

Abstract

Energy Projects in Pursuit of Regional Development: Leaders or Laggards?

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The main theme of these discussion notes is that the (2014) Quebec election results have opened a 'window-of-opportunity' for Atlantic Canada. A radical review and co-operative redesign of energy policies and programs for the Atlantic Provinces, Quebec, and North-Eastern United States could generate substantial benefits for all concerned. The process must be constructively participated in by the Canadian Federal Government and set inside a framework of a dynamic regional development vision. It should not be boxed-in by existing energy sector mindsets.

Apparent insights and potential 'lessons learned' (both from past achievements and vulnerabilities) are suggested in this discussion paper. Main projects reflected upon include:

- Those led by the Tennessee Valley Authority (launched under Roosevelt's 'New Deal' of 1933);
- New Brunswick's Mactaquac hydro-energy dam and Ghana's Volta River projects (both inspired by TVA);
- Newfoundland's experiences - including Churchill Falls, Bay D'Espoir and the once rate-flawed rural electrification program.

Passing references to several additional, local project experiences, including Point Lepreau (nuclear), DEVCO (coal), and Fundy (tidal power), are briefly made.

Were but one energy initiative to be singled out (for apparent successes, vulnerabilities and 'lessons-still-to-be-digested' for the Atlantic Canada of today), it would be that of the Tennessee Valley Authority. Three key points are among many to be highlighted for this region. They are:

- **The importance of federal/provincial political leadership and cooperation across territorial boundaries;**
- **The importance of not viewing energy project planning solely from within narrow 'energy sector' boxes;**
- **The essential connections between responsible (scientifically based) environmental management and pragmatic socio-economic aspirations.**

SOME NOTES FOR DISCUSSION

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[I preface these remarks by emphasizing that I am not – and certainly do not present myself as – an energy ‘expert.’ Most of my encounters with energy projects, policies and issues, have been in the context of their impacts on regional development and community welfare.]

The over-arching theme for these ‘discussion notes’ is that the recent Quebec election results have, I suggest, opened a potential ‘window of opportunity’ for Atlantic Canada. Energy issues and aspirations will play a critical role if the Atlantic Provinces are indeed going to seize hold of this opportunity to become ‘drivers for development’ and not merely (as has happened so often in the past) disorganized onlookers.

The main projects I shall briefly reflect on are:

1. Those led by the Tennessee Valley Authority. The TVA initiative was launched through Roosevelt’s New Deal legislation of 1933;
2. New Brunswick’s Mactaquac hydro-energy complex on the Saint John River and Ghana’s Volta River projects. (Both were influenced conceptually by the earlier TVA record.)
3. Newfoundland’s experiences with the Churchill Falls and Bay D’Espoir projects.
4. Other projects will be briefly alluded to [including DEVCO (coal), Point Lepreau (nuclear), Fundy (tidal power potential) and a cross-section of Canadian rural electrification programs].

1. Tennessee Valley. The TVA was established by an Act of the US Congress in May 1933 as part of President Roosevelt’s ‘New Deal,’ a program “designed to lift the United States out of ... the Great Depression.” It must be numbered as one of the world’s most forward-looking development initiatives (certainly for those times), both as to timing and for ‘strategic’ vision.

What was so special about the TVA? One World Bank assessment defined it as “a corporation clothed with the power of government but possessed of the flexibility and initiative of a private enterprise.” That, I believe, is fair comment.

The TVA had been given a far broader than traditional mandate by Congress. It was “charged ... [to plan] for the proper use, conservation and development of the Tennessee Drainage basin, comprising “over 100,000 square kilometers and encompassing parts of seven states.” Not only, in the World Bank’s words, did the TVA launch “a vast infrastructure of multi-purpose dams and reservoirs ... to harness the Tennessee River ... and an extensive transmission system to provide cheap electricity throughout the region ... [but it also led] intense efforts to improve agriculture, land-use and forestry practices [to] strengthen a healthy environmental base ... [, providing in the process] access to credit and technical assistance programs [to enable] the citizens of the Valley access the tools to improve their own livelihoods ...”

Six key features of the TVA record, the World Bank highlights as among the causes of its success, were:

1. Its “focus on unified regional development,” encompassing seven US states ...
2. Its “multiple missions” ...
3. Its degree of “autonomy” ...
4. Its “high standards of professional excellence” ...
5. Its “grassroots participation and support” ...
6. Its “strong regional identity.”

Yes, we might argue from the context of 2014 that the TVA was a creature of desperate times ... and yes, the Roosevelt leadership was of a calibre but rarely since encountered in North America or anywhere else for that matter ... and, yes, we might today recognize that a tension did later develop between those who viewed the TVA as a “comprehensive development agency” and those who wanted

to contain it as “a power company.” [In the post-World War II years the bulk of TVA revenues were to come from the sale of its electricity, which inevitably impacted on TVA’s earlier and broader mandate.]

[An aside:

The TVA model, while among the first to place emphasis on broader benefit and cost dimensions of projects for evaluation purposes, also generated a degree of ‘number-fudging’ later to favour certain kinds of projects. The author encountered this, for example, when meeting with members of the US Corps of Engineers, as part of an economic appraisal of the Fundy Tidal Power proposed project (in the later 1970s). One key issue was the appropriate choice (for those times) of the discount rate. Bank of Canada and UK treasury officials were favouring a range of rates to see their respective impacts – the conventional upper/middle rate then being around 10%. Such a relatively high discount rate favours short-construction phase projects that can generate revenue flows quickly. In the energy setting, this would tend to favour oil or coal burning plants, not the larger hydro power projects with their much lengthier gestation periods. US Corps of Engineer officials confided to the author that they had managed to gain agreement that a low discount rate (4% at most) be used for their power projects – otherwise many dams would not prove competitively viable! So even if apparently broad-ranging evaluations are undertaken on large power projects – be careful to question ‘apparently routine’ assumptions. When new technologies or systems (e.g., submarine cables for power transmission) are involved, the treatment of risk analysis is especially open to question. I learned this from Churchill Falls discussions and it is extremely relevant to the current assessment of Muskrat Falls.]

2. From TVA to Akosombo and Mactaquac

- **Akosombo**

The Volta River hydro-electric project was much influenced by the comprehensive approaches pioneered by TVA. The core dam, at Akosombo, was to rise some 370 feet above its foundation (in terms of an earth-built structure) extending 2,100 feet along its crest and creating a reservoir 300 miles long. This was the world's largest man-made lake. Ultimately, it had a capacity to generate some 1000 MW. The project was actively promoted by Ghana's founding president, Nkrumah, and gained the commitment of the World Bank and, in the process, purchased Canadian-made turbines and engineering support. While a comprehensive approach to development for the region was central to the Ghanaian government's aspirations, not all went according to plan and lessons can be drawn from the failures as well as the successes.

Three points might be extracted for this particular discussion:

1. The direct energy generation aspect can be viewed to have been successful. The Kaiser (Valco) aluminum smelter acquired relatively sustainable and inexpensive power; as Accra grew, so that city later gained access to what otherwise could have been viewed as surplus – albeit at higher rates than some had argued for.
2. There were numerous social and other economic costs that resulted from this large project. These included the flooding (by the huge lake that formed behind the dam) of relatively good agricultural and forest lands, the demise of several hundred villages, the spread of some water-borne diseases (including bilharzia), the flooding of sacred sites – not least village graveyards ... While some of these costs were recognized when the project was approved, the capacity of the government to implement many of the proposals to reduce the social costs (e.g., develop new and economically viable communities) proved weaker than some apparently anticipated ... so many ideas never left the drawing boards ... in sharp contrast to the capacity earlier shown by the TVA.

3. The earlier vision was for the key energy customer (Kaiser-Valco) to phase out imported bauxite for bauxite mined from local reserves some distance from Akosombo. *[In discussions with engineering consultants.] I was told that this was unlikely to be seriously pursued, since the private investors did not trust the Ghanaian government (then a creature of military coups) not to nationalize the package. Confidence, in short, in government is a sine qua non! TVA had it; Akosombo did not.]*

Mactaquac

The closest example in Atlantic Canada, if not in Canada as a whole, to the TVA model was that of the Saint John River developments that focused on the (650 MW) hydro-power dam at Mactaquac. With the benefit of hindsight, this was one of the proudest legacies of the Atlantic Development Board; its executive director, Dr. E.P. Weeks, *[who was later to accompany me to visit the Akosombo dam in Ghana]* often spoke of the influence of TVA ideas behind his vision for Mactaquac. Nor was he alone in drawing ideas from TVA; the Acres Engineering group was very much influenced by the US experience and worked closely with the US Corps of Engineers *[as I discovered when on an assignment with Acres in Pakistan]*.

The dam at Mactaquac, as that at Akosombo, resulted in the flooding of villages, forest and agricultural land, impacts on fish runs and local fisheries, as well as (in Mactaquac's case) some rail and road re-routing. While New Brunswick, in the Canadian context, was a [relatively] less-prosperous province, it nevertheless has long had extremely capable public servants, generally forward-looking provincial politicians and (perhaps because of its French-English cultural backgrounds) advisers who were familiar with both European Union (including French rural) and US program approaches.

The problems that beset Akosombo did not, at all in the same way, impede the development approaches sparked by Mactaquac. A new town (at Nackawik), tourist development (especially hinged to King's Landing), fisheries projects (supported by the Federal Government), and so on were among the outcomes. Were there to have been a vulnerability, it could perhaps have been that the maritime provincial governments, despite encouragement from the Atlantic Development Board, the Economic

Council of Canada and the Deutsch Report, were then (as possibly now?) failing to work cooperatively together in reinforcing lessons from projects (as Mactaquac) into a broader visionary Atlantic Region Development Plan. *[More could, I argue, have been learned from Mactaquac – and still (I venture to suggest) could be even today.]* At the time, Nova Scotia was substantially mesmerized by coal and, with DEVCO as its closest equivalent to a TVA model, trying hard to strengthen the Cape Breton economy. New Brunswick, conversely, was also looking towards the nuclear age (then much promoted by Ottawa) and embarked on the CANDU reactor (650 MW) at Point Lepreau. *[Prince Edward Island, learning much from Mactaquac, the Gaspé and North-East New Brunswick experiences, embarked on more comprehensive approaches to development planning – at a full provincial level – than seen elsewhere in Canada, Manitoba perhaps excepted. Yes, PEI is smaller but nevertheless its initiatives have been prone to understatement.]*

3. Let's move over to Newfoundland!

Two Newfoundland projects might be briefly remarked on: Bay D'Espoir and the Churchill Falls Complex – with some passing comments on Newfoundland's generally successful rural electrification program.

The Bay D'Espoir hydro-power project (generating about the same quantity of energy as Mactaquac – 600 MW) came on stream in 1967, also helped by a grant from the Atlantic Development Board. Its major rationale was to boost and connect the existing power systems of Eastern and Western/Central Newfoundland. These had grown somewhat 'like topsy,' as (for example) building on the Deer Lake hydro-plant that was primarily designed for the Bowater mill in Cornerbrook, the Exploits River hydro system that fuelled the Grand Falls mill, the family of small hydro and largely oil-fuelled plants on the Avalon Peninsula. This last (Avalon) group, prior to Bay D'Espoir coming on stream, generated about 30% of the island's electric power.

Three points might be highlighted from the Bay D'Espoir experience:

1. The project did successfully link and strengthen the Eastern and Western groupings (including central Newfoundland), albeit it was not designed in conjunction with any broader development plan in place. This initially meant a surplus of spare capacity -- not an unusual experience for relatively large power projects.
2. The initial glut spilled into a provincial policy of declining power rates to encourage demand to absorb more of the available power, as well as some questionable grants to attract small, energy-intensive industries.
3. The same declining-rate formula was then also applied to the rates of the expanding rural electrification program, albeit most of that program was not connected into the island grid, drawing much of its electricity from small and isolated oil-fuelled [and but a few small hydro] plants. These enjoyed none of the economies of scale linked to the Bay D'Espoir system. After the 1973 oil 'crisis,' this cost/pricing mismatch was expensive enough to become a significant problem and it was modified. [For interesting comparative insights, the reader is referred to Quebec Hydro's approach to the Magdalen Islands.]

The Churchill Falls project is well discussed by Philip Smith in *BRINCO, The Story of Churchill Falls*. [Over the period 1962-67, I heard then-premier Smallwood discuss it numerous times, both in private and at public events. I also formally questioned Don McParland (then president of BRINCO) on behalf of the Royal Commission on the Economic State and Prospects of Newfoundland, in his office in Montreal.]

Three main points might be made for the purposes of these notes:

1. Smallwood's vision for Churchill Falls was clear and unambiguous. It was to energize the Newfoundland economy – both on the island and in Labrador. He had aspirations of energy-intensive projects (including steel plants and chemical fertilizer investments) locating in

Labrador and also ideally on the island. *[I actually discussed these ideas with potential investors and] three messages came out very clearly:*

- Labrador was not viewed as an attractive location, despite its iron ore deposits, when the power could readily be transmitted to areas closer to major markets and transport hubs (especially in Quebec and Ontario);
- The island location was a ‘non-starter,’ because of the perceived costs and hazards of undersea cables – given alternative overland options. New Zealand does not have icebergs!
- Quebec held most of the cards and the federal government (concerned about potential separation) was not going to antagonize Quebec for Newfoundland. Smallwood was also concerned that the timing for major hydro-power projects could be running out, given the expansion into nuclear energy, including by New Brunswick. *[Yes, also some talk of Smallwood’s concern that the Churchill Falls project was viewed by him as his legacy – but candidly I think that has been overblown.]*

2. *[From all my perceptions (including when in the Canadian Finance Department), the federal government (whatever the political stripe), has viewed the Atlantic Provinces as ‘little league players,’ disorganized and unable to work together – no regional development priority in the context of Quebec. Smallwood was well aware of this when Churchill Falls was being negotiated and I am aware of numerous cases to support my views then and thereafter.]* It must be emphasized, in my view, that a cooperative and mutually beneficial approach between Atlantic Canada and Quebec is a *sine qua non* for the future substantial development for this region. Energy could be a key building block for progress. Too often it has been an irritant.
3. Smallwood’s vision of the Churchill Falls project being a key component of a regional development strategy for Newfoundland and Labrador never materialized. Yes, he did float the idea of linking a Churchill Falls/Muskrat Falls complex into Nova Scotia and thence beyond. *[But make no mistake, it was then viewed as a negotiating ploy to make Quebec believe*

Newfoundland had viable options. Newfoundland did not!] Now perhaps the engineering economics, the attitude by investors to submarine risks, and so on, has changed since those days ... but I would question that in the broader context of the present opportunity for a really visionary approach to the regional development of New England, Quebec, Newfoundland and the Maritimes. I confess that I am unaware of a coherent regional development strategy for Nova Scotia at this time, let alone for the Maritimes plus Newfoundland. Yet, as the Ivany report does indicate, the future looks fragile for Nova Scotia. *[The Ivany report, while it pulls together much relevant information on this province, is a far cry from the kind of visionary development plan that is badly needed for the Atlantic Canada of today.]*

The message of TVA, in particular, is that enterprising approaches to regional development can really pay off, and that coherent energy investments can be crucial elements of effective and ambitious strategies.

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Some Further Readings/References

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- **The Volta River (Akosombo) Project (Ghana)**

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Juanita P. Montalvo, *Multi-Purpose River Development.* Dalhousie University: MDE Thesis, 1990.

(Especially useful background on the Mactaquac development). Dalhousie University: MDE Thesis, 1990.

- **Newfoundland: Bay D'Espoir (NL)**

R.I. McAllister (ed.), *Newfoundland and Labrador: The First Fifteen Years of Confederation.* St. John's, Dicks and Co., 1966 (esp. chapter 15).

- **Cape Breton (NS)**

Tom Kent, "The Cape Breton Development Corporation: One Canadian Case of Planning on the Spot," in B. Higgins and D. Savoie, *Canadians and Regional Development at Home and in the Third World,* 1988. (Tom Kent's reflections are, as always candid and penetrating.)