

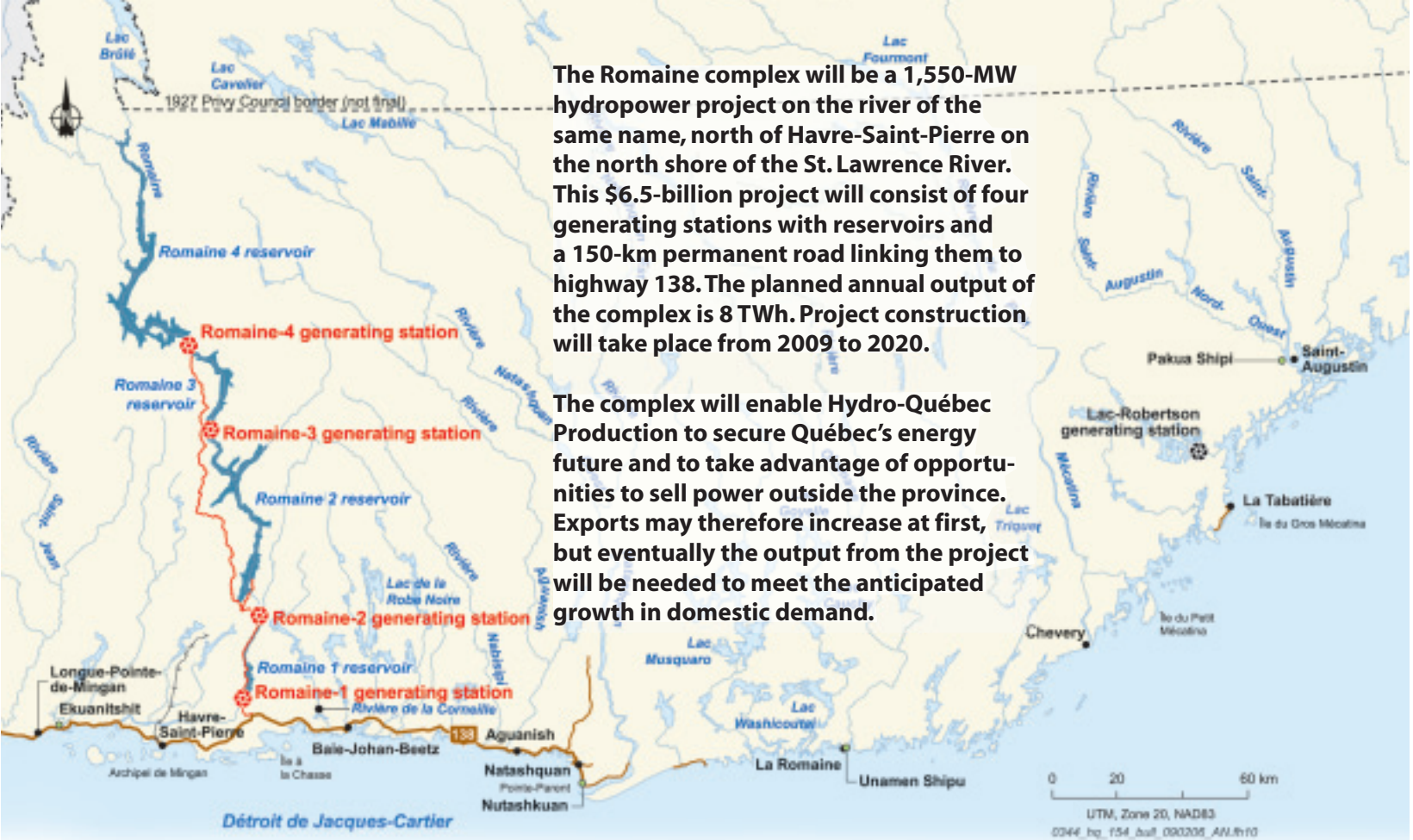


Romaine

Complex

Project Information
February 2009





The Romaine complex will be a 1,550-MW hydropower project on the river of the same name, north of Havre-Saint-Pierre on the north shore of the St. Lawrence River. This \$6.5-billion project will consist of four generating stations with reservoirs and a 150-km permanent road linking them to highway 138. The planned annual output of the complex is 8 TWh. Project construction will take place from 2009 to 2020.

The complex will enable Hydro-Québec Production to secure Québec's energy future and to take advantage of opportunities to sell power outside the province. Exports may therefore increase at first, but eventually the output from the project will be needed to meet the anticipated growth in domestic demand.

Main characteristics

Each development will include a rockfill dam, a generating station with two generating units, and a spillway.

| | Romaine-1 | Romaine-2 | Romaine-3 | Romaine-4 |
|---|------------|-----------|-----------|-----------|
| Dam location (KP*) | 52.5 | 90.3 | 158.4 | 191.9 |
| Dam height (m) | 37.6 | 121 | 92 | 87.3 |
| Number of dikes | 1 | 6 | 1 | – |
| Reservoir area (km ²) | 12.6 | 85.8 | 38.6 | 142.2 |
| Net head (m) | 62 | 158 | 119 | 88 |
| Instream flow (m ³ /s) | 140 to 200 | 2.7 | 2.2 | 1.8 |
| Number of generating units (Francis turbines) | 2 | 2 | 2 | 2 |
| Installed capacity (MW) | 270 | 640 | 395 | 245 |
| Average annual output (TWh) | 1.4 | 3.3 | 2 | 1.3 |

* KP: kilometre point on the river



Romaine-1 development (simulation)



Havre-Saint-Pierre

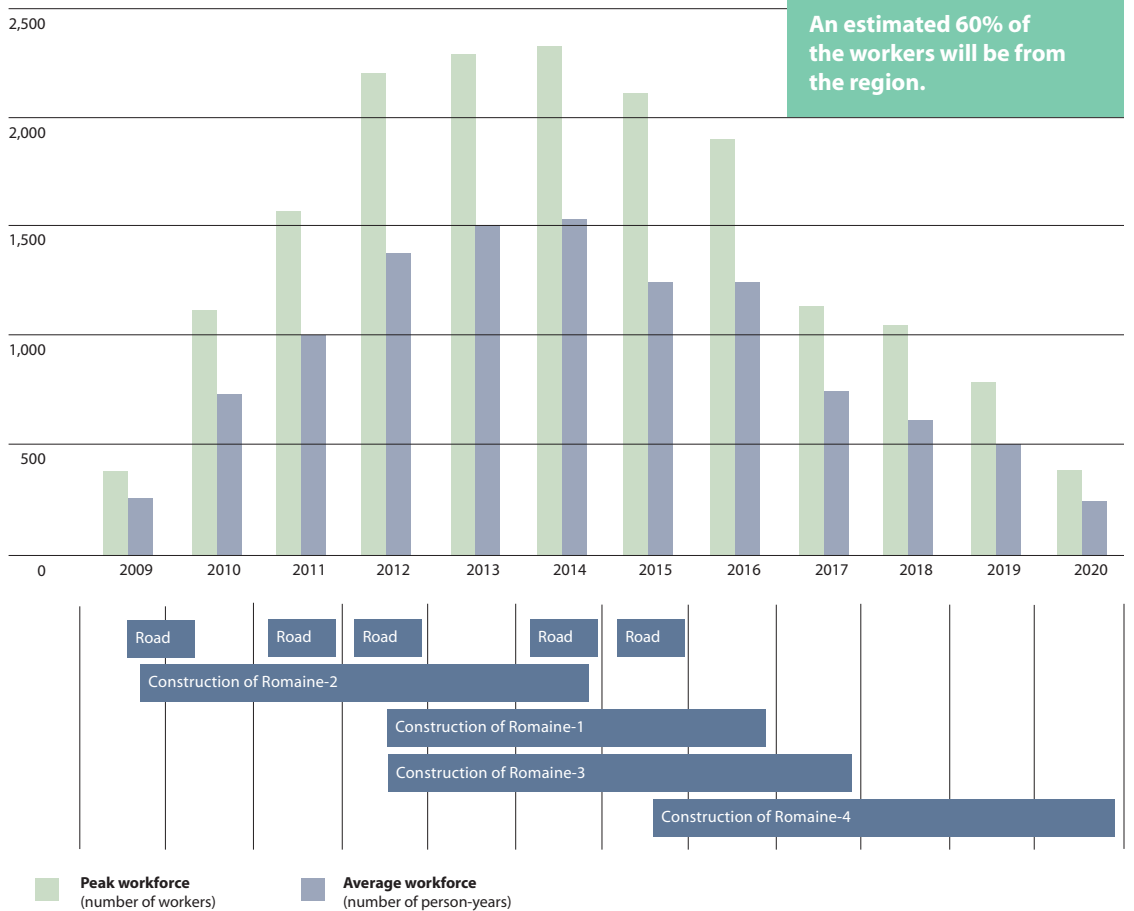


Economic and social spinoffs

Construction of the Romaine complex will generate substantial economic spinoffs. Contracts and purchases of goods and services are estimated at \$3.5 billion for all of Québec, with about \$1.3 billion for the Côte-Nord region alone.

The project will offer attractive business opportunities to companies in the region and encourage development of local expertise. As it does for all its large projects, Hydro-Québec will set up incentives to ensure that workers and companies in the region will be able to participate fully.

Construction Schedule and Workforce



The construction project will sustain an average of 975 person-years of employment for 11 years. From 2012 to 2016, the peak workforce will be over 2,000 workers.

An estimated 60% of the workers will be from the region.

Protecting the environment

A large-scale environmental impact assessment has been completed. This involved analyzing all physical, biological and human components likely to be affected by the project.

Based on this analysis, mitigation and compensation measures have been developed to reduce the environmental impacts and enable land users to continue their activities. All these measures should minimize the project's ecological footprint.

The estimated cost of the studies, mitigation measures and environmental monitoring is \$200 million.

Because the river is sharply incised, the total area of the four reservoirs will be only 279 km²—seven times less than Manicouagan reservoir.

Brook trout



Chutes à Charlie



Caribou



Peatland (downstream of Romaine-1)



Protection of fish habitat

Instream flow to protect downstream fish habitats

Seeding of landlocked salmon in Romaine 4 reservoir and lake trout in Romaine 1 reservoir

Development of lake whitefish, lake trout and Arctic char spawning grounds

Development of brook trout spawning grounds and habitats

Specific measures for Atlantic salmon

Major 20-year enhancement program to preserve the Atlantic salmon

Ecological instream flow adapted to meet the needs of salmon throughout the construction and operation phases

Development of spawning grounds and nurseries

Protection of wildlife

Installation of osprey nesting platforms

Installation of nesting boxes for Barrow's goldeneye and tree-nesting ducks

Inventory and telemetric monitoring of woodland caribou

Vegetation

Partial clearing of banks around reservoirs and development of bays to attract wildlife

Development of wetlands in borrow pits (nearly 100 ha)

An example of spawning grounds developed in the Péribonka



Atlantic salmon



Wetland created in a borrow pit



Environmental follow-up

The project will include an extensive program of environmental follow-up monitoring until 2040. Local and Innu communities will participate in this program, the aim of which is to verify the efficacy of the measures implemented and to make any necessary changes.

The project will not affect the Archipel de Mingan or the mouth of the Romaine, nor the commercial species that live there such as snow crab and scallops.

The mouth of the Romaine



Salmon fishing



Innu snowmobilers



Innu participation in field surveys



Soil sampling



Hunting and fishing

Construction of boat ramps on the banks of each reservoir

Development of portage paths

Widened right-of-way to allow parking along the Route de la Romaine

Snowmobiling

Construction of a snowmobile bridge downstream of Romaine-1

Snowmobiles will be able to cross the river using the road bridge at Romaine-1

Construction of a parking lot near Romaine-1

Forestry

Recovery of merchantable timber from reservoirs and jobsites

Jobsite rehabilitation (reforestation and planting)

Mercury

The increase in fish mercury in the Romaine reservoirs is expected to be similar to or lower than in the La Grande reservoirs. Experience has shown that the mercury exposure levels for area residents will be low and are not dangerous to human health.

Consumption recommendations will be compiled in conjunction with Health Canada and the North Shore Health and Social Services Agency based on the results of regular monitoring of fish mercury levels in the reservoirs.

Tree-planting at a former jobsite





Ekuanitshit School



Ekuanitshit (Mingan)



Havre-Saint-Pierre



Cottage on the Romaine

Partnering with communities

Community participation at all stages of the project

Hydro-Québec builds its projects in partnership with the local and regional host communities. Since 2004, the project characteristics and environmental studies have been presented to the Mingan and Innu communities during meetings, workshops, and information and discussion panels.

The Innu communities of Ekuanitshit, Nutashkuan, Unamen Shipu and Pakua Shipi participated in the studies of the Innu environment.

The company will also work closely with these communities on the eventual project construction and environmental follow-up.

Partnering agreements that benefit communities

Hydro-Québec signs partnering agreements to promote the long-term development of host communities well beyond the completion of the project.

The agreement signed with the regional county municipality (RCM) of Minganie will support economic, recreational/tourism, social and cultural projects within its territory.

As for the agreements with the Innu communities of Nutashkuan, Unamen Shipu and Pakua Shipi, they will fund economic, community and cultural projects, as well as support traditional activities and job training for community members. Hydro-Québec is continuing talks with representatives from Ekuanitshit with a view to finalizing an agreement.

Agreements between Hydro-Québec and the host communities

January 2008: Partnering agreement with the RCM of Minganie

July 2008: Nanemessu-Nutashkuan agreement with the community of Nutashkuan

October 2008: Unamen-Pakua agreement with the communities of Unamen Shipu and Pakua Shipi

October 2008: Understanding in principle with the community of Ekuanitshit



Even with the generating stations in operation, the lower Romaine will look the same as before. Hunting, fishing and trapping will still be possible on Ile Mistaministukueetshuan.

In a spirit of sustainability

Hydro-Québec builds its projects in a spirit of sustainable development—that is, development that achieves a balance between economic, social and environmental imperatives. By promoting hydroelectricity, a renewable energy source, Hydro-Québec meets present needs while preserving the environment and providing for the power requirements of future generations.

Once the Romaine complex is commissioned, Hydro-Québec will pay additional royalties to the Generations Fund on the basis of the amount of electricity generated.

This will help to reduce the provincial debt in the coming years, thereby improving generational equity.

At Hydro-Québec, the commitment to sustainability takes the form of energy efficiency, technological innovation and ongoing development of renewable energy options.

With 97% of its output generated from water, Hydro-Québec is responsible for less than 1.5% of the greenhouse gases emitted by all Canadian power utilities.

Hydro-Québec's electricity exports to northeastern North America made it possible to avoid the emission of some 37 million tonnes of greenhouse gases between 2001 and 2007.

Hydropower can be stored in the form of reservoir water, which makes it an ideal complement to other renewable but intermittent energy sources, like wind power.

www.hydroquebec.com/romaine

Hydro-Québec 2009
Reproduction authorized with reference to source
Legal deposit – 1st quarter 2009
Bibliothèque et Archives nationales du Québec
Library and Archives Canada
ISBN 978-2-550-53252-1
ISBN 978-2-550-55185-0 (PDF)

2009G010 A
Ce document est également publié en français

 **Hydro
Québec**