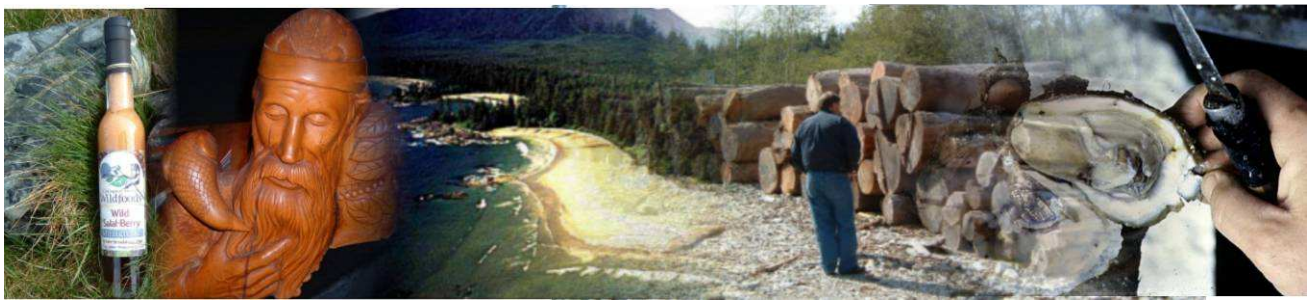

The Clayoquot Green Economic Opportunities Project

Taking Steps Towards A Conservation Economy

VOLUME TWO
SECTORAL ANALYSIS

Note: this version of the report was modified to collate chapters within one file, to shrink memory requirements, to address instabilities within the Microsoft word document, and to address inconsistencies in use of the terms "section" and "part". Page numbers will not match with the original; there are small unintentional changes in captions and formatting and potentially other errors. The original authors have not approved these change and users may wish to check against the original document where details are critical.

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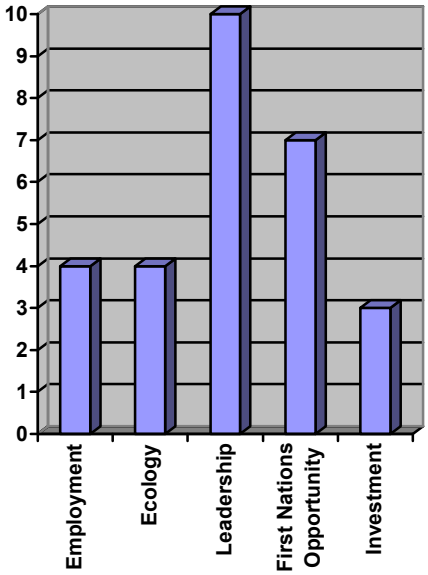
2003

The Friends of Clayoquot Sound

1) SHELLFISH

Photo: B. Kuecks



Overall assessment of potential:

The shellfish industry in Barkley and Clayoquot Sound is poised for rapid expansion, both in the native and non-Native communities, over the next five years. The industry offers new opportunities for investment, employment and community wealth. Long-term success for the West Coast shellfish industry will require a coordinated approach to product development and marketing, the conscious development of local and regional markets, the establishment of a local processing facility and the rationalization of the farmed and wild fishery. It will also be imperative, as the industry grows, to establish systems for monitoring and managing issues related to carrying capacity, water quality and compatibility with other uses of the marine environment.

Since this is an industry that requires significant capital investment for start-up, there is some danger that it could become inaccessible to local communities and that tenures could be consolidated into fewer hands over time. A conscious strategy, from the beginning of this rapid expansion period, around managing, in partnership with the province, tenure location, ownership and community benefit in relation to new applications would help to ensure the long term viability of this industry for the region's benefit.

Current status and trends in the industry

***Provincially*:** There has always been a wild-harvest shellfish industry in British Columbia that has formed the economic foundation for coastal communities and First Nations. The shellfish farming industry in B.C. is entering a unique period of opportunity. There is every indication that it can grow and mature significantly over the next few years, contributing to both provincial and community economies like never before.

At the present time, BC ranks as the 12th largest single producer of Pacific oysters but only produces 0.12% of the global market in value. In 2000 the province accounted for only 5% of the North American landed value for shellfish.

Currently there are 482 licensed shellfish tenures occupying 2114 hectares in B.C. Eighty nine percent of the farm production is concentrated on the east coast of Vancouver Island, 52% of that in Baynes Sound.[1]

The three main species of shellfish cultured in the province are Pacific oysters, Manila clams and Japanese weathervane scallops. Additionally, efforts are underway to commercialize culture of the Blue mussel, the Native geoduck clam and the Northern abalone.

The *New Marine Frontier Project* for Vancouver Island and Coast communities started in February 2000 and is to be completed in 2003. It is an initiative of the Vancouver Island Economic Developers Association (VIEDA), and is designed to build on and support individual community economic development efforts. The goals are to "strategically identify the high growth industries throughout the world, determine key industry sectors that could be located in the Island / Coast region and create tools to effectively communicate with these target audiences to encourage them to relocate. The first sector to be targeted for the stimulation of inbound investment is shellfish aquaculture. In addition to bringing investment in this key economic sector through its integrated marketing campaign, the 'New Marine Frontier project' will result in a regional web site and an inventory of available land and buildings for each Island / Coast community

Virtually the entire commercial harvest of oysters is farmed and the commercial culture of clams is steadily increasing. Between 1984 and 1997 (the latest year for which data on the aquaculture industry's GDP is available), the value added to the economy by BC's fish and shellfish farming industry grew from $1.6 to $68.1 million. This represented an increase that was well in excess of that seen in any other industry, including computer-related manufacturing.[2]

Without the boost provided by the aquaculture industry in the province, the overall performance of the fishing industry would have been much worse than it was during the last few years. It is likely that aquaculture activities in the province will continue to expand even if the opportunities for commercial fishing remain limited.

It is estimated that the industry will grow from its present size ($10.9 million) to $100 million by 2006 with a doubling of the tenured land base from 1,750 to 3500 hectares.

[1] BC Ministry of Agriculture, Food and Fisheries, 2002
[2] ibid

In the Clayoquot Biosphere Region: Much of the opportunity for industry expansion rests in Barkley and Clayoquot Sounds.

WCVI has always had a vibrant wild-harvest shellfish industry, the major wild species including clam, geoduck, scallops, abalone and gooseneck barnacles. The culture and farming of shellfish (primarily oysters, mussels, scallops and to a lesser extent, clams) has supplemented and more recently surpassed the economic importance of the wild harvest for the region.

Shellfish harvesting has formed a consistent component of the region's economy for generations. Wild harvest of clams and oysters has traditionally been a stable of the First Nations economy, wild harvest of geoducks, sea cucumber and urchin an important part of their food, social and ceremonial system and the farming of Pacific oysters has been growing steadily since the 1960's.

There are currently 68 shellfish tenures in Clayoquot and Barkley Sounds, held by 47 individuals or companies. Leases occupy approximately 293 hectares of the marine and foreshore area. At present, Pacific oysters (principally for the shuck market but increasingly for the ½ shell market) are the predominate species grown, with Manila clams a distant second.

Many of the areas offering excellent potential for new and expanded shellfish ventures lay within the traditional territory of the Nuu-chah-nulth. A shellfish corporation owned by the NTC Nations was established in February 2003 to secure investment dollars, manage the development of Nation-owned tenures and return profits to their community/owners.

Under the direction of the Nuu-chah-nulth Shellfish Development Corporation, 2003 will see pilot shellfish sites in Useless Inlet established in Toquot and Uchucklesaht as well as the first commercial enterprise in Lemmens Inlet, owned by the Tla-o-qui-aht Nation.

Lemmen's inlet, with nine active tenures, is the most concentrated production site in the region. Increasingly, farmers are considering the value of lease expansion, timely product diversification and the introduction of new growing methods to increase their access to markets.

The wild harvest of clams, goeduck and mussels continues in the region for sport and food/social/ceremonial purposes. The wild clam harvest continues as a commercial fishery although there is increasing concern about the vulnerability of the wild clam harvest with the current level of pick (there are 333 commercial licenses). The gooseneck barnacle fishery, closed in 1999 for conservation concerns, may be reopened in 2003 under a three-year experimental license on a limited basis.

In 2001, the provincial government announced its intention to increase the amount of coastal area licensed and tenured for shellfish development. Oyster, mussel and scallop farming are expected to increase rapidly under this new regime. Manila clam farming is

an industry that competes with the wild clam diggers for beach access and there are significant issues to resolve before this industry can grow.

As a result of the deliberate strategy to promote growth in the industry, the Alberni-Clayoquot Region can anticipate the following pattern to emerge in the next five years:[3]

- An increase from approximately 66,000 gallons of shucked product harvested annually in Clayoquot and Barkley Sounds to 100,000 gallons/annum
- An increase in single oyster production from 225,000 dozen/year to 1.08 million dozen per year.
- An increase in Manila clam production, from 200,000 lbs in 2002 to 575,000 lbs.
- The reintroduction of scallop and goeduck farming
- The introduction (on a limited basis, most likely First Nations-based) of clam cultivation

The corresponding farm gate values for this level of growth in the sector would increase from 2.5 million in 2003 to 5.5 million dollars by 2008.

A carrying capacity study is being organized for 2003/04 through MAFF and the Clayoquot Sound Oyster Growers Association to establish benchmarks for monitoring the health of the marine environment in Lemmens Inlet as a precondition of granting further tenure development.

Activity aimed at supporting the effective expansion of the shellfish industry is being coordinated, for Lemmens growers, through the Working Sound Shellfish Committee. This Committee, comprised of representatives from the local community, the Tla-o-qui-aht First Nation, government agencies, environmental organizations and growers is currently working to achieve a no-discharge designation for Lemmens Inlet to protect the shellfish from contamination. It is also assisting growers to extend their knowledge of new technology and to work towards a more coordinated approach to market development.

Lemmens Inlet longline oyster harvest. Photo: P. Kareski

Future opportunities and challenges

Global markets for shellfish products are very strong and steadily increasing. The greatest challenge for small to medium sized farms is to gain access to these markets since all products must move through a licensed processing facility.

At the present time, there is no shellfish processing capacity on the west coast, requiring farmers from both Barkley and Clayoquot to ship their product to the east side of the island or to Vancouver for processing and sales.

[3] Ma-Mook Development Corp, 2000

Because the majority of large processors have their own farms, the product from small, independent tenure-holders is often used to 'fill in' when there are periods of high demand or production slow-downs due to closures. Under these circumstances, it is difficult to establish a regular and consistent shipment of product and hence the job of cash-flow management becomes significantly more complex.

There are a number of initiatives underway in the region to try to address this issue including:

- An initiative through the Vancouver Island Economic Developers Association aimed at recruiting a processor interested in setting up a plant on the west coast
- An initiative by the Working Sound Shellfish Committee to complete a feasibility study on the viability of a small, seasonal boutique processing facility to take advantage of the tourist traffic. This project would be undertaken in partnership with the local growers in Lemmens Inlet.
- An independent entrepreneur looking at a combined residential/processing plant development in the region
- Discussions between Robert Wholey Ltd and local growers to test the viability of seasonal use of their processing facility in Ucluelet for shellfish processing
- An initiative steered by a Regional Shellfish Task Force to determine the interest in, and viability of, establishing a broker in the region that can coordinate the purchase of product from a number of growers that can fill the market requirements of a large processor in Washington.

Assessment of the sector by SCED Criteria

Environmental criteria: Shellfish, as bivalve feeders, are key indicators of water quality. They feed by filtering the water that washes over the shellfish bed. Because of their feeding mechanism, these shellfish can accumulate chemical and/or bacteriological pollutants and naturally occurring toxins from the surrounding waters even at a considerable distance from pollution sources. A single mussel, for example, may filter up to 300 times its weight in one hour. This represents a substantial amount of water.

With the objective of protecting public health, Canada signed a Bilateral Agreement with the United States in 1948 to guarantee the quality of shellfish products prior to export. The standards and protocols developed from this agreement form the basis of the Canadian Shellfish Sanitation Program. This program, jointly run by Environment Canada and the Department of Fisheries and Oceans, ensures that:

- bivalve molluscan shellfish are harvested from growing areas meeting approved federal water quality criteria;
- pollution sources to these areas are identified; and
- all shellfish sold commercially are harvested, transported and processed in an approved manner

The Canadian program also protects the recreational harvester by classifying sports or wild-harvest areas in addition to

commercial beds.

Through its Shellfish Water Quality Protection Program, Environment Canada is responsible for monitoring bacterial water quality in shellfish growing areas. Water surveys are used for determining if these growing areas are approved, conditionally approved, or closed. Bacteria called fecal coliforms are used as indicators of contamination from sewage and other fecal pollution sources. High standards for water quality are demanded in areas where shellfish are harvested. Shoreline surveys are also conducted to detemine the sources of pollution and efforts are directed towards their clean-up.

More recently, the focus on shellfish expansion has raised some concerns in the academic community and in government about the long-term sustainability of the industry, both in terms of its impact on aquatic, beach and bird life[4] as well as its compatibility with upland and recreational uses. Studies are underway to measure carrying capacity, to engage local communities in planning for marine uses and to monitor beach impacts. Research is also being conducted to better understand the levels of cadmium in shellfish and how this may affect human health.

Measuring the value of a growing shellfish industry against environmental criteria is hence a process that requires a back-to-front approach. If shellfish can only grow in healthy marine environments and if the federal and provincial governments are contributing financial and human resources to monitoring and managing marine environments where shellfish are produced, it follows that communities in shellfish production areas will be more diligent, more aware, more actively engaged and better supported in their efforts to promote marine protection and change patterns that are detrimental to the industry and hence to their environment. Nonetheless, ongoing research and open dialogue about concerns that arise must be part of the industry development process to ensure sustainability.

***Economic criteria**:* The Alberni-Clayoquot Shellfish industry currently employs approximately 150 people or 80 full-time equivalent positions. The number of people employed on existing tenures in the region averages 1.8/tenure. New tenure owners estimate that labour will increase to an average of 3.3 people/site because of increased production estimates.[5]

The single most significant challenge in terms of economics for this industry is the cost of start-up. For all but the most modest string and line technology used for shucked oysters, the capital costs of equipment are relatively high and it is difficult to borrow for this investment since there is no cash-flow until the first harvest, 12-18 months later. The

[4] Bendell-Young, Leah, 2002
[5] EcoPlanning Consultants, 2003

federal government has also recently added a requirement for an environmental assessment (CEA) to accompany each new tenure or expansion application. The average cost of a CEA is $6000.00

Once a business has been successfully established, owner/operators can expect a 5-7 year climb to full financial viability. In spite of the best-laid plans, unforeseen events such as temporary closures due to water quality problems, slow-downs in the market or even stretches of bad weather can have a debilitating effect on cash flows until the business reaches maturity.

***Social criteria*:** With the exception of start-up challenges noted in (b) above, the shellfish industry is one that is relatively easy to access and in which it is reasonable to expect success. Training for shellfish aquaculture is a combination of on-the-job learning, mentoring and, for some, short specialized courses in various aspects of the industry that are offered through local colleges. People with a strong work ethic, an appreciation for ecology and biology and knowledgeable about the marine environment can succeed without formal education. Like all small businesses, it is necessary to have some appreciation of investment, labour and cash flow management.

Opportunities for First Nations: In all Nuu-chah-nulth Nations, the wild harvest of clams, oysters and mussels have been a historic mainstay of their diet, culture and local economy. It is important that the growth of tenured farms be done sensitively with respect to these traditional wild harvests. The Nuu-chah-nulth First Nations have entered into an agreement with the province to hold and develop a number of shellfish tenures within their traditional territory. To improve opportunities for a collaborative approach, they have established a corporation to assist them with infrastructure development, training and marketing. A series of courses have been developed through Malaspina College focussed on training and supporting First Nations new to the shellfish aquaculture industry.

List of key resources and contacts:

Contacts:

- Barry Seely, President, Clayoquot Oyster Growers Association
- Don Tillapaugh, Centre for Shellfish Research, Malaspina College
- Brian Kingzett, Kingsett Professional Services
- Roberta Stevenson, Nuu-chah-nulth Shellfish Development Corp.
- Scott Fraser, Working Sound Shellfish Committee

Publications:

- Ma-Mook Development Corp, 2000, Diversifying the WCVI Shellfish Aquaculture Industry
- Eco-Planning Consultants, 2003,WCVI Shellfish Development Project
- Ecotrust Canada, 2002, Nuu-chah-nulth Shellfish Marketing Plan
- Fisheries and Oceans Canada, 1997, Intertidal Clam Resources
- Kingzett Professional Services Ltd., Profile & Potential of the BC Shellfish Aquaculture Industry, 2002

Internet:

- Ministry of Agriculture Food and Fisheries
- Department of Fisheries and Oceans Canada

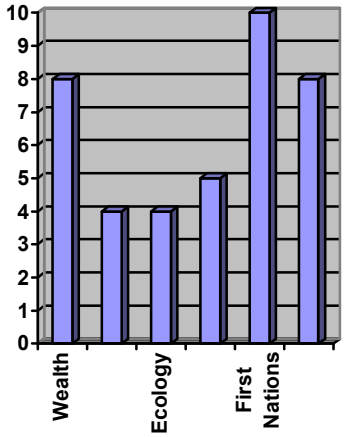
CURRENT STATUS AND POTENTIAL OF SHELLFISH SPECIES (RAMS 2002)

SPECIES	COMMENTS	POTENTIAL
PACIFIC CLAMS	First Nations hold 237 of 333 commercial licenses and have designated beaches for harvest that are off limits to commercial fishing activities. It is believed that the stocks need to be rested. Beach aquaculture of clams is currently in discussion with DFO but must be reconciled with the wild fishery. Earnings remain at an avg of $2600/license/season	Digger incomes, depuration facilities, processing, marketing and shipping services. If farmed and wild values can be reconciled, this fishery could grow significantly
GOEDUCK	This fishery is among the highest value on the West Coast. Divers harvest clams singly and live; picked to order for buyers. Licenses are prohibitively expensive at 500K and up, but several divers are WCVI residents. There are only 55 licenses coast-wide. The Underwater Harvesters Group monitors and manages the fishery. There are unresolved issues between clam and geoduck licensees over the allocation of horse clams.	Divers incomes, landings and shipping. There is potential for investment in live air shipping infrastructure and potentially hatchery development for geoduck seeding/farming.
HORSE CLAMS	The fishery is very small. Z licensees can harvest from the intertidal but hand digging usually damages product. Only G licenses (geoduck) can harvest in the subtidal which produces a superior product. UHA manages this fishery. Reallocation to Z licensees has been requested but not acted upon by DFO.	Income for divers, shipping, landings. Future potential depends on ability to reallocate licenses and develop appropriate bed-management structure
GOOSENECK BARNACLE	Gooseneck barnacles are harvested live for export to Spain. It is also a fishery traditionally used by First Nations for income and food. The fishery was closed in 2000 by DFO for conservation concerns. The WCVIMB has been working with the Gooseneck Barnacle Assoc. to develop a proposal for a three year scientific permit. They anticipate harvesting to commence on a limited basis in 2003.	Income to pickers. Possible local area management structure. Protocols with First Nations will be required.

GREEN, PURPLE SEA URCHIN	First Nations hold 237 of 333 commercial licenses and have designated beaches for harvest that are off limits to commercial fishing activities. It is believed that the stocks need to be rested. Beach aquaculture of clams is currently in discussion with DF0	Prices vary considerably in the marketplace. Income for divers, landings and some shipping opportunities. The fishery for green urchins is likely to expand.
SCALLOP	Wild scallop harvest is currently in abeyance because of a lack of scientific information about stocks. Organizing for a test fishery may be feasible. Scallop farming may be a viable alternative to the wild fishery in the region. One farm in Clayoquot has operated successfully in recent years.	The development of a farmed scallop industry and the potential for a hatchery should be considered
GIANT BARNACLES	There is no commercial fishery at present but some sports fishing and Aboriginal food fishery harvesting. Frozen packaged product is available from Chile to meet international demand. The stocks are accessed by diving in deep, high wave areas.	Stock assessment and market research is required. A new, small fishery could be developed on the WCVI.
DUNGENESS CRAB	The commercial fishery carries 223 licenses coastwide. The value of these licenses is 250K and rising. NTC is concerned about weak stock management regimes. There are 4 licenses held in Ucluelet and 8 in Tofino for this species. It is an important part of the tourist trade in this region as one of the only locally caught species that is available for purchase.	Licensees and crew income are retained in the region. Local sales maximize value from the fishery. Processing in combination with Tanner Crab presents new opportunities.
CRAB: Tanner and Box	The third year of scientific licensing for Tanner Crab is underway. Research on box crab just beginning. Processing of Tanner crab caught by experimental license holders is being done in Port Hardy. Opportunities for a scoring facility in Ucluelet as the fishery develops	Fishing incomes, landing, shipping, scoring, freezing, packaging facilities

2) THE FISHERY AND FISH PROCESSING

Coho Salmon, Photo: Tall Boy



Overall Assessment:

There are a number of opportunities for the introduction of new, supplementary fisheries in the Clayoquot Biosphere region. The structure and management of these new opportunities will be key to their impact on local economies. Adding value to the fishery through onshore processing, niche market development and value-added product development will significantly increase the economic impact of each fish caught.

Ed Note: *Rating the potential of the fishery is a complex task. There are clearly a number of new opportunities that might be developed, but the regulatory regime for new fisheries is extremely complex, the benefits to local communities unclear because of the high costs of access and the environmental impacts dependent on management regimes.*

It remains difficult, within the current regime of licensing and fisheries management, to plan for new business development since access to a minimum level of catch is often required. Efforts to work in a more coordinated way across the region and the opportunity to diversify the fishery (both in terms of species and fishing season), along with structures that maximize local authority over decision making will be key to long term sustainability in this sector.

Clearly, the costs associated with the fishing industry have and will continue to increase as license fees increase, allocation regimes limit catch, monitoring and catch reporting costs are passed from governments to vessel owners and there is consolidation and price controlling in the processing sector.

A few commercial fishing vessels (estimated to be less than 50) remain in the region and continue to fish for at least part of each season. However, without access to the few lucrative fisheries that remain (halibut, black cod, herring), the small boat fleet with eventually be financially squeezed out of the industry.

Overview: Current status and trends in the industry

BC's fisheries sector has undergone significant changes in the last decade. Historically, the industry was dominated by activity related to the harvesting and processing of wild salmon. Other species accounted for a relatively small share of the industry's output. More recently, the emphasis of the industry has been on diversification, placing an increased emphasis on species other than salmon.

BC Commercial Fishing Harvests and Values 2001 (BC Fishery QuickFacts, 2001)

Species	Landings (tonnes)	Landed Value ($millions)	Wholesale Value ($millions)
Wild Salmon	22,900	33.3	160.2
Herring	23,100	43.2	119.0
Groundfish	107,500	124.0	194.7
Wild Shellfish	19,800	131.5	186.2
Tuna and Other	6,900	26.1	33.0
Total	**180,200**	**358.1**	**693.1**

- Commercial fishing is the fourth largest primary industry in British Columbia after forestry, mining and agriculture.
- More than 80 different species of finfish, shellfish and plants are harvested commercially.
- Harvesting is undertaken by vessels using seine or gillnets, and by trawling, trolling or trapping. Other harvest methods include diving and hand picking.
- Many fisheries have become limited entry. These fisheries provide for year-round harvesting, higher quality products and increased values to the fishers.
- Wild shellfish is the most important commercial fishery in terms of value to the harvester. High landed prices are realized primarily in the geoduck clam, crab and prawn fisheries.
- Groundfish species account for 60 per cent of the commercial fishery harvest by volume.
- New and emerging fisheries are being developed to increase diversification of the harvesting sector while providing opportunities for enhancing the value of underutilized species.

Government initiatives to balance the size of the fleet in relation to diminishing salmon stocks played a large role in the restructuring of the fishing industry that took place in the late 1990's. The commercial fleet responded to these initiatives by retiring vessels, changing gear to focus on alternative species, developing new markets and adding value to catch.

At the same time, technological changes and policy shifts have increased emphasis and opportunity in the finfish aquaculture industry. In the 1980's aquaculture was predominately focussed on shellfish. Since the 1990's, the aquaculture industry has been dominated by the farming of salmon. The growth in aquaculture is so significant in the province, that the annual landed value of farmed salmon and shellfish now surpasses the landed value of the wild fishery.[6]

[6] BC Stats Information Management Unit, 2001

Fish Sector Processing in British Columbia, (2001 Quick Facts)

- 179 companies
- 195 facilities
- 3,900 direct jobs

BC Seafood Production Quantity nd Values 2001

Species	Production (tonnes)	Landed and Farmgate Value ($millions)	Wholesa ($mill
Wild Salmon	22,900	33.3	
Herring	23,100	43.2	
Groundfish	107,500	124.0	
Wild Shellfish	19,800	131.5	
Tuna and Other	6,900	26.1	
Commercial Fisheries Total	180,200	358.1	
Farmed Salmon	67,700	269.4	
Farmed Shellfish	8,800	16.7	
Farmed Trout	100	0.5	
Aquaculture Total	76,600	286.6	
Seafood Production Total	**256,800**	**644.7**	

- Seafood processing occurs at 195 facilities located throughout the province.
- The wholesale value of B.C.'s seafood products was worth more than $1 billion.
- Seafood is B.C.'s number one food export as more than 85 per cent of our fish and seafood products are shipped out of the country.
- B.C. seafood processors exported $974 million worth of fish and seafood products to 39 countries. More than 80 per cent of all shipments are destined for the US and Japan.
- Seafood products derived from species other than salmon and herring are becoming increasingly important.
- New fisheries such as squid, sardines and tanner crab, along with added-value processing in existing fisheries such as spiny dogfish, arrowtooth flounder, sea cucumbers, red sea urchins, and pink and chum salmon have presented valuable opportunities.

The combined fisheries and aquaculture sectors in BC in 2001 generated 601 million, less than 1% of the province's total Gross Domestic Product. The single largest contributing sector of the fishing industry was the sports fishery, with a GDP of 228 million dollars. Fish processing (82 million), aquaculture (116 million) and the commercial fishery (170 million) contributed smaller amounts to the overall economic health of the province.[7] The value of farmed salmon production in the province actually exceeded the value of the wild salmon catch in both 1998 and 1999 – a reflection of the decline in the wild salmon stock available for harvest during those seasons.

[7] BC Stats Information Management Unit, 2001

The province's fish processing industry has felt the effect of a dwindling catch, and both GDP and output in this component of the fishing industry have fallen (in absolute terms) since the early 1980s. Two-thirds of the people working in the fishery have jobs in occupations specific to fishing or manufacturing More than a third (35%) of the people working in fishing are employed as skippers, masters and officers, deckhands, harvesting laborers, or in other activities specific to fishing. Just under a third (31%) are in jobs that are specific to fish processing. People with skills and training in the natural and applied sciences also make up a significant percentage (13%) of the industry's workers. Many of them are chemists and biologists, or in similar fields. Another 6% of the people working in the industry have jobs as trades and transportation equipment operators. Of the remaining 15%, business, finance and administrative workers (5%) and people with jobs in sales and services (4%) make up the largest number of workers.[8]

In 1999, there were 6,900 people employed in the province's fishing and fish processing industries. The processing of fish caught by both BC and foreign fish boats accounts for 40% (3,300) of the jobs in this industry.[9]

Part-time work is more common in the fishing and fish processing industry than in most other types of goods production. One in four workers in this industry is employed part-time, meaning that he/she spends less than 30 hours a week on the job.

Relatively few women work in the commercial fishery (including aquaculture), where they make up just 20% of the work force. However, nearly half of the workers in fish processing plants are female.

There are some gaps in the data, but unemployment rates in the commercial fishery hovered around the 20% mark (more than twice the provincial average) during much of the 1990s. The jobless rate was similarly high in the fish-processing sector. As is the case in agriculture, self-employment is very common in this industry, accounting for about a quarter of all employment. About 40% of the people who work in the commercial fishery are self-employed, but it's less common in fish processing.

Aboriginal Fishing Strategy: It is the policy of the Department to encourage increased Aboriginal communal participation in and integration with coastal commercial fisheries. Aboriginal involvement in the fishery is a shared goal between the Department and Aboriginal people. It is a means to stimulate Aboriginal economic development opportunities and develop fisheries expertise in Aboriginal communities, while serving as the basis for more cooperation between Aboriginal communities and the commercial fishery sectors. Aboriginal participation in the commercial fisheries is being accommodated through the Licence Retirement/Allocation

Halibut are of continuing importance to First Nations, who harvest them for food, social and ceremonial purposes. There is extensive use of Halibut by coastal First Nations.

[8] COPS estimate (1998)/ 1996 Census data
[9] Labour Force Survey/COPS

Transfer Program. The Fisheries and Oceans Canada Licence Retirement/Transfer Program (ATP) retires existing commercial licence eligibilities from fishers on a voluntary basis and re-issues these to eligible Aboriginal organizations as communal commercial licences (category "FL" licences). The program has retired 16 commercial FL licences to date, which represents 3.69% of the commercial fleet.

The Department negotiates approximately 74 agreements annually with 145 First Nations in BC and the Yukon. Several of these agreements include provisions for the harvest of Halibut for food, social and ceremonial purposes. The level of harvest is unknown at this time. First Nations access to fish for food, social and ceremonial purposes is managed through a Communal License.

The Pilot Sales Projects are an important element of the Aboriginal Fisheries Strategy (AFS). Through agreements made between Fisheries and Oceans Canada and aboriginal groups, aboriginal communities are authorized to sell specified amounts of fish subject to conservation needs and to agreed monitoring, enforcement and management regimes. The Somass River Fishery in Port Alberni holds one of three provincial licenses for pilot sales.

Fishing in the Clayoquot Biosphere Region: As is the case for other resource-based industries, while fishing and fish processing doesn't play as a big a role in BC's economy as it once did, there are still many communities where the fishery and related manufacturing activities are important to the local economy. The small communities on the West Coast of Vancouver Island, including Ahousaht, Ucluelet and Port Alberni are among those that continue to gain at least some component of their local economy as well as a good part of their identity through their attachment to the wild fishery.

Ucluelet has been significantly impacted by the decline in the fish-processing sector. Three processing plants (Ucluelet Seafood Processing, Canadian Seafood Processing and Robert Wholey Ltd) that ten years ago ran 24-hour shifts during peak summer and fall fishing seasons, now sit largely idle for much of every year. At least half of a processing workforce that was once one of the most skilled in the country has relocated or moved into other economic activities.

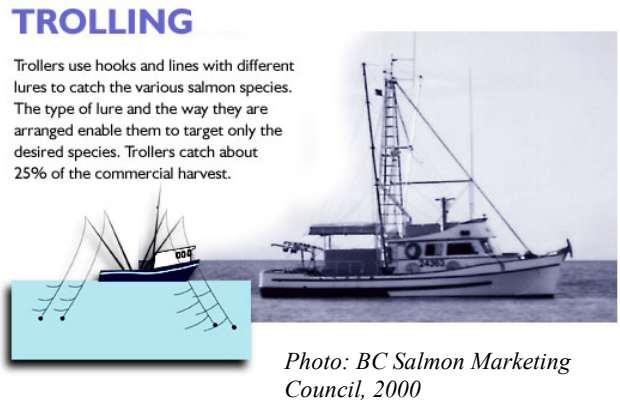


Photo: BC Salmon Marketing Council, 2000

Fisheries infrastructure, including docks, vessels, off-loading facilities, icehouses and net lofts are facilities that remain in the region as valuable and underutilized assets. Most of the fish caught in West Coast waters are now processed in Vancouver instead of in one of the region's plants. This year, as this report is being prepared, the community waits anxiously to learn what percentage of the off-shore

hake fishery will be landed for local processing. The answer is a weather-bell for their annual economic health and hardship.

The WCVI Aquatic Management Board has recently commissioned a study to determine how many fishing licenses remain in the hands of local residents and their early analysis signals a number that is remarkably low (likely less than 30—principally salmon, groundfish and halibut). This means not only less fish boats and fishing jobs, it also has a profound effect on the overall health of the economy because of the loss of revenue to secondary industries including marine weighs, storage facilities, marine supply stores and transportation systems.

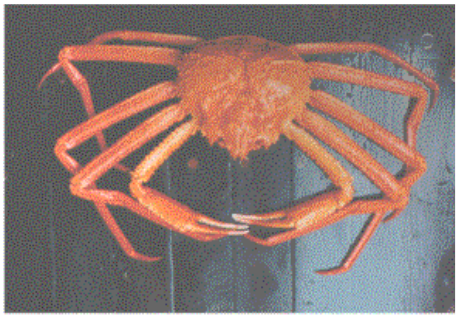


Photo: WCVI Aquatic Management Board

In an attempt to keep some of the fishing infrastructure in place and fishing revenues in the region, considerable emphasis has been placed on developing alternative fisheries – both underutilized species and new species. The region, through the West Coast Sustainability Association, developed and hosted an experimental fishery for Tanner Crab (1999-2001). This fishery has now been established and there are two licenses in the hands of West Coast residents. Processing, for the time being at least, has been centered in Port Hardy rather than in Ucluelet as originally envisioned. The West Coast Vancouver Island Aquatic Management Board is currently working with the Gooseneck Barnacle harvesters to establish a three-year scientific license that will reopen that fishery on a limited basis. Other potential opportunities for development and diversification as identified by the WCVIAMB have been summarized on the accompanying chart.

Each will require significant coordination effort and time to establish the parameters of management, monitoring, allocation and reporting as required by the DFO for new or underutilized fisheries. The commitment (in time, money, expertise and political will) required for opening or reopening fisheries is perhaps the single largest hurdle to development in this sector at the present time.

There are also a host of other issues which act as constraints to marine-based growth and diversification in the region including:

- The slow progress of treaty-making with First Nations which would help to clarify issues of right-of-access to existing and new fisheries
- Intertwined, complex and often competing federal/provincial regulatory regimes
- Weakened management and science capacity both federally and provincially to conduct stock assessment, establish monitoring and enforcement regimes and work with local fishermen to develop plans for fisheries development
- A risk-averse policy framework
- Licensing and allocation issues that, in historical fisheries are difficult to restructure and in new fisheries are difficult to establish in ways that maximize local control and benefit.

There is a need for the fishery to become more vertically integrated as well as more diversified. To take advantage of opportunities within the commercial fleet, not only does the region need more fish landings to be processed in the community, but they also need processors and fishermen to work more collaboratively.

To process new commercial species, some recapitalization/retooling in the plants would likely be required.

Bringing fish into the region from other sources to be processed is a second option. A cold storage facility would have to be established to support this activity.

Assessment of the sector by SCED Criteria:

The application of the SCED criteria to the fishery needs to be done on a species-specific basis; assessment that is beyond the scope of this current project. However, it is not beyond the scope of the process required to table and approve a Fisheries Management Plan. It is during the development of a FMP that decisions about the size and scope of each fishery are established based on, hopefully:

- an excellent assessment of stocks,
- an understanding of species biology and disbursement patterns, and
- knowledge about competing and/or complementary species that could be impacted and a consciousness about strategic benefit to adjacent communities and user groups.

Area based licensing was introduced in the clam fishery in 1989 as an attempt to control escalating effort by requiring harvesters to select annually one of seven license areas in which to fish. Despite this, the number of commercial clam harvesters remained high and resulted in the need for increasingly restrictive management measures in this fishery. Following the introduction of area licensing, approximately 1,900 commercial clam licenses were issued annually. The high number of harvesters and more restrictive management measures resulted in some license areas being opened for only one or two days each year. These management actions necessitated staggered openings between the various license areas to avoid harvest gluts and to maintain a year round supply of fresh clams to the market as defined in this management plans goals and objectives.
Since 1991 a process of management reform has been underway in the commercial clam fishery. This process has focused on the development of community based management initiatives with greater involvement and responsibility of stakeholders including First Nations in the stewardship of this resource.

It is clear that the cultural and historical attachment to the fishery is profound on the West Coast for both First Nations and non-Native fishermen. It is also clear that the skills base and infrastructure related to fishing activity would make the return of the salmon or the introduction of new fishing opportunities a priority for economic development.

The WCVI Aquatic Management Board should be viewed as a key player in all efforts to rejuvenate fishery activity in the Region. Their ability to work with the federal and provincial government, local communities and user groups along with their interest in ensuring

stock viability and maximum, long term benefit to local communities are important to sustainability, new thinking and new practices in the fishing sector.

Key Contacts, References and Resources

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CURRENT STATUS AND POTENTIAL OF WCVI FISHERIES

SPECIES	COMMENTS	POTENTIAL
SEA CUCUMBER	Nuu-chah-nulth dive for sea cucumber for food, social and ceremonial purposes. There is little commercial activity with only 25% of the coast open to harvest	Landings only since sea cucumbers are processed on-board. BC Fish has rated this fishery as fully subscribed. May be limited new opportunities with good science.
NEON FLYING SQUID	The North American market for food grade squid is saturated with product from California. However there is interest and potential in the Japanese market. A test market is being developed by DFO-BC Shellfish Development Committee	Landings and shipping. Careful market research and good trading partners are essential components of success. An excellent combination fishery
PRAWNS	The deepwater prawn fishery became one of WCVI's most valuable fishreies after the 1995 introduction of product to Japanese specifications. The landed value jumped from $3-$9/lb, followed by dramatic increase in license value (up to 350K). Stacked licenses has put tremendous pressure on stocks.There are unreconciled differences between the sport, aboriginal and commercial fisheries. Discussions are underway to restructure the way this fishery is managed and monitored.	Prawns are frozen at sea and air shipped to Japan after processing.If small boat access is secured, this could be a very good long-term fishery for WCVI communities. Work to reconcile fishery users would be required.
SHRIMP TRAWL	This fishery was restructured in 1997 with the establishment of management areas, catch ceilings and quotas and seasonal closures. Nuu-chah-nulth have concerns about habitat damage and bi-catch from the drag fishery.	Shimp landings are down East and West coast. Markets are volatile. A handpeeling/freezing facility would substantially increase value of the fishery to local communities
OCTOPUS	This fishery has been restructured. Divers are no longer licensees. The harvesting of octopus has been limited to bycatch for prawn trap licensees. This has had some impact on incomes for octopus divers.	Loss of value in 1999 due to loss of access for dive licensees. Participating in stock assessment and putting forward a new strategy for fisheries management may open future opportunities.
SARDINE/PILCHARD	The sardine fishery moved from an experimental fishery to a commercial fishery in 2002. There remains some hesitancy about growth potential for this fishery and hence its' development over the next three years will be incremental and risk-adverse. For 2003, 25 licenses for individuals and 25 communal licenses will be issued. Participants will be allowed to harvest 180 MT per license.	There is potential for this fishery to expand. The next three years will be critical to the long term viability of this fishery. Processing activity may accompany in the region once licenses have been established.

SPECIES	COMMENTS	POTENTIAL
TUNA	The Canada-US Tuna Treaty allows Canadian fishermen with a C license to fish US waters and land fish in different countries. This fishery offers security for combination fishing. There is pressure to favor limited licensing to the large boat fleet but DFO has not yet ceded to this direction.	landings, shipping, FAS in some larger vessels, onshore processing and freezing. Tuna brings extra value to the WCVU troll fleet under the current licensing regime.
HERRING ROE	Declining stocks in Barkley have been a concern to NTC. Opportunities for food gathering have been impacted. This is a fishery that could significantly benefit local communities if there was a policy shift to limit access to large non-resident seine vessels. Herring roe is exported to Asia as a food product. Carcasses go to reduction for fish food. Large markets have not been developed. The fishery is a staple for First Nations use.	Landings, shipping, spawn-on-kelp ponds. This fishery would benefit from more local management to ensure long term sustainability.
HERRING	Herring, alongside salmon was traditionally the largest fishery on the coast.The WCVI fishery produces foodgrade herring and bait. In recent years the volume of the fishery, the value of the fish and the structure of the licensing system has seriously impacted the viability of this fishery.	Landings, incomes for fishermen. This fish is processed in Port Hardy.
INSHORE ROCKFISH	The inshore rockfish fishery is very important to WCVI communities because it supports a fleet of smaller boats that are locally based. The inshore fishery has been cut back due to concern about mixed stock bycatch and a general decline in stocks. DFO has expressed concern that long-lived, slow recruiting species could collapse very quickly.	Income to hook and line fishers. Important fishery for the small boat fleet. Landings are generally local.
OFFSHORE GROUNDFISH	The offshore groundfish fishery is comprised of trawlers who drag for Dover and Petrale sole and over 50 species of rockfish. Their catch is managed through the Groundfish Development Authority. The approach is to designate part of every ITQ to meet community and crew objectives. There has been preference for landing and processing on WCVI. There is some concern about stock depletion (already signalled by the collapse in US westcoast waters)	Trawled groundfish are sold in large quantities to wholesalers who truck them fresh or frozen to the Lower Mainland for processing and export to the US, Europe and Asia. The fishery presents opportunities for enforced local landings, fleet and crew income and processing in Ucluelet.

SPECIES	COMMENTS	POTENTIAL
SABLEFISH/BLACK COD	This is a high value fishery -- the first fish to be brought in live and sold as live product. It is primarily a large boat fishery with limited entry. The sablefishery is pressured by the same bycatch and access concerns as the inshore rockfisheries.	Two BC companies began farming sablefish in 2000. Processing in Ucluelet and smoking in Tofino are two possible enterprises associated with this fishery. It is also a fishery that could be used for the purpose of establishing a community development quota.
HAKE	Hake is a significant fishery for the WCVI but it is a complex fishery relative to others because of its long commercial history. This fishery is allocated through a joint venture agreement between Poland and Canada. The 'split' is determined annually prior to the opening of the season. Fishermen can deliver to either the joint venture vessel freezer fleet or to the onshore processors. Ucluelet is now the largest port for hake processing in Canada.	Income to fishermen, onshore employment. The Wholey plant, Port Fish Co and Canadian Seafood Processors rely on this fishery as a mainstay of their annual activity.
HALIBUT	Halibut fishing is one of the few fisheries that continues to provide a good living to licensees. It is managed by individual quota so fishermen can access fish according to market demands and around other fishing opportunities. Work needs to be done to reconcile the halibut fishery with the inshore rockfish fishery (often taken as bycatch)	BC halibut is shipped all over the world. Prices are steady and the structure of the fishery allows fishermen to maximize market opportunities. Fishermen and crew incomes and onshore processing jobs are the key benefits.
SPINY DOGFISH	This is one of the oldest commercial fisheries in BC. Fishing for food began only after 1976 when European markets were identified. Belly flaps are exported to Germany for smoking as a delicacy; fins are frozen for Japanese and Chinese markets. Backs are wrapped and frozen and sold to Great Britain for fish and chips. Industry groups are currently competing for increased access.	Processing in Ucluelet. There is an opportunity to increase value-added services for this fishery. Some licenses have been retained in the region.

3) SEAWEED CULTIVATION AND HARVEST

Overall assessment of potential

This is a relatively new industry. Since it requires very limited capital investment and there are minimal technology requirements, it should be accessible to community members interested in a small business opportunity.

At this time the regulatory framework for the industry is not yet clear and markets are not well developed. Hence the seaweed business requires entrepreneurs who are prepared to be diligent in working with government to secure tenure access (the application process needs to be streamlined) and who are willing to spend time developing new markets and products.

The seaweed industry, or more appropriately a series of linked small businesses that utilize seaweed resources as their foundation, has good potential for the West Coast of Vancouver Island.

It would be beneficial to view the development of a new local seaweed industry quite strategically. A coordinated approach would aim to maximize individual business opportunity, minimize impacts on the resource and develop a planned approach to the market. An interrelationship between businesses could be developed for instance where one or two businesses focus on bulk harvest; one or two on using the dried bi-product; one or two on species designated for the spa treatment market and one or two on food species.

A helter-skelter approach to development of this industry at the local level could soon exhaust both the resource and the market without bringing significant benefit to the region.

Overview: Current status and trends

Seaweeds are marine algae, saltwater dwelling, simple organisms that fall into the rather outdated

general category of "plants". Most of them are red (6000 species), brown (2000 species) or green (1200 species), and are generally attached to rocks or the sea bottom by hold-fasts, which have an anchorage function. Scientists generally call them "benthic marine algae", which means "attached algae that live in the sea".

Seaweeds are found throughout the world's oceans and seas and none is known to be poisonous. On the West Coast on Vancouver Island, over 90% of our seaweed resources consist of three brown species, Laminaria Stechelli, Macrocystis integrifolia and Nereocystis leutkeana. These are almost identical to the traditional Asian products, Kombu and Wakame. Stocks of red seaweed are not extensive.

Wild kelp harvest drying in Ucluelet processing plant. Photo B. Kuecks

Seaweeds are used in many maritime countries as a source of food, for industrial applications and as a fertilizer. Asia is the major consumer of seaweed as a food source. It has been a staple item of diet in Japan and China since prehistoric times. In 600 BC, Sze Teu wrote in China, "Some algae are a delicacy fit for the most honoured guests, even for the King himself." Some 21 species are used in everyday cookery in Japan, six of them since the 8th century. Seaweed accounts for some 10% of the Japanese diet and seaweed consumption reached an average of 3.5 kg per household in 1973, a 20% increase in 10 years (Indergaard 1983).

In the west, seaweed is largely regarded as a health food and, although there has been an upsurge of interest in seaweed as a source of food in the last 20 years, it is unlikely that seaweed consumption here will ever be more than a fraction of the Japanese.

First Nations have traditionally used seaweed for a variety of purposes. Bull Kelp was used for fishing lines, ropes and the storage of oil and fat; giant kelp as the basis of the spawn-on-kelp fishery; floats dried and exploded in the fire as firecrackers; and as a medicine for boys destined to be whalers.

Industrial uses of seaweed are, at present, largely confined to extraction for phycocolloids and, to a much lesser extent, certain fine biochemicals. Fermentation and pyrolysis are not carried out on an industrial scale at present but are possible options for the 21st century.

Seaweed cultivation takes many forms but there is a kind of evolutionary process through which it develops, driven by market requirements. If demand is low and natural resources adequate, cultivation is unnecessary and demand can be met by wild harvest. As demand increases, natural populations frequently become inadequate and supply is supplemented by resource management techniques including adding artificial habitats, seeding cleared

areas and essentially 'farming' the various species. A considerable amount of technology has gone into the development of reliable methods for the cultivation of seed stocks and their improvement.

The penultimate development in seaweed cultivation may be the growing of plants in artificial impoundment on land. This involves the use of either tanks or ponds into which seawater is pumped and the seaweeds are grown detached and at very high densities. Not all species of seaweed are viable in these types of artificial environments. In some instances, 'polyculture' systems that combine the cultivation of seaweed with fishery production have been attempted with some success.

In 1997, the North American market for edible seaweeds was worth $30.6 million. At the present time there are seven companies in North America producing dried seaweed. There are also a few producers who, as wild-crafters, carry small amounts of kelp and other seaweeds with their line of wild mushrooms and herbs. As of 2001, there were only two producers in Canada developing kelp for homeopathic pharmaceuticals, one experimental farm producing sea urchin feed and four small experimental sites producing kelp for the herring-roe-on-kelp-market.

There are two seaweed businesses currently operating in the Alberni-Clayoquot Region. Pacific Sun Kelp in Port Alice was started in 2001. The company's owner/operater Mr. MacDonald holds both a wild harvest license and a farm license for Barkley Sound. He is currently building a processing/drying plant on his property for the purpose of preparing dried bulk seaweeds that will be sold to food processors and specialty health food outlets.

Canadian Kelp Resources, Ltd. (est. 1981) is a family owned and operated company dedicated to the development and promotion of quality kelp products and services in the context of good ecological and humanitarian practices. The company has adapted the Japanese kelp farming technology to Western Canadian conditions and established the first experimental kelp farms outside of Asia Their product line includes sea vegetables and raw kelp material for pharmaceutical and cosmetic products, and kelp seed. In recent years this company has also added a consulting function because of their practical knowledge and expertise and they are contracted worldwide to projects including kelp farming, kelp product development and processing, and environmental assessment and bio-remediation. The company's principles are: Louis Druehl, PhD, Professor of Marine Botany, Simon Fraser University and Rae Hopkins, a professional cook with extensive experience in innovative food preparation.

Future opportunities and challenges

There is significant growth potential in this sector. As a relatively new industry in BC and Canada, the greatest challenges lie in the multi-tiered and often contradictory regulatory framework that determines conditions for farming, picking, harvesting and production. At the present time, entrepreneurs entering this industry must deal federally with DFO and provincially with Ministry of Agriculture, Food and Fisheries.

A licence to harvest marine plants in British Columbia is required to undertake the commercial harvest of any marine plant. The licence stipulates the species, quota, method and area of harvest. Licences to harvest marine plants are issued for the purposes of the commercial spawn-on-kelp (or roe-on-kelp) fishery, and for other commercial purposes such as specialty food for the restaurant market, and fertilizer.

As one of the requirements stated on the license, all marine plants destined for the food industry must be processed in a duly licensed facility. The reason for this is to protect public health by requiring that food products are prepared for the market in a manner, and in a facility, that will ensure wholesomeness.

Before an application can be considered, the applicant must be able to demonstrate that the product will be used for a viable business.

The advantage in the seaweed industry is its technological simplicity. For wild harvest, knowledge of the local area and ecology are the only requirements. For farm production, simple and inexpensive systems similar to those used for long line oyster production are employed. For processing, while plants must be built to meet federal food inspection standards, only simple racking and heating systems are required.

Assessment of the sector by SCED Criteria

Environmental criteria: Even under ideal conditions, where plenty of management funding and labor resources exist, precise human management of kelp forests is inherently difficult due to the complexity of the ecology and the highly dynamic marine environment of kelp forests (Foster and Schiel, 1985). After an analysis of the studies that have been done, two general conclusions can be reached. The first is that when kelp harvesting is done on a limited scale, there is generally little detectable, adverse effect on the kelp forest. The second conclusion is that, while numerous expert opinions agree that over-harvesting can occur (North, 1968; Miller and Geibel, 1973) and they have even postulated the parameters for such a harvest level, few long term studies exist that can answer the question, "At what point would intensive repetitious harvesting, especially in a confined space, begin to cause significant ecological impacts?" Such a question becomes even more complicated when non-harvesting impacts occur, such as storms, near-shore development, incidental effects from recreational uses of the kelp bed, and sewage discharges.

Invertebrates, of all the groups of species that rely on kelp forests for their habitat, may be the most affected by kelp harvesting. For motile invertebrates in the kelp canopy, previous studies estimate that from 1/4 to 1/3 of them are removed when kelp is being harvested by large-scale harvesters (Quast, 1968). However, no research has conclusively determined whether or not such removals are significantly affecting those species populations within the forest, or if such removals are ecologically important.

Some studies indicate harvesting the upper layer of the canopy can be beneficial to kelp by preventing plants from growing top-heavy and becoming uprooted. Harvesting advocates also believe trimming allows more sunlight to filter through the water surface, enhancing the diversity of plants living under the forest canopy.

Economic criteria: This industry offers a number of unique opportunities for small business development in the region. Not only can entrepreneurs get into the business of bulk seaweed production with little capital investment, but also there are a number of avenues for the development of small value-added industries as off-shoots even of the two existing businesses in the region. Kelp flakes, chips and natural products for spas and resorts are just a few examples of businesses that can readily be build from the bi-products of the bulk kelp business. Local jobs, while not large in number, can provide year round or at least secondary seasonal employment. There is no perceivable negative impact on the region's informal economy if this industry is expanded.

***Social criteria*:** The seaweed business offers an entry-point for people who may be marginalized from the mainstream economy because it is low-tech and low-cost. The most complex aspect of the business is market development; accessing existing markets and growing new markets for seaweed products will prove to be the most complex aspect of the industry. It is not likely that this industry will grow large enough to be a major employment generator in the region but it should be able to sustain at least several secure part-time positions.

Opportunity for First Nations: Farm tenures for seaweed production fall under the same legislation as shellfish and finfish farming, thereby recognizing the traditional rights of First Nations to the marine environment and offering opportunities for tenure development to adjacent reserves. First Nations applying for marine plant tenures are subject to the same criteria as non-Natives, including the submission of a business plan that shows the application of the proposed harvest to a viable business.

The seaweed industry may offer an ideal 'fit' for many of the First Nations communities in the region. There is already a historic and cultural relationship to the marine environment and to the farming and use of seaweeds at least for the roe-on-kelp fishery.

For wild-harvest, knowledge of the areas ecology and geography are the only requirements. For farming, First Nations' ability to access tenure sites within their traditional territories offers a distinct advantage. The fact that this industry requires low capital investment and limited technology for all aspects, from production through to processing means it is comparatively easier and less expensive to get into the seaweed business than into many other marine-based industries.

List of key resources and contacts:

Contacts:

- Dr. Louis Druel, Canadian Kelp Resources, Bamfield, BC
- Mr. Scott MacDonald, Pacific Sun Kelp, Port Albion, BC

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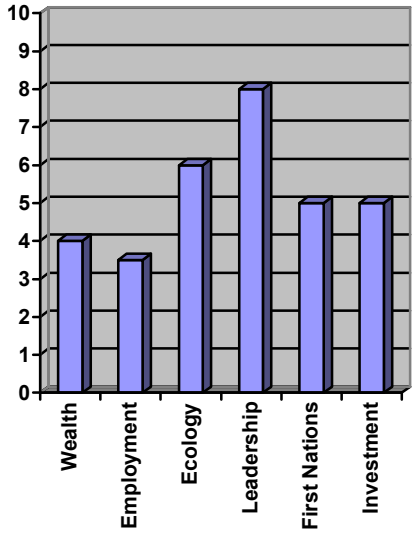
4) ECOTOURISM

Photo: Tofino Sea Kayak Co.

Overall Assessment of Potential



On many counts, the foundation for a strong eco-tourism sector already exists in the Clayoquot Biosphere Region. There are a number of business activities in place to serve as an anchor for further development. There is an established market, one that seems to be showing no sign of exhaustion. There is an incredible landscape that provides unique, as yet untapped potential for new industry approaches.

But there are some significant holes that threaten this foundation including:

- infrastructure that has not kept pace with demand
- increased competition amongst businesses that threatens to undermine the overall experience for the visiting public
- significant gaps in some areas of service
- untested ecological limitations, including to wildlife, beaches and marine species
- limited First Nations involvement in the industry, when their territory and culture is a large part of the picture people have come to experience

The development of a sustainable ecotourism industry requires a planned approach that recognizes and addresses these impacts as part of its overall strategy for growth. In the absence of a management plan for tourism development tourists, and the economy built upon them, is no more secure than any other single resource economy.

Only a well-built and thoughtful approach to ecotourism will add sustainability, dimension and depth to the region's economy.

Overview: Current status and trends in the industry

Background: To understand the growth of the tourism industry in the Clayoquot Biosphere Region, it is necessary to understand something about the history of the place. Historically, the economy of the region was about as far from tourism as it is possible to get. Industrial logging and commercial fishing employed over 60% of the population and provided the backbone of not only the local economy but also the region's identity. Through the 1980's-90's two things occurred simultaneously to change that face forever. First, a 'protracted, high profile clash between loggers and environmentalists to bring an end to industrial logging in the region'. (Sutherland, 1999:48). Second the collapse of the salmon fishery, followed by a significant downsizing of the commercial fleet, associated coastal processing opportunities and marine businesses.

> Historically Skamania County's (Washington) economy has been dependent on natural resources, and the local economy has fluctuated dramatically to adapt to market conditions. Ninety seven percent of County land base is under federal or state land ownership, and in the 1980s federal policy decisions (e.g. harvest restrictions, Endangered Species Act and the Columbia River Gorge National Scenic Area Act) limited local access to the resource base, timber production dramatically declined and mills closed. Therefore, the County, city and private business formed a public-private partnership that built the *Skamania Lodge and Conference Centre* in 1993, which has generated employment (it employs approximately 320 people year round) and contributed to some resurgence in the local retail economy. A second resort in the County is nearing completion. The community has taken advantage of the urban populations in Portland and Vancouver and uses the National Scenic Area Act in its marketing campaigns. Active local County leaders, local businesses and local government formed the Skamania County Economic Development Council to coordinate economic development by assisting the Port in its industrial development strategies. The second step was to build and strengthen the local Chamber of Commerce in order to develop the tourism economy.

The combined effect of world-wide attention on the region for its' environmental stewardship and preservation of natural values together with a large available workforce, made the shift to a tourism economy a relatively easy fit. In Tofino today, the tourism industry far outperforms all others (Firkser, T., 2001, SFU). It is the centre of tourism on the West Coast of Vancouver Island and one of the island's major tourist destinations. While no 'official' survey has been done to measure the exact number of visitors per season, the Chamber of Commerce estimates at least 20,000 people per day visit the area in the summer season. The economic value of the tourism industry is conservatively estimated to be between 50 million/year (National Geographic, 2003) and 100 million/year (Tofino-Long Beach Chamber of Commerce). The growth of tourism is more recently moving into Ucluelet as the requirement for accommodation and visitor services expands and as tourism-related products centered in Ucluelet are developed. First Nations communities

have benefited to a lesser extent with the addition of 25-30 small businesses focussed on the tourist sector located either in reserve communities, in Tofino or Ucluelet.[10]

Movement towards ecotourism as the focus for the Region has not been a conscious or coordinated decision on the part of local governments or other agencies. Rather it has grown organically out of individual business owner assessments of the type of visitors attracted to the area and the subsequent shaping of tourism products.

It may be too strong to suggest that 'luck was with the Region' in this regard, but the absence of tourism development strategy is evident. It shows up both in the somewhat haphazard collection of activities that are available as well as in the obvious sector gaps such as adequate parking and service staff accommodation.

Ecotourism: The Region's focus on ecotourism products has allowed it to benefit significantly from overall trends in the tourism industry. Like the term sustainable development, ecotourism has been defined in a variety of ways and the term used and abused for marketing purposes. However, in theory and good practice, it refers to economically viable, culturally appropriate, nature-based tourism activities that promote education, interpretation, environmental protection, conservation and involvement of local communities and indigenous peoples (Peachy, K. 2001).

Globally, demand for ecotourism activities is growing and shifting away from escapism-oriented travel. A 1990 World Resources Institute estimate suggests that nature travel is increasing at rates between 10% and 30% annually, while tourism overall is increasing annually at 4%. A 1997 survey of tour operators in the Asia-Pacific region supports these observations, with operators reporting annual growth rates of 10% to 25%[11].

According to a 1993 survey conducted by Statistics Canada, adventure travel and ecotourism were driving the Canadian tourism industry in all regions across the country, with a growth rate of 12.9% in 1992[12]. Similarly, a March 1995 study of American travelers conducted for Fodor's Travel Guides, identified Canada as the favored top ten foreign destinations for 12% of respondents, ranking it well ahead of Costa Rica, Mexico and Australia—countries that offer substantial ecotourism products[13].

Tourism contributed over 8.8 billion to the provincial economy in 1998 and wilderness/ecotourism contributed about 9% of this total. On Vancouver Island, the tourism industry is currently estimated to be worth 1.25 billion with wilderness tourism contributing about 200M. [14]

[10] NEDC, 2003
[11] The International Ecotourism Society
[12] Canadian Tourism Commission, 1995
[13] Anderson/Fast Marketing Solutions et al., 1996.
[14] Stats Canada and ETAV, BC Tourism

Cultural Tourism: Interest in aboriginal tourism products and services is somewhat more difficult to measure, but the opportunities for the development of First Nations tourism products in the Region are clearly evident. Aboriginal tourism is a major growth industry in Canada. In 1999, aboriginal tourism generated about $250 million and employed about 12,000 people. Revenues are expected to reach the $1 billion mark in 10 years[15]. The profile of tourists interested in First Nations tourist products is similar to that of the ecotourist.

Humpback
Photo: Pacific Whaler Adventure Tours, Tofino

A 1995/1996 Tourism BC Visitors Study[16] found that visiting native cultural sites was a popular activity for non-resident visitors to Vancouver Island. This was especially true for European, Long Haul U.S. [17], and Asia/Pacific travelers with 61%, 42% and 26% respectively visiting native cultural sites. Between 25% and 29% of Regional Canada[18], Regional U.S., and Long Haul Canada report visiting native cultural sites during their trips to BC.

There are an estimated 25-30 businesses currently operating in the Region that are owned and/or operated by First Nations[19]. They range in size and product from the TinWis Resort and Conference Center owned by Tla-o-qui-aht Nation at one end of the spectrum to small, independent owner/operator fishing and canoe charters at the other. The addition of a First Nations tour booking center (Naachaks Adventure Centre) in Tofino in 2003 will no doubt help to consolidate and raise the profile of these businesses in the coming years. Previous attempts at cooperative marketing in a visible location of First Nations tourism products resulted in significant sales increases for members. Ma-mook Development Corporation has added tourism transportation to its list of businesses with the Clayoquot Spirit Tours and the Long Beach link bus service. Ahousaht has developed and is promoting their Walk the Wildside Trail, a business venture that has the potential to attract thousands of visitors each year to explore, with cultural interpretation, the beautiful natural landscapes of Flores Island. Plans are underway to revitalize and expand this opportunity in a way that is appropriate to the community and sensitive to the ecology.

> "We had lots of people on the Trail. We were overwhelmed. It was scary, the trail was getting chewed up, degraded from too many people in their heavy duty hiking boots. The elders told us to shut it down.

[15] Aboriginal Tourism Team Canada and the Canadian Tourism Human Resource Council, 2000
[16] Tourism BC data adapted from ARA and Peter Williams, 2000
[17] Long Haul US includes all states but Regional U.S. states (i.e. Washington, Idaho, Montana, Oregon and Alaska).
[18] Regional Canada includes Alberta, Saskatchewan, Manitoba and the Territories. Long Haul Canada refers to all other provinces.
[19] NEDC, 2003

Challenges: Obviously, with the tourist season upon us as this report is being prepared, the issues, opportunities and challenges associated with a burgeoning tourism industry for the Region are top-of-mind. Pressures on district infrastructure including roads, water and sewage facilities, the lack of housing for service staff, waste management, parking limits, the loss of a community culture, pressures on wildlife and the ecology, skyrocketing housing prices are all profoundly evident.

As the Region continues to grapple with these issues, some are calling for a 'cap' on tourist activity until there is, at a minimum, a plan for its sustainable growth. Others are eager to exploit the situation for as long as it continues. In an attempt to support the industry's development without further increasing the pressure on local taxpayers, the District of Tofino is considering application to the Province to become a resort municipality and a consortium of municipalities facing similar growth pressures has been formed. Local government is also reviewing its zoning and enforcement bylaws to identify ways that more control can be extended in areas such as overcrowded housing, the use of residential accommodation for nightly accommodation and the problem of illegal parking and camping. Associations have been formed to endorse 'best practices' in the whale watching industry, the kayak industry and the bed and breakfast community.

The issue of transportation links between Tofino and the outlying communities needs resolution. Parking and signage for water taxis associated with the First Street dock facility needs remedying. Taxi schedules need better coordination to link with tourism opportunities and interests. The recent acquisition of this dock by the District of Tofino and the establishment of a committee to consider its usage and management offer an opportunity to find solutions to these issues.

Businesses, residents and government representatives are working together to seek solutions… and the tourists continue to come.

Opportunities: A tourism strategy for the Region would help to identify gaps in the current array of products available for the visiting public. These gaps could then form the basis of new recruitment and new product development. This would minimize competition in those parts of the industry that are already oversubscribed and identify parts of the industry that could effectively and profitably be developed first by local residents and second through a targeted business recruitment strategy.

Some components of the local tourism economy that could quite readily be added to strengthen the overall tourism profile include:

- More First Nations businesses that focus on cultural interpretation and education
- More opportunities to access the Sound
- Businesses focussed on bringing people to

Photo: Tla-ook Culture Adventure Tours

outlying communities and the subsequent development of facilities and infrastructure to support visitors in these locations (Ahousaht Walk-the-Wildside, Meares Island/Lone Cone, Shark Creek).

These enterprises would have to be developed through careful dialogue with First Nations about rights and title, protected sites and preferred development approaches.

Other opportunities include:

- Forestry educational tourism
- Shellfish-related tourism
- First Nations kayak guides
- Art and culture tourism
- Research and field school studies
- Elder hostel
- Additional low-mid price range accommodation and camping facilities
- Sailing tours
- Diving
- Museums (the Ucluelet Museum will open in 2003)
- Mothership Charters
- Health related services and healing retreats (eg. Hollyhock)
- Cultural centers

Tofino Council is reviewing the option of applying to the province for Resort Municipality status. This status would enable the District to apply a user fee to the visiting public – taxing consumption rather than households. The model, tested successfully in Whistler since its' inception, could offer the opportunity to target revenues from tourism more directly to infrastructure impacts.

> We need to nurture rather than promote tourism. We need economic protection. We need a better tourism product and we need legislative tools. This is why we've joined a resort community's focus group. Property tax doesn't work for generating revenue. We have 22,000 visitors daily in Tofino. We're proposing a resort sales tax, on restaurants, tours, hotels etc. We would then give a grant back to the property tax payers (or a reduction).

Assessment of the Sector by SCED Criteria

***Environmental Criteria**:*
Ecotourism, as a subset of the overall tourism industry should be culturally appropriate, environmentally responsible, educational and to the benefit of local communities and their values. The pressure to simply respond and react to a rapidly growing tourism industry in Clayoquot Sound may overshadow the Region's ability to plan and promote the kind of tourism economy that they claim to want. Our commitment under the UNESCO Biosphere designation is to develop tourism as one component of a diversified economy and to be vigilant about the way the Region responds to a situation that appears, at least on the surface, as a gift but could prove otherwise without collective care and attention.

Economic Criteria: The tourism business currently generates an estimated 100 million dollars in the Region's economy and provides more than 1000 jobs in the service sector at least during the summer season. The largely hidden cost of this industry in terms of pressure on infrastructure has not been quantified. The other aspect of the industry that is very difficult to quantify, but warrants further analysis, is the extent to which tourism 'pushes out' other industries that might serve to diversify the local economy. The artificially high cost of real estate, zoning limitations in place to keep the tourism character intact and the cost and access to appropriate infrastructure to support businesses are components worth considering. While it is difficult to pause for thought while business is good and while the impetus to do so is less urgent, when money is not tight, the long-term economic health of Clayoquot's communities demands forethought.

Social Criteria: Tourism creates jobs, but the majority of these are in the service sector and, as such, are lower paying, seasonal and less secure than some other sectors. Employees do not receive benefits such as health care or housing. The costs of living in the Region are often very high compared to wages. New tourism products offer opportunities for entrepreneurs and investment dollars for business start-up may be easier to secure where there is a proven climate of growth. Concern about competition, and subsequent 'informal pressure' may make it more difficult for businesses of some types to open or locate in the Region, favouring existing operators over new entrants. Finally, changes to the way-of-life of residents due to tourism activity, whether it is busier streets, the presence of strangers or tax increases or positive aspects such as support for local

cultural activities, must be considered and citizens of all backgrounds included in the tourism planning process.

Opportunities for First Nations: There are clearly opportunities in the tourism sector that favor the growth and development of First Nation's tourism products. Financial support for First Nation's tourism entrepreneurs is available through the federal government to encourage their increased participation in the industry, and regionally through NEDC. Increased access to the waterfront would benefit the development of First Nations tourism products. The development of a certification program for products and services of First Nations origin would benefit the overall health of businesses in this sector, as would community support for First Nations enterprises and cooperative marketing efforts. Care must be taken, as tourism grows, to ensure that those aspects of the First Nations culture that are sacred can be protected in perpetuity. This requires dialogue, thoughtful planning and a clear objective for appropriate product development.

List of key resources and contacts

Contacts:

- Michael Curnes, Tofino-Long Beach Chamber of Commerce
- Barbara Bryant, Tofino Business Association
- Susan Harvey, Ucluelet Chamber of Commerce
- Individual business owner/operators

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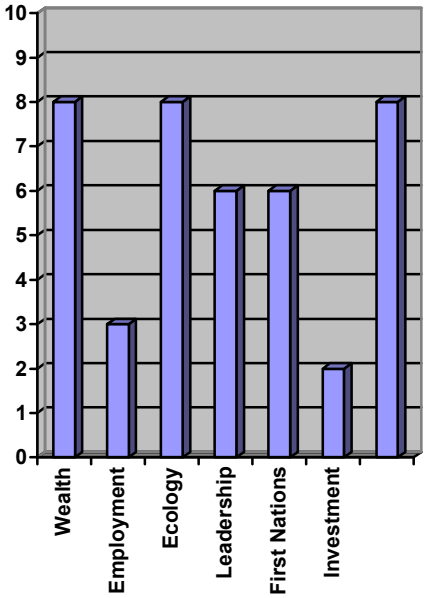
- Tourism BC data adapted from ARA and Peter Williams, Clayoquot Sound/West Coast Region Tourism Opportunities Study, Tourism BC data adapted from ARA and Peter Williams. 2000

Internet:
The International Ecotourism Society, www.ecotourism.org/textfiles/stats.txt

5) VALUE-ADDED AND ALTERNATIVE WOOD PRODUCTS

Photo: K.Vodden
Clayoquot Crafts Value-Added Furniture



Overall assessment of potential

Ed. Note: These estimates of industry potential are conditional on industry changes that will enable more and better wood to remain in the community for processing.

Despite many problems in this sector, particularly with fiber supply but also with the discouragement of local industry leaders, there appears to be opportunities for expansion. Increased local control over resources is increasing local supply and there are new initiatives being undertaken by the forestry companies. Wood from Iisaak and Interfor may become more readily available in the future. Opportunities have been identified for smaller dimension specialty products, alternative wood species as well as materials, furniture and crafts linked to tourism, new residential and commercial construction. Cooperation at the regional and sub-regional level is needed to support the sector, not just among the industry players themselves but within the community at large. A specific recommendation raised by one industry participant was a business-networking meeting to see how this cooperation in support of the sector could be achieved. Organizations that represent multiple communities, particularly First Nations, such as Ma-Mook may be able to take a lead in a regional value-added endeavor. It was suggested that CRB might be an appropriate venue to organize a meeting to discuss cooperative business relationships.

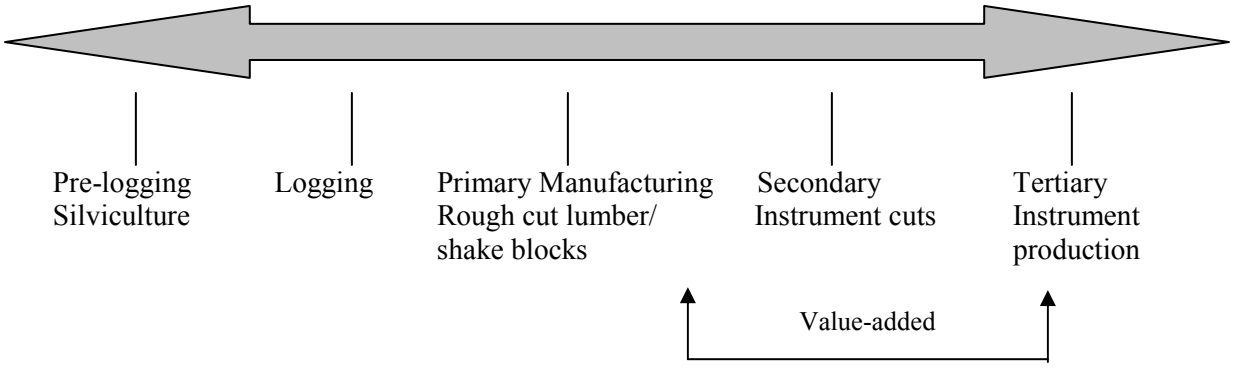
Overview: Current status and trends in the industry

The "value-added wood sector" is a diverse group of activities and industries that involve wood products manufacturing. The sector is often thought of in terms of a process chain, beginning with pre-harvest activities such as silviculture, moving into logging, and after the logs are harvested any activity that adds some level of additional value to the timber is typically considered value-added.

> "In essence, value-added amounts to getting more mileage out of the same resources. Whether we are talking about fish or wood, adding value means bringing the resources closer to their consumer states before exporting them out of the community".
>
> Valerie Langer, Friends of Clayoquot Sound

The goal of those supporting the sector is to find the "highest and best use" for all timber harvested. Neither commodity lumber production nor pulp (both considered primary processing rather than secondary or tertiary processing) are typically included in this category.

Figure 1.



The concept of "highest and best" use is, of course, a value-laden one. The further along the production chain (see Figure 1, above) and the higher the price tag on the final wood product when it leaves the region, the better. From a sustainable development perspective we must consider business ventures that not only maximize the economic value (jobs and revenue) generated from the forest resource but also the social, ecological and cultural benefits. Sawmilling ventures that help supply badly needed housing or wood used for cultural purposes such as carving canoes or regalia are examples.

The Table below further illustrates the benefits of moving wood as far as possible along the production chain.

For every million board feet of wood processed[20]

Operation Type	Jobs Created
Primary (sawmill)	3
Moulding/Millwork	18-20
Furniture	80

Value-added products produced in BC include, among others:

- Semi-finished/remanufactured wood products such as crates, decking, edge-glued products, furniture cutstock, pallet stock, specialty cut lumber, siding, veneer, shingles
- Structural and engineered wood products and building components such as floor trusses, I-Beams, plywood
- Factory build or pre-fabricated housing and structures
- Furniture, cabinets,
- Windows, doors, flooring and other millwork
- Specialty items (crafts, toys, musical instruments)

A more extensive list of potential value-added wood products is provided at the end of this analysis.

A 1999 survey by the Canadian Forest Service estimated that 744 firms were involved in the value-added sector in British Columbia. Sector employment was estimated to be 20,191 (full-time equivalents) and total sales were $4.68 billion. This was an increase from $1.94 billion and 14,000 employees in 1994[21]. This 140% revenue growth translated into only 44% employment growth, indicating increased mechanization and/or consolidation in the industry during this period.

The industry is concentrated in two major Forest Regions: Vancouver (61%) and Kamloops (22%). It relies on exports to the United States and Japan. In 1999, 73% of BC companies exported to the US and 43% to Japan.

In the Clayoquot biosphere region there are more than 15 value-added manufacturers, over 40 when creators of specialty products are taken into account. These manufacturers include:

- sawmills that are producing custom and rough lumber,
- cabinet and furniture makers (garden and indoor),
- specialty producers of toys, bowls and other craft and art work

The largest of these firms (Looker Industries) employs 16 people. Others are sole operator enterprises or part-time hobbyist/ secondary income producers. There are an unknown number (minimum nineteen – see art sector analysis) of Nuu-chah-nulth carvers from the five area Nations that make at least a portion of their income from carving, including canoes, masks and others items.

[20] Mater Engineering, 1997
[21] Canadian Forest Service, 1996

Well known local canoe carver Joe Martin at work. Photo: Tofino Times

While provincial reports demonstrate significant growth in the sector over the past decade the same cannot be said for Clayoquot Sound. The Biosphere Designation nomination (1999: 21) proudly stated, "Value added wood manufacturing businesses (manufacturing of finished wood products rather than raw lumber production) are increasing in number and size". Unfortunately a review of the situation demonstrates this optimism was unfounded.

Since a 1995 study on the region's value-added sector, one of the two largest value-added manufacturers has moved to Parksville. Timber Tonewood and sister company Windfall Cedar Products, operating out of Ucluelet had 20 employees in 1995 producing cedar shake blocks and dimensional lumber used in making guitar tops. Looker Industries and Roofteck Shake and Shingle, also based in Ucluelet, downsized from 45 employees in 1993 to 20 in 1995 and since then to 16. In 2000 Ucluelet First Nation purchased 51% ownership of the 20-year-old company. A furniture manufacturing enterprise, operated by a Past President of the West Coast Value-Added Wood Society, has moved to Port Alberni.

After ten years of effort and the loss of several participating businesses, members of the Value-added Association are frustrated and have lost heart in what can be accomplished. Further, funding for staff support that was once available through Forest Renewal BC has dried up. The Association is longer operating, although some members believe it will someday be revived. The mood is somber and frustrated. Despite much talk about the sector industry experts claim that not much has changed over the past decade. Concerns raised in 1995 have not yet been alleviated. The number one barrier to viability in the sector, let alone expansion, is access to wood.

"It's hard to believe in an area such as ours, wood supply would be a problem. With land claims negotiations, Scientific Panel recommendations and the enforcement of the Forest Practices Code, the small time operator seems to have been forgotten."
- Patricia Greer 1995

***Wood Supply*:** Provincially some value-added operators harvest their own timber through programs such as the Small Business Forest Enterprise Program or access supply through The BC Wood Fibre Network. The Network was created by the Province of BC as an electronic mechanism of linking buyers and sellers of logs and lumber. However, local firms report that these avenues do not meet their needs because it requires them to source wood outside the region, which is costly and logistically complex. Further, the operation of Small Business licenses requires a large investment, particularly in equipment.

Despite years of lobbying effort not enough has been done, operators say, to provide access to local wood. This situation has been exacerbated by market-based policies. "The government's policy is that it (wood) goes to the highest bidder. Even with wood next door to us we can't compete with the US dollar."

Timber production in Clayoquot Sound has decreased dramatically since 1989 (from 958,000 cu m in 1989 to 81,000 in 2001)[22]. Virtually none of this timber is directed to the local value-added sector, in part a function of government and corporate policy but also because of market competition. Value-added companies must rely instead on salvage wood, either harvesting it themselves or purchasing it from a mill.

Salvage wood is wood left in the forest after logging, or timber that is wind-thrown or diseased. There are several reasons value-added manufacturers use salvage wood. First, it is easier to access than newly cut timber because large logging companies are not interested in processing it. Salvage wood also has the advantage of being quality old-growth timber and is less expensive than new, milled timber. One operator explained, "Second growth is just not the same. It is not structurally sound." The value of salvage wood (shake log) is approximately $150 per cu. m. compared to $300 per cu. m. for lumber. Shake manufacturers can sometimes find music block grade wood in their supply worth $600 per cu. m. But concerns about supply exist even with salvage.

Access Issues: Companies harvesting salvage wood must hold a timber sale license. In Clayoquot, and elsewhere, the major tenure holders (International Forest Products and Iisaak) hold the salvage licenses and then issue salvage contracts to local operators in exchange for a fee/royalty to cover administrative costs. Not many salvage licenses are issued. Road reclamation activity is also making it more difficult to access wood in many areas and increasingly the expense of

"We invested $400,000 in a stump processing industry and operated for 8 months paying $2.50 stumpage. Then the government decided to call stumps full-length trees and charge $42. We couldn't do it … Now the machinery is rusting and the training is down the tube."

"There's a mountain of bureaucracy on top of the fiber… We don't count at election time."

[22] Friends of Clayoquot Sound, 2003

helicopters is required to bring logs out. A third problem with access relates to the complex web of government regulations required to obtain access permits for salvage on the 'open market'. These regulations include, for example, special requirements for the protection of culturally modified trees[23].

The new Interfor logs yard in Ucluelet makes some local logs available for secondary processing. Photo: B Kuecks

Supply Issues: In addition to salvage access, there is also a basic problem with salvage supply. More than 20 years of salvage activity coupled with improved forestry practices that leave less behind for secondary 'takers' has left salvage wood harder to come by. Says one operator, "The opportunity to have something made of the old growth lumber will become rarer, as the recovered wood is used up. Another said, "the Sound has already been gone over two or three times" (for salvage wood).

In April 2003 the Province announced policy changes to salvage licensing to make salvaging more "market-principled" and competitive. This new system means that, unless the major companies in the region continue to hold and sub contract for salvage locally, salvage access permits will be issued to the company willing to pay the highest price (not necessarily local). The only other option will be to organize at the community level to pursue a community salvage license to access areas not under control by the majors.

Salvaging in the Biosphere Region: The current subcontracting arrangement with the major companies is seen by some as a source of security in this new era of market-based pricing. Local value-added companies have established business relationships, particularly with Interfor, that help them secure their supply. The forest companies, with liability on the line, benefit by knowing those who work on the land are people they know and trust as reliable operators.

> "Emphasis on market pricing as the only criterion for fiber access leaves no room for considering social, cultural and ecological criteria such as adjacency and local job creation."

[23] Greer, P., 1995

First Nations in the region have begun to assert their rights to what salvage material remains in Clayoquot's forests, entering the industry through training programs and establishing business ventures, often joint ventures with firms already in the industry. Hesquiaht have formed a partnership with Interfor, Ahousaht with Alliford Bay. Assistance with training and equipment purchase is offered in exchange for access to fiber supply within their traditional territories. Yet no one Nation, one industry expert suggests, has sufficient supply to support viable shake and shingle production. Opportunity does exist however, for a cooperative manufacturing endeavor.

Clearly the success of the secondary wood-processing sector is dependent on more of the timber harvested in the region being left in the region. Some blame wood shortages on the fact that the industry remains in the hands of multinationals, with limited local control. Others talk about the apparent unwillingness of companies such as Iisaak to guarantee supply to local producers. Pressure on Iisaak to meet certification requirements is likely to result in improvements in the future. The awarding of a 75,000 cubic meter timber sale license to the Ucluelet Economic Development Commission in 2002 should provide additional local supply. The objectives of the license include supply to local mills, which will be given first refusal of fiber. In addition, there is a stated commitment by the Province (as of March 2003) to redistribute logging rights to First Nations and other communities, which may further increase local control. Finally, treaty settlement will help secure further access to forest resources for local communities.

Milled wood destined for local value-added products at the Interfor log sales yard. Photo: K. Vodden

Another way to add value to the forest sector and address the issue of wood supply is to harvest and utilize species that are typically underutilized or considered a "nuisance". These might also be called alternative wood products. Alder and yew are two examples. Alder, a common forest commodity in the Clayoquot Biosphere region, (a late 1990s study estimates 3,500 cubic metres per year of alder is available) is fast growing and highly valued by makers of furniture and specialty products. Alder furniture has been produced in the region in the past and a veneer plant has been proposed for the past decade that would include alder as an input and directly employ 75 workers. A report on the concept suggests a large market for clear alder veneer. Alder chips are also popular for smoking fish and meats. Currently, however, mature alder is being chopped down for firewood rather than commercially harvested. One local operator explains, "I had a line of alder furniture but it was totally impossible to get the wood. There's no such thing as harvesting alder." Yew wood is also reportedly being chopped up for firewood from clearcut areas. Yew wood is used traditionally by local First Nations for canoe paddles. It is also used for making bows, furniture and specialty items.

A new initiative by Interfor may provide some access to these "alternative species". The company has opened a log sales yard that makes wood available to local individuals and companies, including alder, yew, hemlock, white pine, red and yellow cedar and other species. A portable sawmiller can be brought in to custom cut. Already area residents and firms have earmarked timber for their operations, construction, flooring and furniture making. Timber at the site is sold at market value with the help of an on-site log grader. Although consistency of supply through this avenue is uncertain and the best quality logs are still shipped out of the region by the company, the yard marks a significant improvement in local wood supply. The initiative is made possible because Interfor is now sorting logs on the roadside based on destination.

Another new venture is The Ucluelet Timber Milling Company. The company plans to employ 5-6 people in logging and another 5-6 manufacturing railway ties. If all goes well, additional products such as beams for lodge and large home construction in the region will be added to the product line. The plan is to focus on second growth materials, particularly fir but also pulp grade timber.

Other Constraints and Developments: "The problems are availability of wood at a price we can afford and affordable workspace. Land is expensive."

The second key issue in the region for this industry is space. The 1995 value-added report identified the need for an industrial park. Here progress has been made. Tofino has since constructed a 20-acre industrial park and the site of the new 40-acre Ucluelet Eco-industrial Park, a joint project of the District of Ucluelet and Ma-Mook Development Corporation, is almost ready for occupancy. "The primary industrial focus is intended to be the production of renewable, certified forest products[24]".

The town of Hayfork, California, home to 1,800 people, lies 70 miles from nearest large town or highway in the middle of a national forest. A shift to ecosystem management from forest management for timber production resulted in job losses and the closure of a local sawmill in the early 1990s. The community decided to focus on restoring their forests and launched the Watershed Research and Training Center. Training was provided in ecosystem assessment and restoration. But restoration is expensive, so the town looked to small diameter wood, a byproduct of restoration as a saleable product to help provide revenue. A low-cost, low-impact yarder was developed to remove the wood without damaging the remaining stand. Then a compact sawmill and pole peeler was purchased and flooring and furniture began to be created. An invasive species, mullein, was removed and sold in a market for the treatment of respiratory illness. Hayfork joined with other communities to form the Healthy Forests, Healthy Communities marketing label and program. But space, the need for a kiln and business expertise remained a problem. So they created a business incubator with industrial workspace, equipment for rent (including a second-hand kiln) and in-house business advice. Fifteen people work at the furniture factory and six new businesses occupy the incubator. Five different groups of Watershed Centre trainees have formed their own contracting businesses.

- Ford Foundation, 2002

[24] Quinn, 2002

Additional constraints include workforce, investment, transportation costs, market development and technological change.

Workforce: Wages are seen to be low compared to sawmilling and pulp mill jobs (often $7-13 of the forest industry average) and at $15 per hour it is difficult to get long-term employees, particularly in high priced Tofino and increasingly Ucluelet. Seasonal shut downs are also a discouragement. Yet transient workers are not well suited for an industry that requires skill at a craft such as furniture or cabinet making. Further, some entrepreneurs themselves don't want to work full-time at production, let alone expand their enterprises.

Investment: Getting into the business at a full-time production level can be expensive. Local businesses report that, on average, investment required to get into the sector averages about $500,000 (situation dependent). Transportation costs are also cited as a financial consideration but "if you can add the value to the fiber with a high quality product, then the shipping makes sense".

Markets: While markets are a challenge for any venture, industry contacts indicate that for small-scale production and the shake and shingle industry markets are not a significant constraint. One operator suggests marketing is particularly important (and expensive) when you are starting out. For the specialty producers, but also for others such as furniture and cabinetmakers, the growing tourism industry is a major market. Galleries retail local products, representing the majority of some specialty producers' sales. In addition lodges and bed and breakfast facilities support the sector by buying local products, which in turn becomes a form of promotion. Wickaninnish Inn is a good example. The new resort purchased all of their outdoor furniture from Tofino's Clayoquot Crafts. High levels of construction activity associated with the region's tourism boom provide opportunities for sawmill operators and woodworkers in the region to supply specialty materials for building, such as beams, flooring, cabinetry, doors, windows, furniture etc. Some of this activity is occurring but the opportunity is not being fully capitalized upon.

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Understanding your market is an
essential ingredient in successful
marketing. In products such as
furniture and cabinetry this means
careful attention to design and
monitoring of changes in market
preferences. One possible function of
community research activities could
be to monitor these industry trends
on behalf of local operators.
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The Internet is proving its potential for international marketing in the Sound. One local manufacturer estimates 50% of his sales are on-line, many from the U.S. but also from all over the world. Opportunities may exist for further Internet marketing. A search of the Clayoquot producers listed below indicates only few have an Internet presence. Some people order because they have been to the region notes one furniture manufacturer, but many don't even know where Clayoquot Sound is. They are simply looking for high quality cedar products.

Yet another market opportunity is the green market, expected to be a boon for the area after Iisaak gained certification by the Forest Stewardship Council. Iisaak joined 11 other firms in Canada ad 452 around the word. There is some frustration that a premium for certified product has not been achieved and that some markets, such as China, are not interested in certified products. Sarita Furniture in Port Alberni has struggled despite adding a line of certified products while another local producer suggested, "Tourists don't really care about certification". It was suggested as another limitation that shingles from salvage are not certifiable. Others are hopeful that certification coupled with the region's international reputation will carve out a niche and protect markets that are environmentally sensitive for certified wood and wood products. An emphasis on green building standards could be used to promote certified wood products in building construction, interior and exterior design. Harmonization of FSC standards around the world will also play a role in export markets for certified products. The BC standard is reportedly the most demanding anywhere.

In 1995, the Karuk Tribe secured a $215 000 grant of funding to begin a business called *Tribal Design Works.* This specializes in rustic décor such as lamp bases, lamp shades and wall hangings. Project staff received training in marketing. Tribal Design Works is currently negotiating with the Forest Service to secure small-diameter wood to build pole furniture. In 1998, the Tribal Design Works hired a full-time marketing representative. In 1999, only one employee was working, but in 2000, a one-time order employed six people. Success has been moderate, factors such as limited business experience, a lack of technical assistance, unsuccessful marketing, and an over-reliance on grant funds to pay staff salaries all contributed to Tribal Design's inability to reach its initial employment goals of five full-time employees. It was felt that with more technical assistance form someone knowledgeable about business start-up, a feasible marketing plan could have been developed, thereby increasing the demand for their products.

- K. McIlveen, 2003

Also promising for marketing of local value-added products is the proposed creation of a Forest Resource Center at the Junction adjacent to Interfor's new log sales yard. Evolved from a long-time dream of Value-Added Association members and others for a Clayoquot Wood Village, the current concept will link the Junction Tourism Information Center with forest trails, a carving shed and gallery with value-added items displayed and information about where to find their producers. Central West Coast Forest Society has recently completed the business plan for the Center. For those who prefer to focus on their craft rather than marketing, this and other cooperative marketing ventures are helpful. Also suggested is the need for a consistent logo or image reflecting products made in the region. "We need branding, a logo that says this was made sustainably in Clayoquot, certified through harvesting and processing".

Technology: Continuous investment in technological improvements in this industry is critical. There is already a need for more precision technology in the region. One local mill gets approximately 30% recovery rate, for example, compared to 65% in Japanese operations.

Assessment of the sector by SCED Criteria

Environmental criteria*:* The need to make the most out of precious natural resources makes value-added, in principle, ecologically beneficial compared to alternate uses. Best practices in environmental management must also be adhered to in the harvesting of salvage and alternative species, however, and in the production of value-added items. These practices must be determined on a case-by-case basis, with attention to issues such as chemical use and waste management as well as sustainable wood supply. Industry participants explain that under the Forest Practices Code salvage practices are regulated such that only 2-3% of course woody debris is removed, leaving enough in the forest for biomass requirements. However, increasing pressure for access as supplies shrink will require careful monitoring and operator diligence. Studies show that salvage operators in the region are concerned about maintaining ecological processes, taking steps to minimize impacts (e.g. by helicopter removal, retaining wildlife habitats) and are interested in research findings about the role of downed wood and resulting guidelines developed for their operations[25]. Certification offers ecological benefits as a tool for monitoring and promoting environmental responsibility. Finally, harvesting alternative species will require an understanding of their ecology and implications of harvest (e.g. alder is important for adding nitrogen to soil and discouraging erosion).

Economic criteria: Long-term economic viability of the sector is subject to a sustainable, long-term wood supply. Wages vary in the industry but are generally at a medium level (often higher than the service sector but lower than unionized industrial forestry jobs). There is clearly potential for year-round employment and expansion in the region, although there are a number of significant barriers to be addressed in the development of any new enterprise. Two existing initiatives have identified potential for an additional 20 jobs with other opportunities not yet explored. For multi-unit production significant investment is required (often in the $500,000 range). Salvage harvesting, on the other hand, is labour intensive and requires relatively low capital investment. Finally, the sector is subject to market fluctuations. Specialty, luxury items are subject to economic fluctuations as are products such as shingles, evidenced by prices fluctuations of the past few years (up last year, down now). Innovation and monitoring of the market and the industry are success factors. Some impact from an expanded industry might be felt by those using downed fiber for firewood, but ample supply not of commercial interest is likely to remain present for these purposes.

[25] Newsam and Beasley, 2000

Social criteria: The sector meets social criteria in that it is likely to be locally owned and controlled. Larger ventures should examine joint ventures as a model for ensuring partial local ownership at a minimum. For smaller scale producers it also provides opportunities for people to live an alternate lifestyle, and to increase earning for people marginal to the mainstream economy. Value-added and alternative wood products also provide job potential for First Nations communities (see below). For a number of craftspeople this is a multi-generation family business, a sign of local commitment and appreciation for careers in working with wood and of hope for the future of the sector.

Opportunities for First Nations: There are clear advantages and a good "fit" for First Nations entering or expanding their role in the value-added sector. First Nations have always been leaders in value-added processing. The Nuu-chah-nulth used the bark and every part of the tree harvested for uses as diverse as building, clothing, tools and art. Canoes, masks, clothing and other items are still produced today by Nuu-chah-nulth crafters. Asserting their rights to timber resources the Nuu-chah-nulth are also entering non-traditional wood sectors, including salvage, shake and shingle along with larger-scale harvesting through Iisaak. Increased access to resources for First Nations has multiple benefits, including the ability to make decisions locally about the highest value use of these resources – ecological, cultural or economic. There is opportunity for expansion of First Nations involvement in the value-added sector, both with specialty products tied to cultural themes (such as furniture, art) and more mainstream products. There is also a desire to move in this direction and various initiatives underway that should be encouraged and supported.

List of key resources and contacts

Reports

- Central Westcoast Forest Society. 2003. Forest Centre Business Plan (forthcoming).
- G. E. Bridges & Associates. 1998. Regional District of Alberni-Clayoquot Ucluelet thin-sliced veneer plant feasibility study.
- G. E. Bridges & Associates. 1993. Feasibility Study for Alder Based Manufacturing Centred in the Alberni Valley
- Ford Foundation. 2002. A Community's New Enterprises Restore a National Forest: Hayfork, California. Sustainable Solutions: Building Assets for Empowerment and Sustainable Development.
- Greer, P. 1995. Value-added Wood Products Report. Prepared for the People and Communities of the Long Beach Model Forest Society.
- Mater Engineering Ltd. 1997. Value-Added Wood Products Presentation, Clayoquot Sound Symposium, Ahousaht
- McIlveen, K. 2003. Green CED Case Studies from North America's Resource Dependent Communities. Project document.
- Natural Resources Canada. 1996. Directory to Secondary Manufacturing of Wood Products in British Columbia

- Newsom, D. and B. Beasley. 2000. A Review of Salvage Practices and the Ecological Roles of Downed Wood in Clayoquot and Barkley Sounds. Prepared for the Long Beach Model Forest Society
- Quinn, S. 2002. "Eco-Industrial Park for light industry" West Coast Business Link. Jan. 2002
- R.M. Jeffrey and Associates Ltd. 1995. Long Beach Model Forest Needs Assessment Survey Economic Component. Final Report. Prepared for the Long Beach Model Forest Society.
- Van Allen, K. 2001. An Assessment of the Amount and Characteristics of Coarse Woody Debris in the Temperate Old Growth Rainforests of Clayoquot Sound, Vancouver Island, British Columbia. Submitted to the LBMF Society.

Contacts:

- **Clayoquot producers**

Sawmilling & Shakes:

- Afjord Estates, Arnold Hansen (Tofino, portable sawmill, custom-cut lumber)
- Dave Isenor (Ucluelet, mobile dimension milling for his own use)
- Toquaht sawmill (shakes, rough lumber)
- Len O'Dell (Ucluelet, mobile dimensional sawmill)
- Looker Industries/Roofteck Shake and Single/KD Custom Lumber (shingles, shake blocks, lumber, looking at packaging cedar bark waste)
- Ahousaht mill (Frank family)
- Neil Buckle, custom milling

Cabinets:

- Brian Steven (Tofino, cabinets, furniture and toys)
- J. Sadler and Sons Construction (construction, build own cabinets)
- Sean Mcconnell (Ucluelet, doors, cabinets, etc.)

Furniture:

- Clayoquot Crafts, Daniel Lamarche (Tofino)
- Sabine Hotz (Tofino)
- BCBG Creative Wood (indoor and outdoor furniture, Catface Range, Clayoquot Sound)
- Billy Keitlah (Ahousaht, furniture with Nuu-chah-nulth design)
- Robinson Cook (Strawberry Island/Tofino, furniture, glasses, tools, light fixtures etc.)
- Jan Janson (builder, also garden/outside furniture)

Terry Mckinnon, Wildlife Artist
Photo: K..Vodden

Specialty Items:

- Keith and Sam Plumley (Tofino area, spoons, bowls, jewelry)
- George Yearsley (Tofino, feathers)
- Henry Nolla (Tofino, doors, bowls etc.)
- Gail Duchene (Tofino, wood bowls)
- Richard Menard (masks, sculptures)
- Terry Mckinnon (Ucluelet, wildlife art)
- Paul Petrosky (Strawberry Island/Tofino, guitars)
- Cal Kalkan (carver, Catface, Clayoquot Sound)
- Numerous Nuu-chah-nulth carvers (listed under art sector analysis)

- Forintek: Under contract with Natural Resources

Canada (Canadian Forest Service-CFS) since 1998 to deliver research on value-added products designed to increase knowledge on secondary and tertiary wood manufacturing applications and processes. The program is now being delivered by a research Consortium that brings together Forintek and the University of British Columbia, Laval University (Quebec), and the University of New Brunswick. Research findings are available to members. Technical support services are also available on a contract basis.

- BC Wood:

BC Wood is a not-for-profit trade association dedicated to growing British Columbia's secondary wood-products manufacturing industry. Established in 1989 as a partnership between industry and government, BC Wood provides marketing programs to over 600 registered value-added manufacturers, which includes cost-shared participation in international tradeshows and events, out-going and incoming trade missions, lead generation through the WorldWide Inquiry System (WWIS) and networking opportunities. In addition, BC Wood members have access to an extensive resource library, both on-line and in our office.

- Vancouver Island Association of Wood Producers
- BC Shake and Shingle Association
- Log Building Association of BC
- Construction Association
- Lumber Remanufacturer's Association

Internet:

- Forestsource.com: www.forestsource.com
- Woodweb: www.woodweb.com
- BC furniture manufacturers Directory: www.wooddesign.bc.ca
- Canadian Wood Council: www.cwc.ca
- Woodcom: www.woodcom.com

Listing of BC Wood Member Companies' Capabilities

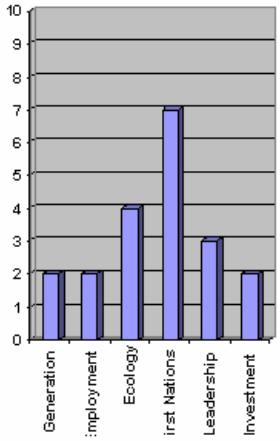
		# Companies
Cabinets		
	Bath Vanities	43
	Case Goods	21
	Commercial/Fixtures	24
	Home Entertainment	31
	Kitchen Cabinets	46
	Other Residential	27
	Parts/Components	22
	RTA/Knockdown	10
Engineered Building Products		
	Floor Trusses	24
	Glulam	25
	I-Beam/Joists	25
	Other	1
	Plywood	18
	Roof Trusses	29
	Structural Composite Lumber	14
Factory-Build or Pre-Fabricated Structures		
	Log Homes/buildings - Handcrafted	55
	Log Homes/buildings - Machined	35
	Other	3
	Panellized Homes/Structures	28
	Pre-Cut Garden Sheds	31
	Pre-Cut Home Packages	32
	Prefabricated Home Structures	1
	Timber Frame Structures	53
Furniture & Fixtures		
	Case Work	10
	Contract Fixtures	35
	Ergonomic	7
	Frames/Parts	26
	Gazebos	29
	Hospitality	5
	Household	77
	Knock Down/Ready-To-Assemble	29
	Office	44
	Other	3
	Outdoor/Garden	50
	Saunas/Hot Tub Finishings	1
	Shelving	35

Millwork and Finished Products		
	Architectural Millwork	57
	Exterior Doors	48
	Flooring	83
	Flush Doors	23
	Garage Doors	18
	Interior Doors	46
	Mouldings/Trim	98
	Paneling	77
	Staircases	38
	Stile & Rail Doors	39
	Turnings	17
	Wood Windows	36
Remanufactured Products (semi-finished)		
	Bins	6
	Box Stock	25
	Chopstick blanks/Chopsticks	6
	Crates	14
	Decking	88
	Door Stock	53
	Edge-Glued Products	40
	F/J Lumber	52
	Fencing/Fence Panels	46
	Furniture Cutstock	49
	Kiln Strips	29
	Laminated Stock	48
	Metric Components	53
	Mouldings/Pattern Stock	76
	New Pallets	9
	Other	4
	Pallet Stock	44
	Pressure-Treated Lumber	21
	Shingles	15
	Siding	62
	Specialty Lumber	144
	Stakes & Lath	41
	Survey Stakes	18
	Turning Blanks	52
	Veneer	21
	Window Stock	56
	Wood Blocks/Blanks	60
	Wood Boxes	17
Specialty Items		
	Musical Instruments	4
	Other	2
	Signs	1
	Toys/Giftware	0

6) NON-TIMBER FOREST PRODUCTS (NTFPS)

Salal Buying Station
Photo K. Vodden

Clayoquot Sound Wildfoods,
Photo: B. Kuecks



Overall Assessment

The overall potential for further development of NTFPs looks promising providing Mamook or an alternative agency is interested in developing a comprehensive strategy for the sector. Much of the background work has already been done. Previous studies (1996) have identified specific species that are available and of market interest in the region. An updated review of market conditions, access, availability, ecology and seasonality is required followed by a survey of interest in harvesting additional products that are assessed as viable. Provided there is sufficient interest, training will have to be offered. Funding is available through agencies such as the First Nations Forestry Program for First Nations to develop NTFP strategies and programs.

Along with tourism, NTFPs and agroforestry are a common thread in sustainable rural development projects in the world's biosphere reserve network. Rural development efforts in Sinharaja, Sri Lanka include planting of both primary forest timber and "locally esteemed" non-timber species. Significant emphasis has been placed on NTFPs in the Pacific Northwest as an alternative to timber harvesting and processing. Due to resulting sustainability concerns the US Man and the Biosphere program sponsored a study of chanterelle mushroom production and harvesting in and around the Olympic National Park and Biosphere Reserve. In Guatemala, home of the Maya Biosphere Reserve, dried berries from allspice trees produces approximately $600,000 US per year in revenue, palm leaves for the European and US floral market $4-7 million and chicle gum $2 million. Chewed first by the Maya, chicle, a tree sap, is collected from a tree species native to specific forests of lowland tropical Central America. It is an all natural alternative to the petroleum based gum products in all other chewing gums.

Overview: Current status and trends in the industry

"In the Pacific Northwest, non-traditional forest products are considered to be the most viable option for strengthening those rural communities suffering from the decline in timber harvests from government lands[26]"

[26] Hammett, T., 1999

Non-Timber Forest Products (NTFPs) are botanical products of the forest other than timber, pulpwood, firewood or similar wood products. Including wild mushrooms, floral greens, Christmas greenery, wild foods, medicinal and craft species, they are also referred to as special forest products. NTFPs are estimated to contribute over $250 million per year to the BC economy. When cultural tourism activities related to NTFPs are taken into account, the economic impact of these resources on the provincial economy is even greater. NTFPs are increasingly being considered as an opportunity for diversification in communities impacted by downturns in other resource sectors.

As is the case throughout Canada, no systematic information has been gathered on the volumes and values of NTFPs in British Columbia. There is no question, however, that the NTFP industry in BC is experiencing significant growth. Growth pressures include increasing demand for alternative and natural medicines, healthy, organic and environmentally sustainable products and rustic/natural design preferences[27].

Recent estimates provide an indication of the sector's economic importance. The two largest segments in BC are:

- wild mushrooms – up to $57 million annually;
- salal and other decorative greenery – $55-60 million

Salal sales make up 95% of the decorative greenery segment (plants sold to the floral industry). There are estimated 13,000 salal pickers in BC, many on Vancouver Island[28]. Recent research suggests that commercial salal on cedar-hemlock sites can be worth up to ~$2,500 ha^{-1}. Research also suggests that experienced salal harvesters make on average $10-15 per hour[29]. Costs associated with transport from remote areas and product quality (e.g. spotting in wet seasons) must be taken into account along with harvester interest when evaluating the potential for expanded salal harvesting in the region. One salal buyer is reported to be in operation in Port Alberni.

Microclimate, seasonal variation and forest successional stage all impact fungi presence. The most valuable mushrooms in BC are pine mushrooms ($25-45 million per year). Pine mushrooms, however, are not abundant on Vancouver Island. NTFP inventories on northern Vancouver Island demonstrate high occurrences of chanterelle mushrooms ($6-12 million per year in BC), limited pine mushrooms and 29 other commercially valuable species[30]. While pine mushrooms are destined for the Japanese market, chanterelles are sold primarily to Europe but also to US and other parts of Canada. Pickers earn on average $2-4/lb according to one source, $1.50 to $ 5 according to another (depending on intended market, time of season, and international competition), wholesalers/buyers $5-7 and exporters $10-15. The chanterelle season lasts from July/August until November. Harvesting supplements annual income, but tends not to be a lucrative business. A US study from 1998 estimates average daily gross earnings from commercial picking of $8 to

[27] Synergy Management Group, 2002
[28] Wills, R.M. and Lipsey, R.G. 1999
[29] MCA, 2003
[30] Berch and Cocksedge, 2003

85 US (2-10 hours per day picking)[31]. Low prices for chanterelles limit the range that harvesters are willing to drive to their hunting grounds and influences where buying stations are located.

In addition to the "big two" (mushrooms and salal) there are existing and emerging markets for many other species. In a 1999 report, Wills and Lipsey discuss more than 200 species commercially harvested in the province, including wild berries, boughs, mosses and native plants for restoration and landscaping. Crafts items such as wreaths, garlands, baskets, cedar bark roses, and jewellery, wild foods, herbal salves and medicines are also marketable.

American exports of commercial moss and lichen amounted to $14 million in 1995, $8 million to the Netherlands for natural packing of floral products - many of which are in turn exported to North America. Concern exists about the lack of knowledge about impacts of moss harvesting. Cedar boughs are harvested extensively both for use in the Christmas season in wreaths and garlands but also for processing into cedar oil.

On northern Vancouver Island bracken fern fiddleheads are being harvested and dried for the Korean market. The dried ferns are sold for $12 per pound. The market size is substantial. The harvesting season starts in May and last two months. Another NTFP product being harvested on the North Island is live sword and deer fern root for replanting and use in the landscaping and restoration business. In recent years live plant harvest from the wild has been discouraged in large part due to concerns about ecological sustainability. However, in this case, plants that would otherwise be destroyed were salvaged from roadbeds. Harvests have also taken place in forested areas prior to timber harvest. A monitoring program has been established to determine impacts on fern regeneration post-harvest.

Photo: North Island NTFP Demonstration Project

Market research on the North Island demonstrates that while the current industry preference is for propagated stock due both to their uniform appearance and questions of wild harvest sustainability, the investment and time required to cultivate ferns led to sufficient interest. Market size is predicted at 50,000 to 100,000 salvaged bare roots per annum. Price and current restoration and landscape activities are important factors. Prices for product range from 1.00 per bare root for small quantities down to 50 cents for bulk deliveries. Harvesters earned on average $40 per hour during the pilot. For an eight-hour day, removing time for travel to harvest sites and carryout, a person salvaging ferns from proposed logging roads could gross $200 to $300. This wage

[31]Love et al, 1998

does not reflect the market development time prior to harvest, nor the prediction and reconnaissance necessary to find viable fern habitat on proposed logging roads[32].

Another opportunity identified is the harvesting of wild blueberries for market to Japan. A significant demand for wild berry products exists in health-conscious Japan, particularly after recent research suggested that blueberries contain antioxidants that help fight eyestrain, cancer, ageing and heart disease. BC is also the world's second largest producer of cultivated blueberries. Production peaks in August.

Natural medicinal and herbal products involve the use of leaves, stems, roots, bark, seeds, fruit, flowers and buds to make teas, tonics, powder, snuff, poultices, salves, tinctures, lotions, and smoke inhalers. Over 40% of prescription drugs, or over $15 billion in sales in 1997, contain at least one natural element.

A growing body of information is available on NTFP harvesting, processing, marketing etc. for the many species referred to above. See below for recommended resources.

The demand for natural health supplements is growing rapidly around the world. However, industry, government, and individuals now recognise that the growing consumer interest jeopardises these products' sustainability in the wild, encouraging cultivation. Further, significant concerns exist about traditional knowledge use and protection of culturally significant plants for First Nations use.

Under the Forest Stewardship Council certification program, there is increasing recognition of the inherent importance of NTFPs to the overall health and integrity of the forest ecosystem. Yet lack of knowledge and lack of management are barriers to determining sustainability of the NTFP sector and, therefore, to incorporating NTFPs in certification processes.

Barriers and issues identified in the Kalum LRMP[33], one of several around the province that recognizes the botanical industry as a legitimate user of the forest resource, include:

- Lack of resource inventory and utilization data
- Socio-economic problems associated with an unregulated, cash-based economic activity
- Resource-use conflicts over harvesting practices (e.g. raking for mushrooms)
- Sustainability of harvesting sites
- Whether or not to license mushroom buyers, and
- Lack of designated responsibility for the industry among government agencies.

Ecologically sound management of forest resources depends on accurate inventory information and clearly defined objectives. Forest management is lacking on both accounts. Only now are NTFP inventories beginning to take place and forest management plans that incorporate a wider range of forest uses being considered. The lack of information about utilization of non-timber forest resources is tied to the fact that it is a

[32] Mitchell Consulting Associates, 2003
[33] Kalum LRMP

cash-based, often "under the table" industry. Further, many harvesters are transient, moving from one area to another to harvest. This is particularly true in the pine mushroom industry. Harvesting is also conducted for recreational and subsistence purposes. Research into NTFPs has increased substantially over the past two decades, as has the interest in NTFPs for their commercial potential. However, our knowledge is still in its infancy in terms of depth and breadth of understanding about ecosystem functions, as well as social and economic relationships associated with NTFPs.

Conflicts between timber and non-timber industries are often profiled (e.g. loss of valuable pine mushroom patches to logging). Research in B.C., Washington and Oregon has shown, however, that when forest management objectives have included consideration for NTFPs selection of silviculture systems can enhance or maintain NTFP values. Examples of timber/non-timber co-management include pruning or thinning in young stands whose boughs have commercial value (such as western red cedar). This enhances timber values by creating less knotty wood and encouraging tree growth. Increasing light to the understory improves forage for wildlife, species that may also be valuable as NTFPs (such as huckleberry). Research on salal and pine mushrooms suggests that productivity of these species may also benefit from some opening of the forest canopy through selective logging or thinning. Further, salal can benefit from forest fertilization. Finally, salvage opportunities exist from cooperation between the two sectors. NTFP harvesters with access to logging plans may be given opportunity to access an area prior to road construction or logging activities[34].

Without regulation there are fears that the industry will fall into the all-too familiar boom-and-bust pattern of the fishing and forestry sectors in BC. At the same time those in the industry worry that government regulation will not solve the industry's problems, but perhaps only make it worse. Despite seeing a need, the provincial government is not particularly interested in managing the sector due to financial constraints. Options are currently being investigated for management regimes for NTFPs. Possible measures include buyer licensing and various tenure and co-management options.

In addition to the complex management, policy and technical research issues facing the NTFP sector business considerations include distance/transport costs, harvester interest and training requirements, variability due to weather and seasonality. The industry is made up primarily of individual pickers and small business buyers. Synergy Management Group estimates that the average buying enterprise employs from one to 11 people and buys from up to 90. These buyers then often sell to either processors who handle, clean, pack and ship the product or to export/broker firms. Many NTFP businesses require very little capital investment.

Harvesters make considerably more money after they become experienced. Therefore a period of training is required for new entrants before incomes become acceptable, ideally with a mentor to avoid discouragement and ensure quality. A strategy where harvesters pick more than one product, increasing their harvesting season, is possible and should be

[34] Mitchell Consulting Associates, 2001

encouraged if the sector is to become a livelihood (vs. supplementary income). For example,

- culinary herbs, fiddlehead ferns, morel mushrooms in spring
- berries in summer
- mushrooms in fall
- ferns and salal fall through spring

First Nations and the NTFP Sector: NTFPs have important cultural, spiritual and sustenance values for First Nations, who have used these plant materials for food, medicine, ceremony, tools, clothing and other uses since time immemorial and, although to a lesser extent, continue to do so. Although strategically situated to benefit from developments within the NTFP industry, First Nations have traditionally participated in only entry-level positions in the industry such as seasonal harvesting. Even as harvesters participation has been limited in the commercial sector despite industry growth. Reasons why First Nations have benefited relatively little from the growth of the industry include:

- lack of local capacity (including small business skills) to create businesses in the sector;
- lack of awareness of markets
- a shortage of local capacity to develop and implement management plans for NTFPs on traditional territories.

NTFPs are one other resource requiring attention among a long list of First Nations priorities. Nevertheless it is a resource of increasing economic importance and one of the only resource sectors for which management and licensing/tenure arrangements have not already been established.

Sustainable development of NTFPs offers a wide variety of benefits to First Nations, including:

- valuing and protecting traditional, subsistence, spiritual and cultural plant uses,
- business and employment opportunities in a wide range of occupations, many linked with traditional First Nations interests, knowledge and occupations.
- opportunities to assume leadership in the development of a "new" industry,
- the ability to make informed decisions about the utilization of NTFPs in their territories, emphasizing and protecting intellectual and territorial rights.

Chanterelle Mushrooms
Photo: My Spice

Today First Nations are gaining increasing management control and business presence in the sector. Under treaty the Nisga'a Government has the exclusive authority to determine, collect, and administer any fees, rents, royalties, or other charges in respect of non-timber forest resources on Nisga'a

Lands. There are 3-4 Nisga'a mushroom buying businesses. The Gitxsan formed Wilp Sa Maa'y Harvesting Cooperative with other local residents to manufacture huckleberry jam and other products. The Ktunaxa Nation initiated an ethnobotany project in 1996, held a conference in 1999 to address concerns about huckleberry harvesting and have since opened their own native plant nursery[35]. Siska Traditional Products is producing jellies, natural soaps, teas, herbal oils and this year are looking at adding a range of medicinal products. Siska's mission is to become the largest First Nations producer of traditional and natural products in Canada.

> over the next 2-5 years, it is expected that the 'Namgis and other First Nations in the region will be actively managing NTFPs within their traditional territories under one or more of a variety of possible mechanisms, including interim measures agreements, treaties, or arrangements with government agencies and/or other forestry interests[1]".

Finally, several First Nations on northern Vancouver Island have been active in NTFP development, including research on markets, inventory and sustainable harvesting methods. They have sponsored training programs for their members and are examining options for gaining management control.

NTFPs in Clayoquot Sound: As in other areas First Nations in Clayoquot Sound are taking a lead in the NTFP sector. The 1995 Scientific Panel report states that the Nuu-chah-nulth intend to participate in the use of special forest products in addition to participating more fully in mainstream economic activities such as forestry and fishing. In 1996 a Secondary Forest Products in Clayoquot Sound Symposium was held in Ahousaht. Mater Engineering provided an overview of more than 18 opportunities for the region based on interviews with approximately 60 buyers[36]. A review of the symposium by BarrenLands Management suggests inventory, harvester training and a planned approach to development in the sector.

In 1996 two graduate students, Juliet Craig and Robin Smith, under the supervision of Dr. Richard Atleo and Dr. Nancy Turner, examined the availability and abundance of culturally significant plants in the Atleo River Watershed within the territory of the Ahousaht Nation. Their research confirmed the presence of the following plants valued, not coincidentally, for both cultural and commercial purposes. Some were found to be abundant, others found only in limited habitat conditions. Due to cultural sensitivity and concern by the elders their work excluded plants used for medicinal purposes:

- Thimbleberry and salmonberry shoots
- Silverweed and clover (root vegetables)
- Salal, salmonberry, huckleberry and crabapple
- Bunchberry, stink current, blackberry and elderberry
- Basket sedge, cedar bark (suitable trees difficult to find)

[35] Mitchell, D. Mitchell Consulting Associates (MCA). 1999
[36] Mater Engineering Ltd.,1996

- Sword fern and deer fern
- And more …

In some cases, they suggest, logging has reduced gathering potential. Craig and Smith recommend training and monitoring of harvesters if commercialization is pursued. They also suggest that Ahousaht village become a centre for restoration activities, including native seed collection and a nursery for culturally important plants.

Clayoquot Sound Wildfoods Natural Wild

In 1999, after extensive research, the Ma-mook Development Corporation launched Clayoquot Wildfoods, the most significant NTFP venture in Clayoquot Sound. Clayoquot Wildfoods began its' operations on a pilot basis and operated this way for two years. The company concluded its' first full year of operations in 2002.

During the pilot phase two wild fruit preserves (Wild Salal Berry Fruit Spread and Wild Blackberry Fruit Spread) were developed and test marketed in the local region**.** Based on the results of this test marketing the Company changed its' product mix in 2001, adding wild salal berry vinaigrette, dried chanterelle mushrooms and wild blackberry syrup and discontinuing Salal Berry Fruit. Markets include tourists, local clientele and sales through environmental organizations. While challenges such as marketing and human resources have been encountered in the company's early years, response to the products has been positive. Plans for an expanded product line as well as increased marketing and production of the existing products are in the works.
Options for an expanded product line include value-added seafood products, products utilising cranberries, fruit leathers, drinks or herbal teas[37]. The coffee and tea industry leads the gourmet/specialty foods market with sales of almost $4.3 billion in 2000. "Salalsa" (salsa with salal berries) has also been suggested.

From June to Sept/Oct 2002 the company purchased 1,000 pounds of berries out of Ahousaht alone. Ahousaht youth picked berries to raise money to attend the fall fair in Port Alberni! Berries and chanterelle mushrooms are purchased from Nuu-chah-nulth people at buying stations set up in Tofino, Long Beach, Tla-o-qui-aht and Ahousaht. The Company uses the commercial kitchen at Tin Wis for cooking and labels and boxes the product at the Ma-Mook's office in Ucluelet. The initiative has been

"Native American Herbal Tea ® Inc. is a 100% American Indian owned and operated company which incorporated in May of 1987. Our basic concern is to increase the employment of Indian people. Because of the popularity of our tea, our company is enjoying rapid growth throughout the United States and other various parts of the world… Although many of the plants and herbs used are what we call "everybody's plant" meaning common knowledge, we do not sell what is known as the "sacred plants," used in healing ceremonies. It is our belief that certain medicines cannot be sold and therefore we do not incorporate them into our blends".

- Company Website

[37] Taiga Institute, 1999

well received within the Nuu-chah-nulth communities of the region.

There are a number of individuals from Ucluelet, Tla-o-qui-aht and Ahousaht picking wild mushrooms (primarily chantrelles) for sale to wholesale buyers. The total number of mushroom pickers in the region is unknown.

Training programs have been offered in First Nations communities in NTFP harvesting and business opportunities (e.g. salal picking) but according to one Nuu-chah-nulth resource manager, with the exception of berry and mushroom picking for Clayoquot Wildfoods, "it hasn't taken off".

Clayoquot Wildfoods is a launching point for further development in this sector. Ma-mook may wish to consider a separate operation acting as a buyer for a range of products, not necessarily only those destined for local processing. This would allow pickers to diversify the products harvested and provide Ma-mook with experience in and access to the broader NTFP marketplace. Alternately this could be a business opportunity for a local individual. In either case success is dependent on sufficient level of harvester interest.

Sustainability Criteria:

***Environmental criteria*:** *"The overall market for medicinal herbs in the United States more than doubled in value from 1996 ($1.6B) to 1998 ($3.97B)… While little data are available on population dynamics of certain NTFP species, anecdotal evidence suggests a reduced availability of these prized forest products. Over-harvesting of species has become a concern…*[38]".

Understanding the ecology of the NTFP products is critical to their long term sustainability. If forest products are to become part of the commodity market, the NTFP industry must make a commitment to management and impact monitoring.

NTFPs offer opportunities to maintain forest biodiversity by recognising the value of the many products represented by the NTFP sector, not just economic values but also ecological, cultural and social. Yet concerns exist about pursuing development in the absence of information about species abundance, role in the ecosystem, responsible harvesting rates etc. Any development should be pursued in a careful and responsible manner, building in a monitoring and research component.

"Many organisations have demonstrated that if the medicinal plants, fruits, nuts, oils and other resources like rubber, chocolate and chicle, were harvested sustainably - rainforest land has much more economic value than if timber were harvested or if it were burned down for cattle or farming operations. Sustainable harvesting of these types of resources provides this value today as well more long term income and profits year after year for generations to come".

[38] Parsons, B et al., 2002

***Economic criteria*:** Job potential is high and investment requirement generally low. Jobs, however, tend to be low wage (e.g. $10-15 per hour) and seasonal. Seasonality can be addressed to some extent by developing multiple product lines. Managerial employment (marketing, operating buying station) is also possible. Harvesters are self-employed and decide on the volume they will harvest. However, buyers require reliable supply as a business. Market knowledge is required to monitor fluctuations and changes. Markets are, however, virtually endless. Distance/transport costs and time considerations must be assessed for individual species and market opportunities from specific locations.

Social criteria: Concern may exist that the work is low wage and hard working conditions (outside, in the bush). The advantage, however, is its flexibility. NTFP harvesting is particularly well suited to those who prefer self-direction and working outdoors.

***Opportunity for First Nations*:** Many First Nations in BC have begun to explore NTFPs as a source of economic diversification for their communities, as well as a route for reconnection with traditional knowledge and activities. Clayoquot Wildfoods is an excellent example. However, most First Nations have not benefited significantly from the recent expansion in this industry. Concerns exist about any NTFP development relating to medicinal uses and about ecological sustainability in general. Distance to market of remote locations such as a Ahousaht are also a concern and must be factored into analysis of opportunities. Nevertheless there is a desire to pursue opportunities in areas such as foods and possibly floral greens. The sector also represents opportunity to assert rights and title.

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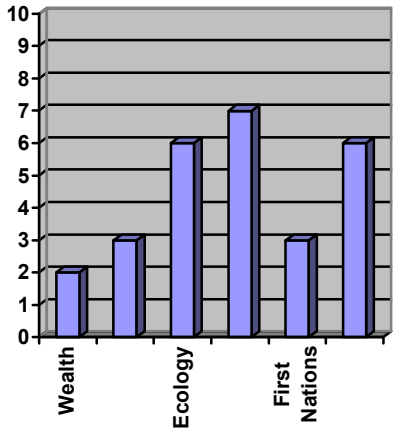
7) RESEARCH AND EDUCATION

Clayoquot shellfish growers receive hands-on training in the French Tube growing technology
Photo: B. Kuecks



Overall assessment of potential

There are at least two options for further development of research and education activities in the region. The first is to expand and improve existing programs and organizations, of which there are a number. The second is to create a new Clayoquot research and education centre that builds on and coordinates these existing efforts, at the same time bringing longevity to the project-funded relationship that has been established between CBT and the University of Victoria (Clayoquot Alliance for Research, Education and Training -CLARET).

The economics of a proposed field training/research center require further business planning and analysis. However there are several indicators that point in favor of the idea, including:

- a clear need to coordinate and share information among the various research and education initiatives in the region
- strong interest both inside and outside the region in increased research and education activity,
- a long history of local leadership for the concept upon which to base this kind of development,
- examples from other areas that demonstrate the potential this type of development offers for job creation and locally relevant research and training, and
- a clear fit with the mandate of the Biosphere Reserve designation and CBT

Ensuring broad-based support will be important in addressing social and cultural sustainability, particularly of research activities. Without this support research is likely to become increasingly intrusive. Integrating any new centre with other research and

education initiatives in the region will be important. Meeting locally identified research, training and education needs and the integration of local, traditional and scientific knowledge should form the basis of a new and relevant research and education program. To ensure local relevance a community-established research and education agenda is required.

Both of the above models (expanding existing initiatives and creating a new centre that integrates/incorporates the activities of these other initiatives) are likely to be non-profit ventures strongly supported by government and university funding. A third alternative within this sectoral category is private sector ventures. Opportunities exist in this arena as well. Hooksum Outdoor School and Hollyhock retreat are examples.

Overview: Current status and trends in the industry

The fields of research and education have experienced growth province-wide over the past decade despite cutbacks in public sector employment. Employment in 2002 across BC exceeded 277,000 (14% of total) in the industry categories of Professional, Scientific and Technical Services and Education Services, with 24% growth since 1996. The education sector alone accounted for 140,000 jobs, up 19% over the same time period[39]. Research and education are integral to the much-touted knowledge-based economy of the twenty-first century.

While the sector is predominantly urban, interest among educational institutions in rural issues, ecosystems and communities presents opportunities for regions such as Clayoquot Sound, as does an interest in learning while vacationing in the tourist market. In Clayoquot Sound, the research and education sector is well established. In addition to public education through the school system, workshops and educational events relating to the region as well as a host of research projects have been ongoing for decades. Among others, the Long Beach Model Forest Society (LBMF) played a critical role in this history.

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Objective:

Use biosphere reserves for basic and applied research, particularly
projects with a focus on local issues, interdisciplinary projects
incorporating both the natural and social sciences, and projects
involving the rehabilitation of degraded ecosystems, the
conservation of soils and water and the sustainable use of natural
resources... Providing a research space, a logistic base for
research and monitoring, is one of the key functions of biosphere
reserves.
                                          - UNESCO MAB 2001
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The announcement of the UN Biosphere Designation in 2000 calls for an even more focused strategy of research and educational development. Research and education are

[39] BC Stats, 2003

intended to be a major focus of the Biosphere Reserve. The Biosphere Reserve network provides support and encouragement for this type of activity. The Canadian Biosphere Reserves Student Network, for example, was formed in 1999 to build linkages between students and Biosphere Reserves[40]. Spending from the $12 million Clayoquot endowment fund received from Government of Canada is intended for use in these kinds of activities. A planned approach to research and education in the region would assist in the effective allocation of these dollars.

Resources and energies are currently available through the Clayoquot Alliance for Research, Education and Training (CLARET), a multi-year federally funded partnership with the University of Victoria to assist with developing a coordinated research and education program in the region. CLARET is a partnership of Clayoquot Biosphere Trust and the University of Victoria funded since 2001 by the Social Science and Humanities Research Council. To date CLARET has supported and initiated a number of research projects, developed protocols for interactions between external researchers and local communities, held workshops and initiated a database of existing data and literature in the region.

> "The Clayoquot Alliance for Research, Education and Training is a unique partnership, founded with the goals of forging creative links between the University and the communities of Clayoquot Sound, providing a forum in which community interests and needs become academic concerns, and making the education and training resources of the University more accessible in the region. An ultimate goal is to establish a resource centre, or "science shop", for ongoing community-university connections designed to foster collaborative research, education and training initiatives".

Research

A number of research-related organizations and initiatives are ongoing in the region. Examples of recent and current projects include[41]:

- Friends of Clayoquot Sound, with Ecotrust Canada and Ahousaht First Nation: Clayoquot Green Economic Opportunities research
- Living Oceans Society: Eelgrass and kelp maps superimposed over aquaculture lease locations
- Nuu-chah-nulth/WCVI Aquatic Management Society: Ucluelet Harbour Project (biological inventories), also Gooseneck Barnacle project
- Strawberry Island Research Society: research and monitoring of marine ecosystems and species in Clayoquot Sound (orca, seal lions, cetacean mortality, eelgrass etc.)
- Iisaak: monitoring, carbon sequestration
- Interfor: knowledge management plan
- Pacific Rim National Park Reserve: current status of eelgrass beds in Clayoquot Sound and relation to fish biodiversity, Seagrass and Ghost Shrimp as Indicators of Ecosystem Integrity in Grice Bay (with students from Uvic and UBC)

[40] Unesco, 2002

[41] Thanks to CLARET for this information. Collection of information on research projects in the region is ongoing.

- Fisheries and Oceans[42]:Geoduck Density Biomass Growth and Recruitment Estimates in Clayoquot Sound, Pacific herring population dynamics, Abundance and behaviour of killer whales in Clayoquot Sound, Identification and Monitoring of Clayoquot Sockeye
- Malaspina University College Centre for Shellfish Research, water quality monitoring
- Dr. Jim Darling, West Coast Whale Research Foundation: Distribution Abundance and Behaviour of Basking Sharks in Clayoquot Sound
- Dr. Hammish Kimmins, UBC Forestry, forest ecosystem study with Dr. Stephen Mitchell and Robyn Scott (windthrow hazards)
- Dr. David Duffus and students, Uvic Geography: whale lab on Vargas and Flores Islands for over 10 years studying grey whale distribution and abundance
- Dr. Rod Dobell, UVic/CLARET: public policy, social capital and institutional innovation

An inventory and library of past and current research is critical to avoid duplication and local frustration and to make effective use of limited research dollars. LBMF and CBT began this process and through CLARET efforts are continuing to build the database. While the full extent of research activity in the region will not be known until a comprehensive research inventory and tracking system is established it appears that more than fifteen individual projects are currently underway. Employment figures associated with this work are not available at this time but almost certainly exceed 30 researchers and staff (part-time and full-time). The Iisaak field research program (Sustainable Forestry Project) alone will be hiring five researchers in the summer of 2003.

> …we are not prepared to accept knowledge gained over a few hundred years of presence for (knowledge) that has been developed over thousands and thousands and thousands of years for good reason."
>
> Clifford Atleo, Ahousaht
> Clayoquot Sound Scientific Panel

The key to the sustainability of these research efforts is the achievement of mutual benefits. Local communities are no longer willing to accept an extractive research model where researchers come into an area and leave nothing behind. Collaboration should involve a mix of responding to locally identified research needs, maximizing use of local facilities and services, respecting local research protocols, involving traditional knowledge whenever possible and agreed upon by First Nations, and addressing local education and training needs. Opportunities for research employment should also be provided.

Without these steps research will become increasingly intrusive and socially unsustainable, particularly in an area where residents already feel they have been "studied to death" with few positive results. This attitude is a barrier to the success of research projects, a situation that will continue to get worse without a conscious and determined effort to model best practices in community-based research within the Sound. At the same time community members and organizations must be aware of the needs of

[42] From Interfor database, listed as "ongoing' without proponent listing. Assumed to be Fisheries and Oceans.

students, faculties and university institutions and barriers they face. While academia is growing to accept the need for applied research and the value of community partnerships, change in these large institutions is slow.

Photo: B. Kopach

Dr. David Duffus' whale research appears to provide an excellent example of community-appropriate research in the region. Students and supervisors work with the community of Ahousaht, living in facilities provided by a community member (Chief Earl George). Ahousaht young people are trained and employed as research assistants and an effort is made to contribute educational resources to the community based on research findings. In 2002 a grey whale ecology workbook was created for high school students. School field trips are also conducted, along with speaking engagements at the Raincoast Interpretive Centre. Pre-season talks for whale watching operators have also been suggested. Some desire has been expressed for Ahousaht people to become involved in the full research process rather than only in data collection (e.g. in analysis, writing, and research design).

The Community University Connections Protocols Project has developed a set of protocols/guidelines for community-based research in the Clayoquot Sound Biosphere Reserve region. The protocols/guidelines were developed under the guidance of a working group that is comprised of members of the local community and the central region Nuu-chah-nulth First Nations. They build on previous efforts of the Traditional Ecological Knowledge Group of LBMF, which developed Protocols for Researchers in 1996. The Protocols will guide Clayoquot Alliance-sponsored research and provide a basis for research agreements and letters of consent. A 1995 ecological information needs assessment identifies a number of research needs for the region related to forest ecosystems[1]. In an effort to coordinate all of these various research-related activities and build a locally driven research agenda a Senior Research Associate is currently being hired by Clayoquot Biosphere Trust and CLARET.

Local research should include not only ecological but also applied social, cultural *and* economic studies. Another excellent example of community-relevant social science research is the Nuu-chah-nulth Central Region Language project, initiated by CLARET in response to First Nations' concerns over language loss. Researchers were commissioned by the Alliance to consult the Nuu-chah-nulth First Nations in Clayoquot Sound on the feasibility of conducting language and traditional knowledge projects. Since that time the project has held several language group meetings, created a CD-ROM and hosted a language conference. It would appear that little research has been conducted to date, however, specifically linked to

economic development opportunities for the region and related education and training needs. Several research needs linked to CED opportunities are identified throughout this report.

Education

Education and research go hand-in-hand. Community dissemination of results and provision of education programs are important aspects of protocols for responsible community-based research. Thus, growth in local research should be accompanied by growth in education programs. A 1997 report by Ecotrust Canada declared education "Clayoquot Sound's new growth industry." To date this projected boon has not materialized. A number of project are, however, being discussed. Existing initiatives such as Hooksum Outdoor School run by members of the Hesquiaht First Nation in Hesquiaht Harbour, The Temperate Rainforest Field Study Centre and Bamfield Marine Station remain in place, as a foundation for further development. North Island College also operates in the region.

The Bamfield Marine Station

Education opportunities in the arts are discussed in the Arts and Culture Sector Analysis. Opportunities also exist in Tourism, Community Development, Ecological and International Studies. Such initiatives will attract students to the area while also providing educational opportunities for local people. An example can be found very close to home in nearby Bamfield. Each summer the Bamfield Marine Station offers 10 to 12 immersion university courses as well as providing public education programs and an active year-round research program

> " The (Bamfield) Marine Station was established in 1970. It is funded by the five western universities and employs over 25 people year round and hosts large groups of students and visitors studying marine habitats. Many of the residents of Bamfield had their first experience with Bamfield as students of BMS. After falling in love with the village they made it their home to raise their families".
>
> Bamfield Community Profile

Cooperation and integration with the existing programs and facilities in Bamfield will be critical to avoid competition, duplication and confusion outside of the region.

Another existing initiative that can be built upon is the Clayoquot Sound Summer Field Program of the Green River Community College. Students prepare for one week of study in Clayoquot Sound surveying either the waters or forests of the biosphere region. The course also discusses the historical and current issues affecting the Nuu-Chah-Nulth.

Green River Forest Ecology Class 1997

The Temperate Rainforest Field Study Centre at Hesquiaht Harbour also hosts university students studying the natural and cultural history of Clayoquot Sound each year. Three-day Natural History Seminars, with topics presented by expert naturalists, are offered. The Centre has six cabins, a dining hall and meeting centre. San Francisco State University's Wildlands Studies Program has visited for the past three summers. The Clayoquot Biosphere Project, while no longer operating, also leaves a legacy of field stations appropriate for research and education use.

Both general education and specific job training are needed in the region.

Examples from Elsewhere

Proponents of a Clayoquot Centre for Coastal Ecosystem Studies point to the successes of initiatives such as the Organization for Tropical Studies and Woods Hole Oceanographic Institution in Massachusetts to demonstrate what can be accomplished. Canadian examples also exist of smaller, community-based research and education centres (e.g. Inner Coast Natural Resource Centre, Bay of Fundy Marine Resource Centre).

The Woods Hole Oceanographic Institution

Staff and Students

Scientists: 135
Technical staff: 155
Students: 130
Marine personnel: 60
Other support staff: 290

Funding

$90 million budget supported by a mix of grants from federal agencies including the National Science Foundation, the Office of Naval Research, private contributions and endowment income.

In Woods Hole a small fishing and tourism town has become a centre for education in oceanography, climatology and fisheries. In recognition that problems of sustainability are not just problems of science the Woods Hole Research Centre established a Program on Science in Public Affairs. The Woods Hole Oceanographic Institute also has a social science division – the Marine Policy Centre. The Institute was founded in 1930.

Additional examples are provided K. Peachey[43]:

The North Cascades Institute based in Sedro-Woolley, Washington State is a non-profit organization dedicated to increasing awareness and stewardship of Pacific Northwest environments. NCI programs are based on the belief that "to be effective stewards people need to know the natural and cultural history of the place they call home". A 17-member Board of Directors, 15-member Advisory Council, Campaign Team, and permanent staff of 15 who direct the organization. More than 50 contract instructors provide a wide range of courses that run from January to December. NCI relies on 35 different inns, lodges, conference centres, farms, campgrounds, state parks, and private lands and homes for accommodating field students

[43] Peachey, K. 2000. Unpublished.

The annual budget for NCI is currently approximately US $1 million. Approximately US $400,000 of this comes from funds raised specifically for child and youth education programs. In general, adult programs are revenue generators for NCI. However, adult field courses are very dependent on weather (poor weather years see lower registration) and demand is less predictable than for school programs. It has been important for the North Cascades Institute to vary its courses and introduce new courses all the time to capture and maintain the interest of new and returning field students. A sampling of field courses for adults by category is offered below.

Birds • Raven ecology & mythology • Marine mammals & birds of the Salish Sea • Ecology of Salmon & eagles	**Flowers, Trees & Other Flora** • Wild edibles of the Puget Lowlands • Spring naturalists retreat at Sun Mountain Lodge • Ecology of an ancient forest
Bugs & Butterflies • An inordinate fondness for beetles • Designing a habitat garden • Land above the trees: alpine ecology	**Literary Arts** • Women writing from experience • A Sauk Mountain perspective • Nature writer's retreat
Cultural History • Earth's heartbeat: a drum making workshop • Learning cedar's song: a woodcarving workshop • Wild edibles and traditional uses of native plants	**Mammals** • Wildlife tracking • Phantom species: rare carnivores of the North Cascades • Selkirk Mountain caribou
Sky, Land & Sea • Biology backpack: a botanical extravaganza • Life in the tidepools: an introduction to marine ecology • Finding your way: maps and route finding	**Visual & Cultural Arts** • Colored pencil field drawing • Steel & wood: a tool making workshop • Native American art and landscape

For field programs, almost all participants are from Washington and neighbouring states with a very small contingent of visitors from BC (less than 10%).

The newest development of NCI, is the scheduled 2002 opening of the North Cascades Environmental Learning Center. This new Center will be a small campus on the shores of Diablo Lake in North Cascades National Park. The Center will include aquatic and terrestrial classrooms, a library, an amphitheater, and secluded outdoor learning areas. A lakeside dining hall will serve up to 75 people, while overnight accommodations will house 40 participants and 12 staff. The Center will also provide a field residency locale for a new graduate program offered through Huxley College of Environmental Studies at Western Washington University and NCI.

Closer to home, Hollyhock is an organization that immediately springs to mind when thinking about creating a Centre that provides highly experiential learning opportunities that transform and educate. It is a learning centre offering a curriculum of wellness and wisdom practices, arts and culture, business, and leadership development. It is also a place for "holidays that heal" and a "space that exists to inspire, empower, enlighten, nourish, and heal people who are striving to make the world a better place."

- Workshops: scheduled courses on well-being, wisdom practices, arts & culture, and business & leadership
- Hollyhock School: training and support for those working for environmental and social change
- Work/Study: A 6-wk residential program where participants spend half the day on study, instruction, and practice and half the day in volunteer service work.
- Power of Hope: a program for teens to tap into a deeper sense of purpose and expand their creative potential
- Retreats and conferences: Hollyhock provides a unique alternative location for meetings, retreats, and conferences
- Bodywork and yoga: a bodywork studio staffed by skilled practitioners
- Kayak adventures: learn to kayak or simply tour the area with Coast Mountain Expeditions booked through Hollyhock
- Vacation stays: Hollyhock can serve as a vacation base where visitors design their own activities and itineraries.

Hollyhock reports increasing interest in and demand for personally enriching holidays. However, Greg Osoba, marketing manager for Hollyhock, warns that the workshop business is "extremely fickle" and there is no "secret formula" for success. Each year Hollyhock programming staff struggle to come up with a hot mix of presenters and topics that will draw people up to Cortes Island.

Long-time interest in creating a research centre in the Clayoquot region and the current availability of resources to undertake the task show real promise. Again, efforts to ensure local control and benefits are critical, particularly for First Nations whose traditional knowledge is central to studies of sustainability.

Assessment of the sector by SCED Criteria

Environmental criteria: Researchers tend to be sensitive to environmental impact, as will students of ecosystem studies. As always, however, best practices must be followed (e.g. no-trace camping, hiking, and boating). Research can help answer significant ecological questions, help monitor ecological impacts and assist with the search for doable sustainable development solutions.

Economic criteria: Financial viability of a new research centre in an era of government fiscal restraint is a concern requiring careful attention. In recognition of the need to diversify the focus should be on students and researchers rather than the tourism market. However, international and private research markets (including tourists) can help to subsidize costs. It has become common practice in Canadian post-secondary institutions and elsewhere to seek international students who will pay higher fees and provide income for cash-strapped institutions. The result is that research and education institutions must be aggressive in promoting their programs internationally through avenues such as global

newspaper advertisements and education fairs[44]. Without such revenue-generating strategies the economic viability of a research centre concept is questionable given financial constraints of universities and the existence of similar initiatives. Nonetheless Clayoquot is unique and opportunities for government and university support should be pursued. Service and location fees can also be charged. CBT may wish to consider whether the Trust Fund is willing to subsidize/cost share such an initiative on an ongoing basis? If so this will be a selling point.

In the absence of significant financial resources to create a new centre a more deliberate and coordinated research program can still be pursued in Clayoquot utilizing existing organizations and partnerships. To achieve the goal of increased local employment in research and monitoring, training and education will be essential. Education can create more qualified local researchers but also meet community needs to enhance human resources by providing training relevant to emerging opportunities. To maximize social and economic benefits applied community development research must be included in a locally established agenda of research priorities.

Social criteria: Social benefits and costs of research are linked to the practices employed and governance structures established. A research centre initiative must have broad-based community support and be in large part (although not exclusively) community controlled and operated. Such an initiative will be intrusive if not done properly. Linkages to the community are key, in part through active information dissemination and by providing an open door for comments, concerns and suggestions, but also by providing visible, practical benefits such as employment or answers to locally identified questions. Mutual respect is also key. Such an initiative should provide relevant local skills and educational opportunities, as well as empowerment and involvement of existing local organizations and initiatives. The role and validity of local and traditional knowledge must also be recognized by researchers and educators new to the area, along with some appreciation for the history, culture and values of the region.

Opportunity for First Nations: As previously discussed future research is likely to involve traditional knowledge. Full involvement of First Nations in further research and protocol discussions is critical. There is a need to have First Nations participating as full partners in establishing a locally relevant research and education program. Opportunities for local education are a significant benefit, particularly post-secondary education delivered in or nearby Nuu-chah-nulth communities (distance is often a barrier to higher education). Seek opportunities, where deemed appropriate by individual First Nations, to locate education and research activities in or within easy access to First Nations communities to maximize access. Past experiences are instructive and appear generally positive as First Nations have been actively involved in the research activities of LBMF, CLARET and other projects and organizations.

[44] BC Business Summit Archives, Goldberg report

List of key resources and contacts

Contacts:

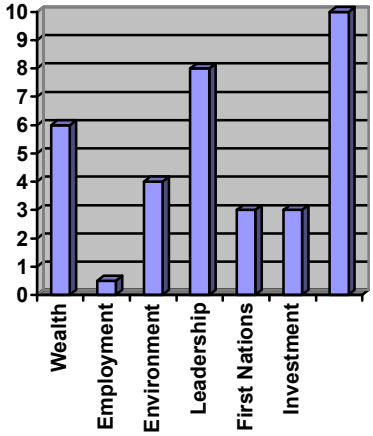
- Bamfield Marine Station, Bamfield, B.C.
- Clayoquot Alliance for Research, Education and Training
  Rod Dobell, Principal Investigator
  www.clayoquotalliance.uvic.ca
- Strawberry Island Research Society
  Rod Palm
  www.island.net/~sisle/
- West Coast Whale Research Foundation
  www.westcoastgraywhale.org
- Green River Community College Clayoquot Sound Summer Field Program
  Dr. Bruce Haulman
  http://www.ivygreen.ctc.edu/haulman
- Boat Basin Foundation/Temperate Rainforest Field Study Centre
- The Woods Hole Research Center
  http://www.whrc.org/pubaffair/pubaffair.htm
- Woods Hole Oceanographic Institution
  http://www.whoi.edu/
- Malasapina University College Centre for Shellfish Research
  Don Tillapagh
- Hooksum Outdoor School
  Steve and Karen Charleson, Hesquiaht Harbour
- North Island College

Publications:

- Chan-McLeod, A. and F. Bunnell. 1995. Needs Assessment of Ecological Information Relevant to Sustainable Forestry within the Long Beach Model Forest. Prepared for the Long Beach Model Forest Society.
- Ecotrust Canada. 1997. Seeing the Ocean through the Trees.
- Palm, R. 2002. Strawberry Isle Research Society. 2002 Year-end report.

8) TECHNOLOGY-BASED ENTERPRISE

Source: Smartdrawphoto



Overall assessment of potential

Technology-based industry opportunities do exist for the region. Niche markets such as web design appear unfilled. However significant development in this area would require investment in technology and upgrading of skills and education. Interest may exist in e-business among local youth. Call centres also offer some promise based on experiences on other provinces and in other First Nations communities in BC. Most importantly, however, the development of a more technologically advanced economy is key to maintaining existing jobs and businesses and integrating with the larger provincial, national and global economy.

Overview: Current status and trends in the industry

With the advent of the "knowledge economy" and age of computer technology rural development agencies have been searching for ways these trends can help alleviate pressure on natural resources and provide diversification alternatives while also helping to overcome the age-old problem of distance from markets faced by remote settlements. While in theory these ideas hold promise practice has been more difficult. Nevertheless some successes have been achieved in:

- Internet marketing of rural products and services
- Establishment of call centres
- Encouraging new businesses and attracting existing ones capable of serving far away markets over the Internet
- Technology-based manufacturing or technology service (electronics, aeronautics, business machines, telecommunications, scientific equipment)

In BC overall these sectors have been experiencing significant growth. According to British Columbia Statistics, there are over 400 high-technology firms in the Okanagan Valley alone, employing 2,500 - 3,200 people. The major high-technology sectors represented in the Okanagan region are: information technology, engineering services, aerospace, biotechnology, and technology support services. In addition there is an established R&D community. The sector is relatively young with most firms less than seven years old, and predominantly smaller companies.

A major advantage for the technology industry is the availability of the infrastructure and resources to assist in the start-up and growth of businesses. The British Columbia government is assisting the advanced technology industry sector by providing:

- BC Scientific Research and Experimental Tax Credit

- a $100 million Knowledge Development Fund
- a $3 million regional High-Tech Development Program
- a 35% reduction in the small business income tax rate.

E-Business:

Today communications technology today is essential for businesses large and small. The importance of the Internet is emphasized by a business owner formerly located in the Clayoquot region:

> You don't need the population base if you have the infrastructure – cable internet, fibreoptics … We left three years ago and now 13 people are employed in Port Alberni. We do over $100,000 in business over the Internet, and it could have been done from Tofino.

The loss of this office supplies business has had a negative impact on all small businesses in the region, which now have to import supplies used on a daily basis. A review of operators in the tourism, arts and value-added sectors also demonstrates significant reliance on the Internet for marketing and sales. The emerging Clayoquot research sector routinely utilizes Internet technology. Finally, organizations in the region responsible for development rely on these services to conduct their business effectively and communicate with one another.

> The provincial government of Newfoundland uses the *Crafts of Character* program (www.craftsofcharacter.com) to promote local products at trade shows and through other marketing tools. This program promotes the distinctive quality of local products to national and international markets, and supports companies in the development of export capability. The program is supported by an online database for wholesale buyers of craft product.

High-speed Internet access has only recently (2003) been made available in the region, only in Tofino and Ucluelet and at a high cost. Clayoquot Biosphere Trust is spearheading the new Clayoquot Sound – Ma-Mook Broadband Project, which will provide a coordinated community approach to developing and implementing high-speed Internet access in the region. The Project has received finding from The Broadband for Rural and Northern Development Pilot Program to conduct a feasibility study for providing Broadband access to all communities in the region.

Research on the opportunities provided to rural areas by e-business points out that proximity to urban markets remains a business advantage. Graphic designers, for example, can email back and forth with

> - During the Christmas retail season of 2001, there was a 73% increase in goods bought over the Internet from the previous year. By the year 2018 it is expected that 50% of all goods and services will be bought over the Internet.
> - In 2002, 90% of all bed and breakfast reservations are made over the Internet.
> - It is expected that 50% of all income earned in 2025 will be from networks of "netpreneurs" who create and break project teams around new income opportunities on a continuous basis.
> - International Data Corp's "1999 Small Business Survey" found that online businesses grow faster than those without a presence on the Web.
> - By 2020, telemedicine will be the norm, allowing the shortage of nurses and other health professionals to be moderated
> - Ubiquitous computing (small micro computers and sensors embedded in materials and humans) will be the norm by middle of the next decade.
> - VIVO – voice-in, voice-out direct language capabilities will be eliminate the need for typing and multi-language capacities while communicating with people all over the world.
>
> *– Rick Smyre, President, Communities of the Future*

their clients but face-to-face contact is still preferred at some points in the transaction. Trust and personal relationships are important success factors. Further, while the Internet allows urban buyers to access rural services it also allows rural residents to access services from outside their communities.

Nevertheless, the Internet does provide market opportunities for business and, increasingly, customers expect an Internet presence. Further, provided communication infrastructure makes operation possible, some entrepreneurs are likely to be willing to accept the market "disadvantage" and travel requirements/costs in exchange for high quality of life in the region. In some cases the Clayoquot reputation may even provide an unique image and thus a market advantage (e.g. hip surfer designs in the graphics example above).

"In the knowledge-driven, computer-networked economy of the future, what matters most is being a place where people want to live."
- Gov. Locke, State of Washington, 1998

BC has the highest percentage of its population using the Internet of any province in Canada (61% reported use in 2002, 53% in rural areas), this figure rises substantially for the 15-24 age group (91%) and for those with a university degree (88%). The figure falls off to 28% for those 55 and over. Of these users 76% use the Internet for purchasing. Books, music, software and travel are the items purchased most often on-line. In Canada 76% of small and medium-sized businesses are using the Internet, 40% for purchasing. Again BC has the highest use rates, with 44% having their own websites[45].

Companies operating customer contact centres are increasingly attracted to the province of Newfoundland for several reasons, including a skilled labour supply, advanced telecommunications capacity, competitive real estate and operating costs, and, for U.S. firms, a favourable currency exchange rate. Through Network Newfoundland and Labrador, a joint industry-government partnership that offers a one-stop shopping approach for investors, the province continues to pursue opportunities for expansion and diversification in this industry. Labour constitutes up to 70% of a centre's total operating costs and is, therefore, a key decision making factor in establishing operations at a particular location. The province has a good supply of workers with skills suited for customer contact operations. Recent experience has shown that businesses operating in this area experience low labour turnover ratios relative to those elsewhere. Local wage rates are also competitive with most other locations. There are opportunities for training partnerships with local post secondary colleges.

Despite this boom in Internet use it is worth noting that the days of "get rich quick" in the IT/e-commerce world appear to be over. The technology has become a way of life for many, Dot-Com companies have laid off employees and the PC market has become competitive, even saturated. But the industry, while levelled off, is here to stay.

There is little available in terms of web design or computer services in the Clayoquot region. With one known web designer in Ucluelet and an increasing need for e-business services additional opportunities exist in this field (others may exist but are not well-publicized).

Call Centres:
Research shows that despite the growth of the Internet, the phone remains a popular method of making inquiries. Answering the phone has become a business of its own, not just for telemarketing but for booking tickets, answering taxpayers' questions and many other functions.

[45] BC Stats 2001

A 1998 report on the industry in Ontario declared the call centre industry to be "booming", jumping 27% from 1997. There are currently over 3,100 centres in Ontario employing 10 or more staff each, with about 150,000 people working in the industry overall[46]. The report adds that a young, educated workforce is an asset. As the callers first point of contact with a company and its product, customer service is extremely important in this industry. Service quality had been a concern. A study of call systems used by local governments in England reports that 25% of calls or more are lost! Due to demand for skilled help Centennial College in Scarborough, Ont. recently opened a 48-week program for call centre operators-to-be.

Source: Network Newfoundland and Labrador

Technology-based enterprise has been a major push in efforts to rescue struggling east coast fishing communities. The customer contact centre industry in Newfoundland continues to expand rapidly. At peak periods in 2001, over 3,500 people were employed in this industry, up from less than 1,000 in 1997. About 28 centres (minimum 15 seats) currently operate in the province. Of these, 25 are operated by the private sector (accounting for almost 90% of employment). The annual payroll of this industry is estimated at $75 million. The expansion is due to investments by U.S. and Canadian companies as well as the expansion of Newfoundland companies (such as utilities, insurance companies and market research firms) into this industry.

Tla-o-qui-aht First Nation has expressed an interest in the call centre concept. Other First Nations in BC have also benefited, assisted by a market advantage in the form of a federal purchasing program that gives priority to First Nations businesses. After a 1999 Supreme Court decision (R. vs. Corbiere), for example, mandated that off-reserve or "away-from-home" First Nations residents had rights such as voting in Band elections like those living at home, a call centre was established to answer questions about the decision and to handle services such as off-reserve voting. The centre contract was awarded to the Heiltsuk First Nation in the remote Central Coast. Sto:lo First Nation and others have also benefited from federal call centre contracts, including those for travel arrangements. The challenge is both finding the market and the appropriate labour force.

"Corbiere Call Centre": Nationally, DIAND needed to respond to First Nations inquiries concerning the Corbiere case. The Heiltsuk First Nation wished to start a call centre. The two ideas were brought together, technologies harnessed, partnerships forged and the image enhanced of First Nations economic development, partnerships and involvement in this industry.

High Technology Manufacturing:
The third element of the high tech sector is high tech manufacturing. The success of such an endeavor in the region would be entirely dependent on an individual with the knowledge and desire to establish such an enterprise. Given the workforce characteristics, however, even the presence of such an individual or firm would be unlikely to make such a business viable without a concerted training and labour force development program (dependent on the product and production process). This segment is not considered an appropriate opportunity for this region at this time.

Other:
Research and development (R&D) is often grouped in this category as well. We have included Research and Education as its own sector. Research can lead to innovation and, ultimately, new economic opportunities. Biotechnology R&D, an emerging activity has a range of marine applications that may be appropriate for the region over time. Again, a

[46] Saunders, 1998

period of capacity building would first be required.

Keys to Success:

Nova Scotia's "Knowledge Economy Report Card" identified three key ingredients for success: post-secondary education, access to information technology equipment and services, and telecommunications infrastructure.

The core capacities of economic development in the Knowledge Economy:

- Forward thinking
- The capacity to innovate continuously
- The capacity to identify and utilize cutting-edge technology
- The capacity to become a learning community

Telecommunications in the Clayoquot region is improving and with the help of the Broadband project should be significantly enhanced. The availability of access to broadband, however, needs to a) ensure it meets the needs of all communities, including the more remote Nuu-chah-nulth settlements, and b) be combined with technical assistance to help small businesses and entrepreneurs become familiar with e-business tools and expedite the rate in which they adapt themselves.

> We have the best-educated generation of First Nations people ever…They are well trained and equipped to make their way in the new global, knowledge-based economy. The rest of the country, especially the business sector, is starting to wake up to this reality.
> - Robert Nault

Education is likely to prove the biggest stumbling block for pursuit of the knowledge-based economy in Clayoquot Sound. In other rural areas the same situation has been found. Labour force issues are the number one barrier[47]. Education levels in the Sound are below provincial average, particularly among the Nuu-chah-nulth population. While this situation appears to be improving a significant amount of labour force training and education will be needed to make the high-tech sector a good fit for this region. The exception is select individuals with these skills and interests. These people should be supported and encouraged as they are instrumental in assisting with raising the "technological literacy" of the region that will be needed for long-term viability.

Despite much promise in technological change the reality is that not only education levels but also being located far from major markets remains a barrier to development that planning must take into account. Recent research suggests that the information economy has increased not decreased the economic gap between urban and rural communities. Nevertheless rural regions must make a concerted effort to keep pace with technological change or get left further behind.

In closing, local economic developers face several key questions related to technology:

- What new technology is emerging?
- How is any new technology important to the future of my region?
- What electronic infrastructure is needed for the community?
- How can we assure universal access?
- How is competence provided for technical knowledge that all citizens need (i.e. email and access to the Internet)?
- How can processes of innovations be created which take advantage of discoveries and innovations in different business arenas?
- What pilot efforts can be created which help cross-fertilize new knowledge that can lead to new income opportunities?

[47] Polese and Shearmur, 2002

- How is the wealth creation from such efforts tailored to help utilize the marketplace to share wealth instead of increasing the gaps between more wealthy and less wealthy citizens?[48]

Assessment of the sector by SCED Criteria

Environmental criteria: E-business is generally thought to be environmentally benign (situation specific).

Economic criteria: There are a limited number of jobs available in niche services unless a call centre or high-tech manufacturing operation is set up. A call centre may be a possibility on-reserve if there is interest and an associated capacity building strategy. Most importantly technological upgrading is important to the viability of many existing business and the protection of existing jobs. Revenue potential is situation-dependent but generally moderate for small business enterprises with relatively low investment. Investment is high if requirements for telecommunications infrastructure is taken into account (e.g. broadband).

Social criteria: Opportunities for employment for marginalized groups is dependent on interest and training. Technological development can exacerbate inequity if efforts are not made to ensure accessibility for all to telecommunications technology.

First Nations opportunities: Low levels of education in Nuu-chah-nulth communities represent a barrier in this sector. However, given Tla-o-qui-aht interest and successes in other First Nations communities, particularly among Aboriginal youth, the sector offers promise for the future. Telecommunications infrastructure initiatives must include Nuu-chah-nulth communities.

[48] Adapted from the US Knowledge Economy Project

List of key resources and contacts

Contacts:

- Clayoquot Biosphere Trust. Clayoquot Sound – Ma-Mook Broadband Project
- Telus Communications Inc.
- Island Net Inc.
- Ucluelet Video Services Ltd.
- Seaview Communications Inc.

Publications:

- Polese and Shearmur. 2002. The Periphery in the Knowledge Economy
- Saunders, J. 1998. Ontario's Call Centre Industry is Growing up Fast

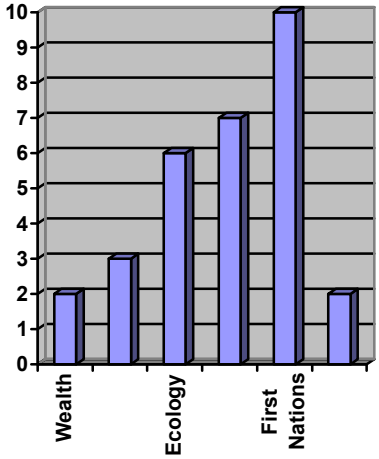
Internet:

- Federal Procurement Policy: www.inac.gc.ca/asi_rfa/asi_home.htm
- NovaKnowledge: www.novaknowledge.ns.ca

SECTOR ANALYSIS

9) ARTS AND CULTURE: "THE CREATIVE ECONOMY"

Reflecting Spirit Gallery, Tofino, BC
Photo: K. Vodden



Overall Assessment

There is already a significant and apparently growing arts and culture sector in the region, with many more gaps and opportunities identified. Challenges inhibiting further development of the sector include: volunteer burn out, low profile, lack of cooperation/unity and individual artist motivation:

- "It takes a lot of energy. People do get burnt out."
- "There have been lots of ideas. People say we should … But who is the we?"
- "There isn't a lot of profile".
- "Our membership is scattered. The communities don't always check with each other when they are planning an event, which causes issues. The Park is a very effective barrier between our communities".

A strategy of cultural community development is needed to emphasize and celebrate the amazing talent of the region and the important role arts and culture play in the Clayoquot communities. Suggestions include:

- identify, appropriately develop and promote art districts in settlements and the Sound (through collaboration of the art community and local governments)
- provide artist live-work space for affordable housing (e.g. in light industrial zones)
- pursue an art school and/or expanded art education programs
- provide artists-in-residence at tourism locations in the Sound (e.g. canoe carving at TinWis)

- increase promotion of the arts in tourism literature and in the community more generally
- pursue a public art program with works of art at the gateways to the communities, within cultural areas and downtown cores
- integrate art into the community market concept
- create cultural and shared cultural/non-cultural tourism product packages (e.g. art walks and tours, nature/art combinations etc.)
- support the development of and promote Nuu-chah-nulth arts and culture facilities (e.g. proposed Ahousaht cultural centre)
- investigate feasibility of Nuu-chah-nulth artists' certification process
- support arts festival and other activities by individuals and organizations such as Pacific Rim Arts Society
- increase web coverage for artist's in the region (e.g. through NTC and Chambers/ tourism associations)
- increase effort to promote film production activity in agreed upon areas of the region
- investigate interest among youth in new media applications (may be opportunities for training and support)

Overview: Current status and trends in the industry

> "Strong, creative communities are known to attract business and industry, bringing employment opportunities and additional wealth to the community. Industries of the emerging information-age economy value quality-of-life issues for their employees, and are attracted to communities, regardless of geography, that actively support arts and culture."
> – from *Creative Connections: Arts and Culture in British Columbia Communities,* Union of British Columbia Municipalities, 1997

Whether or not those who participate in artistic and cultural endeavors see their activities as community economic development (CED) the work of individual artists, art-related companies and non-profit arts and culture groups in a community can have significant economic impact. Perhaps more importantly, arts and culture activities help build community identity and pride, meet a human need for creativity, improve education and in general make communities better places to live. This quality of life in turn attracts visitors and residents and encourages them to stay.

Futurists predict a global renaissance in the arts, literature, and spirituality: "As new technologies continue to unsettle our lives, we will seek to 'regain our balance' by examining our humanity through the arts"[49]. Statistics concur, showing significant growth in BC's publishing, film production, heritage institutions (museums) and performing arts sectors, which employ well over 30,000 people[50]. Employment in the broader category of "arts and culture," including other recreational activities such professional sports and

[49] Naisbett and Aburdene, 1990
[50] BC Stats, 2003

gambling, along with industry estimates are both significantly higher. Within Greater Vancouver an estimated 84% of residents attend arts events (e.g. plays, concerts, opera, or ballet) or visit venues like art galleries or museums, while 51% percent (928,000) are personally involved with the arts in some way (GVRD 1997, 2000).

While similar research has not been conducted in the Clayoquot region the long-standing presence of the Pacific Rim Arts Society (at 27 years the region's oldest operating non-profit organization) demonstrates a strong commitment to the arts as an important part of the community. Each year the Society hosts a music festival, art show and children's programs. This year two film festivals and a Biosphere Summer Camp focusing on art and nature are being added. A Board of 12 committed volunteers runs the Society, supported by a much larger Society membership.

Like many of the sectors examined in this report "arts and culture" or "the creative economy" is in fact a diverse set of activities, including dance, music, theatre, writing and the visual arts (e.g. painting, photography, carving, and sculpture). Each of these individual areas encompasses a wide variety of forms and sub-disciplines. Pottery, weaving, textiles, costumes and jewelry may also be included and tend to be grouped with other visual arts. The definition of art and distinction between art and craft are much-debated subjects beyond the scope of this overview opportunity analysis. Yet another distinction is commercial or applied art such as graphic, industrial, architectural or interior design (photography may also be included) vs. fine art. Finally new media, computer-based applications such as e-learning "infotainment", animation, video games and software are now being considered part of the industry.

Visual and Performing Arts: Unfortunately it appears that relatively little is known about the visual and performing arts sectors in BC, particularly relating to their economic impact51. One exception is a 1998 study by the City of Kelowna's Arts Development Office entitled The Economic Impact of Arts & Culture in the Central Okanagan. The study "brought about a sea change in the understanding of culture's role in the regional economy" and demonstrated how local government investment in the arts stimulates important economic activity. It was determined that arts and culture accounts for a total of 1,592 direct jobs in the Central Okanagan (2,368 total full and part-time) and contributes $37.3 million in direct GDP, $67.1 million including induced impacts on other sectors. The study also confirmed the important role of volunteers and community organizations. Between 1,300 and 1,700 volunteers contribute to the region's cultural organizations.

The largest component of this sector in the Okanagan (42% of industry employment) is service and material providers, including picture framers, retailers of craft and art supplies, musical instruments and audio/video service and equipment, ticket sellers and arts consultants. Following this retail/commercial segment the industry is comprised of:

[51] BC Stats figures on employment by industry combine performing arts with spectator sports and related industries, totaling 20,800 employed in 2002 (up from 10,700 in 1990).

Activity	Direct Employment
Art galleries, dealers and distributors (23)	64
Arts instruction and education	255
Commercial arts	147
Performing arts	77
Visual arts	114
Events and festivals	88
Cultural facilities	10
Literary arts	No information available

A review of the arts and culture sector in Clayoquot Sound demonstrates a majority of activity in visual arts and crafts. In total 17 galleries displaying local works were identified. Two galleries interviewed employ 4-5 people each. A third employs one full-time, and other occasional staff. Based on these interviews regional employment in galleries is estimated to be between 35 and 50 people. In addition, more than 80 artists were identified who sell their works. Research suggests that "only a handful" of these, however, make a full-time livelihood as artists. For most it represents a passion and a second income.

Cal Kalkan Sculpture
Photo: K. Vodden

Galleries are the primary marketing venue. Local art is also displayed at hotels and restaurants such as Long Beach Lodge, Wickaninnish Inn, the Coffee Pod, and Schooner restaurant. The large lodges have not only been supportive in displaying local art, but also in bringing clientele to the area. One gallery owner suggests that business has noticeably increased since the opening of Wickaninnish Inn in 1996. Other venues include craft fairs and an annual summer art show organized by the Pacific Rim Arts Society. An art festival is being arranged for 2003. Word-of-mouth and reputation are also critical, generally built up over years of effort. Finally, increasingly the Internet is being used as a marketing tool. A proliferation of on-line galleries has developed in recent years. Nuu-chah-nulth artists in particular are found on many different sites. Other local artists who do have a web presence tend to have their own sites.

Interviews suggest that those artists who are serious about their profession, gain a reputation over time and treat their art like a business are able to make a living at it. That means hard work at production/supply and marketing suggests one industry expert. "You only get a short window to create your art, mostly it's a lot of PR work. You have to put yourself out there." Be aware of market fluctuations adds an art retailer, 'It's hot and cold. It's unnecessary retail, and it's seasonal. You have to be willing to sell outside of

Tofino." For most it takes many years of building a clientele unless you get lucky and become hot or trendy, but even this takes marketing. "The days when you can sit back and just wait to be discovered are over."

Previous attempts to increasing art marketing efforts in the Sound suggest some artists are not willing or do not desire to put out increased marketing effort. Others are starting to become known and looking at the web as a marketing option. "If people show up the studios have to be presentable, the artists have to be there. There are many things to consider. You need the commitment of the artistic community".

The performing arts also play an important role in the community, although less significant from an employment perspective. Theatre and film are provided periodically throughout the year at the Clayoquot Sound Community Theatre. Shenanigians Comedy Review advertises shows five evenings per week in the summer season.

The annual Pacific Rim Summer Festival, heading into its 18th year, is described as, "one of Canada's most distinguished showcases of chamber music[52]". The two week long event features national and international performers with concerts held in venues throughout Ucluelet, Tofino and the Pacific Rim National Park. The local music industry has recently also become known through the success of the Bottomfeeders. Recorded in 2001 at Ucluelet at Sundog Studios, their album Waterview has received excellent reviews.

"The Bottomfeeders are a motley crew of Tofino boys and girls singing tunes that reflect fishing, f...ing and fighting for the environment. Their sound is West Coast Pogues and a mighty fine sound it is." - Grant Shilling - *The Gig* - Feb./Mar. 2002

In Canso, Nova Scotia the Stan Rogers Festival brings thousands of visitors into the community each July. They're welcomed by more than 400 volunteers, a remarkable feat considering Canso has a population of only 1,200 people. This community-run festival builds on the legacy of Stan Rogers and Nova Scotia's musical tradition, and is estimated to bring about $1.5 million to the local economy each year.

Combining arts and culture with an entrepreneurial spirit works in Bear River too. A group of dedicated volunteers turned their abandoned community school into a vital new centre of economic and community activity. The Bear River Community School is now the Oakdene Centre, a complex that houses craft studios, a community access computer site, and space for events like music festivals and community meetings.

An annual West Coast Music Festival was launched in 2001. Literary artists (writers) also live in the community.

Clearly the visual and performing arts in Clayoquot Sound are significant, inspired by its stunning natural environment and talented, creative population. Given that the profile of this rich cultural resource is not as high as it could be there appears to be opportunity for

[52] Department of Canadian Heritage

expansion in these segments of the arts and culture sector, both in attracting new artists and, perhaps most importantly, supporting existing ones.

Research in the northeastern US suggests that a supportive, "artist-friendly" local government can go far in attracting artists and artist groups. Supportive measures include access to public facilities for events, tax incentives, provision of low cost live/work space, promotion through community art projects, festivals, community markets and other venues, or simply an "open door policy". The potential impact of community art projects is now well-known through the story of Chemainus, which has drawn 400,000 tourists annually and seen 100 new businesses grow through the creation of 33 murals in a downtown revitalization program.

First Nations Arts and Culture:

> "Artistic expression runs strong within the people of Tofino and Clayoquot Sound. The Nuu-chah-nulth people, the First Nation of this area, are very active as artists. Carving and weaving has always been a part of their lives. Art was integral to ceremonial displays, whaling canoes, clothing and nearly every aspect of their days". Tofino Times

Many Nuu-chah-nulth today, including each of the Nations of Clayoquot Sound, are continuing their artistic traditions. Carving, weaving, painting, song and dance are among the aspects of arts and culture being practiced for both cultural and economic purposes. Nearly 20 local Nuu-chah-nulth artists were revealed by a web search, most with items available for sale over the Internet (primarily through galleries). Local information suggests that more than 35 Nuu-chah-nulth artists are active in the region, many from Ahousaht. Again, only some of these individuals make their full-time livelihoods from their art. There are no cooperative marketing efforts for Nuu-chah-nulth artists, although First Nations galleries such as House of Himwitsa (Tofino) and Du Quah Gallery (Ucluelet) provide important marketing avenues. Nuu-chah-nulth Tribal Council has an artist's page on its website. However, only two artists are listed. The new Tla-o-qui-aht booking centre and a proposed new Ahousaht Cultural Centre will provide additional venues. With further development the NTC web page could, however, become a one-stop access location for information on Nuu-chah-nulth art. Finally, the issue of art quality was raised. A certification for Nuu-chah-nulth art that would require artists to be trained (e.g. through mentorship) and provide a guarantee of quality and authenticity was suggested.

Artist James Swan, Ahousaht
Photo: from website of artist

Cultural Tourism: *Tourism BC estimates that 51 percent of visitors to BC have an interest in culture. Cultural tourism can be defined as tourism centered around arts events, cultural festivals, museums, art and craft galleries, and heritage attractions and sites. Representing a rapidly growing sector of the world tourism industry, The World Tourism Organization estimates that cultural tourism is growing by 15 percent annually, while the Canadian Tourism Commission has identified cultural tourism as a "critical area of development" in Canada.*

Opportunities for cultural tourism, including Aboriginal tourism, are discussed further in the Ecotourism sector analysis. Specific ideas raised include artists walks (e.g. to local studios) and longer artist tours that could involve visiting artists in residence through various parts of the Sound, either in their home studios or as visiting artists in other tourism locations. Locations such as Strawberry Island, Catface Range and Ahousaht, home to "clusters" of artists could provide logical art destinations. Workshops and educational programs can also bring visitors to the area and provide a greater range of activities for those who come. Tofino's Just Birding (Clayoquot Sound Adventures), for example, offers educational Nature Photography Tours led by renowned Tofino photographer, Adrian Dorst.

Art Education: Art education is being pursued through summer programs for children, theatre programs put on by Pacific Rim Arts Society and occasional seminars on dance and writing at Wickinninish Community School. The Rainforest Interpretive Centre also offers art-related programs, as do some tour operators. It has been a long-standing dream, however, to develop an arts school in the region. The idea has recently been added to the District of Tofino's five-year plan in hopes that it will be advanced in the near future. A focus on nature art has been discussed. A 2003 nature and art Biosphere summer camp program represents a potential starting point.

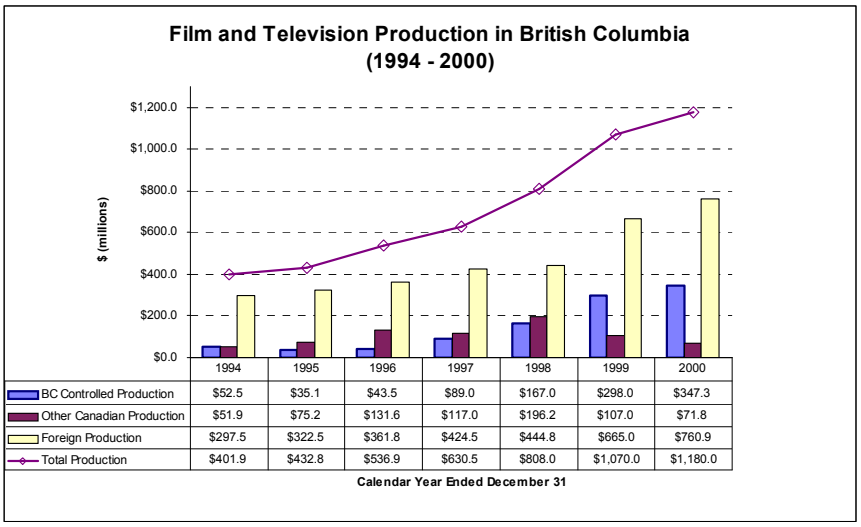
In tourist-dependent Cape Cod, Provincetown in northeastern US a range of local partners developed Campus Provincetown to diversify their three-month seasonal tourist economy. The concept was to bring adult learners to a cultural campus located within the town of 4,000. Beginning in 1999 course enrollment rose from 575 to 1325 in 2001.

Examples of similar initiatives include Kootenay School of the Arts and Campus Provincetown. Kootenay School of the Arts, Centre of Craft & Design began with the creation of the Nelson School of Fine Arts in 1958. In 1969 the school entered into an agreement with Notre Dame University. Through joint programming students were able to earn a Bachelor of Education or Bachelor of Fine Arts degree. By 1984 the institution closed its doors, but in 1991 as a result of significant community work, a new school was founded. The loss of government funding in 2002 resulted in the elimination of Mixed Media and Creative Writing Studios. New programs focused on craft and design including studios in Clay, Fibre, Jewelry & Small Object Design, Metal, and Wood Products Design were, however, created. The School employs 18 full-time faculty equivalents, 6.5 staff and is operated by a 17 person volunteer board. Their $600,000 annual budget is dependent on tuition, fees, and support gained through fundraising

efforts and grants.

Film and Television: *Film and television production has experienced tremendous growth in BC in recent years. In 1994 BC film and television production was worth $400 million. By 2000 this had grown by nearly three-fold ($1.2 billion), making BC the third-largest production centre in North America, following New York and Los Angeles (BC Film Commission). Both BC produced and foreign productions have experienced increases.*

Vancouver Island communities have been working to capture a greater share of this market. According to the Vancouver Island Film Association, the film and television industry spent $23.5 million on Vancouver Island in 2002, shooting 86 productions. In total this generated $70.6 million in the Island economy. Advantages of the film industry are two-fold: immediate revenue and jobs and longer-term benefits of image/reputation. According to BC Film Commission statistics, 35,000 people in BC are employed in the film industry- with 97% of production crews being made up of local people.



	1994	1995	1996	1997	1998	1999	2000
BC Controlled Production	$52.5	$35.1	$43.5	$89.0	$167.0	$298.0	$347.3
Other Canadian Production	$51.9	$75.2	$131.6	$117.0	$196.2	$107.0	$71.8
Foreign Production	$297.5	$322.5	$361.8	$424.5	$444.8	$665.0	$760.9
Total Production	$401.9	$432.8	$536.9	$630.5	$808.0	$1,070.0	$1,180.0

Source: BC Film Commission

A disadvantage is that location decisions are volatile, with periods of expansion and contraction governed by factors such as the world economy, currency fluctuations, labour costs, restrictions on foreign earnings, and available tax shelters. Tax credits and loan guarantees by Canadian governments are a significant factor in attracting production.

While the majority of Vancouver Island filming occurred in the Greater Victoria region in 2002, four productions were filmed in Alberni-Clayoquot with production budgets totaling $2.15 million. With 12 North Island productions in 2002 and 34 in Nanaimo the potential for increasing film production in the Clayoquot region if desired appears high. Despite having less developed support services specific to the industry than larger centres such as Vancouver, Victoria and Nanaimo, spectacular scenery and ample services such as catering, rooms etc. are available. In Tofino advantages of bringing the film industry here, particularly in the summer, are likely be negated by additional traffic and interference with existing tourism activities.

Film production is promoted by non-profit, provincial and federal government-funded film commissions, including the Alberni-Clayoquot Commission in Port Alberni. The Ucluelet Economic Development Commission may want to consider a more aggressive

role in promoting production in their sub-region. Productions should maximize local benefits.

Ed Note: Students at schools in Ahousaht and Tofino are learning film and video production as part of their studies.

New Media: *The main areas of business in the "new media" arts segment include web design, development and management, interactive games, e-learning products, content development and application software, and multi-media (film, video, broadcast, print) development, production and distribution.*

The main cluster of new media companies is animation and special effects for the film, video and interactive games markets. A second cluster involves website design, development and hosting as well as internet outsourcing services. A third is interactive e-learning management tools as well as educational and infotainment software. Contributing and flowing from the development of these interlocking clusters is related education, training, research and development.

Although there is little information on the new media segment in British Columbia or Clayoquot Sound, an estimated 200 BC companies with over 5,000 employees and contractors include artists, software engineers, designers and technical staff. The Clayoquot Sound region lists one graphic designer and 0 firms in web design, software production or animation in the Yellow Pages. Only one web designer is listed under the Ucluelet Chamber of Commerce. See previous section for constraints related to the technology-based economy.

Assessment of the Sector by Sustainability Criteria

Environmental criteria: Arts and culture should have minimal ecological impact. Once again, attention to processes of production and materials used is needed. Activities involving people in nature must also be undertaken in a low-impact manner (no trace camping, hiking etc.). Encouragement of art related to the natural environment can have a positive benefit by raising environmental awareness and appreciation.

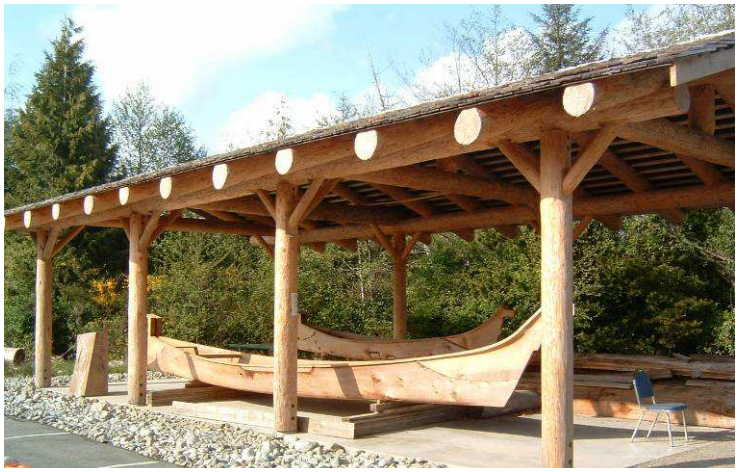
***Economic criteria*:** The sector is highly differentiated in its profitability. New media applications have higher profit making potential. For most in the arts and

Art Wall at the Lounge Collection
Photo: K. Vodden

culture sector it is a labour of love, but nonetheless an enjoyable way to make a living or some extra revenue. The sector also relies on volunteer energy and community support. Because of the commitment to artistic endeavors by the community and the expected long-term popularity of the region as a tourism attraction, the sector has long-term economic potential. A number of areas for local employment creation have been identified. Generally investment requirements are low, with the exception of the creation of an arts school which will take significant energy, commitment and resources to translate idea into reality.

***Social criteria*:** The arts and culture sector, with the exception of foreign film production, is locally controlled and provides opportunities for people who chose an alternative lifestyle. It tends to enhance community spirit but does also draw upon stretched volunteer resources.

Opportunity for First Nations: As discussed above, arts and culture are integral to the lives of Nuu-chah-nulth communities. The degree to which these activities are appropriate for business/economic ventures must be decided by these communities. However, the already significant cultural tourism and art sectors indicate high levels of support when appropriately conducted and locally controlled. New regional arts initiatives should ensure First Nations involvement and participation.



Canoe Carving Shed, TinWis
Photo: K. Vodden

List of key resources and contacts

Contacts

- Pacific Rim Arts Society, President Marla Thirsk
- The Assembly of BC Arts Councils
- BC Arts Council, Cultural Services Branch
- Canada Council for the Arts
- Craft Association of BC
- Alliance for Arts and Culture
- Centre for Craft and Design, Kootenay School of the Arts
  Vancouver Island Film Association
- BC Film, Alberni-Clayoquot Film Commission
  Gordon Scoffield, Primary Film Contact
- Site-Net BC , On-line filming location library

Clayoquot Biosphere Region Galleries

Ucluelet:

- Aperture Overtures Photography
- Du Quah Gallery
- Image West
- The Lounge Collection

Tofino:

- Barr's Native Jewelry & Arts
- Coastline Art
- Eagle Aerie Gallery
- IslandFolk Art Gallery
- Ocean Outfitters Gallery
- Reflecting Spirit Gallery
- Schooner Gallery
- The Tree House
- Village Gallery
- The Lounge Collection
- The Beadcomber
- House of Himwitsa

Nuu-chah-nulth Artists

- Maureen atleo (art cards, Ahousaht)
- Brenda Campbell (beadwork, rings, looms, knitwear, Ahousaht)
- James Cootes, (Ucluelet)
- Douglas David (carver, Tla-o-qui-aht)
- Joe David (art, carver, singer, Tla-o-qui-aht)
- Annie George (button blankets, screen prints and originals, Ahousaht)
- Clifford George (carver)
- Dorothy Jeffery, (Ucluelet)
- Kirt John (painter, clothing designer, Ahousaht)
- George John (carver, painter, Ahousaht)
- Hilda John (weaver, Ahousaht)
- Lena Jumbo (weaver, Ahousaht)
- Carl Jumbo (carver, Ahousaht)
- Billy George (Keitlah) Sr. (Ahousaht)
- Billy George (Keitlah) Jr. (carver, Ahousaht)
- Marnie George (Ahousaht)
- Brian Lucas, (Hesquiaht)
- Frank Lucas (carver, Hesquiaht)
- Rhoda Mack (weaver, Ahousaht)
- Mary Martin (cedar bark weaving, Tla-o-qui-aht)
- Joe Martin (carver, Tla-o-qui-aht)
- Carl Martin (carver, Tla-o-qui-aht)
- Bill Martin (carver, Tla-o-qui-aht)
- Bruce Martin (carver, Tla-o-qui-aht)
- Eugene Martin, (Tla-o-qui-aht)
- Mark Mickey (carver, Hesquiaht)
- Tim Paul (carver, Hesquiaht)
- Hutch Sam (carver, Ahousaht) email: qwaya@shaw.ca
- Hughie Sam (carver, Ahousaht)
- Stanley Sam (carver, Ahousaht)
- Katie Sam (traditional shawls, beadwork, drum-making, Ahousaht)
- Moy Sutherland (carver, painter, Ahousaht)
- Rosie Swan (knitwear, Ahousaht)
- James Swan - Wiyahaqa,cik (silkscreened prints, originals, carvings and jewelry Manhousaht) email: wihay@alberni.net Web: http://www.ahousahtnativeart.com
- Russell Taylor (carver, painter, Ahousaht)
- Roslie Williams (Thomas) (painter, Ahousaht)

Other Clayoquot Artists and Craftpeople (and their Studios)

- Wayne Adams (carver)
- Jill Allen
- Dianne Arnett
- BCBG Creative Wood (indoor and outdoor furniture), Catface Range
- Keredwyn Bird (painter), Strawberry Island
- Bottomfeeders (music)
- Cal Kalkan (carver) Catface
- Ken Clarke
- Clayoquot Crafts (handcrafted cedar furniture)
- Robinson Cook – Divine Proportions Studio (fine furniture, jewelry etc.) Strawberry Island
- Signy Cohen (painter), Reflecting Spirit Gallery
- Adrian Dorst Photography
- Gail Duchene's Burl Studio (carved bowls and plates)
- Joy-Lynn Efford, (sculpture, painting), Ucluelet
- Christy Fever (glass mosaics)
- Sean Goddard (glass, pottery)
- Nicole Goddard (clothing design)
- Walter Guppy (Grassroots Publication Books)
- Eva Hoenig's Woodworking Studio
- Nikki Hainstock (painting)
- Bill and Tina Holden (jewelry - see Beachcomber in Galleries above)
- Stephanie Hughes
- Island Images Photography services.
- Christine Johnston – Ravensong Fibre Arts (weaver)
- Jan Janson (hand crafted garden furniture)
- Jeremy Koreski (photography)
- Betty Krawczyk (author), Cypress Bay
- Rob Libaron (pen and ink drawing, conk art)
- Aaron Marshall (paintings and prints)
- Terry Mckinnon (chainsaw carved wildlife art)
- Richard Menard (wood, stone carving)
- Kevin Midgley - Tofino Art Glass
- Henry Nolla's Wood Carving Studio, Chesterman's Beach
- Keith and Sam Plumley (specialty wood products), Tofino
- Paul Petrosky (stone sculptor, guitar maker), Strawberry Island
- Stacy Prochnau (crochet clothing), Ucluelet
- Wayne Roberts (drum maker)
- Shenanigians Comedy Review
- Jenny Stevens (jewelry)
- Brian Street (wood products)
- Nancy Street (stone carving)
- Joanna Streetly (author)

- Daisy Tatersall, Tofino
- Marla Thirsk (painter), Ucluelet
- Roy Henry Vickers (serigraphy, painter, carver), Tofino (Eagle Aerie Gallery)
- Arthur Vickers (serigraphy), Tofino (Eagle Aerie Gallery)
- Alan Wagstaff's Fine Art Studio (painter/sculptor), Tofino
- Tim Ward, Ucluelet
- Cathy White – Elements Pottery Studio, Tofino
- Jacqueline Windh Photography, Tofino

Commercial Art and Design

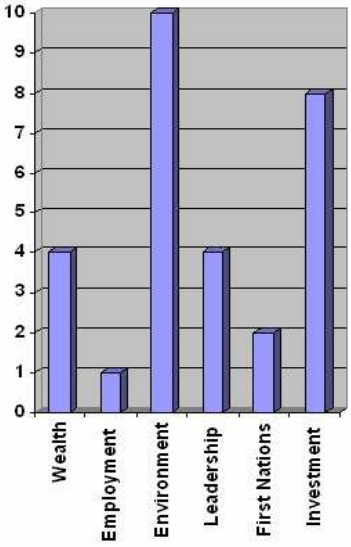
- Long Beach Window & Décor, Ucluelet
- Schramm Design, Ucluelet,
- Laurie Rundle for Diggers Genealogy and Web Design

References

- Tofino Times website (archive of articles on local artists)
- Alberni Valley Times. 2003. ISLAND FILMS GET BOOST**.** March 18, 2003.
- Art dictionary, http://www.artlex.com/
- Canada Customs and Revenue Agency
- Torres. L. and M. Kamhi. 2000. What Art Is: The Esthetic Theory of Ayn Rand
- Naisbiit, J. and P. Aburdene.1990. Megatrends
- City of Vancouver's Office of Cultural Affairs. 2001. Annual Review
- Okanagan Valley Economic Impact of Arts and Culture Study www.collections.ic.gc.ca/okanaganvalley/project/economic/
- Northeastern Economic Developers Association. 2002. The Arts and Economic Development: Achieving Results and Measuring Impacts. Northeast Journal of Economic Development.
- Survey of Public Attitudes Toward a Regional Cultural Plan for Greater Vancouver - Phase III, Canadian Facts, August 2000

10) WASTE MANAGEMENT AND RECYCLING

Source: International Bio-Recovery Genica Fertilizer



Overall assessment of potential

Two key areas of opportunity in waste management and recycling have been reviewed: a thrift or "Re-Store" concept and products manufactured from the region's industrial waste streams, including biosolids, wood, fish and restaurant waste. Potential exists for both types of business, although the thrift store is best pursued as a non-profit endeavor. A business development project that utilizes industrial waste would be extremely worthwhile from an ecological and economic perspective. An initiative is currently underway to develop a regional recycling program and form a regional recycling Society. This organization may be able to provide leadership in developing a strategy for industrial waste management. The District of Tofino has taken an important first step in preparing an initial proposal for a wetland sewage treatment and associated fertilizer pellet production plant, and by further making application to the Eco-Industrial Pilot Project. After being selected as one of the "most likely to succeed" communities in BC no action has been taken to further pursue this project. An industrial waste audit is now required, followed by an assessment of "best use" to move this important initiative forward.

Overview: Current status and trends in the industry

In the 1980s and 90s society began to embrace the concept of the "3Rs" (reduce, reuse, recycle). Many measures were voluntary, others regulatory and financial incentives. The City of London, Ontario, for example, increased its landfill tipping fees for items for which an alternate use had become available – a helping hand to local recycling firms. Cowichan Valley Regional District has taken the approach of diverting organic waste from its landfill since West Coast Diversion Co. opened a large scale composting facility in 2000.

The U.S.-based Institute for Local Reliance and its 'Waste to Wealth Program' has been among the most outspoken agencies in demonstrating the economic benefits for local communities of reuse and recycling. They point out that the waste management industry has been experiencing 8.3% annual increase in employment, and 12.7% growth in sales.

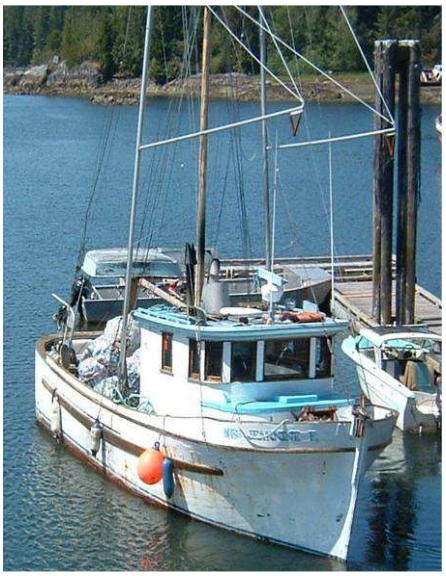
> "In the year 2000, the U.S. recycling industry boasted more than 56,000 public and private sector facilities, sustaining 1.1 million jobs, with $236 billion in gross annual sales … On a per-ton basis, sorting and processing recyclables alone sustain 10 times more jobs than landfilling or incineration".

Job Creation: Reuse and Recycling Vs. Disposal

Type of Operation	Jobs per 10,000 TPY
Product Reuse	
Computer Reuse	296
Textile Reclamation	85
Misc. Durables Reuse	62
Wooden Pallet Repair	28
Recycling-based Manufacturers	**25**
Paper Mills	18
Glass Product Manufacturers	26
Plastic Product Manufacturers	93
Conventional Materials Recovery Facilities	**10**
Composting	**4**
Landfill and Incineration	**1**

TPY = tons per year
Note: Figures are based on interviews with select facilities around the country.
Source: Institute for Local Self-Reliance, Washington, DC, 1997.

Waste management in Clayoquot Sound is a challenge, particularly for remote communities with limited waste handling and management capabilities. Recycling is limited in the region as a whole. Isolated recycling initiatives are underway but they are constrained by financial resources. The District of Tofino has a $50,000 recycling budget. Recycling is picked up along with garbage. The District of Ucluelet discontinued its recycling program due to financial considerations. The Ucluelet Recycling Committee (Ucluelet Recycles) has since been formed. The group recycles paper and cardboard on a volunteer basis. The Community of Ahousaht collects returnables for delivery to Tofino.



Ahousaht Recycling
Photo: K. Vodden

There is a recognized need for increased regional cooperation in order to pool resources and improve recycling services. A project is currently underway to develop a regional recycling program, form a regional recycling Society and secure a site for stockpiling recyclable wastes until prices warrant their sale.

Ucluelet Recycles presents the following potentially revenue-generating ideas for re-use of the region's waste stream:

- Styrofoam box manufacturing from recycled plastics for fish farm product
- Supplying worm composting kits for residential use
- Large-scale community composting to supply topsoil to the district and other buyers
- Wood waste disposal/recycling
- A second-hand store (Re-Store)
- Used paint exchange
- Charge local businesses (e.g. $100 pr mo) to remove their cardboard (businesses save on dumpster lease, tipping fees and moving charges)
- Renting out cups, plates and cutlery for functions
- Glass blowing
- Small-scale glass jar manufacturing
- Used oil recycling
- Selling used magazines
- Collection of dry-cell batteries

However without an industrial waste audit, it is difficult to accurately assess the possibilities for viable business opportunities associated with the waste stream. At this time, the Ucluelet recycling project does not include an audit as one of its objectives.

Several of the smaller ideas above might be combined and taken on by a regional recycling group as revenue generating activities (e.g. cardboard pickup, dishes rental, composting kit supply, selling use magazines and the restore-s). Two of these ideas are reviewed in more detail below: thrift stores and the use of industrial waste (combining a number of the items listed). Both require further research and energy (human resources) to pursue further.

Thrift/Re-Use Stores: *Depending on the size and type of waste stream and the demographics of the potential consumer market, there are a variety of Thrift Store/Re-Store models to be considered. On one end of the spectrum is the 'Free Store' and at the other is a full spectrum staffed store that operates like a regular retail outlet.*

Free Stores are usually located at or near the town dump or waste transfer station. With the objective of diverting items from the waste stream, Free Stores are designed to make products that are considered useable available for 'take away'. Most often, Free Stores concentrate on redirecting heavy or bulky items, including useable appliances, motors, furniture and mattresses. Their operation is dependent either on people voluntarily placing their useable items on location for others and/or on a system of sorting waste in bins prior to disposal. Examples of the Free Store model can be found in the Cowichan Valley and on Saltspring and Gabriola Islands. The Cowichan Valley Regional District has employed, with considerable success, a Free Store system for the past two years at their regional waste facility for car parts and small motors. Islands Trust has encouraged its' Gulf Island residents to establish Free Stores to help offset the high costs of shipping waste off the islands.

Thrift Stores are a common feature in many small towns. Volunteers may operate them and use the revenue stream to support charity activities or they may be established as a private, for-profit business. In both cases, the store's inventory is dependent on local residents donating their used clothing, furniture and house wares for resale. People make donations for a variety of reasons, including an interest in supporting the cause that the thrift store represents and/or an interest in making their own small contribution to waste reduction by diverting what they consider saleable. Some of the larger and more profitable Thrift Stores have established 'pick up' systems to make the option of donating as simple as possible.

The largest island Thrift Store operations on Vancouver Island include:

- Value Village, a multi-million dollar US corporation with retail outlets, modeled like a multi-product chain store, across BC; and
- Good Neighbours Thrift Stores, a cooperative business that until 2002 operated slightly smaller multi-product stores in Courtney, Nanaimo, Duncan, Langford and Victoria

The Alert Bay Thrift Shops

Alert Bay, a small island community of less than 1,500 people, has two thrift stores: one on reserve and one in the neighbouring municipality. One is volunteer run by the Ladies Hospital Auxiliary, the other staffed through social assistance programs. The volunteer-run facility grosses $1000/mo in sales and is open two days per week (5 hours total). Their key expense is rent at only $250/mo., including utilities. Approximately five truckloads of soiled material are taken to Vancouver per year to Welfare Industries. A local delivery trucks charges only $30 per load. The Village of Alert Bay picks up goods that not saleable at no cost. All profits go to Hospital Auxiliary (min $700 per mo).

The success of the Thrift Store model, regardless of its' size, is the quality of goods that are available for resale and the area consumer's interest in shopping reused rather than new. In communities where there are fewer options for retail shopping, Thrift Stores tend to be more successful. The rise of 'big-box' stores (e.g. Liquidation World, Walmart and Winners) in medium-sized towns has definitely increased the competition for Thrift Store operators in more recent years. The ability of these sales-options to offer, in one location, a wide range of new rather than 'reused' goods for lower retail prices makes the Thrift Store option less appealing for some shoppers and less viable as a business in some locations. E-Bay and other on-line auction options has also impacted Thrift Store sales.

In the face of this market competition, some Thrift Store operators are moving into specialty inventory that is only available second-hand (e.g. antique furniture, collectibles, china, estate sales, jewelry, vintage clothing, old music). Others have shifted their emphasis from retail storefronts to Internet marketing in an attempt to broaden their consumer-base.

One of the biggest challenges in the Thrift Store business, ironically enough, is waste management. To break down items that cannot be sold requires time, energy, marketing expertise and transportation resources often beyond the scope of small operators. A percentage of all donated items (some retailers suggest up to 50% of what they receive), will not resell and must ultimately be discarded. The bottom end of the thrift store food-chain for used clothing is the rag-trade – a multi-million dollar international business that wholesales used clothing to Third World countries and shreds material for stuffing and automotive rags. Rag traders purchase used clothing for pennies a pound, sort it in huge warehouses in the Lower Mainland and ship to thousands of destinations for a wide variety of uses.

Used furniture can be dismantled for salvage wood. Hard plastics (toys, car seats, house wares) can be collected and reconstituted into wood siding and decking. Construction and

renovation projects may also yield useful materials for this purpose. Some of these items are also likely to find their way into the arts and crafts businesses.

Applying these lessons in Clayoquot Sound, a reuse system could include a Free Store at the central recycling site for larger items (appliances, potentially furniture) along with reuse/thrift store options in both Tofino and Ucluelet. For smaller items such as clothing and toys many potential users don't have their own vehicles and shuttle bus service is sporadic. Facilities in these two communities would provide some access for the other First Nations communities, although discussion should take place between the regional recycling initiative and individual First Nations about their needs and preferred approaches to the re-use store concept. Given limited availability of lower-end clothing for cash-strapped service industry workers, or of a mechanism for reuse of children's clothing and goods, there should be a ready market in Tofino for such a store. Beyond childrens' clothing supply might be a greater problem, however. The largest issue will be finding low-cost space.

The success of the initiative will also be dependent on the ability to garner volunteer involvement and commitment. The municipality may be willing to provide space and/or an existing NGO may be willing to house and run the facility as a fundraising venture. There is reportedly already a part-time store in Ucluelet. Opportunities for development of this program will have to be locally determined. With the goal of regional cooperation and coordination in mind the regional initiative may want to develop some form of shared inventory system so that all three facilities (two community re-use stores and the Free Store if added as an additional facility) can track what is available (perhaps available on-line for customer browsing). Other than for large items, however, this is likely to be too labour intensive in data entry given the low cost inventory.

Industrial Waste

Three potentially significant of industrial waste have been identified in the region: restaurant waste, fish waste (farm morts, fish offal) and wood waste. A fourth is biosolids associated with sewage treatment. While not an industrial waste in the typical sense, a large percentage of the sewage load from Tofino and increasingly Ucluelet comes from the tourism industry. Sewage treatment and management is an ongoing issue in the region. The District of Tofino is hoping to have a facility in place within the next three years, while Ucluelet has a simple primary system that sometimes becomes overloaded.

Tofino generates approximately 80 million gallons of sewage waste each year. This matter has potential to be converted into useful material.

> a sustainable society, there can not be net accumulation of any type of waste. Natural ecosystems maintain matter in continuous cycles powered by capture of solar energy. 'Wastes' from each link in ecosystems form the raw resources for subsequent links … otherwise they will inevitably contribute to increasing pollution loads as well as wastage of resources.
>
> - The Natural Step 2002

Approximately 6-7% of the average municipal waste stream by weight is food waste. Given the high number of restaurants in the area serving the tourism industry the percentage can be expected to be significantly higher. Seasonality has a significant impact on waste generation, which increases from one truck per month in the winter to two trucks per week! Research shows that businesses with food waste diversion programs can reduce their solid waste production by 33-85%. Options include: food donations, rendering of fats and meats, animal feed and composting.

In Kautzen, Austria 23 farmers have formed a cooperative to operate a district heating network using wood chips gathered from the farmers' forests. The chips are dried with the help of a solar facility. The network delivers heat to 80 users. Conversion to heat and power is planned. Insulation improvements for energy efficiency were also made.

Little is known about fish waste in the region, except that the fish farm industry produces fish "morts" and the fish processing facilities produce fish offal as a by-product of their operations. The offal from at least one of the Ucluelet plans is reportedly sent out of the region for fish/animal feed.

Waste wood consists of a mix of bark, wood, tops, including branches present at road sides, yarding slash and dry land sorts as well as sawdust, small wood pieces, shavings etc. from value-added producers. Wood waste is also produced in construction projects. Interviews suggest that local forestry and wood-related operations are disposing of their wastes in range of ways, from burning onsite to trucking it away for hog fuel, to making bark mulch for local companies and sawdust for horses. A "stump dump" storage location was closed due to concerns about its location and impacts on water supply.
Several options have been identified that could utilize a number of these streams in one or more processes. They include: co-generation (energy production), large-scale composting, fertilizer, wood pellet and/or biodiesel production. Each is described to some extent below. Deciding on the "best and highest use" will depend on an assessment of the waste streams and the relative costs and benefits of each of the alternatives.

Composting:

Composting is a natural process whereby micro-organisms transform organic waste materials into a soil- like product called humus (pronounced "hue-mous"). Kitchen scraps, leaves and yard waste, paper, wood, food-processing wastes, as well as agricultural crop wastes and animal manures, are excellent organic waste materials that can be composted. Composting has two benefits: it helps to reduce the amount of waste going to landfills and to recover a valuable resource. It is estimated that about 40 to 60 percent of the total waste stream could be composted! … The number of centralized composting facilities throughout Canada has more than tripled from 30 to over 120 since 1989.

Composting can be done in a number of ways, including anaerobic digesters, in-vessel, static aerated pile, and windrows. The combination of food and wood waste makes for an

appropriate composting mix. Food scraps provide nitrogen while newspaper, cardboard or wood chips can provide the carbon to get carbon/nitrogen ratios right. A small business on Vancouver Island is also adding fish farm waste to the mix. Composted soil can be bagged or sold in bulk for local landscapers.

Fertilizer Pellet Production: A Scoping Study to Identify BC Communities for Eco-Industrial Pilot Projects (2002) conducted by Tracy Casavant of Eco-Industrial Solutions Ltd. identified Tofino as one of a group of four communities (along with Comox, Richmond, West Kootenay Boundary Region) considered to be in the strongest position to showcase eco-industrial projects. These communities were identified both because they have a 'greener' approach/potential and many have already begun to integrate existing projects or policies into their operations.

The District of Tofino's proposed approach was to develop a system that integrates wetland sewage treatment with composting of sewage biosolids and fish processing waste into a non-toxic natural fertilizer developed and operated by a North Vancouver firm (IBR). The addition of restaurant and wood waste may also be an option. Benefits include: reduction in trucking use and costs, reduction in use of fossil fuels, reduced highway use, eliminated fish waste spills and reduced uses of toxic fertilizers. The company's North Vancouver plant processes over 30 tonnes/day of biodegradable food waste and produces over three tonnes/day of commercial production fertilizer. It operates 24 hours/day, 7 days/week. All odours are contained, collected, and treated through bio-filtration and scrubbing. Due to concerns about heavy metals and toxic substances that may be present in sewage, as well as the need for community support, a public education and involvement campaign would have to accompany the project at various stages of its development.

In 2002 the District suggested that initiation of the project was dependent on a feasibility study of the fertilizer plant, cooperation and communication with stakeholders. None of these steps have been taken to date. Also key is the construction of an appropriate sewage treatment system, proposed as a constructed wetland. This infrastructure alternative is more cost effective and environmentally friendly than traditional treatments. Sewage will pass through a pre-screening facility to remove bio-solids, and then remaining wastewater will flow through wetland for treatment. The wetland is an alternative to hauling bio-solids to regional landfill facility. The plan to process bio-solids into marketable goods (e.g. fertilizer) is unique and corresponds with the concept of industrial ecology quoted above.

The composting and pellet production facility is proposed as a public-private partnership between District of Tofino and IBR; the wetland is funded by the District of Tofino and the Canada/BC infrastructure works program. Economic development opportunities arising from availability of the organic fertilizer from the IBR Plant need to be explored. Fertilizer could be used by local forest companies for silviculture or for use by local farmers for producing food for restaurants and lodges or gardeners/landscapers. The facility could also be used to develop industrial eco-tours, an interpretation centre, relevant conference and to tie in Tofino's planned green building for its new town hall a broader green development strategy. Report author Tracy Casavant suggests that Tofino would be in a good position to access funds from Western Economic Diversification, Environment Canada and Green Municipal Enabling Funds (GMEF), which have funded three eco-industrial projects (District of North Vancouver, Town of Hinton, and soon, Richmond. As well the BC Real Estate Foundation, Industrial Research Assistance Program, Sustainable Development Technology Fund and Softwood Industry Community Economic Adjustment Initiative (SICEAI) were suggested as sources.

Municipal sewage sludge may contain heavy metals such as cadmium, mercury, arsenic and lead, as well as organic contaminants like dioxin, PCBs, pesticides and alkyl phenols (detergent agents). These materials pose a health and environmental threat when burned in low-temperature incinerators or released into water.

Sludge also contains pathogens, spent pharmaceutical substances, and resistant bacteria strains (potential "superbugs") that survive secondary treatment within in-vessel anaerobic sewage composters. Sheep eating cabbages grown on sludge have developed lesions of the liver and thyroid gland. Pigs have elevated levels of cadmium. Biosolids workers are at risk of exposure to salmonella, shigella, camylobacter, cryptosporidium, giardia and enteric viruses.

Some experts have concluded that gasification and high-temperature technologies that capture the methane in sludge for energy generation may be the most environmentally sound disposal methods. However, these are expensive and have mostly been sidelined by public officials who believe that sludge spreading is safe.

A waste audit and feasibility study for this project is critical before proceeding. This would include a tour of the North Vancouver facility and speaking with customers who have purchased the Genica product. The project has not advanced due to time constraints in the District of Tofino office. The potential for making this a regional project should be investigated in the feasibility stage. Concerns about the use of biosolids as fertilizer must also be investigated.[53]

Two recent studies have examined wood waste production and alternative uses for Northern Vancouver Island. The region has five shake and shingle mills, three sawmills and a fir pole producer. Estimated annual wood waste production from these facilities is 36,335 tonnes. Harvesters leave an estimated 153,000 tonnes at roadside (based on 3

[53] Crittenden, G. 2002

million cubic metres per year production) and dryland sorts an additional 141,000[54]. Total production, therefore, exceeds 300,000 tonnes annually. Clearly these volumes are significantly higher than what is available in Clayoquot Sound at current harvest volumes. The North Island region produces over 3 million cubic metres of wood overall each year.

Most North Island operations, particularly larger ones, are currently processing waste into hog fuel and selling that material at roughly break-even costs of production and transport. Others are burning, land filling, producing firewood and composting. Hog fuel is a term for waste wood reduced in size for handling. Hog fuel is an important source of energy for many sawmills and pulp mills. Burning the chipped waste wood material produces steam for heat and electricity.

Findings from a North Island study on alternative uses of wood waste identify additional options (excerpts from Foronomics Consulting 2003 below):

Wood stove pellets:
Cedar sawdust is generally unsuitable for residential fuel pellet furnish. Cedar burns too fast and generates more clinkers than does other species. Wood from salt-water transport would not meet quality standards for salt content. There are currently no pellet plants on the coast, likely due to salt content concerns. Some potential for overseas markets or other commercial fuels exists for pellets from North Island wood waste. An economical minimum volume would consist of about 50 green tonnes per year but any overseas destination would require deep sea loading infrastructure. Downstream local benefits from a pellet plant would have great potential as clean burning lower-cost alternative to conventional fossil fuels or electricity.

Compressed waste wood logs:
This product is designed for fireplace/airtight burning and is produced by compressing sawdust or ground wood into small logs. One manufacturer ("Heatlog") requires a minimum of 1000 tonnes/year (three shift basis) of sawdust or ground wood to < 2 to 6mm particle size < 10% moisture content for furnish per extruder unit. Capital cost of each unit is around $90,000. Local markets are not adequate as MacMillan Bloedel's Somas Mill discovered several years ago after installing equipment to produce similar products. They scrapped the venture only months after initial production began. Overseas markets are likely required for this product to be viable for North Island operators. Drying the furnish could be problematic without kilns or a local heat source.

Boilers:
Conventional boiler technology offers many sized systems available with high and low pressure steam outputs or simply hot water. Low-pressure units can supply low-grade heat for area heating, water heating for aquaculture, hydroponics or the hybrid of both, aquaponics. High-pressure systems are generally used for steam turbine power generation and require ticketed steam engineer operators. Steam turbines generally require a large scale of production and fuel volume.

[54] Chittick, J. 2002

Green house heat, Hydroponics, Aquaponics:
Wood burning heat is currently being used at the green house operation at Sointula. Green houses require heat, light, and increased Carbon Dioxide concentration above ambient air. In addition, they require transportation infrastructure to enable economic marketing. Waste wood produced heat either for power production or direct heating can match sufficient heat energy and CO^2 for various sizes of greenhouses. Hydroponics is the culturing of plants in a water / sand / gravel medium as opposed to soil. This allows recycling of water to reduce nutrient loss. Most commercial green houses produce vegetables using hydroponics. By adding aquaculture to this system, commercial warm fresh water fish species such as Tilapia and Catfish can be raised in the water while adding plant nutrients from their waste. A pilot aquaponics operation in Nova Scotia is being supplied with the heat equivalent of approximately 1000 tonnes / year of green hog fuel.

The Confederated Tribes of the Warm Springs reservation in Oregon formed the 'Warm Springs Deposit Products' business, that makes diatomaceous earth fire retardant building products from newspaper by-products, gypsum, casting plaster and cement. The newspaper by-products are from a waste management company in the area. Five years ago two people started the business and as they found a market for fire-proof products the business expanded. It now employs 33 people, produces approximately 9000 panel count each year and generates revenue of approximately $3.5 million each year. The initial costs of equipment are expensive, but the ongoing costs mostly stem from the regulatory certification, as each time they produce a new product there is a strict certification process that costs almost $15000 per certification. There success has largely been due to providing a unique product - making products (mostly doors) that have an extended fireproof time – from the usual 30-60 minute fireproof time to 90 minutes of fireproof time. They have a domestic US market, but have started to sell internationally – particularly in the Philippines and the UK. They contend that international markets will only increase as there is growing demand for up-grading and stricter building codes in tourist destinations.
- McIlveen 2003

Gasifier:
The Gasifier is a two-stage thermal oxidation system. The system is usually computer controlled and fuel burn rates and energy production can be adjusted to match energy requirements. The flue gas from the gasifier secondary can be used to heat compressed ambient air from a compressor coupled to a gas turbine. The gasifier flue gases are then vented to the atmosphere or can be used for other process heat. The compressed ambient air can be expanded through a modified gas turbine coupled with a generator set for power production. A portion of the exhaust gases is used for the combustion air for the gasifier and the remainder is available as ancillary heat. Gasifiers can also be set up to directly fuel internal combustion engines (converted diesel engines) coupled to generators. By reducing the oxidization in the primary chamber of ambient air, gasifiers can be used to manufacture charcoal and or bio-distillates. Three advantages of gasifiers is their ability to

economically operate at smaller scales than steam processes, do so fully automated, and at significantly lower capital cost.

Waste reduction / improved utilization:
North Island shingle sawing operations produce approximately 5 to 10 tonnes / day of "spolts". These are approximately 1" thick by 18" long by 4" to 10" clear cedar and cypress leftover pieces (required to hold the block while cutting). This material is currently being chipped, hogged or burned. Attempts at utilizing spolts have so far resulted in cash losses. Some of the possible products, which could be made from spolts include stakes, craft stock, carving blanks, gift boxes, laminated panels, and shutter stock. Requirements for potential utilization include optimal scale and capitalization, market development, labor cost and infrastructure resolution.

Biofuels:
Finally, as discussed in the green energy sector analysis, waste can be converted to biofuels such as methanol, a form of alcohol used as a liquid fuel. Biofuels from low-cost woody biomass can offer higher energy yields at lower cost and environmental impact than other traditional biofuels[55].

Several factors affect whether wood waste, or other waste resources, can be developed feasibly. They include:

- the amount and concentration of the supply of surplus wood waste;
- the probability that the supply will continue to be available;
- the cost of other sources of energy (if waste is being used as energy); and
- the environmental impacts of collecting and burning (or other types of processing) of wood waste[56].

Many opportunities exist for converting waste into useful products, generating jobs and revenue in the process. The central problem with pursuing any of these ideas is that not enough information is available about the local waste stream. An audit, particularly of industrial waste streams, is required followed by an examination of the business feasibility of these various options and their comparative costs, risks and benefits.

[55] UNDP. 2003
[56] BC Hydro 2002

Assessment of the sector by SCED Criteria

Environmental criteria: Reuse and recycling benefit the environment from making the most out of the planet's limited resources. Improved waste management practices should be a central component of a sustainable communities vision for the region. As with all other sectors attention must be paid to energy efficiency and other ecological issues in the processing of waste. These include odour issues, leachate and toxic contaminants in the waste stream.

The 2000 Eco-Industrial Pilot study found that Tofino's proposal for a waste reuse facility proposal integrates several strategies that make it ecologically attractive: material and energy conservation, pollution and toxics reduction, material and energy cycling, green infrastructure (e.g. storm water management, constructed wetlands sewage treatment, transportation planning) and shared services (e.g. marketing, R&D etc). Tofino's proposal itself lists benefits such as reduction in discharge of raw sewage to the ocean; reduction in solid waste; reduction in fossil fuel consumption; reduction in highway resurfacing and reduction in fish waste spills. Further, the wetland sewage treatment system will provide a model for other communities.

Economic criteria: The economic value of waste initiatives requires further examination. Certainly it would appear that volunteer-run thrifts stores are most feasible and that revenue is limited, although useful for a local charity. Revenue and limited job creation potential certainly exists from a selected "best use" processing facility for industrial waste. Initial investment requirements for such a facility are likely to be high. Waste reuse can also have financial benefits for municipalities in the form of extended landfill life.

Social criteria: A thrift store can provide social benefits in the form of access to goods for the under and unemployed. Social costs of industrial waste facilities if not designed properly, on the other hand, can lead to community concerns over odour and unsightliness. Siting a waste management facility in an area with limited land base may prove to be a significant challenge.

Appropriateness for First Nations: First Nations in the region share the need to find solutions to their waste management issues. The location of Reserve communities, however, suggests that a facility constructed to utilize the region's wastes will not be located in Nuu-chah-nulth villages.

List of key resources and contacts

Reports and References:

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- Casavant, T. 2002. Scoping Study to Identify BC Communities for Eco-Industrial Pilot Projects. Prepared for Western Economic Diversification and Environment Canada.
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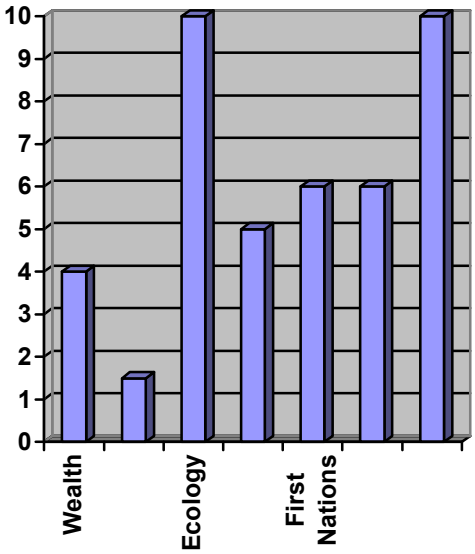
Contacts*:*

- Tracy Casavant, MES, P.Eng. Eco-Industrial Solutions Ltd.
- Ian Howett, District of Tofino
- Ucluelet Recycles
- Clayoquot Regional Recycling Initiative

Websites:

- Coast Waste Management Association http://www.cwma.bc.ca/articles/recyclex.html
- Green Plan for the Food Service Industry http://www.p2pays.org/food/main/intro.htm
- Food for Thought: Waste Reduction in the Restaurant Industry www.p2pays.org/ref/03/02905.pdf
- Institute for Local Self-reliance Waste to Wealth Program www.ilsr.org/recycling/

11) GREEN PRODUCTS AND SERVICES



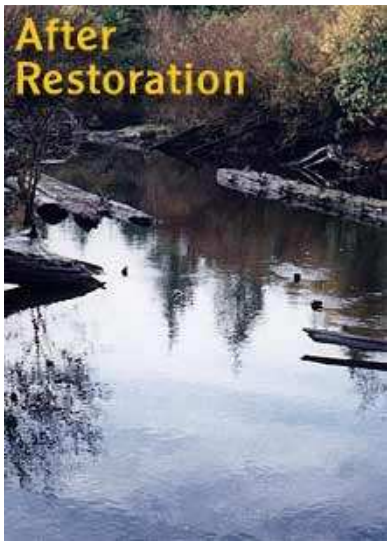


Photo: Central West Coast Forest Society

Overall Assessment

Small business and entrepreneurship will continue to be cornerstones of the rural economy of the West Coast. Finding deliberate ways to support, link and encourage collaboration between small businesses in the Region, like through a 'green promotions' strategy, would help to strengthen their overall success.

Initiatives that focus on improving the state of the environment and that encourage a conscious relationship between people and the environment are a natural 'fit' with the objectives of the UNESCO biosphere designation.

Overview: Current status and trends in the industry

For the purpose of this project, the Green Products and Services category has been used as somewhat of a 'catch-all' category. The category captures the wide variety of small businesses, industries and services that use or sell environmentally sustainable products and/or operate with deliberate intent around issues of social responsibility, equity and environmental improvement.

Recognizing that these businesses and services can be described or itemized in a variety of ways, the authors of this report, for simplicity, have chosen to cluster them into the following 'categories':

- Businesses selling environmental products
- Holistic health, fitness and body work
- Natural foods, markets and restaurants
- Natural remedies and products
- Bookstores, counseling, education and spiritual enterprises
- Social/cultural non-governmental
- Resource and environmental conservation, management and restoration

In Clayoquot Sound there is already a plethora of businesses and activities that rightfully fall into these clusters or categories. As one resident stated, "The region has, by accident and by history, created and drawn to the area people who are interested in a healthy lifestyle, who have a higher than average concern about the environment and who want to live in harmony with the natural world".

The war in the woods, establishment of the UNESCO biosphere reserve and growth in the region's eco-tourism industry all attest to the fact that there is, indeed, a special quality on the West Coast that brings people and their environment into better balance. For the most part, the people who are drawn to live in the region are drawn by these qualities and those who have been here for generations already have an intrinsic link to the land. One person interviewed for the report called it a 'mystic quality'. It is in this kind of atmosphere that a deliberate strategy to promote green business can and should thrive.

Research for this report identified a number of existing businesses currently focusing on the sale of green products (including natural-fiber clothing and organic produce); a number offering holistic health and fitness services (including spas, health food and retreat businesses); and a range of non-profit and for profit initiatives focussed on environmental issues including restoration and resource management.

The construction of an eco-industrial park in Ucluelet designed specifically to attract environmentally friendly industry and the construction of the first Gold Standard LEED restaurant complex in North America (Cedar Corner) will serve to further raise awareness and interest in the region's commitment to an alternative and greener economy. Research has identified a number of areas where the 'green theme' for want of a better word could be further emphasized. This would have the impact, as with arts and culture sector, of deepening an overall culture and identity for the Clayoquot Sound Region. These include:

Green building development: The region has a stated interest in supporting alternative building technologies. The Tofino Council is currently reviewing an addition to its' building by-law that strengthens the language around options for alternative power and water storage and use. The first LEED[57] standard building in the Region is being

[57] The LEED (Leadership in Energy and Environmental Design) Green Building Rating System™ is a voluntary, consensus-based national standard for developing high-performance, sustainable buildings. Members of the U.S. Green Building Council representing all segments of the building industry developed LEED and continue to contribute to its evolution. LEED standards are currently available for:

- New construction and major renovation projects

developed this summer at the corner of 4th and Main in Tofino. Cedar Corner, once completed will house the first gold-level LEED restaurant in North America along with an organic food store and a compatible business service. Two staff apartments have been included in the design to help address the affordable housing shortfall in the District.

The Cedar Corners commercial development in Tofino will be the first gold LEED restaurant in North America

This project has not only raised interest in the concept of green building construction, it has and will no doubt continue to generate interesting spin-offs. At the present time, those involved in the Cedar Corners project for instance, are exploring the feasibility of adding a new business to the 'mix' in the region with a salvage wood program that would provide consumers with the option to incorporate reclaimed wood into their construction projects.

A second green building project in the region generating significant interest is the new $5 million dollar expansion at the Pacific Sands Resort on Cox Bay. The resort owners, with assistance from BC Hydro plan to introduce an energy efficient Geoexchange heat pump system. This earth source system will heat, cool and provide domestic hot water to the 22 new units. It is the first resort in Tofino to incorporate this technology.[58]

The consideration of a by-law to encourage green building and conversion can also be taken a step further with the addition of deliberate incentives or reward programs for homeowners and businesses that demonstrate a commitment to green technologies and approaches. This concept is currently being developed for review in the District of Tofino.

- Existing building operations
- Commercial interiors projects

LEED was created to:

- define "green building" by establishing a common standard of measurement
- promote integrated, whole-building design practices
- recognize environmental leadership in the building industry
- stimulate green competition
- raise consumer awareness of green building benefits
- transform the building market

The program provides a complete framework for assessing building performance and meeting sustainability goals.

[58] Vancouver Sun article, 2003

Organic produce and bio-regional products: At the present time, there is only one organic food producer in the region, located behind the Info Centre on the Pacific Rim Highway. This greenhouse business provides salad greens and vegetables in season to local restaurants and bulk produce to Salal's Coop. A seasonal visitor adds a 'twist' to the organics business by bringing a truck load of Okanagan produce each summer to sell in the region. The continued success of this endeavor is a small indication of the growth potential in this marketplace. Tofino Coop has added a small organics section to their inventory but at the present time, with the sale of Salal's Coop this spring, there is no food store or specialty store focused on organic or bio-regional food products. Business recruitment is underway to see if this type of business can be incorporated into the Cedar Corners development.

Habitat restoration: Three years ago, habitat restoration promised to become a significant industry in British Columbia. An estimated 1200 people coast-wide were working on initiatives to build and improve park trails, restore damaged salmon streams, decommission logging roads and bridges, construct habitat viewing platforms and perform silvaculture tasks. Much of this work was being paid for through HRDC, Forest/Fisheries Renewal BC and Western Economic Diversification – via project partnerships designed to create new employment opportunities and develop new skills in communities experiencing significant economic transition (due to forestry and fishing cutbacks).

In 2001 the provincial government announced their intention to close the two crown corporations, Forest and Fisheries Renewal BC, that were their vehicles for this work. In 2003, HRDC announced its final year of funding for community projects to support human resource transition in the fishery and DFO announced the closure of its community stewardship program.

Without these funding sources opportunities for habitat restoration businesses and employment will be significantly reduced. Some silvaculture employment and contracting will continue in the Region, paid for by Interfor and Weyerhauser. Some private fisheries biology contracts will also be retained through agencies such as Department of Highways for remediation consultation. One interview respondent suggested, however, that this contract work is insufficient for a consulting biologist to operate out in the region on a full-time basis. It was also suggested that with cooperation between communities two crews of up to ten people could be sustained in in-stream and riparian work along with building and maintenance of trails and recreational infrastructure throughout the region. A few jobs will be retained through the National and Provincial parks system, again focused on park infrastructure and maintenance.

Unfortunately, despite the need for these activities, without government programs and funding support there will not likely be significant new opportunities or growth in this sector in the coming years. Private dollars for habitat restoration are very restricted and the competition for funding in the non-profit environmental sector is steadily increasing.

Resource and environmental management: The funding challenges that face habitat restoration are also relevant in resource and environmental management. Nevertheless, public concern, assertion of Aboriginal rights and title and a desire for increased local control over resource and environmental management have been responsible for the creation of a number of new organizations in the region, and new jobs within them. These include Iisaak, The WCVI Regional Aquatic Management Board, Clayoquot Biosphere Trust, Central Region Board and others. A strategy for building the human resource requirements to fill positions within these organizations is needed to ensure local, particularly First Nations, residents are able to fill these positions.

Small businesses focussed on green products: At the present time, there are only a couple of local businesses that have a 'green' emphasis in the products they retail. There is probably some further opportunity for 'niche' retail and wholesale industry in the Biosphere Region – especially if there is a commitment to emphasis and build an overall regional culture based on the 'green theme'. Small businesses face some special challenges in this region however, that cannot be ignored. The factors for success are not clearly in their favor. Higher-than-average commercial rents, limited commercial space options (storefront, storage, industrial), parking restrictions, a lack of staff housing, significant seasonal population fluctuations all combine to make a business start-up and success quite complex.

One retailer summed the situation up nicely. 'Focussing on green products might prove to be good for business if everybody in town is doing it so we could get some synergy and marketing happening, but if it was just me doing it, I would sink my business in a week. Green products are too expensive for the people who live here and the tourists won't pay my rent in the winter'.

The chart below suggest some of the areas that could be further developed if the region was to commit to a 'go green' strategy for retailing.

Air Purifiers & Filtering Systems
Alternative Energy Product Sales and Production
Architects & Building Designers
Artists & Galleries
Automobile Repair & Service
Baby Accessories & Diaper Services
Beauty Salons
Beds, Bedding, Futons & Mattresses
Bicycles: New, Used, Repair and Service
Boating Products
Bottled Water
Building Contractors, New & Remodeling
Building Materials, Supplies & Products
Carpet & Upholstery Cleaning
Cleaning Products & Supplies
Clothing and Shoes
Convention Organizing
Crafts and Cultural Arts
Desktop Publishing and Graphics Design
Energy Saving Devices
Entertainment)
Environmental Design & Consulting
Value added wood Furniture & Accessories
Gardening Supplies
Greeting Cards
Heating and HVAC Contractors
Hemp Products (existing)
House Cleaning and Janitorial Services
Interior Design & Decoration
Landscaping
Lighting

Music: Tapes, CD's & Records
Organic Products
Outdoor Recreation & Equipment
Paints, Stains, & Other Finishes
Paper, Stationery & Office Supplies
Pest Control
Pet Stores & Supplies
Photography and Services
Financial services (responsible investing)
Printing and Photocopying
Recycling & Waste Reduction Services
Telephone & Telecomm Products & Services
Transportation - Alternative
Tree Service
Water Treatment - Filters & Purifiers

To assist and encourage businesses to improve their environmental practices and to increase focussed marketing efforts, some areas have adopted special programs that either award 'green behaviour' or provide recognized certification where businesses achieve a pre-determined standard of excellence in environmental performance. The boxes in this section describe three such initiatives that are achieving considerable success for participating businesses.

59

The Green Tourism Business Scheme is an accreditation program for tourism businesses in Scotland that show initiative in terms of good environmental practices. Awards, issued annually at a gala event, recognize business achievements in three categories-gold, silver and bronze.

The scheme, which is used as a marketing and promotions tool throughout Scotland and promoted by both government and industry, has a two-point impact. It encourages the kind of 'sustainable tourist' that Scotland is interested in targeting and it encourages tourism businesses to reduce their environmental impact, save costs and improve their efficiency.

The program started with financial support from government and is now a self-financing program operating under the auspices of VisitScotland, a non-profit company.

[59] Green Tourism Business Scheme, 2002

Best Awards[61] honor green businesses

SEATTLE -- The Business and Industry Resource Venture has established the Best Awards to honor notable "green" achievements by Seattle-area companies in waste prevention and recycling, water conservation, energy conservation, storm water pollution prevention and sustainable building. The acronym stands for Businesses for an Environmentally Sustainable Tomorrow. Winners will be honored at a public ceremony as well as promoted in the media.

As good citizens, we all want to do our part to protect our fragile environment. Clean air and clean water are important to us. That's why we began the Green Partners program, to assist and encourage businesses to protect our resources. Many area businesses are committed to reducing pollution and contamination of our resources through the recycling of used materials, safe handling of hazardous wastes, and application of best management practices.

Businesses voluntarily apply for certification as a Green Partner[60] and submit an Environmental Management Plan, which they develop with the assistance of the Green Partners Program. Granting of a Green Partner certificate is based on adherence to the standards of the Plan, and the Green Partners Program.

A Green Partner business is recognized as a leader on environmental issues, and is entitled to display the Green Partners seal on their places of business, advertising and packaging, in compliance with the licensing rules of the program. The benefits of the program for member businesses are several:

- A positive corporate image as a responsible, efficient manager of resources, committed to reducing pollution and waste
- Recognition as a provider of a safe, healthy work environment
- Savings in long-term avoided costs of pollution cleanup, and waste disposal

[60] Green Partners Program, 2003, Florida

[61] Reported Jan 22, 2003 in the Seattle Daily Journal

Assessment against SCED Criteria

Environmental Indicators: There are clear environmental advantages if a region adopts a strategy of promoting greener products and services. The 'switch' from activities that are not environmentally sustainable/friendly to activities that can be more readily defended in this realm would have an inherently positive impact on the natural environment.

***Social Indicators*:** Small businesses and entrepreneurs often have a difficult time gaining financial stability and profitability. Commonly used statistics suggest that more than 50% of small businesses fail within the first two years of operation. However, it is also acknowledged that small businesses are the largest employer in Canada and are the single largest contributor to the health and vitality of local economies. An economy that can be diversified through a deliberate strategy of market support and identity development that helps to sustain small businesses would be a significant benefit to the region. Women operate over 36% of small businesses in British Columbia. The majority of owner/operators are between the ages of 35 and 55 but there is a significant portion (20%) under the age of 25. Older workers (55+) account for 19% of all entrepreneurs in the province.

Economic Indicators: In 2001, almost 98% of all businesses in British Columbia were small businesses. Micro-businesses (those with fewer than 5 employees) constituted 83%. The sector generated an estimated 930,900 jobs (58% of all private sector employment) and contributed 28% to the provincial GDP.[62] On average, small businesses pay their employees at a lower rate than large companies (est. to be approximately $8000 less/year). In 2001, the average small business employee earned $29,558.00. The province estimates that tourism, high tech and value added (secondary) processing will become the major economic generators in BC over the next decade. The service sector (with some obvious overlap into tourism) currently comprises the majority of small business owners. In 2001 there was small but steady growth in both the number of establishments and in employment statistics for the tourism sector (2.4%), significant growth in the high tech sector (8%) and a decline in the secondary manufacturing sector.

Many environmental businesses are small. They also face unique economic challenges in accessing their markets and requiring higher prices than their less environmentally responsible competitors. Without a system of full-cost accounting in our society going green continues to come with a higher cost. Nonetheless, the tremendous growth of industries such as organic products and natural health care demonstrates that there is demand for environmental alternatives. Ecolabelling efforts such as Canada's environmental choice program and forest products certification schemes are seeking to provide a market advantage and identifiable image for green companies.

Opportunities for First Nations: Small businesses that have a 'green' focus may be a natural fit for First Nation's entrepreneurs. There may be some capacity building requirements for business planning, marketing and management but the opportunities that

[62] BC Stats, Small Business Profile, 2002

are available to be exploited, particularly by the younger generation and the suitability for some small business activity in outlying communities are important factors to consider.

Key resources and contacts:

Contacts:

- Barbara Bryant, Tofino Business Assocation
- Chambers of Commerce, Ucluelet and Long Beach-Tofino
- Gord Johns, Fiber Options
- Warren Rudd, Tofino Community Investments
- James Rogers, Cedar Corners Development
- Central Westcoast Forest Society

Publications:

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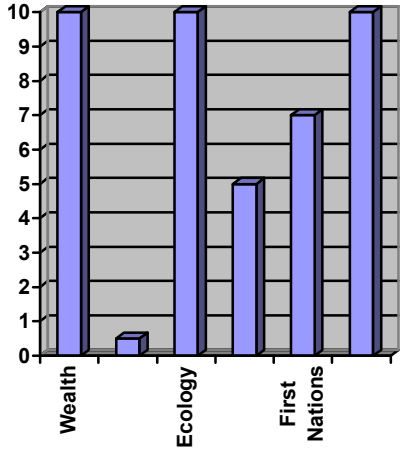
- Green Partners Program, www.greenpartners.org , 2003, Florida
- Coop America, Green Pages Online, 2001, www.greenpages.org
- Green People, www.greenpeople.org, Santa Monica, CA
- Natural Choice Directory of Puget Sound, Washington, www.naturalchoice.net/
- Environmental choice program, www.environmentalchoice.com/

SECTOR ANALYSIS

12) GREEN ENERGY



Overall Assessment

Green power is a growing sector of the economy. While it is still in its relative infancy in British Columbia, it is clear that there will be an increase in the number of opportunities that present themselves in the region as government policies are clarified, regulatory frameworks streamlined and technology tested.

As the industry grows, it will be important to ensure a comprehensive approach to planning a sustainable resource mix. It will also be important to ensure that communities adjacent to these sites are organized to negotiate effectively for direct benefit.

It is not possible to predict the number of jobs that will be created through the development of green power alternatives since the size and scale of these projects can vary so considerably. However, it is possible to predict that where they exist, community wealth can be generated by the development of thoughtful and thorough structures for financing, management and leadership. For instance, share ownership for projects occurring on First Nations traditional lands will be imperative, as will the negotiation of direct power benefits to Ucluelet should a wind generation system be established in Barkley Sound.

Overview: Status and trends in the industry

The term "green power" is used to define power generated from renewable energy sources, such as wind and solar power, geothermal, hydropower and various forms of biomass (see below for further detail on each). As with all new ‘sciences’ there is some controversy about what does and does not constitute green energy, based on differing definitions of sustainability and au courant debates about what ‘renewable resources’ really means and how community impacts can be measured. In the absence of an official

international designation, BC Hydro has adopted the following 'criteria' against which it measures the viability and validity of its green power projects[63]:

- **Renewable** — this means the resource must be replenishable by natural processes within a reasonable length of time -- at the longest, within about one average human life span. Hydroelectric generation relies on water, which is a renewable resource. Natural gas electrical generation relies on a fossil fuel, a resource that is not renewable.
- **Environmentally responsible** — this means that the project avoids any significant environmental impacts (ed note: in Canada, environmental impacts are sited by standards established under national and provincial legislation)
- **Socially responsible** – this means that the energy is not generated in a way that conflicts with key community values. (ed note: a consistent way for measuring this component of a project has not been determined)
- **Licensable** — this means that the project meets all relevant regulations and standards.

Unfortunately a system of alternative energy will not be developed overnight. The green power industry is still highly experimental and in the industrialized countries that have relied on nonrenewable coal, oil, and natural gas to fuel their economies, skeptics abound. There is a combination of factors that will combine to make the shift to renewable energy a formidable task. These factors include: high levels of capital investment required for R&D; the complexity of international and national policy frameworks related to energy production and use; the economic power of energy conglomerates; and the mercurial pace of changes in public opinion and practices. Political pressures are being applied to governments from both sides of the issue.

None the less, power generation giants like British Petroleum and Royal Dutch/Shell are investing heavily in renewal sources of energy and industrialized countries are beginning the process of experimentation by streaming at least some portion of their power supply requirements towards green alternatives. Their rationale, as multi-billion dollar industries, is less that we are running out of fossil fuels per se, but rather that we are running out of liquid fuels that are cheap to produce. There are still significant oil and natural gas reserves, but they are diminishing and will be more costly to extract. Geologists caution that in the next couple of decades, the planet's petroleum and natural gas supplies will reach their high-point of production and decline forever after.[64] There are also coal reserves that could be exploited (huge deposits still remain on Vancouver Island), but, at this time, coal is commonly viewed as a gross polluter and no technologies have been developed that allow it to be burned without damaging the environment. Climatologists warn of rapid climate change and global warming caused by increasing concentrations of greenhouse gases in the atmosphere caused by burning. Nuclear fission is uneconomical when capital investment, radioactive waste management, and long-term storage of hazardous materials are factored in.

[63] http://www.bchydro.com/environment/greenpower
[64] http://www.altenergy.org/ alternative energy institute

Hence, all signs point towards the need to move away from traditional power sources towards alternative energy systems. Renewable energy will play a major role in the energy industry of the 21st century and beyond. Industry experts predict that over the next half century, renewables may grow to supply half the world's energy.[65]

Successfully generating electricity by harnessing the perpetual power of the sun, wind and water is not only a dream for the future, it is technologically feasible and to a small degree already a reality. The US Department of Energy (whose citizens use 25% of the annual power generated world-wide) established the Renewable Energy Production Incentive (REPI) as part of an integrated strategy in the Energy Policy Act of 1992 to promote increases in the generation and utilization of electricity from renewable energy sources.[66] Several projects focussed on biomass energy, wind and solar power are being developed and power is being sold on a limited basis in Oregon and Washington States.

Significant research and development funds have been allocated to new technology development. In Canada, the Ministry of Natural Resources (NRCan), announced in 1996 a Renewable Energy Strategy for the country. Minister-of-the-day Anne McLellan stated, "This strategy will be a blueprint for NRCan's participation in the renewable energy sector. In particular, it will help the renewable industry grow and become more self-sustaining. A dynamic industry will contribute to economic growth and new jobs for Canadians while also helping reduce greenhouse gas emissions." [67]

The Canadian Renewable Energy strategy is based on cost-shared, voluntary and economically sound initiatives, in partnership with a broad range of stakeholders, including the renewable energy industry. Through this strategy, NRCan serves as a catalyst to encourage commercial opportunities for renewable energy by.

- Enhancing Investment Conditions through improvements to the tax system;
- Supporting Technology Initiatives in the area of research and development; and
- Encouraging Market Development Initiatives to reduce market barriers and to create a demand pull for renewable energy technologies.

The International Energy Agency in the USA predicts the use of non-hydro renewables in Canada and the U.S. will increase from 2% in 2000 to 12% in 2030 under a 'pro-environment' policy scenario.[68] It suggests that Canada obtained 16.8% of its primary energy from renewables in 2000; 12.3% if biomass and EFW are excluded. The Canadian government has notably avoided, to date, the declaration of any national targets for wind and renewable energy development. However advocates of renewable energy are confident that the recent signing of the Kyoto agreement will have an immediate impact on the seriousness with which they move to implement their 1996 policy statement and establish targets for the rate and type of growth to be achieved in the sector.

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[65] ibid

[66] Alternative Energy International, 2002

[67] Natural Resources Canada. 1996

[68] Ibid, 1996

In the interim, even in the absence of any national targets or strategy, Canada has committed $260 million under the Wind Power Production Incentive, provided financial support to Reno$ense, a promotional program to assist retailers to merchandise energy efficiency and home improvement products and made money available for provincial-level research and development activity.

In British Columbia, the focus of renewable 'green energy' production has been focussed primarily around the work of BC Hydro. In 2000, the Corporation committed to meet 10% of increased demand for electricity by 2010 through a variety of new green energy sources.

To help chart the provinces potential for green power development, a study was commissioned through the Canadian Chartographers in 2002 to develop a spatial map of potential sites suitable for small hydro, biomass, wind, solar, geothermal, ocean wave and tidal current power generation[69]. In April 2000, BC Hydro invited independent power producers to submit proposals for new Green Energy projects and subsequently signed power purchase agreements with 23 proponents. One subsequently withdrew, leaving 22 projects. Of these, 7 are hydroelectric projects on Vancouver Island and 1 is a biogass project. The combined capacity of these 8 Island projects, once completed, is estimated to be 6-8 MW by 2005.[70]

In October 2002, BC Hydro invited IPPs to submit qualification documents for more Green Energy projects. Of the 70 proposals received, 17 were on Vancouver Island. The Table below identifies those projects that have been short-listed to proceed to the next stage of the process – permitting, financing and construction. The combined installed capacity of the short listed Vancouver Island projects is expected to be about 140 MW with an expected 'dependable capacity' of 28-60 MW.[71]

[69] Lou Skoda, 2002
[70] BC Utilities Commission, Staff Information Request No 1.3.4, March 2003
[71] Ibid

On-Island Green Energy Proposals – 2002 Green Call

Project Name	Location	Technology	Developer	Short Listed
Tahsish River Hydroelectric Project	Woss	Hydroelectric	Axiom Power Ltd	
Gabriola Wind Generation Project	Gabriola	Wind	Clyde Coats & Off The Grid Energy Systems	
Great Central Lake Pumped Storage	Port Alberni	Hydroelectric	Earthgen Co	
First American Cowichan Biomass Power Plant	Duncan	Biomass	First American Power Corp	
Nanaimo Reservoir 1	Nanaimo	Hydroelectric	Greater Nanaimo Water District	X
China Creek Small Hydroelectric Project	Port Alberni	Hydroelectric	Hupacaseth First Nation	X
Cruickshank River Hydro Project	Courtenay	Hydroelectric	Innergex II	
Kokish River Hydro Project (East Fork)	Port McNeil	Hydroelectric	Innergex II	
Kokish River Hydroelectric Project	Port McNeil	Hydroelectric	Northern Utilities Inc.	
Port McNeil Power Project	Port McNeil	Biomass	Northland Power Inc	X
Zeballos Lake Hydro Facility	Zeballos	Hydroelectirc	Pacific Rim Power Corp.	X
Piggott Creek Power Ltd.	Campbell River	Hydroelectric	PacWest Hydro Partners One Inc	
Palmerston/Mt. Brandes Wind Farm	Holberg	Wind	Stothert Power Corp/Global Renewable Energy Partners Ltd	X
Cypress Creek Hydroelectric Project	Gold River	Hydroelectric	Synex Energy Resources Ltd	X
Ucona River Hydro Power Project	Gold River	Hydroelectric	Synex Energy Resources Ltd	
Vancouver Island Offshore Wave Power Generation Project	Ucluelet	Wave	Ucluelet Wave Energy Plant	
Ucona River Hydro Project	Gold River	Hydroelectric	Ucona River Joint Venture	X

The structure of the agreement with BC Hydro for independent power producers is two-fold. First projects must be located in areas that are able to access the existing Hydro grid system, second that BC Hydro will pay a premium for every MW hour that is produced, providing the financial incentive for large capital investments. To date, all the projects pre-approved for a partnership with BC Hydro involve commercial (well-established) technologies utilizing resources such as small hydro and biomass. Wind energy, micro hydro (systems with an installed capacity of less than 2 MW), tidal current, geothermal and Building Integrated Photovoltaic Solar options are being researched.

At the present time there is only one short listed project for a small run of the river hydroelectric project in Port Alberni. A considerable amount of research went into the development of a wave energy proposal in Barkley Sound but this project was not short-listed. Other companies are involved in researching the potential for wind power generation on the West Coast. These include:

- Sea Breeze Energy Inc., proceeding with plans to erect a test site on Chrow Island (Barkley Sound) to collect the data needed to determine the feasibility of a wind energy farm.
- Hesquiaht Wind Farm Ltd., who has submitted a request to the province for an investigative permit that will allow them to establish up to four wind testing towers on crown land in the vicinity of Hesquiat Lake.
- Port Albion Wind Farm Ltd. (the same proponent as for the Hesquiaht site) who have submitted a request of a two year investigative permit to investigate wind turbine power generation on unsurveyed Crown land between Port Albion and the Maggie River.

The Colville Reservation in Washington, USA is 1.4 acres, with 8500-9000 members and the Colville Confederated Tribe has a tribal company that pursues funding and employment for tribal members. The forest products division of the Colville tribal company purchased a large sawmill – a veneer, plywood plant that came with a co-generation plant. It currently employs 160 people and produces $30 million gross revenue/year. The cogeneration plant consists of two turbines with the capacity to produce 12.5 megawatts of electricity and the energy source is 'hog' fuel from the sawmill. The co-generation plant supplies the plywood plant, sawmill and the casino with power. It provides two megawatts for the plywood plant, two megawatts for the sawmill plant, half a megawatt for the casino, and eight megawatts left for sale on the grid. They have not yet sold the extra power but want to move in this direction. Given the high costs of energy they also examined possibilities of wind generation but found that it was too capital intensive and given their location, maintaining consistency of wind was too unreliable. - McIlveen 2003

- AquaEnergy Group Ltd., an American company who have been trying to identify a partner in the Region interested in a joint venture wave-power project. Ma-Mook has been approached for discussion.

***Green Technologies**:* Introducing alternative energy systems or 'green technologies' as they are more commonly known, can occur either on a large scale or on an individual household basis. At the present time, the only financially viable way to engage with this sector for large scale development is to be in a position to sell power back to BC Hydro for a premium price as a partner independent power producer. The capital required for research and infrastructure does not make it feasible to establish an alternative system to service one community or one development (even though the long term cost-benefits are clear). However, it is feasible to consider including power-smart options at the individual household level. These options can be built into new residential developments with relative ease and existing buildings can, in most cases, be converted to some if not all technologies with minimal disruption. The cost recovery for the installation of alternative power systems, like solar panels, geothermal heating systems, water storage and heat recovery units is between one and seven years.

***Biomass Energy**:* Biomass is defined as organic material derived directly from plants. It is produced through photosynthesis, the process used by plants to convert the sun's energy into chemical energy. This chemical energy can then be extracted from the biomass through combustion, to produce energy that can be used as heat or power. In B.C., wood residue – material left over from forestry operations – is the most abundant and readily available source of biomass, and represents the largest opportunity for electricity generation. (See also Waste Management and Recycling sector analysis.)

Small and Micro Hydro Energy: Small and micro hydroelectric developments have significant potential for contributing to B.C.'s energy mix. For example, BC Hydro has signed electricity purchase agreements for 20 green small hydro projects to be owned, built and operated by independent power producers.

In addition to these new projects, a number of small hydroelectric generators (one on the Ucuelet/Port Alberni Highway) have been supplying power to the BC Hydro grid for many years. These existing facilities operate with small dams or run-of-the-river diversion structures to divert water from smaller rivers and streams through pipes to the generating station. There are also a number of micro hydro plants in areas where there is no access to the electric power grid.

For small and micro hydro developments, 1 MW of installed capacity will supply enough power for about 550 homes – more than enough, for example, to power the new residential development proposed by Ahousaht for Flores Island.

Hupechaset First Nation has been shortlisted by BC Hydro to develop a small run of the river project, diverting water from China Creek, putting it through a turbine system and then returning it to the river further downstream. This 2-3 MW system, costing 1.5-2 million/MW to develop is anticipated to generate $600K per year in revenue for the

Nation.[72] The feasibility study to prepare this application to BC Hydro was funded by NEDC.

Various studies have identified more than 600 potential small and micro hydro sites in British Columbia. This information has been used to publish *the Inventory of Undeveloped Opportunities at Potential Micro Hydro Sites in British Columbia.* Hydro has also developed a *Handbook for Developing Micro Hydro in British Columbia,* describing issues that need to be considered including criteria for interconnecting to Hydro's grid.

Digester Gas and Landfill Gas: When trash is buried it creates an oxygen-free environment under the capping soil layer. With relatively dry conditions, landfill waste produces significant amounts of gas as it decomposes -- mostly methane. If these gases are released to the atmosphere, they add to global climate change problems. They are also potentially a fire or explosion hazard. So, a good solution to the landfill gas problem is to collect it and burn it to produce electricity. The gas can be collected by a collection system, which typically consists of a series of wells drilled into the landfill and connected by a plastic piping system. The gas is saturated with water, refined and used to run gas turbines and fuel cells.

There are two known households in the Region operating on privately developed digester gas systems with good success for at least part of their power requirements.

Fuel Cells*:* Fuel cell technology is "space-age technology" brought down to earth. Fuel cell technology dates back to the 1800s, but it was not until the end of the 20th century that it was used successfully in spacecraft to provide electricity and water. The technology can be used to make electricity to power vehicles, homes and businesses. And if you use a renewable energy source as the main source of hydrogen, a fuel cell can be considered a renewable energy source

Fuel cells are being designed for use in stationary electric power plants to provide reliable, clean, high quality electricity for distributed power generation. These small systems can provide primary or back up power to commercial and industrial customers such as hotels, hospitals, manufacturing facilities, and retail shopping centers. Eventually, smaller fuel cells will be sold for use in homes, most of which will connect to natural gas supplies

The new Cedar Corners development in Tofino will include photovoltaic cells for energy production and will hopefully become the first commercial establishment to sell power back into the BC Hydro grid.

Geothermal Energy: Geothermal energy is produced by the heat of the earth. The constant temperature below ground can be tapped to warm and cool homes through a relatively simple and inexpensive ground-source heat pump. Surveys taken by utilities

[72] Darren Willis, Ecotrust Canada, 2003

have found that homeowners using geothermal heat pumps rate them highly when compared to conventional systems. Figures indicate that more than 95 percent of all geothermal heat pump owners would recommend a similar system to their friends and family.

Pacific Sands Resort in Tofino plans to use a geothermal heat system to provide heating, cooling and hot water to its new 55 unit development slated for completion in 2004.

Solar Power: The sun's heat has been used for decades to heat water for homes and businesses. At the turn of the 20th century, solar heated water systems were common in Southern California. Today in the US more than one half million solar hot water systems have been installed, most in private homes. Some countries have made their use mandatory. For example, all homes in Israel have solar hot water systems.

Typically, a homeowner relying on electricity to heat water could save up to $500 in the first year of operation by installing a solar water heating system. The savings over time increases due to increasing electricity rates. The average solar heating system pays for itself in four to seven years.

Panels on a rooftop collect energy from sunlight and convert it directly into electricity.
Encarta Encyclopedia, 2003

A water-pumping windmill in Spring, Arizona, provides water for agricultural use.
Encarta Encyclopedia, 2003

Wind and Wave Energy: Wind technology has been used for thousands of years. These two renewable sources of energy have high potential on the West Coast. Two potential wave energy sites were identified by BC Hydro's Cartography study, the one with the greatest potential located in Barkley Sound near Ucluelet. An independent company, Sea Breeze Energy Inc. is proceeding with plans to collect data to determine the viability of this site.

The province has received an application for two year test licenses for two other sites in the Region – one near Hesquiaht Lake and the other near Port Albion.

Biodiesel: A final source of green power that has, incidentally, received some attention in Clayoquot Sound is the concept of biodiesel as an alternative to automobile fuel. Tofino

Bus has been researching the viability of switching to a dual fuel system that will allow it to utilize 'green fuel' for at least part of its fuel requirements.

Biodiesel is an alternative fuel, produced from domestic, renewable resources. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression-ignition (diesel) engines with little or no modifications.

Photo: Tofino Bus Website

The concept of using vegetable oil as a fuel is nothing new. Dr. Rudolf Diesel first developed the diesel engine in 1895 with the full intention of running it on a variety of fuels, including vegetable oil. Diesel demonstrated his engine at the World Exhibition in Paris in 1900 using peanut oil as fuel. In 1911 he stated "*The diesel engine can be fed with vegetable oils and would help considerably in the development of agriculture of the countries which use it.*" In 1912, Diesel said "*the use of vegetable oils for engine fuels may seem insignificant today. But such oils may become in course of time as important as petroleum and the coal tar products of the present time.*" Since Diesel's time, the design of the diesel engine has been modified so it can run on the cheapest fuel available: petroleum "diesel" fuel. [73]

Assessment of the Sector by SCED Criteria:

Using green resources to generate electricity supports sustainability because it creates many environmental, social and economic benefits.

Environmental Criteria: Environmentally, green energy generation results in low or no emissions of greenhouse gases, sulphur oxides and local air pollutants. The environmental "footprint" (area impacted) by green energy projects can vary, but overall impacts are less than those of conventional technologies. Because the sources are renewable, these projects do not deplete the Earth's resources.

Social Criteria: Some of the benefits of green energy – for example, lower environmental impacts and cleaner air – also result in social benefits, as they reflect key community values. Green projects can often comfortably co-exist with the community. Community energy projects that reduce energy costs for residents can have significant benefits, particularly for low income families whose energy bills constitute a high portion of their housing costs.

Economic Criteria: Economically, green energy projects can create employment opportunities and support the development of new industries (for example, suppliers of goods and services related to project development). Job creation is limited for many

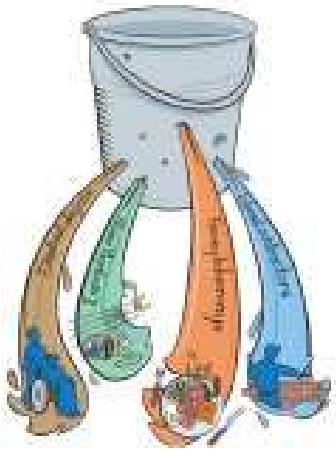
[73] The Veggie Van Foundation, 2002, http://www.veggievan.org/index.html

technologies and investment high but can result in good savings and returns in the medium to long term.

Opportunity for First Nations: Many of the terrestrial and marine sites that hold potential for green energy production are located in Nuu-chah-nulth traditional territory. As the purchase of green power from IPP's becomes more commonplace, opportunities for joint-ventures between First Nations and the private sector for power production may be significant.

SECTOR ANALYSIS

13) PLUGGING THE LEAKS



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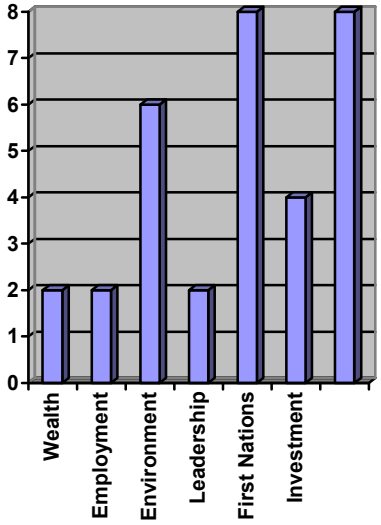

A common analogy for the community economy is the rain barrel. The shell of the barrel represents the structure of the community economy. The water entering the barrel represents resources of the economy, such as income, government support, or investment. If the barrel is full, then the material needs of the community are being met. The extent to which the level of water (resources) fluctuates in the barrel depends upon one primary factor, the extent to which resources "leak" out of the community. If a community is particularly dependent upon external goods and services, then resources will leak out of the community economy, serving the financial and employment needs of another community.

Import substitution seeks to identify these leaks and develop programs or businesses that either produce the needed goods and services locally or encourage citizens to support existing local businesses. There are many ways and examples of import replacement methods and businesses. Buying lumber from a local sawmill instead of externally controlled forest companies helps keep dollars within the community. Purchasing produce from a farmers market or community market instead of a chain grocery store ensures that your dollar stays within the community and multiplies its value within the local economy. - Smith (1999)

One way to make a local economy healthier is to plug the leakage of dollars and other resources from the community, instead keeping them circulating within the community. This is also known as the "multiplier" effect. If money is received and then spent outside the community the multiplier is only 1. If the money stays in the community its local benefit increases every time it is spent (the multiplier increases). To increase the multiplier in their local economy a community first needs to determine the ways that money flows out. There are two main sources of money leaks — purchases from outside the community (imports) and outside investments/bank

savings. Every time someone buys something from outside the community dollars leak out. To balance this drain of dollars an equal amount of money must flow back into the community in the form of exports or attracting tourist dollars. A different approach can be taken. By replacing imports with locally manufactured products or locally provided services (called import substitution), a community can generate new businesses which, in turn, may cause a chain reaction of even more new business start ups (e.g. production of local jam could lead to a new business to produce jars or lids or labels or marketing firms). Another advantage of "plugging the leaks" in the local economy is that it reduces energy use and pressure on transportation infrastructure as goods are brought in from outside or residents travel to obtain needed services.

The town of Tropic, Utah, had been in economic crisis since its timber mill closed in the early 1990's. In 1995, students in a high school entrepreneurship class noticed that tourists visiting nearby Bryce Canyon National Park were buying a lot of bottled water. As a result the class began its own business producing locally bottled water from Bryce Canyon and, is so doing, has helped to revitalize the town's economy.

Buy-local campaigns are one way to encourage people to spend their money on local products instead of imports. Another strategy to encourage buying locally is the issuance of local currencies. A number of towns in Manitoba and Saskatchewan have set up community cash programs whereby local credit unions issue the "cash", which is really a type of coupon, to individuals who then are able to spend it like regular money at stores within their community. The attraction to consumers is that they have three months interest free spending before they have to pay the credit union in dollars what they have already spent in "community cash". Local businesses pay the intervening interest but they also benefit because of the increases in sales. The local exchange trading system (LETS) is similar strategy for stimulating local exchange. First started in the Comox Valley of BC, there are now LET systems set up in several communities across the province, and hundreds worldwide. In the LET system trade occurs among community members without the use of money through a system of *barter credit* in which members advertise their services and wares in a monthly newsletter and "sell" them to each other for a "green dollar" price that they set themselves. Each member has an account at a central computer to track of transactions. Collective barter systems work best in communities where money is scarce, unemployment high, people have skills and time to contribute, and needs to fulfill. It is one way to create local employment and purchasing power without having to borrow or spend money. Cowichan has a barter system set up for child care. However, LETS requires a committed champion.

New wealth is created when an economy can produce more while using the same or less amount of energy and resources. In other words, if a commodity can be used more efficiently to achieve the same net result then "money saved is money gained." An example is the town of Osage, Iowa, population 3,800. By introducing energy efficient devices and programs to its local residents and businesses, the town was able to put some

$7.8 million back into its local economy between 1974 and 1991. In 1995, electric rates were 50% lower than the state average. Fox River Mills, a major employer in Osage, was able to cut its production costs by 29% because of the lower rates and energy savings with the result that the plant was able to expand and triple the number of its employees.

Strategies that promote the start up of *value-added enterprises* is another expression of resource efficiency — extracting the greatest amount of work and energy out of a given resource. Recycling of used materials can also be a strategy for turning waste into profit, extracting more from a given resource. For example, there is a growing market for use of recycled paper.

One of the keys to successful import substitution is to match up local suppliers with local purchasers, to provide a brokering service for local businesses. The Oregon Marketplace, started in 1987, was set up to match buyers and sellers of Oregon products. In the first year it created 100 new jobs and $2.5 million in new contracts by matching the products that businesses purchase and finding local suppliers to fill this demand[74].

Tofino-Long Beach Chamber of Commerce took the first important step in 2002 in determining what products and services might be missing in the community by surveying their members. The survey asked what percentage of their business (49%) and personal (61%) shopping they did locally. Based on these statistics, it would appear there is room for improvement. The next step, however, is to ask what kinds of products and services they purchase outside of the region and to analyze which, if any, could be feasibly provided in the region.

The aquaculture industry, for example, may provide opportunities for secondary industries including net cleaning and storage. Since traditional net cleaning causes environmental concerns about copper nitrate in the netting and the treatment of contaminated water after washing[75], a 'green' community has the opportunity to show environmental leadership by undertaking a green net cleaning process. Discussions are underway in Ahousaht about establishing such a venture. Entrepreneurs such as Dick Johnson of Canadian Fabricators Ltd., Alert Bay have taken up the challenge of designing innovative, environmentally responsible systems for net cleaning. Johnsons' design is a self-contained barge-mounted system expected to cost approximately $800,000 to construct[76].

In our interviews several services and retail items were identified as 'missing' from the local economy. These provide a starting point of business ideas for "plugging the leaks", either by adding new product lines to the inventory of existing businesses or by starting new ones:

[74] Adapted from Nozick, M. et al 1997
[75] MacLennan 2003
[76] Alby Systems 2002

- Office supplies
- Photo developing
- Green building supplies (reused wood, low flush toilets, solar panels
- Fly ash concrete (also for green building)
- Electrician
- Plumbers
- Used clothing/thrift store
- Fish market/dock side sales
- Surfboard repair
- Bicycle repair
- Web design and computer services

Salmon Arm is in the midst of a number of new retail, commercial and service sector developments that will enhance its position as a regional commercial/retail centre. The Salmon Arm Strategic Plan commercial/retail strategy includes: development of a mentoring program on "taking care of and supporting existing businesses; foster working relationships between business groups to support and present a unified image of our commercial community, yet promote uniqueness; and conduct an import substitution study to identify business opportunities for local residents and improve the self-reliance of the Salmon Arm local economy

To facilitate local business expansion and retention, including the commercial/retail and construction sectors, the Salmon Arm Economic Development Corporation launched the Business Expansion and Retention (BEaR) program. The BC Ministry of Community Development and Human Resources Development Canada provided funding. BEaR aids communities in understanding the issues and opportunities facing existing local business and identifies, sponsors and/or assists in the implementation of activities that help businesses thrive.

To date a database of businesses by industry sector has been created and interviews have been conducted to identify and understand the challenges, concerns and future plans of local business. Out of 250 businesses, 188 identified areas of assistance or concern, primarily in marketing and use of the Internet. A number of specific initiatives have been launched as a result:

For First Nations communities with limited commercial and retail operations in their reserve communities the problem of leakage if often particularly severe. A concept referred to as attractors suggests that certain key services are needed for people to shop locally. These include a post office, bank, coffee shop and grocers. Several suggestions that could help address leakage in Ahousaht have been raised, including a coffee shop/bakery/Internet cafe and the relocation of the post office from a general store a short boat ride away into the community-run grocery store. The process used by 'Namgis First Nation to convince their local credit union to open an on-reserve branch may be worthy of further investigation.

There are three major areas one can look to for plugging leaks out of local households: food, energy and construction and renovation. Energy conservation is discussed in the analysis on Green Energy.

Local organic food production is discussed in the Green Products and Services analysis. Opportunities for greenhouse production expansion to meet local demand is thought o exist. A number of people supply eggs. While chickens, rabbits and ducks have been suggested as potential sources of local meat supply, others expressed concern about health-inspected facility requirements for commercial sale of these products. Possibilities for local food production warrant further investigation.

Perhaps the most significant opportunity for "plugging the leaks" is in the field of construction and renovation. Residents complain that local tradespeople are too busy with the big jobs (e.g. lodges) to get to household repairs. At the same time reports suggest

that local companies (construction in particular) are too small to bid on big construction jobs. Yet with a building boom in the region (on and off reserve) the opportunities for employment in construction are significant. Cooperation between local governments and the construction industry, among construction firms themselves, new business development and construction training are all possible strategies for capitalizing on this opportunity and minimizing the amount of construction-related revenues that leave the region. A Nuu-chah-nulth operated trades and construction firm co-owned by the region's five Nations, possibly run by Ma-Mook, was suggested.

Other communities such as Salmon Arm and Plymouth provide examples of how to organize to better take advantage of such opportunities.

As part of developing an Economic Development Strategy the Salmon Arm Economic Development Corporation, along with Shuswap (regional) construction industry professionals identified significant economic opportunities due to predicted growth rates. The Shuswap Construction Industry Program (SCIP) was launched to capture more of the financial benefits from this growing market for local firms. Activities included a background survey, the creation of a "plan room" where local contractors can view blueprints for local construction projects, the development of training programs and a construction labour pool, an awards program for developers using local contractors, and the hiring of a construction industry coordinator.

In Plymouth, UK a minimum local employment code of practice was agreed for all of the city and health contracts building work. Members of the Plymouth Employment in Construction Partnership agreed to provide support for the inclusion of training and local labour schemes in construction projects. In nearby Luton a local builders' cooperative was formed and has competitively won tenders for contracts, thus keeping a lot more money locally.

List of Key Resources and Contacts

Publications

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