7.0 SOCIO-ECONOMIC CONSIDERATIONS

This Section briefly reviews the main phases of oil industry activity, some of the major socio-economic effects from these phases and their significance for local jurisdictions and communities. As well, it outlines several of the key new management strategies that have come into effect over the last ten years. The Section also briefly discusses a number of key issues that were brought up during the 1984 public meetings and outlines how these issues are dealt with in other jurisdictions. Interwoven throughout the material is information related to potential actions of governments and communities.

The fundamentals of the offshore oil industry have remained largely the same over the last ten years, although there have been notable refinements in the way the industry works. The following points made in the 1998 report continue to be relevant:

- *Introduction of new technologies (e.g., improved seismic capabilities, developments in directional drilling, further automation, and a move from fixed production platforms to floating systems and subsea completions)*
- *New business approaches (e.g., a greater focus on 'core business' interests by oil companies, an associated increased reliance on contractors including use of alliances, and growth in the pooling or sharing of assets by different operators).*
- *Continued globalization of the industry, especially in the expansion of the contracting sector.*

7.1 The Four Main Phases Of Oil And Gas Activity

The four phases of oil and gas activity are exploration[2], development, production and decommissioning. This section examines each phase in turn.

2 For any given oil or gas field, the phases – exploration, development production and decommissioning- follow in sequence for any field that comes into production. Normally, exploration activities will continue to occur in any area where fields are under development, and it is possible for a producing area to have all four phases underway simultaneously.

7.1.1 Exploration

Exploration consists of seismic surveys and exploration drilling to determine the existence of commercial petroleum reserves in licensed areas. (Seismic surveys may indicate that exploratory drilling is not justified, but companies may conduct both seismic and drilling activity to fulfil the terms of an exploration permit.)

Exploration work requires the use of expensive and highly mobile equipment, including seismic vessels, drilling rigs, supply/support vessels and helicopters. Typically these are owned and operated by specialist multinational companies that undertake exploration for oil companies on a contractual basis. Onshore activity to support the offshore is concentrated at one shore base, airport/heliport and administrative centre, which may be at considerable distance from the concession blocks being explored.
The 1986 report (p.51) notes that activity levels during the exploration phase are highly variable. Companies can terminate their efforts for a variety of reasons including poor exploration results, better prospects elsewhere, a global recession in exploration or a local jurisdiction being 'unreasonable' in its requirements for local preference, taxation and/or environmental protection. This international mobility also makes it difficult to impose local employment, health or safety policies or for unions to organize oil industry workers. These factors continue to characterise the exploration phase during the early part of the 21st century.

Exploration commonly involves short-term, specialized work. For example:

- *a seismic program may last only a few weeks and use a crew of 20 to 30 individuals;*
- *a single well drilling program can be completed in three or four months using a rig with a crew of approximately 45 and two or three support vessels crewed by approximately 12 people each.*

As a result, limited opportunities exist for local involvement. The high degree of uncertainty in this phase means that the necessary investments of capital and time at the local level cannot be justified given the very short-term and/or periodic involvement with the industry. So it is neither practical nor sensible to try developing local ownership of seismic, drilling or support equipment or to have locals become senior seismic or drilling crew if they are only in an area for a couple of weeks or months. This means that the community which serves as the shore base for exploration activity commonly sees workers and contractors from elsewhere who seldom remain in the community beyond the time needed to transit to or from the offshore or to do their business.

Some of the work during this phase is a natural extension of tasks traditionally done by coastal peoples, such as stevedoring, marine crewing, ships-chandlering and ship-repair. Wharf space, heliports, storage yards, office space, hotel space and other existing onshore infrastructure are required, and these provide some opportunities for local employment and business involvement with only limited new training or investment required. Legislating higher levels of local involvement can be done, as was the

case in Newfoundland during the late 1970s, but such workers will have to find employment internationally given a downturn in local exploration levels.

Previous experience shows that exploration activity is often accompanied by speculative activity on the part of local residents, especially early in the phase if there is, or is thought to be, a significant discovery. This may see local communities and business people wanting to build industry infrastructure, e.g., support bases and office buildings, local residents buying or building new housing and municipalities rezoning land to permit such developments. These speculative responses are often based on a lack of understanding of the industry and its requirements and may be contrary to the interests of local residents and businesses, i.e. by producing house price inflation. Both Nova Scotia and Newfoundland experienced this phenomenon in the early to mid 1980s.
Recent developments in exploration that have socio-economic effects include:

- *improved three-dimensional seismic technologies have increased the success rate of exploratory drilling by more effectively identifying likely prospects. This results in more efficient drilling, thereby reducing the scale of activity and prospective local impacts, as well as reducing the time between the start of exploration and subsequent development activity (if any);*

Observers confirm the increased use of three-dimensional seismic technology does result in fewer exploration wells being drilled and a higher success rate in those that are drilled. The implication is that development of fields should follow more quickly from exploration activity than has been the case in the past.

- *further globalization resulting in operators becoming more aware of the range of prospects worldwide and the requirements to become internationally competitive, in terms of both prospectivity and local exploration costs. This further limits the ability of provincial governments to impose local benefits and other requirements.*

Globalization is very much the way the industry works today. It is clearly the view that the potential supply community needs to be aware of the global marketplace and of being competitive globally. Over the last two to three years, the pressure to be globally competitive has increased. The Atlantic Accord and its associated Acts, give industry in the Atlantic region “full and fair opportunity” and the “first chance” to compete but does not negate the need to meet global competitive standards.

It should be noted that currently provincial governments do not have the ability to impose a benefits plan. They only have a consultation role since it is the Accord that governs activities. A province can approve a development plan, but in reality its role is more one of moral suasion but it does not have many real policy levers to operate. The industry is still relatively immature in the Atlantic area and needs to grow and mature to develop more of the support infrastructure. One of the keys is to get more engineering work done locally, an area in which Newfoundland and Nova Scotia have had some success

as is noted below.

- *pooling of resources, with individual oil companies operating in a region sharing equipment and supply sources needed for exploration programs. This may limit local opportunities, in that oil companies will likely use a single shore base, office, heliport, etc. and share personnel and contractors. However, asset pooling may also make exploration more economically viable, in particular, by allowing shared costs for commissioning and operating exploration equipment, especially for activity distant from other oil patches. For example, a five-well drilling program in the remote Falkland Islands' waters could only be justified when a number of individual oil companies agreed to share equipment and support costs.*

Pooling has become more common in the last six months and is expected to be the way of the future.

7.1.2 Development

This phase involves the design, construction and installation of production equipment, including systems to bring the oil and/or gas onshore. No guarantee exists that exploration will lead to development and production. Exploration may continue on and off for decades without a decision being made to develop a field. This was the case in Newfoundland, where exploration started in the mid-1960s, but the first development activity did not occur until 1990.

Historically, production equipment consisted primarily of steel or concrete platforms, containing drilling and processing facilities and associated accommodations, resting on the seabed. When located in deep waters or a harsh marine environment, these were often massive structures, expensive to build and difficult to tow to the field. Such structures were constructed at coastal locations relatively near to the fields, such as Bull Arm, Newfoundland, Ardersier, Scotland or Stavanger, Norway.

Such yards required a mix of specialist and non-specialist labour and had many of the characteristics common to any large construction project, such as:

- *a range of labour requirements, and*
- *a limited project duration, resulting in the potential of 'boom-bust' problems.*

Any associated project design and administrative activity, commonly located in a capital city and/or near a major metropolitan area, was similarly variable in scale and of relatively short duration. However, the Hibernia construction project indicates how these problems may be mitigated and prevented given the use of appropriate management tools.

Small fields or those located in relatively shallow water tend to use smaller production rigs, such as the jack-up for gas production of Nova Scotia or tanker transport for requiring very little on board rig storage capacity. Both situations lead to much more modest levels of development related activity in the nearby on shore locations.

Recent technological advances have limited the requirement for fixed, especially concrete, platforms and, hence, for these large scale construction projects. There is, instead, an increasing use of FPSOs (floating production, storage and off loading system) and other floating production systems. There has also been an increased use of tankers rather than pipelines to transport oil ashore, except in those areas which already have surplus pipeline capacity in place. Gas is still normally moved by pipeline. These changes have meant that:

- *major production system components, which are easily transported, can be built at greater distances from a field (for example, the FPSO hull needed for Newfoundland's Terra Nova field is being built in South Korea). The prospective involvement of local jurisdictions in this phase of activity is correspondingly reduced and may be limited to local fabrication and support functions;*
- *given the jurisdictional capability and political will, oil companies can still be required to undertake locally significant design, fabrication and assembly work;*

However, experience with the Sable gas project in Nova Scotia has shown that, in the absence of government financial involvement, as was the case with Hibernia, it does not make sense to expect to build major components locally based on only a single field development. It requires a continuity of projects that has not yet happened in Nova Scotia. Newfoundland is further along in this regard[3].

Some components such as hulls, spars, tension legs and sub-sea completions will all be built in foreign yards because of the high technology required and the lack of local capability in the Atlantic areas. In the case of British Columbia, it appears likely that steel leg gravity based structures with steel jackets would be used. Local capability can be built up for this type of technology.

Offshore pipelines have limited local impacts, other than pipe coating work for a short period, since the specialized pipe laying vessels are imported from the international market. It is also worth nothing that, sometimes, local supplier companies are not interested in gearing up for a one time only development. It is too expensive and too uncertain whether it will continue. Some companies also decline to participate because of the administrative burden imposed by government to report local content.

- *the amount of work involved in offshore site preparation and installation may be significant and appropriate to local marine capabilities;*
- *reduced requirements may exist for pipeline construction projects and associated onshore processing and onward transportation projects. This can reduce the need to bring oil into environmentally vulnerable coastal areas, although cases exist, such as Newfoundland, where the product is brought to a transhipment terminal for transfer from shuttle to second-leg tankers.*

3 Note the Hibernia development was unique with its high level of government involvement. Terra Nova, and Sable have and White Rose will proceed solely using industry resources.

Observers stress the continuing shift to the use of floating production systems, sub-sea completions, resource pooling and the shift to processing sour gas offshore as technological changes that continue to rapidly change the nature of the industry. There have been great advances made in the use of downhull and underwater separation of oil and gas from associated condensates and liquids. Use of this technology means that topside structures on platforms (frequently the source of considerable local employment for finishing and installation) are not required for separation and stabilization of oil for export. In parts of the North Sea, sub-sea separation technology is being used and this appears to be the direction of the future. The general implication of these trends is that they reduce the potential for local employment and local production of goods and services for the offshore industry.

7.1.3 Production

The production phase for a large field can last for several decades, although for small fields it could be much shorter. Production over a long time, thus, is potentially the most beneficial phase of activity to any jurisdiction, both because of the employment and consumption of locally produced goods and services and the royalties earned from the oil and gas production[4]. The important features to note about the production phase include:

- *Production represents a commitment to ongoing activity in the area.*
- *The development of one field greatly increases the probability that others will come into production, resulting in long-term employment and business opportunities.*
- *There is an increased likelihood that those directly employed will be local or, if hired from elsewhere, will live locally[5], increasing the multiplier benefits[6].*
- *There is also an increased likelihood that the industry will wish to use local sources for supplies and services, and both workers and businesses will be willing to invest time and money in seeking these longer-term economic opportunities.*
- *The decision to develop a field also commonly represents a very significant fixed investment, making the company more amenable to local regulations and more sensitive to local concerns.*

Production can generate substantial numbers of jobs in operations, maintenance and the periodic upgrading of systems and these are usually concentrated in a nearby urban area. These direct local employment effects may be moderated or reduced by changes in the industry over the last decade, whose implications continue to be felt:

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4 Production eventually leads to the local jurisdiction receiving resource revenues, although the nature and scale of this benefit will depend on such items as jurisdictional status and the fiscal regime.

5 The 1986 report indicates that production phase shore base staff 'would generally be housed and supplied on a permanent basis at an accommodation facility at the shore base' (p.80). Such a system has never been used in North America, and there is no reason to expect it would be used in Northern British Columbia. Such workers will most likely live in, and include individuals hired from, communities within commuting range of the shore base.

6 Note however that both the multiplier and the spread effects of oil and gas –related development in rural areas are low. See McNicoll, I.H., 1986. "The Patterns of Oil Impact on Scottish Rural Areas", J.D. House, Ed. *Fish vs. Oil: Resources and Rural Development in North*

- *the use of floating production systems has led to production drilling being undertaken by floating rigs identical to, and owned by the same contracting companies as, those used in exploration;*
- *the use of floating production systems and subsea completions, with lower capital and operating costs (including lower labour requirements), has increased the viability of smaller and relatively short-life fields; and*
- *resource pooling limits the total size of local opportunities and concentrates them in the hands of a limited number of companies.*

7.1.4 Decommissioning

Decommissioning is a long-term concern. It is important to note that the life span of individual fields and of production in any region is commonly underestimated. New technologies continue to extend the lives of the fields and thus oil and gas regions. Moreover, new discoveries can also extend the life of a region. The socio-economic effects of closing a field are of relatively short duration and present limited local employment and business opportunities. Indeed:

- *difficulties experienced in decommissioning old structures, such as the Brent Spar, have led companies to design new structures with this in mind, further reducing the scale of wind-down activity and any associated positive or negative effects.*

Only one development has been decommissioned on the East Coast. The Cohasset oil field off Nova Scotia was decommissioned in 2000 after operating for about seven years. This work was done under budget and in less time than planned. Experience in the North Sea has also shown that decommissioning is not a major employment generator.

Decommissioning is seen as a serious issue in the world and a more public process than was once the case. More attention is being given to the use of mobile technology and recycling equipment, innovations that continue to improve the efficiency and lower the cost of decommissioning. Thus, the decommissioning scenario faced by British Columbia many years in the future could be very different than the current situation in the industry.

7.1.5 Other

Oil spills and blow-outs can occur during all offshore phases, although the likelihood of either happening is remote. The socio-economic consequences of such an event follow from the biophysical impacts discussed in earlier sections of this report. On the negative side, there may be losses of employment and business in fisheries or tourism. However, some short-term economic opportunities associated with clean up operations may exist.

Atlantic Societies. St. John's, Newfoundland: Institute of Social and Economic Research.

7.2 Socio-Economic Management Strategies

7.2.1 Control

Jurisdictions wishing to optimize the socio-economic effects of the oil industry can achieve that objective either through a legal basis for control or economic leverage or a combination of the two. In Canada, the legal basis for control will rest in federal and/or provincial legislation. On the Atlantic Coast, for example, the Accord Acts, signed in 1986, provide for joint federal-provincial control of offshore oil and gas activities. The Acts are managed by The Canada-Nova Scotia Offshore Petroleum Board and the Canada-Newfoundland Offshore Petroleum Board (the Boards) for Nova Scotia and Newfoundland, respectively. One could expect a similar type of arrangement for British Columbia. *In some places, a local area can achieve some economic leverage through its control over onshore infrastructure required by the industry. The Shetland Islands provide an example of the latter. With its control of harbours, the local County Council exerts considerable influence over industry activity, but technological change is now lessening the industry's reliance on the nearest facilities and sites.*

In the past, subsidies, such as the federal PIP grants in the 1980s and federal support for the Hibernia project in the 1990s, were used to induce industry to undertake oil and gas activities with a high level of local employment and industrial benefits. Times have changed and, with the current fiscal climate, such subsides are seen as inconsistent with the sound financial management policies adopted by government. Now, regulations under the Accord Acts require that companies file an acceptable Benefits Plan that spells out their plans for engaging local labour and local businesses in supplying required goods and services, as well as targets for education and training and research support.

It should be noted that pipelines introduce jurisdictional complications as the experience in Nova Scotia with the Sable gas pipeline has shown. The National Energy Board acts to regulate offshore pipelines and inter-provincial pipelines. The Province of Nova Scotia wishes to assert its Review Panel for Sable pipelines was used as a stopgap. Regulatory issues remain to be resolved, howeve,r and there will be further questions regarding third party access to pipelines, who regulates gas processing plants and tolling (pricing) issues for third party access to pipelines.

7.2.2 The Objectives of Managing and Monitoring

At a province wide level, the Boards conduct the management and monitoring function as directed by the legislation that they implement. For the most part, they do not directly address the issue of how can and should coastal jurisdictions respond to an offshore oil or gas industry. As the 1998 report indicated, coastal communities have often adopted a passive approach, 'coping with' offshore oil and its impacts rather than actively seeking to manage the industry and its activity. That is,

> *responses of coastal jurisdictions to an offshore oil industry have often been reactive. ...focus(ing) on limiting and/or preventing oil activity or mitigating its disruptive effects*

and hoping that oil activity will have positive impacts on the economy either as a result of resource revenues or spin-off employment and business.

The experience in Newfoundland and some other locales suggests a need for more proactive approaches and, in particular, more encouragement of local people to consider ways in which they want to engage the industry. The key question should be 'what do we want and how do we get it?', not 'how do we cope?'. Guysborough County, Nova Scotia has adopted this approach in relation to the Sable offshore gas development. It has tried to optimize the local economic development related to the location of the gas plant in the county and the passage of the gas trunk line through the county.

The 1998 report stressed the need for greater emphasis on management and monitoring with targeted assessments, a greater stress on socio-economic and environmental protection plans and other post-approval project management tools. This shift was meant to replace a regulatory regime that focuses on an environmental approvals process based on large and unfocused environmental assessments. It was also intended to deal more effectively with the high levels of uncertainty associated with the scale of activity and impacts, especially during the exploration and development phases.

The 1998 report also argued strongly for greater use of effective and focused socio-economic monitoring to provide timely feedback about the positive and negative effects of a project. The monitoring system would take into account the objectives, indicators to be used, frequency with which data should be gathered and the needs and expectations of the sponsors and other stakeholders. Among the benefits cited were:

- *socio-economic monitoring provides governments, the community and/or industry with the information needed to respond quickly and appropriately to changes.*
- *the provision of feedback helps develop experience and expertise that can be applied to planning and managing future projects.*
- *socio-economic monitoring can provide a mechanism for community participation in evaluating and managing the impact of a project*
- *It will also help in developing approaches and mechanisms that permit a rapid response to unanticipated or undesirable developments (Storey et al 1991).*

7.2.3 Balancing Revenues and Direct Benefits

Offshore oil and gas production generates two separate but not unrelated streams of benefits to the economy in which it takes place:

- Resources revenues or royalties that are collected from the revenues generated by the sale of the oil or gas during the production phase.

- Direct economic benefits, the terms frequently applied to the employment and income associated with direct employment by oil and gas activities or from the supply of goods and services required during exploration, development, production and decommissioning.

It is sometimes argued that governments must find a balance between trading-off resource revenues and direct economic benefits. Experienced observers of the offshore development on the Atlantic Coast note that the mix of royalties and direct benefits ultimately achieved reflects a complex mix of the jurisdictional powers, economic and political priorities and the global competitive environment in which offshore developments occur. Even over the very brief history of production of oil and gas in Newfoundland and Nova Scotia, the mix has varied considerably. Against this background we note that both Newfoundland and Nova Scotia now have generic royalty regimes that are very similar. These regimes have been recently subjected to analysis to assess their fairness and effectiveness[7]. The analyst found that the two schemes both rely on a profit-sensitive component that tries to approximate a tax on economic rent. At the same time, returns accrue to governments, irrespective of eventual project profitability. Both schemes satisfy the majority of a set of analytical criteria covering basic features, efficiency and fairness and administrative features and are not punitive. Overall, the regimes are deemed sensible. Regarding the concept of trade off royalties for local benefits, currently this is not done. It would be very complicated to assess the effects of doing so given the complicated equalization effects.

In Newfoundland, there have been significant changes in the treatment of royalties and local benefits over the course of three developments. For Hibernia, guarantees were given for building modules in Newfoundland in exchange for loan guarantees and credits and linked to royalty regime. For Terra Nova, there was no government money involved and a very different royalty regime but no required work to take place in Newfoundland, although, of course, fulfilling commitments made in the Benefits plan is monitored by the Offshore Petroleum Board. White Rose will operate under the generic royalty regime set up by Newfoundland government. There is no set of conditions for local production of goods and services, so the project proponent responds to terms of the Atlantic Accord only. It is important to note for British Columbia that the principles of the Atlantic Accords may very be the basis for a similar agreement on the West Coast.

7.3 Issues

Each of the following issues are examined in terms of the four phases of offshore oil and gas activities – exploration, development, production and decommissioning–if relevant.

7 See G.C. Watkins, *Atlantic Petroleum Royalties: Fair Deal or Raw Deal?* Atlantic Institute for Market Studies Oil and Gas Papers, Paper #2, June 2001.

7.3.1 Regional Economic Development

7.3.1.1 Exploration

As indicated in the 1986 report, exploration results in limited direct requirements for onshore infrastructure and facilities. There is a need for wharf space, heliports, storage yards, office space, hotel space and other infrastructure, but this is likely to result in the use of existing facilities in or around a single community. It is unlikely that exploration would involve significant new construction or the use of greenfield sites.

7.3.1.2 Development

Development will likely require one or more fabrication or construction sites. These are associated with field development and related pipeline or transhipment infrastructure, but changes over the past decade have reduced demands for local facilities and have increased the likelihood of using existing facilities, e.g., a shipyard, located some distance from the field.

The shifts towards the use of the FPSO technology, with its inherent tendency to limit local economic benefits, is still strong as evidenced by the proposed production system for the White Rose oil development off Newfoundland. In its Development Application, the project proponent proposes to have the FPSO built entirely in international shipyards. However, the Public Review Commissioner questions the validity of this approach and indeed recommends against approval of the Proponent's Benefits Plan[8].

7.3.1.3 Production

Production is a long-term activity that justifies investment in transhipment or pipeline landfall facilities and training of the operating staff. It will require an expansion in management and administration activity, and associated office space requirements that most likely would be concentrated in a major metropolitan area and/or capital city. This simply reinforces the strong propensity for an urban focus exists in all phases of offshore oil activity and infrastructure requirements.

7.3.1.4 Decommissioning

As noted previously, this phase has very limited potential to be the basis of economic development, given that it is an isolated event of short duration.

7.3.1.5 General Observations

Observers of offshore oil and gas activities in the Atlantic region made several points in relation to the last three to four years.

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8 See *Report of the Public Review Commissioner for the White Rose Development Application*, St. John's, Newfoundland, September 2001. http://www.wrpublicreview.ca

- Organizations involved in the monitoring and control of activities are beginning to recognize that the cyclical nature of offshore oil and gas activities can restrict very much what can be done locally.
- Local communities still see the oil and gas industry as a way to diversify their economy; but they often have a very narrow perspective – they tend to be looking for a supply base.
- Keeping expectations of all concerned in check is a major challenge. Related to this is the fact that many people are poorly informed about the nature of offshore oil and gas activities. This represents a major challenge for the companies, regulatory boards and government.
- Local economic benefits and associated economic development is an important agenda item for interest groups. The Public Review Commissioner makes the same point in his White Rose report cited previously.
- The shift to the use of a generic royalty regime (instead of a negotiated royalty with specific commitments to local benefits as was done with Hibernia) means there are no specific guarantees for local building of equipment. This point stands out in the White Rose application and lies at the heart of the Commissioner's recommendation against approval.
- Local companies now have enough experience in supplying or attempting to supply the offshore that they have matured and realize that they must be able to compete globally to get involved. In other words, just being local is not good enough. Reaching this level of understanding is a learning process that takes time and will grow as the offshore develops and some observers believe, probably does not require government intervention.
- The evolution of benefits policies in other countries is worth noting. For example, the UK and Norway were originally very interventionist, although they used very different methods.
- The UK approach was based largely on maximizing government revenue and expediting development in part to resolve balance of payment problems.
- This meant a heavy reliance on foreign companies with few checks on their use of domestic suppliers limited the ability of domestic UK suppliers to develop offshore capacity. This decreased the direct benefits of projects, and ultimately limited the ability of UK firms to compete internationally. To this day, few UK firms participate significantly in offshore development at the global level.
- Also, because the firms were large US multinationals, and able to avoid UK taxes, income was lost and the final demand benefits of oil and gas development reduced.
- Norway used a strong interventionist approach that intentionally slowed the pace of development to ensure maximum local involvement. Notable observations about the Norwegian experience include:
- An initial development policy that nurtured a fully integrated indigenous oil sector through partnering, state interventions and technology transfer was very successful. The slow pace of development matched project supply needs with the increasing capacity of the Norwegian supply sector.
- A subsequent policy reconciled the realties of globalization with the need to nurture a strong domestic base.
- Polices have consistently been designed from a long-term perspective, with the goal of extending the life, and maximizing the value of the oil sector beyond the life of Norwegian oil reserves.

Now most countries have evolved away from intervention to facilitation to bring together all parties to develop a common vision for the long run development of the industry. Using a collaborative approach appears to be more successful and leads to countries that can compete internationally and be sustainable. However, this process can only be successful where there is a high level of understanding and trust. This has not happened in East Coast Canada yet.

7.3.2 Commercial Fisheries

None of the four environmental impact statements of Atlantic Canada oil and gas projects (Hibernia, Terra Nova, SOEP and Cohasset-Panuke) which received government approval to undertake drilling operations indicated that their proposed projects would have a lasting effect on fish populations. As pointed out in the Terra Nova Environmental Impact Statement (EIS), recent research indicates that anything adding to the relief or structural diversity of soft-bottom marine habitats will attract fish. Production structures, pipes, mounds of cement and debris also create artificial reefs that will attract fish. Pelagic fish are also attracted to structures but are generally found around and near structures. However, the fish community found within, very near and around offshore oil and gas structures, to some extent, depends on the nature of the structure. Studies conducted in the North Sea show that cod, haddock and other commercially important species are attracted to and concentrate around production facilities. On the assumption that there would be a safety zone surrounding any drilling unit, this would constitute a refuge for various fish populations. According the Terra Nova EIS, for structures projecting above the seabed a positive, minor, sub-local long-term impact on fish populations might occur due to the reef effect. Fish would be slightly protected from predation by bottom trawlers; on the other hand, a negligible to minor negative impact could occur on a ground fishery. The greater the number of exploration rigs, the larger the safety zone, which could create a short term negative effect on access to fishing grounds, but in the long term create a refuge and enhancement of local fish populations.

For the most part, fisheries issues have not been a major concern for the development underway in Newfoundland and Nova Scotia. The companies are trying to be more consultative than in previous years and have used dialogue with the fishing industry to raise the level of awareness. Observers point out that the fishing and petroleum industries co-exist in lots of places around the world and that successful relationships are built on a willingness to work to build mutual levels of trust and understanding. Furthermore, information is accumulating about the effects of articfical reefs and other sub-sea surfaces for enhancing fisheries production. For example, fish production in the Gulf Mexico has been significantly enhanced through the creation of artificial structures. Evidence is mounting the oil and gas platforms and other sub-sea structures can produce similar results.

This is not to say that fisheries concerns have disappeared, however. The public discussions conducted for the White Rose application in Newfoundland focused on seismic operations, loss of access to fishing grounds, potential for tainting, potential for Newfoundland fishing grounds to lose their reputation as pristine and pollution free and, in particular, the need for fisheries liaison with the oil industry. The fishing industry's primary concern was that it presently lacks the capacity to participate in an informed

manner in the many issues raised by offshore oil (and gas). The Public Review Commissioner recommended that the oil and gas industry provide funding for the fishing industry to hire a fisheries/petroleum industry liaison officer to advise them on offshore oil and gas issues related to the fishery and to assist both industries in cooperatively pursuing their respective activities. In Nova Scotia, the Fisheries and Environmental Advisory Committee of the Offshore Petroleum Board provides a mechanism to facilitate communication between the fishing industry and the oil and gas industry, and to inform the Board about fisheries and environmental issues.

Concern about the effects of seismic operations on fish stocks is also a major concern in Nova Scotia. A public review is currently underway prior to the start of planned seismic programs on lands covered by exploration leases near Cape Breton Island.

7.3.3 Fisheries Compensation

During 1984 public meetings regarding proposed drilling offshore of the Queen Charlotte Islands, several issues regarding fisheries compensation were raised. As a result of these concerns, the Panel recommended in its 1986 report that a government compensation policy covering all stages of an exploration program be established prior to any exploration activity occurring. The Panel further recommended a series of compensation principles.

Many of the 1986 Panel recommendations are, in fact, now standard practice in other jurisdictions. However, some other approaches have proven to be more effective in actual practice. Any fisheries compensation policy must have input and buy in by the fishing and petroleum industries and, therefore, will need to be tailored to each fisheries region and petroleum project. Nonetheless, some general principles can be applied, particularly for exploration activity. An overview of fisheries compensation policies and trends is provided on the following pages.

In dealing with any new oil and gas area, compensation is of major concern to fishing interests and needs to be addressed prior to drilling. However, oil and gas regions located in or near prolific fishing grounds have faced similar issues previously and the international offshore petroleum industry and the commercial fishing industry have co-existed for many years in other jurisdictions. Appropriate examples for this report are taken from Atlantic Canada and the North Sea.

The relationship between the international petroleum industry and the commercial fishing industry in the western context is based on the fundamental assumption that the two have the right to co-exist and that each will maximize its ability to facilitate that coexistence. Neither party assumes that damage is inevitable and programs are implemented to prevent damage during normal operations and in the event of an accident.

The approaches used in the North Sea and in Atlantic Canada are very different, but with similar outcomes. In the North Sea, petroleum operations are mature with many operators and shared

international jurisdictions. During the 1960's and 1970's compensation programs were developed in an ad hoc manner to address situations as they arose, but today well established programs are in place and accepted by both industries. In Atlantic Canada, a preventive approach has been developed with established contracts and protocols in place prior to any offshore activity. A majority of international offshore petroleum operators are familiar with and, in fact, insist on some sort of compensation program prior to undertaking exploration and production activities in well known fishing areas.

In conclusion, offshore fisheries compensation programs are normal practice in the western world. (See Appendix 1 for details.) They have proven to be effective, impartial mechanisms accepted by the fishing and petroleum industries, are established prior to exploration, follow certain general principles and are agreed to by both industries prior to any offshore construction or production.

Since the 1998 report, the Canadian Association of Petroleum Producers has developed a non-attributable compensation plan covering gear and vessel damage.

7.3.4 Education/Training

Education and training initiatives are recognized as a key component in any strategy to maximize local employment. To be effective, the initiatives need to be consistent with any local employment preference requirements established.

The provision of education and training must match the employment considerations discussed earlier. That is to say, some limited opportunities exist related to exploration and development, but significant opportunities exist with production. Significant training can usually only be justified if it leads to longer term prospects with other projects, or if the skills can also be applied in other industrial sectors.

By way of example, the Hibernia construction project training largely met these criteria. This project involved initiatives to develop local capabilities in both the professions, especially engineering and construction trades. In the former case, training initiatives and benefit requirements led to over 1.8 million person-hours of design engineering work being undertaken in Newfoundland, mostly by local residents.

The primary resource for the construction trades training was the Cabot College (now the College of the North Atlantic), although other colleges were also involved on a competitive basis. Between 1991 and late 1995, a total of 55 training programs were offered. Upon completing their training, 1,844 of the male trainees and 65 of the female trainees obtained project employment. In total, 78 percent of the 2,463 persons trained found work at the Bull Arm site where construction of the Hibernia GBS was taking place. Using the securing of on-site employment as a measure of success, 67 percent of all courses achieved a success rate of 80 percent and above, and four had a 100 percent success level (Community Resource Services, 1996).

In addition to effectively providing access to employment on the Hibernia and subsequent Atlantic Canadian projects, some programs produced tradespeople with internationally marketable skills. For example, tower cranes at the construction site were state-of-the-art and the 50 recently trained operators now have skills that are required on many major construction jobs. Some of the welding specialty trades employed on the project - such as flux core, submerged arc and titanium welding - were also transferable to other projects.

Development phase employment opportunities are generally short-term and shrinking in size, with the production phase presenting greater potential. The specific skill requirements for production are diverse (see above), with relatively small numbers needed in any particular speciality. Existing programs, especially given the long lead times available can largely meet training requirements. However, training for some of the more specialized positions (e.g., offshore installation managers, reservoir and drilling engineers, loss prevention and safety personnel) is only available in a small number of centres, and there would be little justification in introducing local training for these specialities.

The Pacific Marine Training Institute, the engineering faculty at the University of British Columbia, the British Columbia Institute of Technology, the Technical University of British Columbia and the technology programs at local colleges are well suited to provide the necessary education and training. In addition, research opportunities exist for many of the local institutes, universities and research related companies.

As discussed above, the socio-economic effects of closing a field are of relatively short duration, and the decline and ending of activity in a region is a composite of the sequential closure of a number of individual fields and, therefore, a relatively long-term and gradual process. Employment opportunities directly associated with wind-down and decommissioning are limited, as are the related training requirements. The same is the case with respect to oil-spills, with the training requirements primarily related to the need of being able to respond rapidly and effectively to a spill. These requirements are usually established by some combination of regulatory and industry standards.

The above discussion focuses on training issues related to employment opportunities in the oil industry itself. However, as is indicated in the 1986 report, it is also very important to provide civil servants, community leaders, labour leaders and the general public with a more general understanding of the industry, its prospective impacts, choices and options related to its management. This is reinforced by more recent experiences in frontier regions world-wide.

In addition to the foregoing, based on comments from observers of the Atlantic offshore, the following additional observations are worth noting:

- Companies must address education and training issues in their Benefits plans but the Accord Acts

are not very specific in identifying requirements.

- The Petroleum Boards are paying increasing attention to education and training on case by case basis. In Nova Scotia, for example, Benefits plans must identify training and education initiatives. The use of job shadowing and mentoring to reduce foreign workers over time is encouraged as well as succession planning. Industry is encouraged to liaise with educational institutions.
- Among the types of training completed have been regulatory training, professional training, other support of education and training including curriculum development and identification of skill sets. Industry has been an active participant in these activities.
- The Canadian Association of Petroleum Producers has been very active in getting a national Sector Council for Oil and Gas established to study labour shortages that may be faced by the oil and gas industry.
- The Atlantic Canada Petroleum Institute supports education and training for Atlantic Canada's oil and gas sector through workshops, conferences, and studies. Strategies for maintaining and enhancing an oil and gas skilled workforce are currently under discussion across the region.
- The Atlantic Canada Petroleum Institute is managing a study of the demand for and supply of occupations for the offshore now. This study will try to develop a model of how the offshore will develop and the occupation and skills that will be required. The intention is to make the results available to Community Colleges and universities and other training institutions to help guide their training investment.

It is important to note that other industries require people with many of the same skills of the offshore oil and gas industry. Thus education and training requirements must be viewed in a broad context.

7.3.5 Employment

7.3.5.1 Exploration

The 1986 report was correct in indicating that employment opportunities during exploration are limited and short-term. For example, between 1985 and 1995, a total of approximately 4000 person-years of exploration employment occurred in Newfoundland and Labrador. The variability in such opportunities, allied to the specialist nature of the more senior positions, mean that many exploration workers commute into the region on an international basis. Recent developments have further diminished the numbers likely to be employed during this phase. Nonetheless, if the Industry grows, opportunities exist for a supply base, marine support, catering and yard service exist in towns such as Prince Rupert, which would result in significant local employment.

7.3.5.2 Development

Many more jobs can be created during development. For example, the Hibernia project created about 21,000 person-years of employment in Atlantic Canada. However, there can be a 'boom and bust' pattern to such employment and recent developments have reduced both the likelihood of large-scale

construction projects in the region and the likely size of such projects. In the latter case, for example, the Sable Offshore Energy Project generated about 3000 person-years of employment in Atlantic Canada. Some of this employment is in traditional construction trades. *Again, opportunities exist in the regions for the construction of portions of the production module and for supplying sub-trade services for those modules.*

7.3.5.3 Production

Lastly, for reasons discussed above, over the long run the greatest local employment opportunities are during production, although even these are smaller than peak development employment on an annual basis given the latest production systems and asset pooling. In Atlantic Canada, the Hibernia field employs about 800 workers per annum, of whom about 90 percent are Atlantic Canadians. The Terra Nova project is expected to employ an average of about and 440 workers per annum, again mostly drawn from the region. The Cohasset field in Nova Scotia, while it was operating, employed about 400 persons annually, 87 percent of them from Nova Scotia and a further 11 percent from other parts of Canada. During the year 2000, the Sable gas project currently employed on average about 840 people, over 92 percent of them in Nova Scotia. *Given the long duration of production activity, the total amounts of employment involved are considerable. For example, it is estimated that Hibernia production will result in 13,300 person-years of employment, while Sable and Terra Nova will each generate about another 6000 person-years*[9]*. For reasons described above, this phase provides the highest levels of local involvement.*

The specific employment opportunities associated with production facilities are in offshore production operations, marine and air support, and shore-based support and administration. These services could be located in towns such as Prince Rupert. By way of example, the state of the art Terra Nova floating production storage and off loading (FPSO) vessel will have 90 to 100 crew, half of whom will be working offshore at any time. Typical skill requirements will include deck officers, seamen, deckhands, maintenance personnel, mechanics, electricians, control room operators, loss prevention personnel, crane operators, catering personnel, radio operators, medics and environmental and forecasting specialists. Marine and air support will total 60 to 80 people and include the crew of supply and support vessels and helicopters. There will be 45 to 50 onshore personnel, including office staff, engineers, geologists, geophysicists, technicians, yard and dock workers, and marine operations specialists. (Petro-Canada 1997)

There are also long-term employment opportunities associated with any pipeline or transhipment facilities, although these are increasingly automated. For example, the Newfoundland Transhipment Terminal, which will handle crude from the Hibernia, Terra Nova and probably subsequent fields, will only employ between 20 and 40 full-time or contract staff, including managers, equipment operators,

9 It should be noted that field life estimates are usually conservative, and do not reflect the effects of new technologies in extending the lives of fields, and hence these are likely to be underestimates of total employment generation.

electricians, maintenance personnel, dock workers and tug boat crew (Chevron, Mobil and Petro-Canada 1996). Similar numbers are involved at pipeline landfall facilities such as the gas plant at Goldboro, Nova Scotia, the landfall for the Sable gas pipeline.

The Newfoundland Ocean Industries Association has almost 400 member companies, most of which have a direct relationship to the offshore oil and gas industry. These companies provide more than 250 oil related products and services ranging from abrasives to wellhead equipment sales and services. All of these companies are located in Newfoundland and many started up, opened up branch offices or expanded as a result of the offshore.

7.3.5.4 Decommissioning

As previously discussed, the socio-economic impacts of closing a field are of relatively short duration and the employment opportunities directly associated with wind-down and decommissioning are limited. For this reason, the main employment-related challenge is trying to diversify the local economy.

Although a relatively remote occurrence, oil spills and blowouts can happen during activity in all phases. Socio-economic consequences could happen that largely follow from the biophysical impacts discussed in earlier sections of this report, for instance through losses of fisheries or tourism employment. However, there may also be some short-term employment opportunities associated with clean up operations.

There are clear opportunities to optimize the local share of employment levels in all phases. The 1986 Panel recommended that, as a condition of obtaining an Exploration Agreement, operators should be required to establish preferential policies for the employment of local residents. Similar requirements are standard practice in exploration and development agreements (the latter contain provisions relating to both the development and production phases) in Atlantic Canada and many other jurisdictions. They commonly include provisions related to hiring, employment monitoring, technology transfer and education and training. In Atlantic Canada, these are detailed in the Benefits Plan which project proponents must file with their Development Application (e.g., Canada-Newfoundland Offshore Petroleum Board 1988). However, it has been argued that these provisions are not as effective as they might be and that there is a need for clearer strategic thinking in seeking to optimize regional economic benefits (Newfoundland Ocean Industries Association et al 1998).

Industry observers note that achieving Canadian content in employment in the 90 – 95 percent range has been part of the Benefits plans and that these levels have been achieved, sometimes even earlier than planned, for instance with Hibernia. The Boards continue to push harder for higher levels of local content. There have been some gains in the seismic area recently, but it remains true that achieving high levels of local content is easier in the production phase. Most knowledgeable observers expect that there will always be 4-5 percent foreigners employed given the world-wide character of the industry. It should also be noted that many Canadians are employed by the oil and gas industry in other countries

around the world.

One of the areas of great interest and success has been front-end engineering. Both Nova Scotia and Newfoundland have been successful in establishing a strong local presence with engineering companies capable of the development and production design work. For example, the Engineering, Construction and procurement Management Contract for the Alma filed of the Sable Offshore Energy Project was awarded to a Canadian joint-venture company with offices in Halifax. Of course oil and gas companies still bring foreign staff in to work with local staff with a resulting technology transfer.

The Accord Acts set out general requirements for local content, requiring that local people and companies have "full and fair opportunity" to participate. Oil and gas companies must spell out their policies and procurement procedures in the Benefits plan, but the Acts themselves do not require any commitment to specified targets. However targets are often given and the Boards use them to measure and monitor progress.

7.3.6 Business Opportunities, Industrial Development and Infrastructure

7.3.6.1 Exploration

As is the case with employment, business opportunities associated with exploration are limited and uncertain. Those related to production are considerable and long-term. While development opportunities can be considerable (as in the case of Hibernia), they are generally and increasingly short-term.

This is not to say that exploration expenditures are not considerable, or that some companies may not have successful involvement with exploration. Exploration spending in Atlantic Canada between 1967 and 1987 has been estimated at nearly $8 billion. Exploration licenses in place in Nova Scotia during the 2001 fiscal year have a work commitment totalling over $ 1 billion. However, the majority of such spending is directed to geological, geophysical and drilling activities undertaken by large multinational contracting companies (as an indication of the costs involved, the day rate for a newer semi-submersible drilling rig can be as much as $125,000). In terms of local participation, the main opportunities for local companies are with harbour, warehouse, office, apartment/condominium and hotel facilities or in the provision of environmental, catering, transportation, professional and other services. These businesses can be located in towns such as Prince Rupert. However, given uncertain levels of activity, it would be a mistake for such companies to develop too great a reliance on the oil industry.

7.3.6.2 Development

The possible business benefits of development phase activity are demonstrated by the Hibernia project, outlined in Appendix 2. However, it must again be cautioned that the likelihood is small of the occurrence of further such large-scale and relatively long-term (seven year) development projects. The Sable and Terra Nova development expenditures will each be about a third the size of those for

Hibernia, with the total Atlantic Canadian share of expenditures being about $500 million.

Overall, work on offshore oil projects, aided by the local benefits provisions, generally expanded and diversified Newfoundland and Nova Scotia business and research capabilities, with local companies, universities and research institutes building on their oil-related experience and expertise to sell to the industry elsewhere. Their new expertise and experience made them more competitive and fostered a greater confidence in their capabilities, not only within the local context but also on a global scale. The connections and contacts developed through various projects provided local companies with exposure to international opportunities and have broken them out of the local-operations mind-set.

Many companies and research institutes have realized that they can compete on the international level and have adopted an aggressive marketing strategy to pursue overseas contracts. The effect of oil-related work on local companies' bidding, management, quality assurance and control and other business capabilities has made them more competitive in local, national and international markets, both with respect to oil and non-oil work. In these regards, involvement in development phase activity has helped companies prepare for opportunities in the production phase.

7.3.6.3 Production

Estimated total production phase expenditures are $8.3 billion for Hibernia, $2.5 billion for Terra Nova, $2.0 billion for Sable and $775 million for Cohasset (in this case about 50 percent of total spending including development and decommissioning. The longer term nature of these expenditures will result in a much greater share of expenditures being captured by local businesses[10].

7.3.6.4 Decommissioning

As previously discussed, the socio-economic impacts of closing a field are of relatively short duration and the business opportunities directly associated with wind-down and decommissioning are limited. For this reason, the main business-related concern is seeking to diversify the local economy.

The experience of the Atlantic area and elsewhere shows that the development phase for any oil or gas field will have the most dramatic impacts on the local economy because of the compressed time over which activities tend to take place. Building business capability in the local economy to participate in the offshore industry takes time. Hence, the more controlled the pace of development, the greater the chances for substantial local business involvement in offshore activities. Furthermore, one can expect local involvement to increase as the number of oil and gas fields brought in to production increases and a region gains greater experience with the industry. Experience also demonstrates the important role that regulatory agencies such as the Offshore Petroleum Boards in Nova Scotia and Newfoundland can play in enhancing and monitoring the progress made in increasing local business opportunities related to

10 The above analysis only considers direct employment. Theses direct jobs have indirect and induced employment multiplier effects, although these may be modest given what is likely to be high levels of "leakage" from the region.

offshore oil and gas.

7.3.7 Research Needs

Supporting research carried out in the Atlantic region to address issues related to offshore oil and gas development has become a priority for the Petroleum Boards. Both the Newfoundland and Nova Scotia Boards expect the Benefits plans submitted for approval to include allocation of funds for this purpose.

In Nova Scotia, the Board did develop R&D guidelines for the Sable gas project and requires an annual R&D report from the project. The Board is looking at incremental R&D and other operators will be required to follow a similar approach. Research in Newfoundland is heavily focussed on oceans and ocean environment, and the marine environment. The work tends to centre on the local capabilities. One problem on the research side has been that many organizations support R&D but they do not talk to each other and there was no coordinated effort. As one observer put it, "It was too much like feeding peanuts to the pigeons". There was clear need to establish priorities, strategies and time lines. Resolving this situation was one of the main motivations for the creation of the Atlantic Canada Petroleum Research Institute. Industry now looks to the ACPI to ensure a coordinated approach and assurance that relevant research is being done.

The Atlantic Canada Petroleum Research Institute solicits research proposals related to the offshore in the following areas:

Hydrocarbon:

- Regional basin history
- Resource evaluation
- Technology for resources assessments

Environmental Impacts and Effects

- Environmental loads and factors
- Environmental impacts and assessments
- Sustainable development
- Environmental design criteria

Operations and Technologies:

- Health and safety in offshore Atlantic Canada
- Technology for sustainable exploration & production

Policy Research

- Socioeconomic impacts and benefits
- Rights issuance processes
- Environmental assessments
- Harmonization of policies and regulations

The oil and gas industry has provided funding directly to fund of university faculties and community college facilities.

7.3.8 Investment

The previous discussion of business opportunities highlights the situations and circumstances where investment by local businesses and institutions could be warranted to take advantage of opportunities related to offshore oil and gas activities. In terms of the four phases of oil and gas activities, the prospects for local investment can be characterized as follows:

- Exploration: since highly specialized international companies carry out most exploration activities, it would be prudent for local investors to wait for evidence of a commercial find. There may be possibilities to climb the learning curve during this phase provided the investor fully assesses the risk involved.
- Development: there are many more opportunities during this phase but the highly specialized nature of the work, the propensity to use offshore facilities to construct equipment and its relatively short duration can all be substantial barriers. Still, it can be worth investigating, especially where there are multiple fields to develop with development phases that follow one another.
- Production: this the most stable and longest lasting phase. Many observers believe it offers the most promise for local business to make investments that will pay off in the long run. However, one must remember that spending levels during production are much smaller than during development.
- Decommissioning: the socio-economic impacts of closing a field are of relatively short duration and the business opportunities directly associated with wind-down and decommissioning are limited. For this reason, the main business-related concern is seeking to diversify the local economy.

7.3.9 Social Effects

The 1986 report indicated that lifestyles could change as a result of a range of oil activity related impacts and that a range of positive and negative effects would likely occur. The findings of the 1998 report and observations of activities over the last three to five suggest there have been very few negative effects, and most people view the growth of the offshore oil and gas industry in Atlantic Canada positively.

7.3.9.1 Exploration, Production

The experience of developed countries since 1986 is that, given the use of conventional impact assessment and management approaches, the social impacts of exploration and production are limited and generally positive. Increased incomes and employment, allied to improved transportation services and company community investment programs, have positive direct and indirect consequences. While initial concern focuses on increased substance abuse, illegitimacy, crime and the cost of living, recent evidence suggests that increases are normally minor or non-existent. However, a danger exists that communities will damage their own social environment through speculative responses early in exploration or in the wake of a discovery. For example, this occurred in Newfoundland in the wake of

the Hibernia discovery, with expectations of increased house prices becoming a self-fulfilling prophecy at a time when only minor direct industry effects occurred on the local housing market.

Wills (1991) and Freudenberg and Gramling (1994), in writing about the Shetland Islands and Louisiana respectively, conclude that offshore oil activity has generally had a positive effect on the local culture. This finding would apply equally in Newfoundland, Nova Scotia and most other similar areas that have had oil industry involvement.

The transition from development to production for the Sable gas project was greeted enthusiastically by the Village of Goldboro and Guysborough County, Nova Scotia. The gas plant in Goldboro and the passage of the gas trunk line through the county are seen as the forerunners of further developments based on the use of the natural gas as an energy source.

7.3.9.2 Development

The main exception to this pattern has been in the development phase, which is potentially problematic given the size and short duration of some construction projects and, hence, the danger of 'boom and bust' impacts. The construction of the Trans-Alaska pipeline and Sullom Voe refinery are often cited as examples of such problems. However, these types of projects are becoming smaller and less common, and the Hibernia experience shows that they can be managed. A study of the Hibernia construction project concluded that it:

> "Successfully avoided the negative social and economic impacts normally associated with the superimposition of very large projects on rural environments... Hibernia stands out as a case where potential impacts were adequately identified, optimization measures determined and implemented, and the negative consequences avoided or mitigated. (Storey, Shrimpton and Grattan, 1996, p.271)"

The primary mitigation strategy was housing non-local project workers in a high-quality, well equipped and well managed work camp, thereby making it unnecessary for workers to find accommodations or use services and other infrastructure in nearby communities.

The development phase for smaller projects, such Terra Nova and the Sable Offshore Gas project, have produced no serious negative social effects. This is in part due to the relatively small size and to the careful planning and monitoring that accompanied these developments.

7.3.9.3 Decommissioning

As discussed previously, the socio-economic effects of closing a field are of short duration, while the end of activity in a region is relatively long-term and gradual. For this reason, the social effects are gradual and there is opportunity to prepare for them. The decommissioning cost for the Cohasset field

in Nova Scotia were a little over $50 million and were hardly noticed in the provincial economy.

7.4 Current Community Concerns

Previous sections of the report have dealt with experience elsewhere and how that might be relevant to British Columbia in responding to any offshore oil and gas activities. It is also important to note the current concerns of citizens of the North Coast, the area that would be most directly affected. To that end, municipalities and regional districts along the northern coast of British Columbia were consulted and asked about the issues and concerns they may have should the current moratorium on off shore oil and gas exploration be lifted. Items identified include the following:

- environmental impacts on the inshore and near shore areas
- social and economic impacts regarding on livelihoods (e.g., commercial fishery, forestry);
- impacts on the aquaculture industry (e.g., salmon);
- environmental impacts of onshore activities related to oil and gas;
- impacts on traditional aboriginal livelihood;
- the use and training of local labour in the oil and gas activity;
- division of labour, profits, royalties and license fees associated with oil and gas;
- access to the oil and gas resources once ashore; and
- impacts on the current local industry structure.

It is clear that authorities and the public are taking actions to prepare for any future oil and gas activities. The Northern Development Commission (NDC) of British Columbia and the Coastal Communities Network Pacific collectively represent municipalities and Regional Districts11. Are working together in a collective process to examine the impacts on northern communities of lifting the moratorium on exploration.

The Northern Development Commissioner has, as part of his legislated mandate, the responsibility to consult with northerners as needed in the process of encouraging job creation and economic development in Northern British Columbia. Further, the Commissioner is to advise government on the need for legislation, policies and practices respecting northern economic development issues.

The Conflict Managers Group was engaged by the Northern Development Commission in February 1999 to determine if representative stakeholders in Northwest British Columbia would be prepared to engage in a process to examine the issues. The consultants delivered their first report in September 1999. The Conflict Managers Group then expanded the scope of their consultations to include stakeholders further afield and their second report was released in August 2000.

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11 The NDC was established through the Northern Development Act which received Royal Assent in July 1998. The Coastal Communities Network Pacific represents the coastal Regional Districts and the tribal councils spanning the western coast of BC from North Vancouver to the Alaska border, including the Queen Charlotte Islands.

The reports prepared by the Conflict Managers Group noted that there was interest in entering a process of discussion. They found that members of the Northern BC community wanted access to credible information concerning the present state of oil and natural gas ocean drilling and production technology, including studies or reports that have examined the economic, social and environmental impacts. This included bringing on stream the operations in the East Coast of Canada, as well as those in the North Sea.

The Offshore Oil & Gas Report of August 2000 assesses the degree of interest of members of the northern coastal communities to become engaged in a community based, consensus building process to consider the merits of lifting or keeping the present oil and gas moratorium. This report contained the recommendations indicating that the next steps in the process would be to invite stakeholders themselves to design the process that would govern the discussion and that a design team be established to do that. Northern Development Commissioner appointed this process design team (PDT), after review of advice and consultation from the Conflict Managers Group. The PDT developed a set of recommendations for consideration by the Northern Development Commissioner with regard to:

- Designing an open process for public consultation on the issue;
- Ensuring that relevant, credible, accurate, reliable and up to date published material relating to the issue is made accessible to the public;
- Presenting, by way of a conference, a series of balanced and objective presentations which present all sides of the issue and serve to inform the public; and
- Establish a defensible, fair and neutral process to determine broad public opinion which is available freely and conveniently to the public at large.

Subsequently, representatives from Norway and the Orkney Islands of Scotland (Highlands and Islands Model) presented their models of integrating offshore oil and gas development into their economy to NDC. Data and information collected with respect to the exploration and production activities on the East Coast and North Sea was made available to northern communities. Regulatory bodies in the Maritime Provinces were visited and the NDC were advised of their cooperation and willingness to provide needed information, studies and reports, if a community based consensus building process was established. Discussions with stakeholders and interested parties in the northern part of Vancouver Island were also undertaken. The industry point of view was obtained through discussions with the Canadian Association of Petroleum Producers. Officials of the State of Alaska were consulted to provide background information on activities there.

As a result of this consultation process, there is a recognition by the northern communities of BC of the positive impacts on the economy which can occur as a result of offshore oil and gas activity, given careful planning and organization by the community.

Currently, there is a push by northern communities in British Columbia to reinitiate the work on developing a Pacific Accord, which was postponed when the moratorium was put in place.

Communities recognize the need to develop an authority that will determine the division of such things as labour, profits, royalties and license fees. The northern communities are collectively formulating an ongoing voice to government. Currently, a group of provincial Members of the Legislative Assembly are touring the northern regions of the province and consulting with northern communities. They will present a report to the BC Provincial Cabinet early in 2002.

7.5 Alaska

Alaska is the area closest to British Columbia with experience with the impacts of offshore oil and gas activities. Since 1975 these activities have been the subject of numerous socio-economic studies assessing possible impacts. Much of the exploration activity in the Beaufort Sea, Chukchi Sea, Bering Sea, Gulf of Alaska and Cook Inlet took place between 1975 and 1985. With fall in oil prices in 1986, exploration interest dropped sharply and resumed with the sale of a few leases in 1998. There has been some drilling around Cook Inlet from shore facilities that explored under sea possibilities.
The first offshore production facility on the North Star oil field is due to start production in November 2001. A production plan has also been filed, but not yet approved, for the Liberty oil facility. Both fields are located near Prudhoe Bay.

Over the years, the main issues and concerns addressed in the socio-economic studies include:

- In the Beaufort Sea, a major issue has been how oil and gas activity affects hunting access to the bow head whale population by the Iñupiat community on the North Slope. The issue arises because of the concern that seismic activity (noise) will deflect whales off their traditional migration paths and make them much less accessible to hunting parties. Because bow head hunting continues to be an important traditional component of the Iñupiat economy, studies are on-going to clarify this impact. One result has been the introduction of stipulations in exploration leases to minimize impacts by permitting only seasonal drilling the avoid conflicts with the whale migration.
- In the late 1970's, the Iñupiat formed the North Slope Borough (equivalent to a county) that covers a large part of the area where oil and gas activities occur on the North Slope. This gave them the basis on which to tax oil and gas facilities. They have raised an estimated $US200 million, revenues that have allowed the community to strengthen its economic base and given them a strong power base from which to deal with oil and gas activities.
- For small communities along the coast, the working assumption for oil and gas activities has been that imported workers would be housed in largely self-contained enclaves separate from the existing town and its residents. Apparently all of the activities have been carried out this way.
- When exploration was active in the Bering Sea, Nome was used as the shore base for air and marine supply activities to the offshore rigs. Crews were flown by helicopter from Nome to

the rigs, a town of about 4,000 people. Although there were noticeable effects from the local spending of income by the crews and local purchases of goods and services for the rigs, Nome served mainly as a transfer point. The crews actually spent very little time there.

- With the pending operation of the North Star and Liberty fields, some concern has been expressed about the cumulative effects of oil and gas activity. In other words, as the number of operating fields grows, and exploration and development activities increase, will there be some threshold beyond which the North Slope begins to suffer negative impacts that have yet to appear at current activity levels?
- Concerns have been expressed cover the possible impacts of oil and gas exploration on commercial fishing. In the Bristol Bay area, these concerns led the State of Alaska to push the United States federal government for a moratorium on the use of leases that had already been granted. In Cook Inlet, the EIS preceding exploration was extended over a five to six year period. In the end, the combined fishing community and environmental community pressure led to re-definition of the leases to exclude all but about 25% of the original leased area.
- For First Nations, a major concern has been contaminants in the water. This is a general concern that covers compounds with origins as far away the continental United States and includes oil and gas activities in Alaska.
- Overland pipelines to transport oil or gas raise concerns about their impact on local hunting patterns. Where hunting is an important local food source and part of the local culture, these potential impacts require remedial measures. Such on-shore pipelines would not be a concern for offshore oil and gas unless an on-shore pipeline was chosen as the most appropriate transportation mode.
- Arguably the highest profile concern in Alaska has been the lingering effects of the Exxon Valdez oil spill in Prince William Sound. This spill was indirectly related to offshore developments since the oil being transported was brought to Valdez from the North Slope by the Trans-Alaska pipeline. Studies have shown that the environment has responded with remarkable ability to rejuvenate itself, although there are still lingering after effects. In some ways the most important long term effects have been on the social and economic structure of the many coastal communities direct in the path of the oil along the southern coast of Alaska. A recent report offers a systematic assessment of the long the effects of the oil spill on the traditional villages of the Alutiiq people along the southern coast:

  "… the spill was a "determinative" event for those Pacific Gulf communities near its center, contrary to the assertions of industry's scientists. It was a clearly a "calamity" for nearby Alutiiq communities. The spill destabilized subsistence activities and associated social and cultural practices, as summarized below. However, the spill was not destructive of Alutiiq society or culture, contrary to claims of the Native class. It has been a catalyst for certain economic and cultural

changes in the spill area, but these changes appear to be principally in terms of degree, rather than kind. The spill has provided the impetus for the elaboration and acceleration of sociocultural, economic, and sociopolitical trajectories already underway in the Pacific Gulf. Many of these changes may be beneficial to the Alutiiq as a distinct group, while others portend less certain outcomes at this point in history[12]."

7.6 Lessons Learned

At the micro level, the observations made in the 1998 report remain valid.

Lessons learned from the offshore oil experience on Canada's East Coast clearly indicate that many of the perceived problems can be avoided with proper planning of the three major parties: the oil industry, government and communities. As an example, many of the anticipated concerns about the Hibernia project which arose during public hearings did not occur as evidenced by studies that were undertaken after the development phase was completed. That was in part a result of good management practices, but also because some of the concerns were unrealistic in the first place. Furthermore, much of the speculation about socio-economic effects was fuelled by local residents rather than by the oil companies. Nonetheless, one way for local jurisdictions to manage effects of oil and gas developments is to have proactive and positive management schemes in place that allow oil companies to explore and develop oil and gas fields, but only by adhering to realistic guidelines and regulations. These should be worked out between the three parties prior to any development. Examples are fisheries compensation and training needs. Lastly, it is important that local jurisdictions fully understand the various phases of oil and gas development and that realistic expectations and regulations are placed on the exploration phase, the most ephemeral phase of all.

The following points expand and re-emphasize some of the 1998 observations[13].

- Managing expectations of everyone involved (supply community; government, public) is very important. Part of this is to be realistic about what is possible in a world competitive business. Experienced observers caution not to expect too much too soon as it will be an evolutionary process. The world free trade environment has an important bearing on how management will be implemented.
- Open communications and dialogue, with a consistent message from all players to inform people about what 'benefits' means, how to get involved and what they can realistically expect is extremely

12 James A. Fall, Rita Miraglia, William Simeone, Chares J. Utermohle and Robert J. Wolfe, "Long Term Consequences of the *Exxon Valdez* Oil Spill for Coastal Communities of Southcentral Alaska", prepared by Division of Subsistence, Alaska Department of Fish and Game for Mineral Management Service, United States Department of the Interior, Alaska OCS Region, OCS Study MMS-2001-032, April 15, 2001

13 For another view of lessons learned, see Doug House, "Myths and Realities about Oil-Related Development: Lesson from Atlantic Canada and the North Sea", in *Exploring the Future of Offshore Oil and Gas Development in British Columbia: Lessons from Atlantic Canada*, Conference Proceedings, Simon Fraser University, 2000. http://www.sfu.ca/cstudies/science/oilgas/

important.

- It will be important to ensure that the public understands how the management process works.
- Creating the right sort of business environment is vitally important to attain the maximum local benefits. Oil and gas will be developed in a globally competitive environment and industry must be able to respond to its needs within any local framework.
- Maximizing local benefits requires good planning to understand local capabilties and what are the best opportunities for successful local participation.
- Pollution and worker safety are important issues that require resources to be dealt with effectively from a regulatory point of view.
- Requiring the operator of a developed field to produce annual lessons learned reports that outline strengths, weakness and gaps in the local economic suppliers can be a useful way to pin point areas to expand or strengthen. For example, the Sable project produces once per year a Supplier and Infrastructure Assessment report.

In a broader context, it can be assumed that any decision to lift the moratorium and resume exploration activity will be followed by the implementation of some form of federal-provincial regulatory mechanism based on legislation similar to the Atlantic Accord and the Accord Acts. In this sense, it worth noting the following observations at the broad policy level based on experience in the Atlantic Provinces.

Major offshore energy projects can provide excellent opportunities for development and growth of local industrial capacity. To realize these opportunities requires a combination of well-capitalized and technically capable companies on the supply side, and a steady flow of offshore opportunities on the demand side. It also requires recognition on the part of resource owners (*i.e.,* governments) that participation in offshore development as an investor or major contractor can be next to impossible due to significant barriers to entry. Concerted action on the part of government is required to overcome these barriers.

Large American and European companies dominate the global offshore oil and gas sector. Breaking into the industry as an investor is challenging because of barriers such as capital, technology and the lack of established partnerships. Breaking into the industry as a contractor is difficult because of the close working relationship built up between established producers and international service and supply companies. As long as decisions about approaches to field development and the selection of contractors are made outside the province, the interests of local industry are unlikely to be well served.

Government must recognize that major benefits from offshore development tend to flow out of the province. The return on investment will flow out of the province to non-resident operating companies. In the Atlantic area, for example, most of the oil and gas is exported to the US. Few local companies played a significant role in supplying goods and services during field development. The *Accord Act* governing offshore development contains the phrase “full and fair opportunity” when describing the

condition that local individuals and companies should face in competing for jobs and contracts. Giving real effect to these words is a substantial challenge for regulatory bodies when the whole industry structure and the decision-making that flows from it lean towards an international approach to field development.

Governments can do a better job in advancing local participation in offshore development. If government were serious about this, it would find creative ways of defining a supportive framework that takes the mandatory Benefits Plan as merely a starting point for constructive corporate citizenship. Firstly, as the owner of the resource, government has the ability to set the terms of access through exploration agreements and licensing conditions. For example, there is nothing to prevent the adoption of a competitive offshore licensing regime encompassing local investor participation on a right of first refusal basis. Secondly, governments, through moral suasion, could make it clear to operating companies that facilitating local investor participation through joint ventures would be a condition of a sound working relationship and a concrete commitment to the spirit of the “full and fair opportunity” objective.