate water supply and quality. It is important that agencies consider the linkages between human consumption of water and the environment before making decisions. Increasing clear cutting and gravel excavation lowers the surrounding water tables and contributes to destruction of critical forest canopies, forest floors and ground covers which assist in water retention recharge capacity and purification capabilities.

The quality of drinking water has been a concern for decades. In the 1980s and 1990s municipalities eliminated much of the phosphorus in effluent discharged into lakes and rivers through upgrades to sewage disposal and wastewater treatment centers. Still, growing populations will cause the total amount of effluent to rise, with continuing negative effects to water quality.

In addition, malfunctioning and poorly designed septic tanks contribute further to pollution levels.

Heavy industrial releases are also a major source of pollution and threat to all marine, fresh surface and ground water sources.

Storm drains and agricultural runoff are two sources of pollutants and phosphorus that continue to be of concern. Storm drains carry pollutants such as oil, antifreeze, cleaners, pesticides, paint and paint thinners from urban centers into water bodies causing excessive algae growth and, in turn, reduced oxygen for fish and an unpleasant smell and taste in water.

Transportation: Motor vehicles are the dominant form of transportation in the area. The region is connected by a road system that emphasizes north-south mobility. A dispersed pattern of low-density residential and commercial land uses is the primary cause of traffic congestion. The high numbers of visitors driving in the summer contribute to already congested conditions. Providing high levels of service to these visitors is important because of the revenue they bring to the region. Address the issue of Greenhouse gas Emissions and their reduction can be greatly assisted by the addition of mass transit in the form of an Urban Transit Bus service. For these reasons, transportation planning is a regional issue that will have a profound effect on quality of life and future economic conditions.

There are several approaches to alleviating these transportation issues, including encouraging the use of local and regional transit, bicycling, car-pooling, and walking. The most important and effective method of reducing car-dependency and traffic is to create compact, mixed use, pedestrian and bicycle friendly land use development patterns.

3.0 Brief Economic History

The economy of North-Eastern New Brunswick historically has relied heavily on natural resources and heavy industry. Tourism, a major source of revenue in the summer months, relies on attractive, clean, and accessible environments and eco systems. Lakes, rivers, distinctive landscapes draw visitors to the region. In the winter, skiing and snowmobile trails attract many visitors. Forestry and mining still play a role in the economy, but are reducing in their levels of economic contributions.

Conflicts sometimes arise between economic activities in the region. Whereas primary and secondary industries boost the regional economy, the resulting resource consumption, land conversion, waste, processing residue and pollution have a direct impact on other important sectors of the economy, particularly tourism, water resources, quality of life and human health. Under the prevailing land use model, industrial and residential pressures to develop agricultural land remain high. This should be of concern to communities working towards greater sustainability. Indicators of future needs of the earth and growing global conflicts point to the availability of agricultural land and fresh water as the two most valuable economic resources. Specifically, “agricultural land that is still capable of producing crops to feed a population of 6.6 billion and land that still is capable of supplying safe fresh water resources”.

4.0 What is Green and Sustainable Development?

The concept of sustainability became widely used in the 1980s as a response to criticism of development projects that produced short-term benefits, but were long-term failures.

Environmental, social, and even economic conditions were sometimes worse after these projects than they had been before. In North America, sustainable development (or, more recently, sustainability) came to be associated with **“enterprises that are successful in creating jobs without causing environmental harm and social impacts”**.

Environmental harm caused by human economic activity has been categorized as:

1. **Depletion of resources** such as water, clean air, fisheries, old growth forests, or productive soils,
2. **Pollution** of land, air, and water, and including eutrophication, ozone depletion, and climate change, and
3. **Expulsion** of species and ecosystems, characterized by declining biodiversity and extinctions, and including reduced cultural diversity (Winsemius and Guntram 2002: 27).

In response to the social and environmental weaknesses of prevailing models of economic development, the Brundtland Commission in *Our Common Future* (1987) penned the now-famous definition of sustainability:

- “Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.”

Another version would be:

- “Sustainable Development means using and living with our natural resources in such a way today that we ensure that they are there for future generations.”

The years of burdening the earth with our pollutants must be left in our past. In only 100 years during the 1900’s since the industrial age began and the development of the burning of fossil fuels, mass production of goods, plastics, large urban centers, over population, mechanized forestry and fisheries, mineral extraction and automation, most of the earth’s ecological resources, eco systems and species have been pushed to or beyond critical thresholds. In order to ensure a planet where humanity can still sustain human life, the next 100 years, starting today, must be the Age of Change. No longer can we delay, action is required at the local and personal level immediately and in each new economic decision that we make.” (Brenda Kelley, 2003)

Green Sustainable Development

Poor management, good management, facility location, or human relations could render any enterprise to be considered “green and sustainable” or not. For example, research institutes, consulting firms, or clean manufacturing plants located far from communities, so that all employees must drive to and from work, are not sustainable. Medical facilities that fail to dispose of waste carefully or that is poorly integrated into neighboring communities are not sustainable. Recreation or tourism activities that result in noise or water pollution (such as some water craft) or destruction of native plants (such as off-road vehicles) are not sustainable. Agricultural operations that use wasteful irrigation techniques, excessive amounts of pesticides and fertilizers, or convert remnants of undisturbed ecosystems to farmland are unsustainable. Forestry based on logging of the few remaining stands of old-growth timber, clear cutting to stream margins, or cutting at rates above long range sustained yield is not sustainable.

To be sustainable, then, an enterprise must focus on products and services that are environmentally benign, socially responsible, financially self-sustaining, and economically viable, and must conduct its operations in the same way.

Few existing enterprises (private or public sector) could satisfy all seven sustainability criteria. This failure is hardly surprising, given the relative newness of the sustainability concept, and the confusing signals sent by

markets, regulators, and society with regard to the importance of sustainable methods of operation. Assistance for existing enterprises to reach this objective will be necessary.

Identifying Green and Sustainable Businesses

A Vision of Green, Sustainable Economic Development

The following types of businesses are considered to be sustainable:

- Agriculture
- Agricultural processing (e.g., wine, fruit juices, and other products)
- Forestry, select cutting only, no clear cutting, no mechanized harvesting
- Light industry, including manufacturing using wood
- Tourism (golf, skiing, winery tours, culture, agro tourism)
- Retirement services
- Healthcare
- Post-secondary education
- Technology industries, including call centres
- Financial services
- Government offices
- Consulting and related knowledge-based services

Most commercial and retail enterprises

The following new or existing enterprises would also be identified as sustainable: Can you add your own ideas to this list?

- Research Institutions:
- Agrifood Research Centre (PARC, Summerland)
- Forestry Research Centre (FRC, Vernon)
- Fisheries enhancement and fishing (as a tourism activity)
- Sustainable utilities – wind farms, solar power, recycling.

5.0 Industries Targeted by Regional Strategies

In a recent survey in another community in Canada, it is interesting to note survey response when asked:

Do you consider this activity to be sustainable?

Agriculture <u>Yes</u>	Forestry <u>Yes</u>	Fisheries <u>Yes</u>	Energy (solar, wind) <u>Yes</u>
Wineries <u>Yes</u>	Wood <u>Yes</u>	Tourism <u>Yes</u>	Light Manufacturing <u>Yes</u>
Golf <u>Yes</u>	Aircraft repair <u>Yes</u>	Avionics <u>Yes</u>	Skiing <u>Yes</u>
Wine <u>Yes</u>	Education <u>Yes</u>	Medical schools <u>Yes</u>	Agricultural Processing <u>Yes</u>
Multimedia <u>Yes</u>	Govt. Offices <u>Yes</u>	Healthcare <u>Yes</u>	Financial services <u>Yes</u>
High Tech <u>Yes</u>	Software <u>Yes</u>	Call centers <u>Yes</u>	Research Institutes <u>Yes</u>
Services to Retirees <u>Yes</u>			Telecommunications <u>Yes</u>
Continuing education <u>Yes</u>			Retail and Commercial <u>Yes</u>

The question to ask ourselves is:

“What is the Net Environmental Impact in Absolute Terms?”

(After all aspects of the activity have been calculated including the production of Greenhouse Gas Emissions and energy source)

Linkages among Sustainable Businesses

What other types of businesses would link with or fit with the above noted industries and meet the green sustainable criteria?

As an example, we will use the net of relationships that can grow among the various sectors involved in the production of grapes and wine.

1. **Grapes:** Research organizations provide information to producers on grape varieties, production techniques, and demand for various grape products. Researchers advise wineries on production technology and marketing, and the service sector (offering wine tours, bed and breakfasts, and associated “cultural” tourism) information on operations and marketing. Vineyards demand equipment, land, water (collected rain water), and agricultural supplies in order to produce grapes, some of which go to wineries. The wineries produce bottled wine for domestic sale or export, and support wine tours.

The service industry helps support wineries, and has strong links to other tourist infrastructure, such as golf courses, restaurants, hotels, and transportation.

- **Research**
- **Primary**
- **Industry (vineyards), Secondary industry (wineries)**
- **Service**
- **Products (wine, wine tours)**
- **Information**
- **Manufacturing**
- **Information (grape varieties, production)**
- **Information (tourism) *Demand for equipment, supplies, resources***
- **Products (grapes)**
- ***Demand for equipment supplies, resources Links to other tourist infrastructure***
- **Computer programming**
- **Equipment manufacturing**
- **Agricultural Research**
- **Agriculture (fruits, vegetables, cattle)**
- **Wineries , Wine tourism, agrotourism**

Pure research on its own may also have direct industrial and business linkages and advantages. For example, in one Canadian community, the Dominion Radio Astrophysical Observatory (DRAO) undertakes world-class research into, among other things, wireless telecommunications. The Observatory’s new building is designed to accommodate incubator start-up companies. Community awareness and promotion of the work being carried out by DRAO could potentially lead to the manufacture of specialized telecommunications products and software and, perhaps, to a consulting sector.

The area's large population of seniors and retirees offers potential for the provision of services such as specialized health care (private and public), financial services and continuing education for seniors. This sector could be further enlarged if the area could attract funding for research into gerontology and other age issues.

The natural beauty, climate and recreational attributes of the project area have made it a magnet for tourists. The area offers the full range of recreational activities (boating, swimming, fishing, golf, skiing, and biking) that make it a year-round tourist destination.

The development of a winery sector or brewery in terms of product excellence and recognition and in terms of the creation of tours, tasting and restaurants, can add another attraction. The wine and beer-based tourism concept is being expanded to agro tourism in general. This industry shows the potential to make use of backward linkages (e.g., research into resource management) development of a new hotel school or hospitality training centre catering to needs province-wide and beyond) and to further development of hotels, restaurants and the retail sector.

Society's expectations regarding environment and economy tend to evolve over time.

The four environmental needs that people seek sequentially are:

1. ***Food, clothing, and shelter***, provided by the use of resources from the environment, and threatened by non-sustainable use of these resources,
2. ***Safety and security*** that can be placed at risk by contamination, disease, and conflict over land and resources,
3. ***Quality surroundings***, such as a green and healthy landscape or neighbourhood, that can be threatened by resource extraction, unwise industrialization, and urban sprawl,
4. ***Quality ecosystems*** that grow in social importance as people recognize that we are part of the ecosystem, that our personal and social well being rely on healthy functioning ecosystems

When the economy falters and people lose their jobs, then priorities can shift *down* the ladder as people (and governments) become more concerned with the ability to pay for food and shelter than protecting fish habitat or air quality.

Moving from present conditions to a more sustainable future will require profound evolution of our economic structure. Some regions are still struggling to base their economy on traditional resource extraction, or heavy industry, even as they experience the social dislocation and environmental degradation that accompanies that course.

What will the future be like in Northern New Brunswick as we move toward a green and sustainable economy? The following description of a desirable, attainable future is offered to provide some hints.

What might the new green economy look like in a few years?

The new economy in Northern New Brunswick will be characterized by businesses and industries that are non-polluting, invest in their staff, and have a long-term commitment to environmental stewardship, ecological and social responsibility in their communities. The agricultural and food sector will be a model of modern intensive, non-polluting farming that is profitable, wildlife-friendly, irrigated by rain water collection, heated by geothermal energy and powered by renewable energy. New Agrotourism and ecotourism initiatives, based on a biodiverse natural and agricultural landscape, will complement cultural tourism events and attractions

throughout the region. A local technology sector will support other industries and will be supported by research and development facilities in the region. Innovation and entrepreneurial spirit will characterize businesses in the region and attract investment from around the world.

Compact communities will become common, fostering high-quality design, creating people-friendly neighbourhoods, reducing motor vehicle trips, and minimizing sprawl. The region will be home to a stable, well-paid workforce with increasing education and skill levels. Progress toward a more sustainable future will be revealed in an active program of protecting and restoring the region's fragile yet productive ecosystems, with results that will attract visitors and support researchers into new environmental technology.

Many enterprises, government departments and corporate headquarters, experience difficulty in making the transition to new ways of thinking and working. Responses to environmental issues typically move through a set of stages.

Reactive. At the beginning of the response to an environmental issue, governments and businesses typically dismiss environmental risks as exaggerated, and publicize the cost (in dollars and jobs) of protecting the environment. Industry, special interest, and environmental groups lobby government for and against legislation. If new or more stringent regulations are imposed, public and private sector enterprises reluctantly apply “band aid” technical solutions (stack scrubbers, catalytic converters) to comply with regulations.

Functional.

At the functional stage, private and public sector enterprises seek ways of reducing costs or gaining competitive advantage as they comply with escalating levels of regulation. Environmental protection responsibilities move from technical staff to a higher level of line managers.

Integrated.

The integrated approach begins as enterprises see that cooperation with other groups (the public, special interest groups, NGOs, research institutes) is necessary to successfully manage environmental impacts. Government policy moves from regulation to more economic incentives (taxes, levies, deposits, tradable emissions rights) to integrate environmental costs into market pricing.

Proactive.

Finally, senior management (and shareholders in the case of private sector enterprises) realize the need for profound changes in the way businesses, governments and institutions operate if the vision of a sustainable future is to be attained. “The proactive response requires deep organizational change. It involves the transformation of the organization’s culture into one driven by an environmental vision, in which all management actions are directed by a quest for value through harmony with the environment.

“The path to sustainability can be scary, since the very nature of the business might be challenged. Maybe the service or product—such as cars or detergents is incompatible with sustainability if the global atmosphere or waters are not able to carry the burden.” Government may find that the basic premise of their plans and policies is inconsistent with sustainability. ” (Winsemius and Guntram 2002: 16-17)

Growing green sustainable enterprises in Northern New Brunswick depends on continuing education of business, government, and non-governmental organization leaders and managers, and then having the courage to institute change.

Managers must not only be convinced that enterprises should take the leap to pro activeness but they must see that sustainable operations make them more competitive and profitable. We must help these enterprises learn how to make the leap.

5.1 What is the Purpose of Economic Development?

In pursuing economic development, it is important to understand the reasons why such an activity is considered important. The following reasons why economic development is important were identified:

- Economic development can reduce dependency of economies on transfer payments, real estate and construction, or similar “single sector” sources of income.
- The decline of employment in the resource sector demands shifts to more sustainable forms of economic activity.
- Sustainable economic development can increase the resilience of economies to shocks and changes in external events (such as the softwood lumber dispute, or declines in some sectors or industries).
- With a green and sustainable economy, the Region could benefit from exports based not only on farm and forest products, but also increasingly from products and services based on research and development, and the expansion of the College to a University College.

6.0 Monitoring Progress Toward Sustainable Economic Development

Monitoring is an important element of any economic development program. The following topics have been identified as potential indicators of success of the Sustainability initiative in the region.

- Greater profitability and stability of local businesses.
- An increase in job creation in appropriate sectors.
- Enhanced cooperation among jurisdictions.
- Clean air, clean water and increased populations of “listed” species.
- Increased investment in appropriate sectors.
- Increased diversification of the economy and jobs.
- Ensure cost-effectiveness of economic development efforts.
- Reduced energy use and waste generation per capita.
- Residents of the region understand & support the philosophy of sustainability.
- Increased education and training opportunities, accompanied by higher educational and skill levels among the labour force.
- The region will be better known globally for its green, sustainable economy.
- The demographic characteristics of the population will be more balanced.
- Improvements in stream and lake water quality.
- Reduced vehicle kilometres traveled, total and per capita with the introduction of green mass transit.

Summary

Bathurst Sustainable Development is proposing that the Northern Region of New Brunswick establish a united vision, action plans and submit project proposals to the Government of Canada (various funding agencies), the Province of New Brunswick (various funding agencies), National, International, Science and Research agencies, and other available funding agencies to begin to work on a **Green Sustainable Development Strategy (GSDS)** for the region via the formation of a **Green Economic Development Agency or Association (GREDA)**.

Objectives and Goals of GREDA

GOAL

To identify and encourage realistic and responsible economic development in Northern NB that harmonizes with the environment, biodiversity, human health and the quality of life.

Objectives:

- Identify existing business, industries and services in our communities which currently meet this goal.
- Encourage current and new enterprises, businesses, industries, Municipalities, organizations, institutions, groups and interested citizens that meet this goal to become registered members of GREDA.
- Establish and build working groups with paid staff who will assist and encourage the region and its citizens in moving towards implementing the goal.
- Provide current information on available training, courses, workshops, research, innovation, emerging technologies pertaining to businesses, services, and enterprises which meet the goal of GREDA.
- Establish membership base and certification recognition for members.
- Link, via memberships, and associate memberships, GREDA, with International, National, Provincial and Regional organizations and entities who share this common goal.
- Actively seek funding sources, start up information, available incentives to encourage new “green” enterprises, businesses, industries and services to locate or “start-up” in Northern-eastern, NB.
- Seek positive interactions and partnerships with all regional development agencies, Municipalities and various Government Departments.

This document examines economic, demographic, and environmental conditions in North-Eastern NB, and outlines a strategy for achieving sustainable, environmentally and ecologically sound economic development.

Through examination of reports, data and discussions with local citizens, enterprises and service providers it has been identified that:

- residents value this region for its environmental potential, scenery, oceans, beaches, forests and lifestyle opportunities, yet they recognize its current limited economic prospects, have concerns about pollution levels and the impact on human health
- the present population of is expected to decrease in the next 30 years
- the median age of the population is advancing, and the aging population will become a dominant consideration in economic development planning and the provision of services in coming decades
- the unemployment rate is higher than in the rest of the Province

- major environmental issues are associated with industrial and economic activity and land development, and include water supply and quality, air quality, toxins in the environment, impacts on human health and loss of biodiversity.

Sustainability deals with balancing economic activities. In the case of North-Eastern NB, sustainability is still a relatively new concept which still revolves mainly around economic and industrial needs versus the needs of the environment. It is hoped that this document will assist the region to gain a greater understanding of the long term opportunities and advantages available to the region by adopting a new definition of sustainability.

Bridging the gap of understanding and merging the needs of economic development with the needs of the environment and society will mean seeking full and meaningful employment in occupations that protect the environment and enhance the region's communities and quality of life.

This GSDS strategy document contains criteria for determining the sustainability of the operation of enterprises in North-Eastern New Brunswick and is already a working model for other regions and communities. A variety of primary, secondary (manufacturing, agricultural, value added products), small to medium size enterprises, service industries, plus not-for-profit enterprises (research and development and educational institutes) are examined and a list of target enterprises presented which are non-polluting.

7.0 TERMS AND CONCEPTS RELATED TO SUSTAINABILITY

DEFINITIONS

"**[Sustainable production and consumption is]** the use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations."

Symposium: Sustainable Consumption. Oslo, Norway; 19-20 January 1994.

"Sustainable production and consumption involves business, government, communities and households contributing to environmental quality through the efficient production and use of natural resources, the minimization of wastes, and the optimization of products and services."

Edwin G. Falkman, Waste Management International. Sustainable Production and Consumption: A Business

Perspective. WBCSD, n.d.

"The emphasis of sustainable production is on the supply side of the equation, focusing on improving environmental performance in key economic sectors, such as agriculture, energy, industry, tourism and transport. Sustainable consumption addresses the demand side, looking at how the goods and services required to meet basic needs and improve quality of life - such as food and health, shelter, clothing, leisure and mobility - can be delivered in ways that reduce the burden on the Earth's carrying capacity."

Nick Robins and Sarah Roberts, Changing Consumption and Production Patterns: Unlocking Trade Opportunities. International Institute for Environment and Development and UN Department of Policy Coordination and Sustainable Development, 1997.

“**Sustainability** is an economic state where the demands placed upon the environment by people and commerce can be met without reducing the capacity of the environment to provide for future generations. It can also be expressed in the simple terms of an economic golden rule for the restorative economy: Leave the world better than you found it, take no more than you need, try not to harm life or the environment, make amends if you do.”

Paul Hawken, *The Ecology of Commerce*.

“Growing environmental concerns, coupled with public pressure and stricter regulations, are changing the way people do business across the world. Industry is on a three-stage journey from environmental compliance, through environmental risk management, to long-term sustainable development strategies.”

International Institute for Sustainable Development

"Sustainability is to leave future generations as many opportunities as, if not more than, we have had ourselves."

Serageldin

“Sustainable development is development that meets the needs of the present, without compromising the ability of future generations to meet their own needs.”

Brundtland Commission

"Sustainable consumption implies that the consumption of current generations as well as future generations improves in quality. Such a concept of consumption requires the optimalization of consumption subject to maintaining services and quality of resources and the environment over time."

Dr. Emil Salim, *The challenge of sustainable consumption as seen from the South*. In Symposium: Sustainable Consumption. Oslo, Norway; 19-20 January 1994.

Appendix A: Sustainability Concepts

Carrying capacity: is the maximum number of individuals of a defined species that a given environment can support over the long term. The notion of limits is fundamental to the concept of carrying capacity. However, our limited understanding of complex, non-linear systems leads to uncertainty in calculating carrying capacity in relation to humans. Some argue that the concept is meaningless as free market conditions and technological innovation can extend limits indefinitely.

The steady state economy is a human economy characterized by constant population, capital stocks and rate of material/energy throughput such that there is sustainable equilibrium between human activities and the environment. While these elements are constant, "cultural capital" can change; thus a distinction is made between growth (quantitative) and development (qualitative).

Environmental utilization space or ecospace: is the capacity of the environment to support human activities by regenerating renewable resources and absorbing waste. The boundaries of environmental utilization space are determined by the patterns and level of economic activity. A distributional element can be added by allocating eco space at a national or per capita level, and is thus useful in illustrating present inequities.

Ecological economics: goes beyond conventional conceptions of scientific disciplines and attempts to integrate and synthesize many different disciplinary perspectives in order to achieve an ecologically and economically sustainable world.

Ecological footprint: is the area of land and water required to support a defined economy or population at a specified standard of living. Industrialized economies are considered to require far more land than they have, thus, through trade, impacting on resources in other countries. Also known as 'appropriated carrying capacity', this concept also incorporates the distributional aspects of sustainable production and consumption.

Ecological rucksack: is the total weight of material flow 'carried by' an item of consumption in the course of its life cycle. Like the ecological footprint, the ecological rucksack concept deals with displaced environmental impacts but has a more technical focus. It is concerned with reducing material intensity and resource inefficiency.

Eco-efficiency: is the more efficient use of materials and energy in order to reduce economic costs and environmental impacts. This is widely considered a pragmatic approach, particularly among business, but it has been noted that improved unit efficiency does not necessarily lead to lower consumption levels. Economic output may rise with constant or reduced resource inputs.

MIPS : (material intensity per service unit) is an indicator based on the material flow and the number of services or utilizations provided. Reducing the MIPS of a product is equivalent to increasing resource productivity.

Factor Four: is the idea that resource productivity should be quadrupled so that wealth is doubled, and resource use is halved. The concept has been summed up as "doing more with less". It is argued that this would result in substantial macro-economic gains.

Factor Ten: is the idea that per capita material flows caused by OECD countries should be reduced by a factor of ten. Globally, claim proponents, material turnover should be reduced by 50 percent, but because OECD countries are responsible for material flows five times as high as developing countries, and world population is inevitably increasing, the OECD has to set long-term targets well beyond the more conservative Factor Four target.

Natural capital: is an extension of the economic notion of capital (manufactured means of production) to environmental 'goods and services'. It refers to a stock (e.g., a forest), which produces a flow of goods (e.g., new trees) and services (e.g., carbon sequestration, erosion control, habitat). Natural capital can be divided into renewable and non-renewable; the level of flow of non-renewable resources (e.g. fossil fuels) is determined politically.

Natural resource: accounting and green GDP are alternative systems of national accounting and performance measures, which incorporate ecological and human welfare considerations. They are a way of better understanding the implications of economic activity for environmental integrity and human well-being. However, placing a monetary value on pollution and resource extraction is controversial and presents methodological difficulties.

Environmental debt: is the cost of restoring previous environmental damage as well as the cost of recurring restoration measures. Unless measures are taken to alleviate environmental degradation, environmental debt continues to rise and the burden is transferred to future generations. However, some environmental damage such as species extinction is not restorable, and therefore cannot be included in the environmental debt.

Industrial ecology: uses the metaphor of metabolism to analyze production and consumption by industry, government, organizations and consumers, and the interactions between them. It involves tracking energy and material flows through industrial systems, e.g. a plant, region, or national or global economy.

Inter-generational equity: is the principle of equity between people alive today and future generations. The implication is that unsustainable production and consumption by today's society will degrade the ecological, social, and economic basis for tomorrow's society, whereas sustainability involves ensuring that future generations will have the means to achieve a quality of life equal to or better than today's. Intra-generational equity is the principle of equity between different groups of people alive today. Similarly to inter-generational equity, intra-generational equity implies that consumption and production in one community should not undermine the ecological, social, and economic basis for other communities to maintain or improve their quality of life.

Sustainable building: is the use of design and construction methods and materials that are resource efficient and that will not compromise the health of the environment or the associated health and well-being of the building's occupants, builders, the general public, or future generations.

Sustainable production: is the creation of goods and services using processes and systems that are non-polluting, conserve energy and natural resources, are economically efficient, are safe and healthful for workers, communities, and consumers, and are socially and creatively rewarding for all working people.

References

- Amory Lovins. *Natural Capitalism*. 2001. Online. Australian Broadcasting Corporation.
- Available: <http://www.abc.net.au/science/slab/natcap/default.htm>
- Breslow, Mark. *Connecticut's Economic Development Programs: High Costs and Inadequate Job Expansion*. 2000. Online. Available: <http://www.comw.org/necap/Ctjobsreport2000.pdf>
- Center for Economic Development and Research. *CEDR Services*. 1 October 1999. Online.
- University of Houston. Available: <http://www.cl.uh.edu/cedr/> (26 May 2002).
- Central Okanagan, Regional District of. Online. Available: <http://www.regionaldistrict.com/>
- Community Futures Development Association of British Columbia. 2000. Available: <http://www.communityfutures.ca/provincial/bc/>
- Gladstone, City of. *Economic Development*. Online. Available:
- http://www.gladstone.mo.us/Com_Development/cd_ed.htm
- Greater Vernon Water Utility. *Waterlines*. Available: <http://www.waterlines.ca>
- Ihlanfeldt, Keith. *Economic Development Policy*. Online. Available: http://frp.aysps.gsu.edu/frp/frpreports/policybriefs/policy_brief4.html
- Illinois, State of. *Illinois First Initiative*. 2001. Online. Available: <http://www100.state.il.us/ilfirst/>
- International Institute for Sustainable Development. *Instruments for Change: Definitions and Concepts*. Online. Available: <http://www.iisd.org/susprod/principles.htm> (24 May 2002).
- Local Government Commission. *Economic Development*. Online. Available: <http://www.lgc.org/economic/>
- Kelowna1.com. Available: <http://www.kelowna1.com/>
- Ministry of Community, Aboriginal and Women's Services. *Okanagan Valley: The Economy*. 2002. Online. Available: <http://www.marh.gov.bc.ca/GROWTH/oveconom.htm>
- Napa Valley Economic Development Corporation. Available: <http://www.nvedc.org>
- National Round Table on the Environment and the Economy. *Sustainable Cities Initiative*. 27 February 2002. Online. Government of Canada. Available: <http://www.nrtee.ca>