Renewable Energy for Newfoundland and Labrador: Policy Formulation and Decision Making

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Abstract:

Newfoundland and Labrador province is blessed with many natural resources. The province heavily depends on nonrenewable petroleum products for its domestic need and export. Considering the limited nature of this nonrenewable resources, the provincial government has takes many policy initiatives to develop its renewable energy sector. It has been found that the concentration was mainly on hydroelectric generation where the government is now implementing the formulated policies. But, policymakers are in policy formulation stage for wind energy development. Overall, the province has set its long term vision of sustainable energy supply and moving towards development of clean and environment friendly energy.

Key Words: Newfoundland and Labrador, renewable energy, policy formulation

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1. Introduction:

Sustainable energy supply is very essential for sustainable development for aneconomy and appropriate policy formulation for renewable energy (RE), in the same way, is essential to ensure sustainable energy supply. Renewable energy is the inevitable choice for sustainable economic growth for any country in the present world and its government has the key and initial power for developing renewable energy development policy (Peidong et al., 2009). Newfoundland and Labrador has enormous potential of RE generation. According to the government of Newfoundland and Labrador (2007), the state has the potential of 18,000 Megawatts (MW) electricity generation (renewable) whereas the requirement is only approximately 2,400 MW to meet its own electricity needs[1]. With this great store of clean, RE resources (hydroelectricity and wind energy), the province has the capacity not only to provide for its own long-term energy security but also has the potential to replace greenhouse gas-emitting energy sources in the North American marketplace (Energy Plan, 2007). Although the state has huge RE potential, it is highly dependent on its nonrenewable energy sources like crude oil and natural gas. This dependence on non-renewable, deplete-able energyof the provincewas more than 82% in 2012 (Enerdata, 2013).

Under these circumstances, the policy makers began to recognize this as a problem and set up agenda of developing renewable energy. During last few years, policy initiatives and strategies have been made to develop and expand the RE sector. The province has formulated its energy

[1]This production mainly comes from upper Churchill project. Because of the upper Churchill contract 1969 between Hydro-Quebec and CF(L) Co., the province will receive only 10 percent of the total energy production until 2041.

plan (2007) with the objective of protecting the environment, developing resources to serve long-term interests of the people and contributes to a vibrant and sustainable Newfoundland and Labrador. This energy plan shows the development plan of the state both for renewable and non-renewable energy resources. The natural resources department of the province also formulated its Strategic Plan 2011-14 to ensure sustainable development of the renewable energy sector.

2. Study Scope and Objectives:

Under the existing situation of high dependency on non-renewable energy, a number of policies formulated/initiated and strategic decisions have been taken (in the form of Energy Plan 2007 and Strategic Plan 2011-2014). The government is working relentlessly with course of various actions to upgrade and finalize its policy package for the sector. It is very essential and time worthy to research on the rational policy planning of the province for RE development. This research paper will mainly deal with two objectives regarding the renewable energy policy of the province- explore the policy initiatives taken for renewable energy resources development and investigate the essentiality of these policies for the development of this sector. Here policy initiatives are the policy actions that are part of policy formulation and decision making stage of policy cycle. According to IPCC SRREN (2011), RE not only contributes to secure future energy supply but also contributes to social and economic development; reduce GHG emission and governments' needs to enact specific renewable energy policies to meet these objectives and substantial growth of RE technologies. With the same objective, the province has formulated a set of concrete policy guideline not only to ensure future energy need but also to keep environment clean. This research paper investigated this renewable energy policy guideline formulated by the province and determines the significance of these formulated policy initiatives

for the development of this energy. The study will provide additional insight to the objective and goal of each formulated policy and strategic decision in order to determine the essentiality and significance of the policy to develop RE sector. The paper focuses mainly on the renewable energy policies and legislative measures taken for hydro and wind energy development and policies relevant to these two sectors. In this way, this research paper will try to frame the progress of RE policy of the province with policy cycle framework.

3. Theoretical Background

The concept of policy cycle was developed by Harold Lasswell of USA in the 1950s. Policy cycle model is an analytical tool is that helps to understand the public policymaking process by breaking it into a number of stages and sub-stages. Each of the stages is interlinked and can be investigated alone or in terms of its relationship to other stages of the cycle (Howlett and Ramesh, 2013). The literature on policy cycle suggests that the public policy process consists generally of a set of four major functional stages- agenda setting, policy formulation and decision making, implementation and evaluation and termination (Jann and Wegrich, 2007; Dye, 1992). Once the existence problem is identified and needs to remedy, the next stage in the policy cycle is policy formulation and decision making. Policy formulation and adoption is mostly a government program that includes the definition of policy objectives and consideration of alternative actions or initiatives. Decision making is rational planning to achieve clearly defined goal and adoption of proposed policy depends on resource scarcity and actors competencies (Jann and Wegrich, 2007). The role of this stage is to identify and review the possible solutions to policy problems, determine favorable and the unfavorable factors, and make decision of accepting or rejecting the solutions or actions (Howlett and Ramesh, 2003). Policy makers of the

province are currently finished the policy formulation and decision making stage with regard to hydro energy policies but for wind energy policy, they are still in policy formulation and decision making stage. They have formulated a number of policy action for hydro and wind energy but adopted mostly hydro energy policies keeping wind energy policies mostly on hold.

4. Policy Initiatives

Energy is an essential part of human living and economic development not only for the present period, but also will be very significant for future generation. Good planning and long-term comprehensive stewardship is essential for attaining the goal of dynamic efficient allocation energy resources and is also critical for environmental preservation and economic development for a nation. Government of Newfoundland and Labrador through its department of natural resources has formulated comprehensive policy initiatives for the development of its highly potential renewable energy sector.

4.1 Managing Energy Warehouse

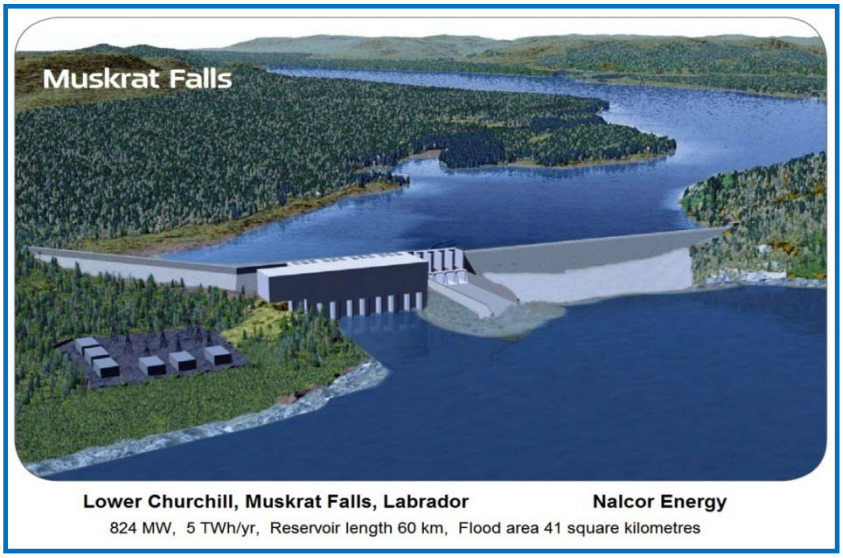
The province has abundance of natural resources in the resource scare world. Right resource management decisions are require for managing its Energy Warehouse. The province energy supply is heavily relied on nonrenewable energy sources like oil and gas in the past years. Considering the depletion of these nonrenewable resources, the provincial government has taken initiative to leverage its non-renewable oil and gas wealth into a renewable future. The state will invest a significant portion of its non-renewable resource revenues in renewable energy infrastructure and development. Moreover, the state seek to work with other resource development partners to develop its resources for mutual benefit; and increase strategic

investment in information gathering and options for the development of its energy resources. To govern the pace of development and benefit from energy resources, the state has planned to ensure that its policy and legislative structure provides with the appropriate tools. In this regard, the state has passed legislation in 2007 to create the new provincial Energy Corporation that will take a lead role in the province's participation in the development of its energy resources (Energy Plan 2007, p-14).

4.2 Policy Initiatives for Churchill Project

Newfoundland and Labrador has a number of clean renewable electricity generation source like hydroelectric projects at Bay d'Espoir, Cat Arm, Upper Salmon, Hinds Lake, Upper Churchill as well as the Lower Churchill. The province exports electricity several times more than its domestic demand. Hydroelectric generation results not only cleaner environment but also provides a solid and sustainable electricity industry with a secure supply of competitively priced electricity for economic development and domestic use. The province is considered as home of the most attractive undeveloped hydro project in North America on the lower part of the Churchill River. Its two installations at Gull Island and Muskrat Falls will have a combined capacity of 16.7 Terawatt hours of electricity per year. The provincial government is leading the development of the Lower Churchill Hydroelectric Project through the Energy Corporation. The project is also expected to create employment of over 10,000 people per year during its construction, and provide economic benefits from generation for decades to come (Energy Plan 2007, p-32). A significant portion of the jobs and business spin-off will occur in Labrador. Provincial government has taken initiative to ensure employment for the qualified personnel adjacent to the resource. The government also have a standby plan to provide future electricity

needs of the state from alternative economically and environmentally attractive combination of thermal, wind and smaller hydrodevelopments in case they unable to develop the lower Churchill hydroelectric Project.



Provincial Government aims to support and improve the existing interconnected and isolated electricity generation systems like Upper Churchill facility and the services they provide to the citizens and industries. Upper Churchill project is third largest hydro-electric generating station in North America with the capacity of 5,428 MW. But the province will not enjoy the full economic or electrical benefit of this enormous asset until the expiry of Upper Churchill power contract with Quebec in 2041 (Energy Plan 2007, p-33). Given this fact, the government's plan is to ensure that CF(L) Co. continues to maintain the Upper Churchill facility to a proper operating standard so that it remains fully functional well beyond the expiry of its current commitments in 2041 (Energy Plan 2007, p-34). This will help the province to take full advantage of Upper Churchill power generation project to export electricity after the power contract expires. The

provincial government has planned to continue its exploration of opportunities for this facility to make a greater economic contribution to the province.

Newfoundland and Labrador government consider that renewable electricity resources will be the foundation for a sustainable economy of the province and they will maintain control and develop these projects. The objective of the government is that once the investments in renewable generation projects are recovered, the will produce electricity at very low cost.

4.3 New Hydro Developments

The province has a vast hydroelectric potential from the Churchill River that can more than enough for its electricity consumption and export needs. But the government has taken initiative to ensure adequate supply for a number of possible future industrial development scenarios. Energy Corporation of the government continues to work on feasibility and environmental studies of additional hydroelectric prospects. The government authorized the corporation to control and coordinate the development of small hydro projects that meet economic thresholds and provide cost-effective energy supply (Energy Plan 2007, p-34). The objective of the government is to maximize the benefits from resource developments and provide Energy Corporation with full controlover any new hydroelectric generation assets.

4.4 Wind Energy

The province is also blessed with another clean and renewable electric energy generation source wind and the province is considered as a potential wind energy powerhouse. The following figure shows the potential speed of wind at 50 meter above the ground and it is clear that wind

speed is very high on the eastern side of the state. Apart from this, the cost of wind power generation is significantly reduced with introduction of advance wind turbine technology.

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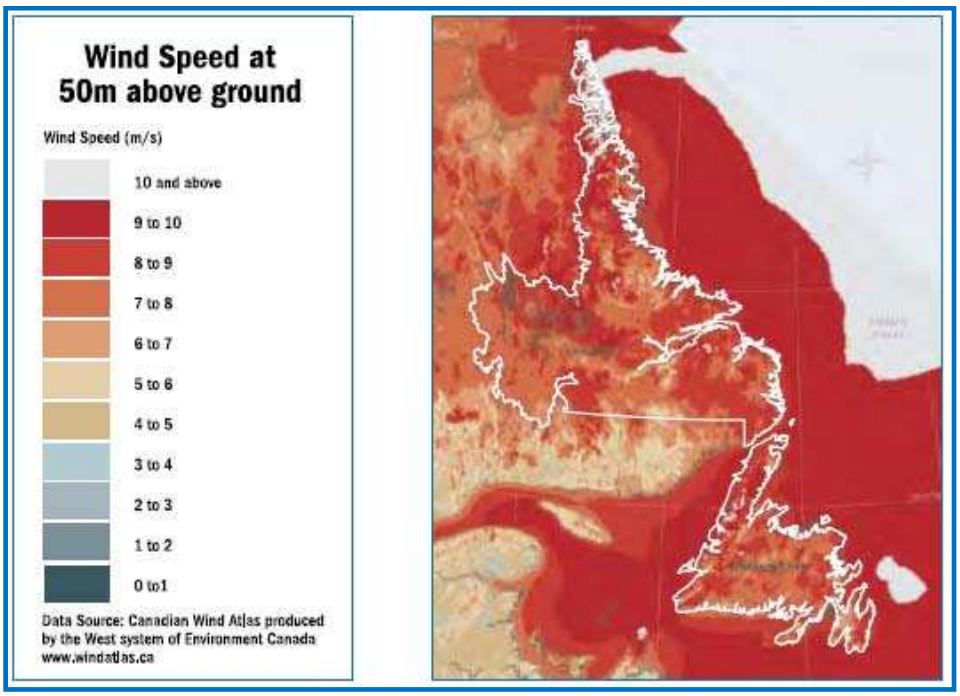
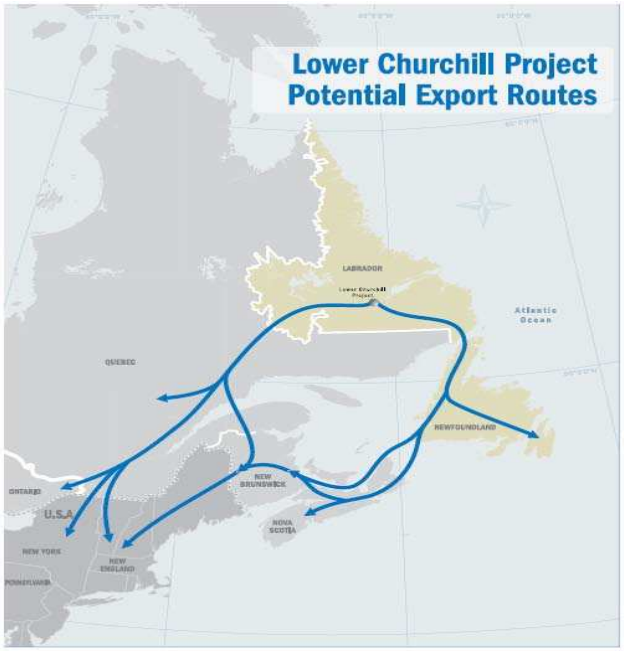


Government of the province has taken many initiatives to tap this unexplored resource. They have taken the policy of issuing Crown Lands for wind power generation for the Energy Corporation or a company selected by it and this will allow them to obtain a Crown lease for a wind power development (Energy Plan 2007, p-37). Apart from this, many planning and implementation activities are currently underway both in Labrador and on the Island for wind developments. Department of natural resources of the province has provided funding in FY13 for the study on Coastal Labrador Wind Assessment (Annual Performance Report FY13, p- 17, 37). The government is also working with the aboriginal groups in areas where potential wind developments in order to settle all the obligations included under land claims agreements. Moreover, the government has taken initiative to capitalize on the significant manufacturing and fabrication opportunities associated with large-scale wind projects in order to boost up the

employment condition of the province. The province is delaying with the wind energy development because they have enough energy supply of hydroelectric power from Muskrat Falls to meet their medium term need until 2041 and also because of high investment cost and short term lasting of wind turbine. They find investment on transmission line is more essential.

4.5 Transmission for Distribution and Export

The province needs to have good transmission access to both domestic and export markets to realize the full economic and environmental benefit of hydro and wind generation potential. Constructing the transmission link between Labrador and Island and delivering Lower Churchill power to the Island, is a more cost effective and essential alternative to oil-fired thermal power resources. The government initiated to build a transmission link between Labrador and the Island in conjunction with the Lower Churchill development and working closely with developers to ensure transmission costs are understood and address the timelines. The government considers this as GHG emission reduction initiative and seeks financial assistance from Federal Government in the context (Energy Plan 2007, p-41). The broader goal of the government is to ensure low cost and reliable electric supply and attract new industrial development in the province particularly in Labrador. The government is also focused to build the energy transmission network with the potential export market of Canada and USA including Ontario, New Brunswick, Quebec, Nova Scotia, P.E.I., New England and New York. Two export routes for energy export are being investigated and pursued. One is through the province of Quebec, using Hydro-Quebec's Open Access Transmission Tariff (OATT) process into New Brunswick, Ontario, Quebec, Nova Scotia, New England and New York (Energy Plan 2007, p-44).



The other one is a subsea route from the Island into the Northeast United States. The prime objective of the province is to utilize its significant electricity resources to fulfill the needs of the province and provide a competitive, long-term, clean, reliable source of electricity at a reasonable price to the rest of the country and parts of the United States.

4.6 Other Policy Initiatives

The provincial government has taken a number of other policy initiatives that are either directly or indirectly focused to develop its renewable energy sector. The government strongly supports mechanism for investment in renewable energy projects and work to ensure that technology fund investments are directed towards regional and national initiatives facilitating obviously high value opportunities such as the Lower Churchill and the province's wind development opportunities (Energy Plan 2007, p-54). The emphasis has been given to work with the government of Canada and other provinces, as well as with industry to develop a technology fund that will invest in transmission for the lower Churchill project and wind opportunities.

Other than this, the provincial government provided support research and development into wind and hydrogen integration for isolated communities; pursue other technologically and economically feasible generation opportunities; affirm the lead role of NLH as the long-term planning entity for the electricity sector; ensure that the regulatory process can appropriately accommodate Lower Churchill and other power for use in both domestic and export markets etc. (Energy Plan 2007, p-39).

5. Strategic and Legislative Measures:

The province has set its long term vision to realize the full benefit from the sustainable development of its natural resources. Department of natural resources of the province is working closely with the key stakeholders for policy development, coordination and ensure sustainable development. Accordingly the department develops, monitor and initiate regulatory and benefit optimizing activities.

5.1 Strategic Direction:

The natural resources department of the province has set some strategic directions as guideline for accomplishment of the goal and objective that it has set in the coming years (Strategic Plan 2011-14, p- 8). Two of these strategic directions are for the development of the renewable energy sector and are discussed below.

- **Responsible Resource Development:** This strategic direction refers to development of clean and renewable energy through the lower Churchill project and search for the activities that support Social License granted by the community, including Aboriginal groups. The objective of this direction is to ensure marketing, sale and distribution of the

power that will be generated from the lower Churchill project. The goal and objective of this directive is to advance renewable energy in the province focusing on the lower Churchill project.

- **Stable and Competitive Energy Supply:** This strategic directive primarily focused on three issues: alternative energies, electricity rate and the export of surplus energy; in order to address the goal of renewable energy development. Apart from electricity generation from Lower Churchill Project, development of wind and bio-fuels as alternative sources of energy.

5.2 Strategic Issue: Renewable Energy

The prime mission of the natural resources department of the province is to ensure growth of energy and mineral resource industries in sustainable manner by 2017. To meet the objective, the department has taken the strategic issue of renewable energy development. Renewable energy development of the province mostly centerson the most stable, least-cost lower Churchill hydroelectric generation project. Other than this, there are two wind developments and significant reserves of wood pellets and bio-diesel in the province. The natural resource department of the province has set up its goal to enhance legislation and policy measure necessary to advance renewable energy by 2014. On top of this goal, the department also has two objectives prioritize to hydro and electricity development by 2013; and ensure progression of the Lower Churchill project and initiate to development of a provincial wind policy by 2014 (Strategic Plan 2011-14, p-26). All these target set by the department of natural resources is to support the provincial government's strategic direction of responsible resource development and; stable and competitive renewable energy supply.

5.3 Legislative Measure:

The provincial government has taken many legislative measures to guide and govern the development of its renewable energy resources. The government has developed new acts and made amendment of the old acts to keep pace of the development of the renewable energy sector. The legislative initiatives of the government are briefly explained below (Annual Performance Report FY13, p- 17, 85).

- ***Muskrat Falls Project Land Use and Expropriation Act:*** This legislation establishes a lands-related Act to govern the acquisition of land and land interests that are necessary for the Muskrat Falls Project.

- ***Amendment of Hydro Corporation Act 2007:*** This amendment sets out the mandate, powers and management structure of the Newfoundland and Labrador Hydro-Electric Corporation as a crown agency. Amendment of the act is done in 2012 to facilitate project financing and protection of non-project assets, and sufficient borrowing limits for Nalcor.

- ***Amendment of Electrical Power Control Act 1994:*** This amendment sets policy with regard to electric power rates andestablishes provisions for the determination of such power rates by the PublicUtilities Board. Amendment of the act is done in 2012 for granting of exclusive, wholesale electricity supply rights and Crown equity payments to NL Hydro.

- ***Lower Churchill Development Act 2001:*** This act authorizes the Minister of Natural Resources to enter into an option agreement with the Lower Churchill Development Corporation (LCDC) guaranteeing the corporations executive water rights, rights to flood land and a sole option to purchase the Gull Island hydro assets.

- ***Newfoundland and Labrador Power Commission (Water Power) Act:*** This act extinguishes certain water power rights held at the time by BRINCO and provides for their assignment to Newfoundland and Labrador Hydro (Power Commission) to facilitate financing of the Bay d'Espoir hydroelectric project.

- ***Miscellaneous Financial Provisions Act, 1975:*** This act removes any restrictions elsewhere in provincial legislation on government assigning to Newfoundland and Labrador Hydro Electric Corporation a right, title or interest in royalties and rentals inclauses 1 and 8 of Part II of the leasebetween government and CF(L) Co.

6. Conclusion:

The provincial government has formulated a number policy measures for the development of its abundant renewable energy resource and also provided legislative, regulatory support to ensure the development of clean energy supply. The research analysis shows that the province has formulated its RE policies focusing primarily to develop its hydro energy so that this energy can meet domestic supply and export demand until and beyond 2041. To ensure this objective, the province also formulated policy to set transmission lines and slowed down the investment for the wind energy development. This shows the rational planning of the province to meet the goal RE development and justifies the essentiality of concentrating policy actions more on hydro energy. The objective of these policy measures are not only to produce clean and environment friendly energy, but also contribute to the province's employment generation, export earnings from energy export, attract industrial investment and thus overall economic growth of the province.

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