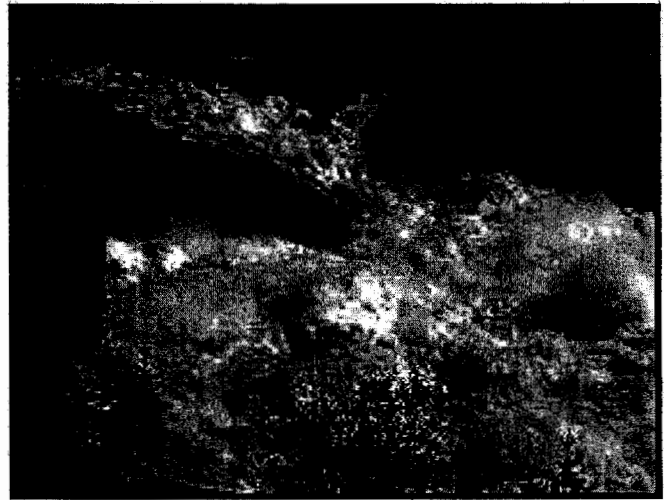




Comité d'évaluation
RECU LE
08 JUIL. 2003
COMEV

July 2003

Paper on the Draft Directives for the Preparation of the Impact Statement
Eastmain-1-A & Rupert Diversion



Rivière Rupert

RIVIÈRE RUPERT

The Organization

World Wildlife Fund (WWF), through its conservation work, aims to protect biological diversity, the sustainable use of natural resources and reduce pollution levels. In Quebec, WWF-Canada works to promote an overall territory management strategy that takes into account the many users and balances the social, environmental and economic dimensions, especially those associated with protected areas.

Interest in Project

The proposed Eastmain-1A/Rupert Dam and Diversion project is part of what is called the “great hydroelectric projects” in Quebec. As with any major hydroelectric project, there are significant impacts, especially on nature. Looking at its components, the entire hydroelectric project, if carried out, will irremediably affect the integrity of the entire ecosystem, including its biodiversity.

Given its mission to preserve biodiversity, WWF was asked for its opinion on the project, or, at the very least, to voice some of its concerns regarding maintaining biodiversity.

For several years now in Quebec, WWF-Canada has focused on conserving natural habitat and, in particular, intact ecosystems in the boreal forest. The proposed Eastmain-1A/Rupert project will take place in the heart of that territory. The boreal forest is considered to be endangered due to the accelerated development it is undergoing (forest, mining, hydroelectric, petroleum and gas development).^{1,2}

The territory in which the proposed Eastmain-1a/Rupert project will take place is for the most part intact, that is has not been significantly altered by humans. Indeed, this territory is in one of the Earth’s last frontier forests, forests that are sufficiently vast and unspoilt to ensure that natural ecological processes and viable populations are maintained for all native species³. We should point out that, out of all original (pre-colonial) forests, only one-fifth of them would be considered frontier forests today. Half of these frontier forests are in the boreal regions of the Canadian, Russian and Alaskan interior³. Thus, Canada, including Quebec, has a major responsibility to the international community to protect these last intact forests, or, at the very least, protect vast representative samples of this ecosystem. A network of representative protected areas has not been completed for the boreal forest, and even less so for the western part of the boreal forest in Quebec.

Unlike most countries, Québec still has the opportunity to protect vast intact regions (especially patrimonial rivers) and, thus conserve its biodiversity before it depletes. Protecting vast representative territories of boreal forest, within which any industrial exploration or exploitation will be prohibited, must be done before we make any changes to the land (construction of access roads, exploration and/or mining, logging and hydroelectric development, etc.). Not only are protected areas a critical component of any strategy for the conservation of biodiversity, protected areas also play an essential role as control

¹ Sub-Committee on the Boreal Forest of the Standing Senate Committee on Agriculture and Forestry. **Competing Realities: The Boreal Forest at Risk**. Government of Canada. Ottawa. June 1999.

www.parl.gc.ca/36/1/parlbus/commbus/senate/Com-f/BORE-F/rep-f/rep09jun99-f.htm

² Canadian Boreal Initiative. **The Boreal Forest at Risk : A Progress Report**. June 2003. www.borealcanada.ca

³ Bryant, D., D. Nielsen, L. Tanglely and coll., 1997. **The Last Frontier Forests: Ecosystems and Economies on the Edge**. World Resources Institute.

samples for the natural evolution of ecosystems free of major human intervention, thus enabling us to assess the impact that our practices have on other areas of our territory. This is tangible application of the precautionary, or “conservation first” approach advocated by WWF-Canada.

Description of the Project

By their signature to the “Peace of the Braves” treaty in February of 2002, the Cree Nation consented to the construction of the Eastmain 1-A powerhouse. This treaty led to the Boumhounan Agreement between the Société d’énergie de la Baie-James (SEBJ), Hydro-Québec and the Cree Nation, which elaborated the details of the project implementation. Among several significant environmental issues, the flow of the Rupert River will be decreased between 80 and 92% as a result of the Rupert diversion. In fact, the mean flow of the river can fill an Olympic sized swimming pool twice per second⁴.

Last year, the Rupert was listed as the first of the Canada’s Top Ten Most Endangered Rivers by the Earthwild International.⁴

The project consist of the following⁵:

- The Rupert diversion, which consists of redirecting some of the waters from the Rupert River watershed into the Eastmain watershed
- The construction of an additional generating station (Eastmain-1-A) on Eastmain-1 reservoir
- The addition of structures at the Sarcelle site, at the outlet of Opinaca reservoir

The diversion project involves the following structures and facilities:

- Four dams
- A spillway on the Rupert River
- About 50 dikes
- Two diversion bays with a total area of some 395 km² (area flooded larger than Montreal’ Island)
- A control structure between the two diversion bays
- A network of canals or tunnels totalling approximately 12,000 metres in length to direct the flow into the various parts of the diversion bays;
- Structures to restore some of the instream flow to the lower reaches of the Rupert River

Under average runoff conditions, the Eastmain-1 (currently under construction) and Eastmain-1-A generating stations, together with the Rupert River diversion, should produce up to 5.6 TWh per year.

⁴ www.earthwild.ca (based on a flow rate of 865 cubic metres per second)

⁵ http://www.hydroquebec.com/eastmain1a/en/pdf/rens_preliminaire.pdf

Project Timeline:

SEBJ began design studies in the summer of 2002. Hydro-Québec plans to file an environmental impact statement with the authorities in early 2004 in order to obtain the necessary government approvals. Once these approvals have been granted, construction work could begin in 2005 and the generating station could be commissioned by 2010.

COMMENTS ON THE DRAFT DIRECTIVES FOR THE IMPACT STUDY

In order to facilitate the use of our comments, they are presented in the order established in the document entitled “Draft Directives for the Preparation of the Impact Statement for the Eastman-1-A and the Rupert Diversion Project”.

Part I, Section 3. Guiding Principles

Section 3.4 Sustainable Development

“Promotion of sustainable development is a fundamental purpose of environmental assessment. ... Sustainable development is development that meets the needs of present generations without compromising the ability of future generations to meet their own needs. ... Progress towards sustainable development will require the following:

1) the preservation of ecosystem integrity, 2) the respect for the right of future generations to the sustainable use of renewable resources, and 3) the attainment of durable and equitable social and economic benefits.”⁶

Comments from WWF

- ❖ What does the Proponent mean by “preserving the integrity of the ecosystem”? It is already understood that the Project will considerably change the many physico-chemical parameters such as the hydrologic regime of waterways (e.g. flow rates), sediment regime, thermal regime, salt content, mercury content, etc.

“Even substantial minimum flows cannot adequately maintain biodiversity or ecosystem health.”⁷

“Virtually all methods currently in widespread use for determining instream flow needs will possibly lead to inadequate protection of ecologically important flow variability, and ultimately to the loss of native riverine biodiversity and ecosystem integrity. Current aquatic ecology theory and empirical observations suggest that a hydrological regime

⁶ Evaluating Committee. 2003. **Draft Directives for the Preparation of the Impact Statement for the Eastmain-1-A and the Rupert Diversion Project.** 63 pp.

⁷ Raphals, P./Helios Centre. 2001. **Restructured Rivers: Hydropower in the Era of Competitive Markets.** International Rivers Network. 113 pp.

characterized by the full or nearly full range of natural variation is necessary to sustain the full native biodiversity and integrity of aquatic ecosystem.”⁸

“A healthy functioning river ecosystem requires maintaining not only the integrity of the resident biotic communities and their habitacle, but also the natural processes that sustain them. Any modification to a river that modifies the parameters inevitably affects the river ecosystem”⁷

If the project is carried out, there will be a considerable loss in integrity for the ecosystem in spite of any mitigation or compensation measures. Thus, how can the Proponent claim to be preserving the integrity while going ahead with this project?

- ❖ **Maintaining the potential for recreation and tourism** of the Rupert River and neighbouring areas for future generations to sustainably use renewable resources should be considered. **The Project, especially regarding the diversion of the Rupert River and the many dykes, could have a serious adverse effect for future recreation and tourism of the rivers** affected by this project. As well, given that recreation and tourism is growing and that the economic benefits for this activity—which are sustainable and have little impact on the environment—are mainly beneficial to the local or regional economy, there should be consideration of the potential socio-economic benefits of this non-consumptive activity over a period of several decades, or even 100 years.
- ❖ Given that the many traditional hunting grounds will disappear or be affected by the Project and the consumption of piscivorous fish will be practically prohibited (due to the increased mercury levels), the contribution of country food to the local economy should be properly evaluated in the socio-economic study.

Part I, Section 4. Preparing and Presenting the Impact Study

Section 4.1 Study Strategy and Methodology

“The Proponents shall consider the application of the precautionary approach which requires: 1) that the onus of proof lies with the Proponents to show that a proposed action will not lead to serious or irreversible environmental damage, especially with respect to overall environmental function and integrity, considering system tolerance and resilience...”⁶

Comments from WWF

- ❖ According to WWF, **a preventive approach would first involve creating protected areas that are sufficiently vast and representative (especially for patrimonial rivers)**. In addition to being recognized as being essential for protecting biodiversity, these protected areas would be control samples for the natural evolution of ecosystems free of major human intervention, thus

⁸ Brian D. Richter *et al.*, “How Much Water Does a River Need?” *Freshwater Biology*. Vol.37 (1997), pp. 231-249 in Raphals, P./Helios Centre. 2001. **Restructured Rivers: Hydropower in the Era of Competitive Markets**. International Rivers Network. 113 pp.

enabling us to assess the environmental impact of our activities, especially hydroelectric activity, elsewhere on the land.

- ❖ WWF-Canada recommends that the Proponents specify, using a table, **the concept of “reversible versus irreversible”**: 1) Which activities are “reversible” and which ones are “irreversible” 2) Explain the basis for the designation and 3) Identify the proposed compensation for “irreversible” activities
- ❖ WWF-Canada recommends that the **Proponent assess the impact on environmental functions and integrity** (given the resiliency of the system) at **different scales** (regional, local, watershed) and also by taking into **consideration of cumulative impacts** of past and other future activities (e.g. Great Whale Complex, construction of access roads and energy transmission corridors).

Part II, Section 2. Project Justification

Section 2.1 Purpose of Project

“The purpose of the Project should be established from the Proponents’ perspective ... The statement of the Project’s justification must be presented in both energy and economic terms.”⁶

Comments from WWF

- ❖ We believe that it would be simplistic to justify a project of this scope strictly based on the Proponent’s perspective and only in terms of energy and the economy. As was mentioned earlier (Part I, Section 3.4), **the potential for recreation and tourism in this vast area and all the long-term socio-economic benefits should be taken into account.**

Given that the Project will obviously have negative impacts on biodiversity, as well as potential social impacts on the communities affected, the real issue in this project is maintaining the biodiversity, health and traditional activities of the Cree communities, as well as regional economic development opportunities (see Identification of the Key Issues, Part II, Section 6).

“Social, environmental, governance and compliance aspects have been undervalued in decision-making in the past. In light of this, the Commission developed criteria and 26 guidelines to complement the body of knowledge on good practices and to add value to current national and international guidelines, including those on technical, economic and financial aspects. Seen in conjunction with existing decision-support instruments, the Commission’s criteria and guidelines provide a new direction for appropriate and sustainable development”⁹

Because the project should be economically viable, socially equitable and ecologically durable, the guidelines proposed by World Commission on Dams should be incorporated into the comprehensive evaluation.

⁹ Dams and Development: A New Framework for Decision-Making: The Report of World Commission on Dams An Overview - November 16 2000. p. 36

“Dealing with risks cannot be reduced to consulting actuarial tables or applying a mathematical formula. In the end, as in the case of rights and entitlements, they must be identified, articulated and addressed explicitly. This will require the acknowledgement of risk to be extended to a wider group than governments or developers in order to include both those affected by a project and the environment as a public good.”¹⁰

“The WCD (World Commission on Dams) concluded that the 'end' that any project achieves must be the sustainable improvement of human welfare. This means a significant advance of human development on a basis that is economically viable, socially equitable and environmentally sustainable. If a large dam is the best way to achieve this goal, it deserves support. Where other options offer better solutions, they should be favoured over large dams.”¹¹

“In any event, the true economic profitability of large dam projects remains elusive, as the environmental and social costs of large dams were poorly accounted for in economic terms.”⁷

Part II, Section 3. Description of the Alternative Means Considered and the Project Selected

Section 3.1 Description of Alternative Means of Carry Out the Project

“The Impact Statement must indicate the feasible alternative means capable of meeting the Project’s objectives, including the one that initially seems to be the optimal alternative mean in terms of environmental protection.”⁶

Comments from WWF

WWF comments will focus on alternative arrangements for linear disturbances and infrastructure.

- ❖ WWF wished here to underline the importance of assessing the impacts of the infrastructures fragmenting the land (e.g. access roads, hydroelectric energy transmission lines, railways, etc.) due to its impacts on biodiversity.

“The main factors affecting biological diversity in Quebec are the loss and degradation of habitat (including habitat fractioning).^{12,13} Fragmentation of the natural habitats is considered to be one of the main factors for the lost of biological diversity.¹⁴”

“Transport systems often cover large distances or form widespread networks, affecting biodiversity locally and regionally. The major impacts are:

¹⁰ Dams and Development: A New Framework for Decision-Making: The Report of World Commission on Dams An Overview - November 16 2000. p. 25

¹¹ World Commission on Dams. 2000. **Dams and Development: A New Framework for Decision-Making.** <http://www.dams.org>

¹² Government of Quebec. 1992. **État de l’environnement au Québec.** Ministère de l’Environnement. Montréal. 550 p.

¹³ Government of Quebec. 1994. **Vision stratégique 1995-2000.** Ministère de l’Environnement et de la Faune. Québec. 39 p.

¹⁴ Jarzen, D.M. 1994. **Evolutionary Perspectives on Biodiversity.** pp. 543. In : **Biodiversity in Canada: A Scientific Assessment.** Environment Canada. 275 p.

- a) *Loss and disturbance of habitat: including traffic noise (up to 400 m on either side of roads).*
- b) *Barrier effects: occur when species are unable or unwilling to cross a transport route, which impedes gene flow within a population.*
- c) *Habitat fragmentation and isolation: occurs when natural habitats are separated, grow smaller and become surrounded by an inhospitable landscape. In general, large continuous blocks retain more undisturbed habitat, and support more species, than an equivalent area of fragmented habitat blocks. Fragmented habitats have proportionally more edges exposed to disturbances, pollution and invasion by alien species.*
- d) *Mortality: new road access to the land will make it easier to exploit wildlife, not to mention road accidents.*
- e) *Pollution: Air, soil and water pollution caused by vehicular emissions, oil leaks and road run-off or sumping. That cause changes to sensitive vegetation, particularly wetlands.*
- f) *Invasion of alien species: Some of these species become invasive species and competing with wildlife up to eliminate them.*

To reduce the negative impacts on biodiversity, it is recommended to: 1) route the roads through areas that have already been disturbed, avoiding blocks of relatively undisturbed habitats, and 2) promote the grouping of linear infrastructures in order to minimize land use and land fragmentation."¹⁵

Part II, Section 6. Identification of the Key Issues

*"These issues refer to rather broad and general problems considered important from a scientific and social standpoint. Moreover, these issues take into account the concerns and worries of the communities affected by the Project and that can tip the balance in favour of or against the Project."*⁶

Comments from WWF

- ❖ The global issue of the project is to maintain the biodiversity, health and traditional activities of the Cree communities, as well as regional economic development opportunities.

Globally declining freshwater ecosystems

*"Freshwater species, especially fish, are increasingly endangered, a significant percentage of wetlands have already been lost, and the capacity of aquatic ecosystems to produce many of the goods and services on which societies depend is rapidly declining, making water for nature an essential consideration."*⁷

¹⁵ IUCN. **Road Infrastructure and Biodiversity.** Biodiversity in Development, Biodiversity Brief 8. Web Site: <http://www.iucn.org/themes/wcpa/pubs/pdfs/biodiversity/>

“Freshwater is the single most essential good for our well-being. With freshwater wildlife declining by 54 % in the last 30 years, freshwater ecosystems are by far in worse condition than forest, grassland, and coastal ecosystems.”¹⁶

Knowledge of genetic, taxonomic and ecosystem diversity of the study area is patchy and insufficient for robust estimation of the effects of environmental impacts of the hydroelectric project on biodiversity. Moreover, it was demonstrate that biodiversity preservation is essential to preserve the stability and production of the ecosystem.¹⁷

Need to complete a protected areas network

- ❖ As mention previously, protected areas is an important issue for WWF. A Global strategy to develop a representative protected areas network on Cree’s Territory should be considered as a “Key Issues”. This is important considering a large part of the territory will be modified by the Project and considering mitigation measures have given little results. The section 9 of *the directives* talks about a description and location of protected areas (actual and future). It is also said “the Proponents shall present the manner in which the Project will modify them, as well as the importance of this change”¹⁸. How this can be evaluate when the first protected areas have just been established throughout the Province?

Part II, Section 8. Description of the Biophysical Environment and Assessment of the Impacts

Comments from WWF

“The generic nature of the impacts of large dams on ecosystems, biodiversity and downstream livelihoods is increasingly well known. From the WCD Knowledge Base it is clear that large dams have led to:

- *The loss of forests and wildlife habitat, the loss of species populations and the degradation of upstream catchment areas due to inundation of the reservoir area*
- *The loss of aquatic biodiversity, of upstream and downstream fisheries, and of the services of downstream floodplains, wetlands, and riverine, estuarine and adjacent marine ecosystems; and*
- *Cumulative impacts on water quality, natural flooding and species composition where a number of dams are sited on the same river*

On balance, the ecosystem impacts are more negative than positive and they have led, in many cases, to significant and irreversible loss of species and ecosystems.”⁷

¹⁶ Freshwater problems: Introduction; WWF International, Web Page. WWF. 2002. **Living Planet Report**. (page 3). 36

pp.

¹⁷ **La biodiversité et le projet de Grande-Baleine**, dossier no.11 évaluation environnementale, (p. i, 45)

¹⁸ *Draft Directives for the Preparation of the Impact Statement for the Eastmain-1-A and Rupert Diversion Project-section 9*

- ❖ WWF wants specific attention to be paid to the two vulnerable species in Quebec on this land: the caribou (forest ecotype) and the bald eagle.

➤ Caribou

In Quebec, there are three caribou ecotypes: mountain caribou (e.g. in the Parc de la Gaspésie), barren ground caribou (which uses primarily tundra habitat in summer, also called the migrating caribou) and, between the two, the woodland caribou (which lives year-round in the boreal forest). Although these three ecotypes belong to the same species (*Rangifer tarandus*), they are different genetic entities with different behaviour. The barren ground caribou (especially in the winter) and the woodland caribou (all year round) live in the James Bay area.

Maintaining biodiversity also involves maintaining genetic diversity within a species or subspecies (or ecotype). The problem of maintaining genetic diversity becomes acute when the species are at the edge of their species distribution area. This may be the case in the James Bay region for the barren ground caribou (southern border of its area). The loss of habitat and/or fragmentation may lead to a loss in genetic diversity.

“Species at the extreme limits of their range often have a proportion of alleles that are in central populations ... Local genetic adaptation can result from millennia of natural selection, but local variation can be lost instantaneously through extirpation caused by habitat destruction or by genetic mixing.”⁷

“The fragmentation of the habitat may isolate the herds of caribou and makes them more vulnerable to hunting and poaching, decrease the gene transfer between groups and increase the risks of predation and overexploitation of food.”¹⁹

For the barren ground caribou and woodland caribou, the newly built reservoirs and dams as with other infrastructures (e.g. roads) may interfere with their seasonal movement.

*“In addition to logging, other human activities are carried out in the woodland caribou distribution area, such as the **development of hydroelectricity**, mining and oil development, sod harvesting and various recreation activities. **The greatest impact of these various activities appear to be the development of the associated road network, which increases access to the land for hunters, poachers and predators.**”¹³*

➤ Bald Eagle

“ ... The Rupert also provides habitat for flourishing populations of Bald Eagles, it is easy to spot eight to ten of them in a single day on the river.”²⁰

¹⁹ De Bellefeuille, S. 2001. **Le caribou forestier et la sylviculture**. Ministère des Ressources naturelles. Direction de l'environnement forestier. 91 pages.

²⁰ EarthWild International. 2002. **Canada's Top Ten Most Endangered Rivers**. 25 pp. Internet : www.earthwild.ca

The bald eagle is on the list of species that are likely to be designated endangered or vulnerable in Quebec. Recently, the Endangered or Vulnerable Wildlife Advisory Committee recommended that this species be considered a vulnerable species in Quebec.

“The bald-headed eagle looks for areas away from human activity. It is during the reproduction season that these eagles are the most sensitive to disturbances. There are many cases where eagles have abandoned a site after major disturbances (e.g. tree harvesting, building a road).

In Quebec, the proposed protection approach is the following: an intensive protective area around the nest and surrounding buffer area. The intensive protection area extends over a 300-metre strip around the nest. In this area, all activity is prohibited at all times. Around this intensive protection area is an additional strip of 400 m in which activities are allowed from September 1 to March 15. However, these activities must not involve the creation of permanent infrastructures (roads, buildings).”²¹

“It is important to ask not only how a dam affects the population on one or more key species, but also how it affects biodiversity in the watershed or region.”⁷

❖ A few important habitats

➤ Existing Protected Areas and IABC Sites

Although the protected area network is not complete for the James Bay region, the Quebec government currently protects two sites:

- *Réserve de biodiversité de la Baie de Boatswain*
- *Réserve de la biodiversité Ministikawatin*

These two biodiversity reserves include, in full or in part, IABC sites (important areas for bird conservation in North America), namely: Baie Boatswain and Cabbage Willows Bay. There are major populations of waterfowl and shorebirds in these areas. These species include the Canada Goose, Brant, Snow Goose, American Black Duck and Yellow Rail (threatened in Quebec). We should also mention that the Crees of James Bay hunt the Canada Goose for food.

It is important that these sites be conserved. They are sensitive to environmental disturbances.

➤ Estuaries and Wetlands

A good number of species of migrating birds feed around the coastal waters and riparian habitat of James Bay in general, especially around Boatswain Bay. Coastal marshes and eelgrass bed are among the most important habitats for the birds in or around sanctuaries.

²¹ Gouvernement du Québec. 2002. **Protection des espèces menacées ou vulnérables en milieu forestier : Le pygargue à tête blanche (*Haliaeetus leuccephalus*)**. Société de la faune et des parcs du Québec, Direction du développement de la faune. Ministère des Ressources naturelles du Québec, Direction de l'environnement forestier.

They feed on the vegetation, invertebrates or organic detritus. The sometimes major flooding in the spring brings greater amounts of food to these birds. **By changing the normal course of the river, the entire biodiversity in the area is directly affected. The delicate balance between the salt and fresh water in Rupert Bay allows these birds to survive.**

“The flooding from opening of the reservoir would turn several hundred square kilometres of varied habitats (small islands and islets, wetland, bog, muddy or sandy foreshores, rocky beach, cobbly shore, heaths, salt-marshes, eelgrass bed), into a single purely aquatic habitat.”²² It is a known fact that the loss of ecological diversity strongly contributes to the loss of a regional biodiversity.

Specific recommendations:

- a) Ensure all existing conservation designations (e.g. protected areas, IABC sites) are not impacted by the proposed development. If so, then the proponent should specify replacement habitat of equal or greater ecological value.
- b) Any existing management and monitoring programs for woodland and barren ground caribou should be evaluated and, where necessary, monitoring strategies should be improved in advance of any development.
- c) Any existing management and monitoring programs for bald eagle should be evaluated and, where necessary, monitoring strategies should be improved in advance of any development.
- d) All riparian habitats potentially affected by the proposed Project should be documented (mapped) and potential habitat changes should be used to estimate changes in the viability of wildlife populations.

Part II, Section 11. Mitigation, Compensation and Residual Impacts

*“The Impact Statement must also present an assessment of the effectiveness of the proposed mitigation measures based on past hydroelectric projects and provide an estimate of their costs.”*⁶

Comments from WWF

- ❖ According to Hydro-Québec, the biodiversity’s durability is ensured by mitigation measures.²³ However, according to the Grande-Baleine environmental assessment, *“the most beneficial mitigation measures, from the proponent (H-Q) and the natives perspectives, are preventive. There seems to be a consensus between the proponent (H-Q) and the Crees, saying that most*

²² Dignard, N., Lalumière, R., Reed, A., and Julien, M. 1991. **Les habitats côtiers du nord-est de la Baie James**. Special Publication No. 70. Environment Canada, Canadian Wildlife Service, Ottawa. 30 pp. in Poulin, B. and Lefebvre, G. 1993. **État des connaissances sur l’avifaune de la région visée par le projet hydroélectrique Grande-Baleine. Évaluation environnementale du projet Grande-Baleine : Dossier-synthèse No. 3**, Bureau de soutien de l’examen public du projet Grande Baleine, 99 p.

²³ **Rapport sur le développement durable 2002, : des actions bénéfiques pour l’environnement, pour la société, pour l’économie, et pour toutes les régions du Québec; un engagement pour les générations à venir** Hydro-Québec, p. 16, 48 pp. www.hydroquebec/publications/

*mitigation measures were too inefficient and expansive to be justified for the La Grande Project*²⁴.

For a project such as the diversion of the Rupert, there are some reasons to believe that the conclusion could be similar. Thus, mitigation measures are not an alternative means to allow a project to be considered “acceptable” by WWF.

*« It is not possible to mitigate many of the impacts of reservoir creation on terrestrial ecosystems and biodiversity, and efforts to 'rescue' wildlife have met with little long-term success. »*⁷

*“The costs of protecting an ecosystem are far lower than those involved in restoring it²⁵; as well, it is impossible to accurately recreate a given ecosystem.”*²⁶

Partie II, Section 13. Follow-up and Monitoring program

Comments from WWF

- ❖ The following statement is fairly clear on what we can expect from the Eastmain-Rupert Project.

*“Efforts to date to counter the ecosystem impacts of large dams have met with limited success due to the lack of anticipation, the poor quality and uncertainty of predictions, the difficulty of coping with all impacts, and the partial implementation of mitigation measures.” “The paucity of monitoring and evaluation activity once a large dam is built has impeded learning from experience.”*²⁷

Possible impacts would be: “the artificial increase or decrease species; numbers and a potential loss in genetic diversity; and the shrinking of natural ecosystems.”²⁸

The impact assessment, particularly when concerning marine ecosystems, should take into account cumulative impacts, prior to hydroelectric development.

²⁴ L'atténuation des impacts au complexe La Grande, dossier no.8 évaluation environnementale, p. (68)

²⁵ Cairns, Jr., J. 1993. Is restoration ecology practical? Rest. Ecol. 1(1):3-7 in Alfonso, N. et McAllister, D.E. 1994. La biodiversité et le projet hydroélectrique Grande-Baleine. Dossier-synthèse No. 11, Bureau de soutien de l'examen public du projet Grande-Baleine, 81 p.

²⁶ Alfonso, N. unpub. MS: Restoration Ecology in North America: An Overview and Discussion. 10 pp. in Alfonso, N. et McAllister, D.E. 1994. La biodiversité et le projet hydroélectrique Grande-Baleine. Dossier-synthèse No. 11, Bureau de soutien de l'examen public du projet Grande-Baleine, 81 p.

²⁷ Dams and Development: A New Framework for Decision-Making: The Report of the World Commission on Dams An Overview - November 16 2000. p.18- 22

²⁸ La biodiversité et le projet de Grande-Baleine, dossier no.11 évaluation environnementale, p. (46)

The Grande Baleine's environmental assessment²⁹, suggests the following list of (criteria/indicators): construction impacts, erosion impacts from dams and road constructions, variation of the flow regime (particularly downstream of dams), decrease of quantity and variability of traditional resources, etc. to be used to assess and monitor the dam's potential impact.

Conclusion

We have presented evidence from the scientific literature clearly indicating that the proposed Project will likely result in significant ecological impacts to ecosystem function and wildlife populations. In summary, WWF-Canada recommends that the following issues be included in the Directives to ensure that they are adequately considered in the *Impact statement*:

- Identify and establish a representative protected areas network to conserve biological diversity prior to the realisation of the Project, which means before the year end of 2004;
- Define measures to monitor the impacts on existing protected areas (Ex. Baie Botswain);
- Develop an access plan that includes provisions for a road network that minimizes the impact on the biodiversity;
- The rehabilitation and restoration of degraded ecosystems and promotion of the recovery of threatened species;
- The respect, preservation and maintenance of traditional knowledge of the sustainable use of biological diversity with the involvement of the local Cree communities;

²⁹ La biodiversité et le projet de Grande-Baleine, dossier no.11 évaluation environnementale, p. (47)



WORLD WILDLIFE FUND CANADA
1253, av. McGill College, office 330, Montreal (Quebec) H3B 2Y5
Phone : (514) 866-7800 Fax : (514) 866-7808