

Why a Canadian Energy Information Organization is Needed?

INTRODUCTION

In November 2015 CERI developed a Business Case for an Energy Information Organization for Canada (CEIO)¹. It was heavily motivated by the need to improve the current state of affairs for energy data and analysis in Canada expressed by a number of stakeholders. That included, just to name a few: suggestions to establish such an agency by the Standing Senate Committee on Energy, the Environment and Natural Resources; by the School of Public Policy paper “A Proposal to Create a Pan-Canadian Energy Information Organization”; goals set by the Council of Federation in Canadian Energy Strategy and by Statistics Canada in its Statistical Framework for Energy to improve timeliness, consistency, coverage, and quality of data; and hands-on experience by the Canadian Energy Research Institute (CERI) and similar institutions, which are constantly facing challenges as “data consumers” when producing research.

In February 2016, CERI conducted a workshop in Toronto to discuss the acceptance of Canadian Energy Information Organization and seek common understanding on the issue. More than 20 attendants from federal, provincial and territorial (FPT) governments, Statistics Canada, the National Energy Board, provincial regulators, ecological NGOs, academia and other stakeholders took part in the discussion.

Overall, many participants agreed on the value which CEIO may bring².

Many participants agreed that a single **comprehensive** repository of energy data would eliminate the costly duplication of effort in the current system, where many different stakeholders produce their own statistics. Industry partners wanted to make sure that data is collected once instead of having to provide multiple agencies with the same information many times, often under different rubrics; consolidating the information at a single site would also save time and money.

A more **coherent** harmonized data would also reduce confusion for end-users since differences in definitions and taxonomy make the information harder to digest. A few participants suggested that such a system would improve efficiency in the Canadian energy market and help to monitor the effectiveness of government programs by measuring the Canadian economy and energy sector. The need for a robust understanding of data and comparability of various data was mentioned as important.

Several participants suggested that there is probably a great deal of data in Canada, but it is too spread out and **inconsistent** to be useful. There is a need for access to coherent and consistent energy information which would be helpful to help raise energy literacy of Canadians, for them to appreciate the trade-offs that are required, and help in regulatory and policy-making processes.

Participants agreed that a CEIO should provide **credible** (unbiased, factual, verified,

¹ Available at CERI

² More detailed information is available in the CERI Summary of Workshop to discuss establishing a CEIO, March 30, 2016

independent) information—to be a “source of truth” and commonality at the economic and policy levels, as well address the need of **regularity and timeliness of data.**

Lastly, a uniform level of coverage throughout the energy sector was also mentioned as an important issue, basically underlining a **lack of data** in some areas. Oil and gas were stated to be well covered, granted, there are areas in oil and gas that are a problem, but in other sectors, it is difficult to find the same level of information. The burgeoning clean technology sector was exemplified to be loosely defined, with lack of solid numbers on its size and scope.

The goal of this piece is to build upon those discussions and explore the deeper needs for a CEIO.

To further understand those needs and benefits CERI has undertaken a closer look at the current state of affairs in the energy data realm in Canada. Specifically, we looked at the problems most frequently expressed by stakeholders - lack, coherence, consistency, credibility, comprehensiveness, and timeliness of data. We have also looked for context in Canada that would encourage the establishment of a CEIO. We gathered again the information on the problems, risks and consequences which stakeholders face in the status-quo situation, as well as what is being done in Canada to improve the situation. The conclusion sums up with the benefits of a CEIO, which would cover the needs expressed.

WHAT IS THE CONTEXT IN CANADA FOR ESTABLISHING A CEIO?

There is no need to remind everyone of the importance and interconnection of economic and environmental policies which are now at the top of the agenda in the world and Canada. The energy sector has become possibly the most vivid

battleground for the search for balance between economic and environmental goals and concerns.

In this setting, Canada is also going through **diversification and sophistication of its energy sector** in terms of both supply and demand. Unconventional oil and gas, renewable energy, LNG, NGLs, bio-fuels serve as an example of issues growing in the economy relative to what Canada had a decade ago.

We see **increased attention of a multitude of stakeholders in Canada to the economy-environment relationship in the context of energy projects**, to benefits, risks and costs of each initiative for Canada and each province. With wider access to information and social media, a large number of stakeholders enjoy vast amounts of information, analysis, including from foreign organizations, as well may fall victim to misinformation. The debates become more intense and heated, while trust in participants’ data and to the process and regulators has decreased.

The international energy sector has also been going through an **enormous uncertainty period for Canadian and international investors, looking for different investment options.** The situation of the abundance of energy supply options with renewables getting cheaper, nuclear safer, an abundance of hydrocarbons with shale oil and gas, development of LNG market, carbon pricing, and rival policies do not make investment decisions easy. In such situations, there is a high international rivalry by countries and regions for the large long-term projects, investors, and markets shares of supply.

Canada has many projects at hand for its review with hundreds of billions of dollars of total investment. Many of those led by international investors with other options available internationally. Some projects undergo a number of years of assessment and waiting for a greenlight has increased investor concerns of a protracted process. **There are indications of**

those international investors leaving Canada³ and some Canadian energy companies heavily investing abroad, rather than in Canada (TransCanada, Enbridge)⁴, while they wait for reviews to finish.

CEIO will not certainly come as the only saviour for these challenges, but as a catalyst for many stakeholders to be able to conduct productive dialogue based on common data and analysis.

There is a multitude of stakeholders and users on Canadian energy in Canada and abroad: Public, Federal government, Provincial government, political parties, Regulatory, First nations, Mass media, Investors, Energy associations, government agencies, NGOs, Financial sector, International Development agencies of Canada, Consulates abroad, Academic and research institutions, international trading partners, International organizations (UN, WB, IMF etc.) and others. Many of these stakeholders are participants to regulatory, investment, consumption, trade, and policy decision-making in various forums and circumstances.

In such an international and Canadian context, it is in the Canadian interest that these stakeholders operate with the same comprehensive, consistent, coherent, quality and timely factual data. That will facilitate communication, raise trust in collaboration, help to make evidence-based decisions with confidence, and allow decision-makers to concentrate on costs, benefits, risks and outcomes of projects, investment decisions and policies rather than debate facts and misinformation.

³ Overseas Shell potential investments in a view of delays in Canada (<http://www.smh.com.au/business/energy/shell-leaves-door-open-for-browse-lng-as-canadian-venture-delayed-20160204-gmm9mq.html>), Petronas North LNG potential sale of shares (<http://www.theglobeandmail.com/report-on-business/petronas-weighs-sale-to-exit-27-billion-bc-lng-project-sources/article32160849/>)

⁴ TransCanada's \$13 billion announced acquisition of US Columbia Pipeline Group, TransCanada announced \$800

WHAT ARE THE CHALLENGES AND PROBLEMS WITH THE AVAILABLE DATA?

To better address the needs for the CEIO, CERI has analyzed expressed concerns about energy-related data and has grouped those concerns into two major sections and 6 total categories⁵:

- No data
 1. Lack of data
- Different data
 2. Not coherent data
 3. Not consistent data (quality concerns fall into this category)
 4. Not credible data
 5. Not comprehensive
 6. Not regular, not timely data

There are seven major groups of data and in some cases analysis. Providers available to Canadians include FPT statistics agencies, regulatory agencies (FPT), Natural Resources Canada, provincial/territorial ministries of energy, industry associations, and special agents (e.g. some NGOs, academia, government special programs, mass media etc.), international organizations (e.g. US EIA).

Many of the providers have several energy-related products (databases, tables, reports), which stakeholders may use. The scope of statistics is usually defined in terms of the reference territory, energy products, energy flows, energy industries, energy consumers, energy resources, reserves and

million refined products project in Mexico, Enbridge renewable project in Europe, Enbridge deal with US Spectra (<http://business.financialpost.com/diane-francis/diane-francis-pipeline-deals-good-news-in-a-bleak-industry-too-bad-they-are-in-another-country>, <http://ca.reuters.com/article/businessNews/idCAKCN10D1UK>, <http://www.transcanada.com/announcements-article.html?id=2035550&>

⁵ Based on multiples publications and sources

other related aspects. They cover production, imports, exports, transmission, transformation, use and stocks of energy.

CERI has reviewed most, not all, of these resources – around 40 – as well as available public information and previous publications on the topic to gain insights into abovementioned 6 categories of energy data problems.

Lack of data

Canadians and foreign stakeholders enjoy access to a good deal of energy data. Still, providers as well as end-users' express feelings of lack of information.

Statistics Canada as a major collector of primary data has set several strategic priorities for Canada's energy statistical system development⁶. These strategic priorities have been identified by stakeholders to be of critical importance where quality energy statistics is necessary, and included⁷: Energy and Economy (prices, imports and exports, investment, employment, consumption, energy efficiency), Energy and Environment (GHG, air pollutants, water and land use), Energy Efficiency (performance of energy efficiency in the country), Energy Security (energy reserves, innovations to make reserves viable, emergency preparedness during global supply disruptions), Energy Markets (different modes and volumes of transportation of energy, environmental impact of energy transportation), International Reporting requirements (improving timeliness, quality and responsiveness of Canada's international reporting to IEA, NFCCC, UNEC and other organizations), Informing the

Public (improve the energy awareness and energy literacy of Canadians and contribute to decision-making on Canada's energy future).

A search in recent publications produced by various Canadian organizations in the energy sector have expressed the need for more data for cogeneration, distributed generation, electricity use and energy efficiency in commercial buildings, environmental impact of shale gas/oil developments, pipeline safety, energy storage capacity, employment, bust and boom cycles and other to name a few.

One of the most pertinent examples of the lack of data currently in Canada is the movement of products across the country. Statistics Canada: *"Relevant and timely data are required to inform decision-making on the movement of energy products across different modes of transportation (pipelines, rail, ship, road, electricity transmission). In addition, the potential impacts on the environment relating to energy transportation have become an increasingly high-profile concern (e.g. the impacts of pipeline construction, the risks associated with rail transport). To inform these debates, more data are required on the types and volumes of energy being moved by mode of transportation, including destination of shipments, product movements, transportation of products by mode (e.g. rail, pipeline, ship, truck), and transportation infrastructure."*⁸

To understand how much data Canada is lacking, Statistics Canada has produced the Status of Statistics Canada's Volumetric Data⁹. The indicators are categorized as a) collected (with subcategories of good quality or improvements in quality required), b) not collected (but could

⁶ <http://www.statcan.gc.ca/pub/57-602-g/2015001/chap3-eng.htm>

⁷ Several are selected by CERI from the list as examples.

⁸ <http://www.statcan.gc.ca/pub/57-602-g/2015001/chap3-eng.htm>

⁹ <http://www.statcan.gc.ca/pub/57-602-g/2015001/ann/annd-eng.htm>

potentially be collected), and c) not collected – could not be gathered due to the nature of cross-tabulated references not being feasible.

CERI has analyzed this Status for energy supply indicators (similar information on energy consumption is not available at Statistics Canada website) to reach for the **conclusion that out of 189 indicators that can potentially be gathered 72 are collected at the moment (38% out of potential total), and 117 (62%) are not collected. Out of 72 collected, Statistics Canada believes that 54 (75%) are of good quality, and for 18 (25%) quality should be improved.** Lack of information is seen largely in nuclear fuels, biomass, solid and liquid biofuels, biogases, and wastes, as well as for some indicators in coal, oil, gas, and NGLs.

There is a possibility that some of the lacking data in Statistics Canada can be available from other providers – provincial regulators, statistics agencies, or associations, which touches upon a problem of no comprehensive and consistent data repository we will be discussing in more details below.

There are many cases when non-Canadian sources of data are used, or non-official providers of energy information are considered e.g. consultancy firms or mass media like Bloomberg. CERI has analyzed several major energy reports by Natural Resources Canada, NEB, and other providers and has found numerous examples of such cases. **Foreign agencies in major Canadian energy-related publications varied from 2.5% to 15% and averaged 7% of sources.**

The root cause could be either that data may not be available in Canada, or most likely, is easier to be accessed via foreign websites (egg. US EIA) as

a single coherent source of data versus the need to compile data from a number of Canadian sources. **The US EIA provides more than 175 indicators for Canada and other countries has different options for data units and is convenient as a one-stop-shop. It is important to note though that the list of data in the US EIA is far from being complete and can provide much more data for the Canadian energy sector if one compiles them and reconciles the information from many sources.**

Examples of foreign usage of data in major reports include prices for petroleum and other liquids, light tight oil/shale oil, shale gas, total energy supply, transmission lines. Since the abovementioned reports have been compiled by energy professionals who may not know Canada data infrastructure, data gaps exist or are difficult to be accessed.

Compiled data in reports (when several sources were used per indicator) and usage of consultancy/media firms was used for biofuels, supply and demand for uranium, pipelines, refineries, recent deals in the industry. For these cases, it may serve as an indication that data provided by Canadian sources for these items are not detailed or not fully complete in any single source, which requires stakeholders to compile it from many sources, often with varying degrees of sophistication and knowledge.

In preparation of this piece, CERI conducted a poll asking various stakeholders to answer questions related to a CEIO¹⁰. The preliminary results show that **41% of respondents were somewhat concerned and 59% are very concerned about the lack of information**

¹⁰ The sample at the time of this piece was not large – 12 respondents; CERI is working to extend the number of respondents.

available to make business decisions or develop public policy.

To conclude, it is worth citing Statistics Canada: *“It is important for data collection to keep pace with changes in the energy sector, especially in order to better understand and assess emerging issues and innovative technologies and approaches. A balance between the efficient use of resources and collecting what is necessary must be struck, recognizing that what is necessary will depend on the needs of data users, that not all needs will be possible to meet, and that a lack of quality data could ultimately be far more costly than data collection and associated activities.”*

Data not coherent

The problem of coherency of data from different providers poses a problem for stakeholders to get information fast and match it with other information at hand. Providers of data frequently use different definitions and methodologies, various data-sets, the structure of data and breakdown depth, different availability details per province/territory, and a number of units for the same indicators. Even though methodologies are usually available, it is quite laborious to reconcile data.

Relatively new terms in evolving industry sectors are sometimes defined differently across data and analysis providers such as clean energy, energy efficiency, renewable energy, shale oil/gas, and emissions, resulting in difficulty to operate and compare data. More fundamental terms, which everyone would expect to be the same for all sources, such as energy supply, final consumption, end energy use, energy product – may also have different definitions as it has been revealed. For

an unsophisticated public user or even a professional, who has not dug deep enough into the methodology behind each source, such situations will result in different data at hand for decision and policy-making.

For instance, Statistics Canada energy statistics uses SFEC - Statistical Framework for Energy in Canada (SFEC), developed based on IRES – International Recommendations for Energy Statistics (UN) – a framework for volumetric measures of energy supply and demand. Another framework exists for similar data, the SEEA-Energy – System of Environmental-Economic-Accounting (UN) – also available at Statistics Canada, for the compilation of statistics linking environmental data and economic data. How are the two to be reconciled?

Some of the differences of the Statistical Framework for Energy in Canada (SFEC) and the System of Environmental-Economic-Accounting statistics include¹¹:

- National territory/residential principle: SFEC provides information on markets and industries within Canadian national geographic borders, covers energy that enters and leaves Canada; does not include energy outside borders for Canadian citizens and organizations; SNA/SEEA is based on residential principle, not on territory principle.
- Difference in definitions: The term “supply” in the IRES is defined as primary production, plus imports of primary and secondary energy, minus exports of primary and secondary energy, minus international bunkers, minus stock changes; while the term “supply” in the SNA and SEEA-Energy is defined as production (output), plus imports. Therefore, the concept of supply is broader in the SEEA-

¹¹ <http://www.statcan.gc.ca/pub/57-602-g/2015001/chap2-eng.htm>

Energy than in basic energy statistics. Accordingly, the concept of energy “use” in the SNA and the SEEA-Energy covers all final uses, including exports and inventory changes. The term “final consumption” in the IRES excludes the use of energy products in the energy industries and by other energy producers as input into transformation and energy industry own use. The term “final consumption” is not used in the SEEA-Energy to avoid confusion. Instead, the term “end-use” is introduced to denote the concept of energy use, excluding the use for the transformation process. In addition, in basic energy statistics, an item titled “statistical difference” is included to capture the differences between supply and demand, while no such items are in SEEA-Energy.

- Energy balances and accounts: data are presented differently between energy balances and energy accounts. A typical example is the use of energy for transportation. In energy accounts, energy use for transport, as well as for other use, are presented for each ISIC (International Standard Industrial Classification of all Economic Activities) class, while in energy balances, a total aggregate for “transport” is introduced, showing the total energy use for transport purposes by all economic activities, not by individual ISIC industries.
- There are also differences between SNA and SEEA-Energy themselves. While the asset boundaries in the SEEA-Energy and SNA are the same in monetary terms, assets in SEEA-Energy are defined more broadly than in the SNA in physical terms; while SNA recognizes natural resources that have economic value.

SEEA-Energy includes all known deposits, even parts of resources that have no present economic value as assets only. Similarly, the scope of the physical flows compared to monetary flows is somewhat broader. In addition, the depletion of resources is incorporated in SEEA-Energy as a cost against the income earned from the extraction of natural energy resources in addition to being a reduction in the value of these resources.

One more good example could be drawn for emissions - another topic of high public, government, industry and NGOs’ attention.

If one customer would use Natural Resource Canada’s Energy Use Data Handbook 1990-2013 (EUDH) and another Environment Canada’s National Inventory Report 1990–2013 (NIR-2013) in any decision or policy-making process the discussion would be hampered by **more than 10 differences in definitions on residential, commercial/institutional, industrial, transport, and electricity generations emissions**.

Both Natural Resources Canada (NRCan) and EC use the energy demand data from Statistics Canada’s Report on Energy Supply and Demand in Canada as a base. However, the two organizations use different sectoral mappings. EC prepares its emissions inventory according to the specifications of the Intergovernmental Panel on Climate Change, while NRCan has developed mapping that is more suited to energy end-use analysis.

Some of the examples of different definitions¹²:

- definitions of residential emissions: EUDH residential emissions include end-use, electricity-related emissions, which are reported under power generation in NIR-2013

¹² Natural Resource Canada’s Energy Use Data Handbook 1990-2013 (EUDH)

- definitions of commercial/institutional emission: EUDH commercial/institutional emissions include end-use, electricity-related emissions, which NIR-2013 includes under power generation
- definitions in the industrial sector:
 - EUDH reallocates producers' consumption of petroleum products from the producers' consumption category to the petroleum refining and upstream mining industries. NIR-2013 reports this as the consumption of fossil fuels.
 - EUDH industrial emissions include end-use, electricity-related emissions. NIR-2013 reports them under power generation.
 - NIR-2013 includes producers' consumption of non-fossil fuels in the fossil fuel categories. EUDH does not report this consumption.
 - NIR-2013 also reallocates estimates of emissions from upstream oil and gas flaring to fugitive emissions from the fossil fuel sector
- definitions of transportation emission:
 - EUDH transportation emissions include end-use, electricity-related emissions, which are reported under power generation in NIR-2013
- Definitions of electricity generation sector:
 - NIR-2013 reports emissions from electricity and steam generation at the aggregate level, while the EUDH reports emissions for electricity generation only.

Data sets, structure, depth and details of energy information, as well as availability details per province/territory, also differs substantially across providers.

CERI has taken two energy areas as a sample – gas and electricity – and has analyzed how many different indicators per each area are available from several providers. For gas - Statistics Canada, NEB, Canadian Gas Association, Alberta Energy Regulator, CAPP, US EIA, and International Energy Association (available free of charge data) were used as sources. For electricity – Statistics Canada, NEB, Canadian Electricity Association, US EIA, and International Energy Association (available free of charge data) were used.

For gas, the numbers varied from 7 to 36 indicators from a provider (with US EIA and IEA providing 14-16 indicators). Canadian sources averaged 16, US EIA and IEA - 15. For electricity number of indicators varied from 7 to 37 (with US EIA and IEA providing 14-37 indicators). Canadian sources averaged – 24 indicators, US EIA and IEA - 25.

CERI has not reconciled and checked for the difference of data for all providers. **However, three tentative conclusions can be made based on visual review of the data: 1) to reach a comprehensive data set on any energy area one would need to use some if not all of the sources 2) data partially overlap in different sources 3) the structure, names, elements of indicators in many cases different and will require reconciliation and harmonization of definitions.**

Availability of data for Canada and per province also varies. **For gas and electricity combined, 55% of sources provided provincial/territorial details, but only for part of the data. Another 45% of sources, including US EIA and IEA,¹³ did not have provincial/territorial data.**

Lastly, many providers use various units for energy and energy sources: annual, monthly, per

¹³ For IEA free of charge published energy data was used

day, imperial and metric systems, different scale. Just for the gas, we have counted more than 5 different mixes out of cubic meters, cubic feet, litres, per day, per year, thousands, millions, billions, and trillions. Some of the sources allow the user to change preset units, some do not. Even though conversion tables are provided, that does not simplify a job and does not save time either for a sophisticated stakeholder nor the general public.

Inconsistent data

One of the most intriguing questions when a number of data sources is available - from primary providers who collect information and secondary who receive or combine data - is how much it is consistent for the same matters.

To get an overall understanding CERI has taken a random sample of energy data of total 26 indicators for gas reserves - 3 sources, crude oil production - 4 sources, greenhouse emissions - 3 sources, electricity generation from renewable (wind, solar, hydro) and nuclear sources - 4 sources. All of the sources were Canadian and one foreign - US EIA. **30% of indicators were different in units, so we used NEB conversion tables to arrive for the same units.**

All indicators were drawn for the same year (2014 and 2015), with identical or maximum similarity in nature and name to the extent that a professional might not recognize a difference in them (if it was a difference) let alone a non-sophisticated stakeholder.

As a result, out of 26 indicators, 11 were different by more than 10%, which comprises 42%. In 3 cases (11%) US EIA data differs from Canadian sources.

The explanation behind the large inconsistency could be that data contained different elements (definitions), or collected differently, or transferred from provider to provider incorrectly via data sharing agreement or had used a different set of respondents to arrive for total figures.

Without deep reconciliation and methodology studying it is difficult to tell which reason stands behind all of this 42 % of inconsistencies.

Sometimes the inconsistency of data and information from various sources could be used intentionally or unintentionally to influence public and decision-makers, to change, stall or at least protract progress of energy initiatives and policy-making.

Mass media is full of cases when basic information is debated among stakeholders: TransCanada corrects misinformation about pipeline safety¹⁴, Woodfibre LNG project - Answering LNG 'misinformation'¹⁵, Canadian solar industry decries nuclear "misinformation" campaign¹⁶, CEPA Myth and facts on pipelines¹⁷, Calgary Herald: Keystone's academic critics misinformed about world of oil and pipelines¹⁸, Accusations of misinformation at First Nations' community meetings about Pacific Northwest LNG¹⁹, Fighting misinformation: The truth about ethanol and livestock²⁰.

¹⁴ <http://www.energyeastpipeline.com/transcanada-corrects-misinformation-about-pipeline-safety/>

¹⁵

<http://www.squamishchief.com/opinion/letters/answering-lng-misinformation-1.1078801>

¹⁶ <http://www.power-eng.com/articles/2012/12/canadian-solar-industry-decries-nuclear-misinformation-campaign.html>

¹⁷ <http://www.cepa.com/library/pipeline-myths-vs-facts>

¹⁸ <http://calgaryherald.com/business/energy/big-academic-brains-misinformed-about-the-world-of-oil-and-pipelines>

¹⁹ <http://calgaryherald.com/business/energy/big-academic-brains-misinformed-about-the-world-of-oil-and-pipelines>

²⁰

<http://gfo.ca/Portals/0/Government%20Relations/Food%20vs%20Fuel/02-02-2012->

Availability and consistency of data from a trustworthy source on such subjects as pipeline reliability (leakages), tankers failures (spills), solar power ecological friendliness (wastes), nuclear safety, hydropower influence on ecosystems and others, could prove beneficial for Canada energy-related debates. Competing facts sow confusion and lack of trust amongst stakeholders which increases the risk of not gaining public acceptance for policies or projects.

Not credible data: lack of independent, unbiased, and reliable data

The October 2012 research titled “Energy Literacy in Canada” by The School of Public Policy, University of Calgary²¹, has shown a large gap of confidence and credibility of various institutes in providing energy-related information.

Researchers of U of C tried to gauge the trustworthiness of sources and surveyed people on a scale of zero to ten, how do people trust the institutions. The results showed low trustworthiness for Oil&Gas companies and executives, CAPP, federal, provincial and city government (more than 62% of people showed “Not at all” to “Neutral trust”; 19-34% have expressed this group “Neutral” to “Full trust”). Academia and Economic Experts received maximum trust (51-58% of people have given them “Neutral” to “Full trust”, and 34-43% to “Not at all” to “Neutral”).

In CERI’s recent poll, on the extent of the trust to different organizations in the energy sector to provide unbiased data and analysis, federal agencies achieved 75% of respondents (vs. 16.6% for federal government), provincial/territorial

agencies achieved 50% (vs. 16.6% for provincial/territorial governments), universities and colleges - 50%, industry associations – 41.6%.

“The problem is that those with the most knowledge and understanding of the sector – oil and gas companies, their executives and the Canadian Association of Petroleum Producers – have the least amount of credibility when it comes to being a trustworthy advocate for the industry. “The energy sector as a whole has a real credibility issue. They are not trusted as a source of information about energy and any move forward to increase literacy has to tackle the fact that as spokespeople they have problems,” said Turcotte²² (one of the U of C report authors).

One of the authors of the study also concluded that “Canadians, as with many in North America, are under-informed about energy issues”²³. That corresponds with Statistics Canada strategic priority of improving the energy awareness and energy literacy of Canadians and contribute to decision-making on Canada’s energy future as well as Canadian Energy Strategy objective 3.1 aimed at the same goal. And when people are under-informed or when there are many sources of different information on similar subjects it is easier for any discussion to derail.

Trustworthiness and credibility may be undermined by natural advocacy mandates of the data and analysis provider. Data may be gathered, structured, analyzed or presented to support stakeholder views and position. Sometimes there is a lack of transparency or credibility in a source – there are cases when providers do not disclose

[ReponsetoGMC%20Report.pdf?ver=2015-09-17-135706-503](#)

²¹ <https://www.policyschool.ca/wp-content/uploads/2016/03/energy-literacy-ii-online.pdf>

²² *ibid*

²³ http://www.huffingtonpost.ca/2012/10/31/oil-gas-canada-trust_n_2051602.html

how the data was gathered. Some of the data might be potentially intentionally merged, so it is difficult to understand details.

An independent and credible organization can provide unbiased and more trustworthy information which will facilitate discussions, policy-making and investment decisions.

Not regular, not timely data

For some energy-related data in Canada public, government, investors and other stakeholders may need to wait two or more years get it. Much data and reports are already available for 2016 covering production, prices, import, export, expenditures and alike. Still, a big portion of the information is one or more years old.

Statistics Canada's Report on Energy Supply and Demand Canada is available for 2014 in preliminary version (publ. Feb 2016). The 2013 revised (final) version was published in Jan 2016. Statistics Canada System of Environmental-Economic Accounts also available till 2014 (many out of those till 2012-2013). Natural Resources Canada National Energy Use Database provides data until 2013. Natural Resources Canada Canadian Energy Assets is available for 2014 at the moment.

CERI has reviewed 10 federal and provincial agencies and industry associations taking 33 energy indicators and reports as a sample and analyzed the last publication date per indicator and report. As of October 2016, 61% of data available for 2016, 9% for 2015, and 30% for 2014-2012 or earlier.

Most sources have only annual data, some provide data on a monthly basis (around 85%). They also vary greatly for the periods they cover: 27%

provide data for years as early as 1955, 1985, 1993 and before 2002, 73% starting from 2002.

Not comprehensive Canada-wide data

To understand the Canadian energy market in its completeness you will probably need to go to more than 10 major sources and around 5-10 minor specific reports, which cover national and provincial/territorial data. For some specific data, or for more provincial/territorial breakdown one will end up going to at another 15-25 additional sources (regulators and ministries of energy databases/reports) as well as up to 10 Canada-wide energy associations.

These sources may include:

a) major - StatsCan Yearbook report, StatsCan CANSIM tables, StatsCan Report on Energy Supply and Demand Canada (RESD), StatsCan System of Environmental-Economic (SEEA) Accounts-Energy, NRCan Energy Fact Book, NRCan National Energy Use Database, NEB Canada Energy Dynamics, NEB Canadian Energy Overview (CEO), NEB statistics for different commodities, price and trade, NEB Canada's Pipeline Transportation System 2016, and Environment Canada, etc.

b) specific - NRCan Canadian Energy Assets, NRCan Fuel Focus report, NEB Safety and the environment- pipelines incidents etc.

c) regulator and ministry – Canada-Newfoundland offshore petroleum board, Canadian Nuclear Safety Commission, BC Oil and Gas Commission, Alberta Energy Regulator, Alberta and Saskatchewan Petrinex database, Ontario Energy Board, Canada-Nova-Scotia offshore petroleum board, etc.

d) associations – Canadian Association of Petroleum Producers, Canadian Solar Industries Association, Canadian Wind Energy Association,

Canadian Nuclear Association, Canadian Gas Association, Canadian Electricity Association, Canadian Hydropower Association and others

To see how many sources are in practice used by energy professionals to build a comprehensive energy report for Canada or for an energy sub-sector, CERI has analyzed several major reports as a sample. The conclusion – to build an outlook for the Canadian energy sector one will need to look into 13-26 sources/databases²⁴. To get a perspective on just one energy sub-sector one might need to go to 8 sources. On average for each third indicator, a different source is used.

Resulting examples per the report:

- To produce Energy Fact Book by Natural Resources Canada (2014-2015) of 55 indicators, 26 sources were used (2.1 indicator per source). For 20% of indicators, foreign services were used together with Canadian source, for 9,1% - only foreign; for 25% indicators NRCan had to compile from many sources or estimate
- To produce NEB Canada Energy Dynamics (2016) of 38 indicators, 13 sources were used (2.9 indicators per source), 2% - foreign sources only
- To produce Energy Canada Strategy by Council of Federation (2015) of 11 indicators, 8 sources were used (1.3

indicator per source), 9.1% - foreign sources only

- To produce Key Canadian Electricity Statistics by the Canadian Electricity Association (2014) of 13 indicators, 8 sources were used (1.6 indicator per source). 15% of foreign sources were used, 8% - foreign sources only

INITIATIVES AND OBSTACLES

This review provides clear evidence which supports many Canadian energy professionals and stakeholders' views of the need for credible and comprehensive data with consistent, coherent, quality and timely characteristics.

A number of initiatives have been launched in recent years which have identified that improvements in Canada's energy statistics system are needed²⁵:

1. A national energy statistics workshop organized by NRCan (2007)
2. A "Blue Sky" report prepared by the ESP at StatsCan (2008)
3. Standing Senate Committee on Energy, the Environment and Natural Resources (2012)
4. Energy and Mines Ministers' Conference (EMMC), (2012)
5. A content review of the energy statistics surveys conducted by the ESP at StatsCan (2012/13)

²⁴ Two notes of the methodology. First, by a separate source we mean when a different provider is used, or a different database of the same provider is used. For instance, if Statistics Canada different CANSIM tables are used – this is one source for the report. At the same time Statistics Canada CANSIM and Report on Energy Supply and Demand Canada – two sources. The logic behind was that a) user has to use different databases to download information even within one website domain; b)

databases/reports of providers are frequently structured differently, with different interfaces and query systems. Second, Canada related statistics when compared to other countries (usually rankings) were not included into the pool of indicators since usually international sources are used for such purposes, and rightly so.

²⁵ <http://www.statcan.gc.ca/pub/57-602-g/2015001/chap1-eng.htm> and complication

6. A need for Canadian Energy Information Organization publication by U of C (2012)
7. Canadian Energy Strategy by the Council of Federation (2015)
8. Statistics Canada Strategic Priorities for Energy Statistics (2016)
9. CERI Workshop for Canadian Energy Information Organization in Toronto (2016)

There are several quotes in addition to what has been said at the Toronto workshop worth reproducing:

- Standing Senate Committee on Energy, the Environment and Natural Resources: *“The committee considers it a key priority for the federal government, along with interested provincial and territorial partners, to consolidate energy information from existing sources and establish a Canadian Energy Information Agency modeled after the U.S. Energy Information Agency. The proposed Agency would be national in scope, with a mandate to collect, analyze and disseminate independent energy information to Canadians, policymakers, and various energy stakeholders. It would also provide systematic lifecycle analyses”.*
- Canadian Energy Strategy, Council of Federation. *“Focus Area 3 - Enhance energy information and awareness. Goal 3.1 - Improve quality of energy data across Canada. Action 3.1.1- Collaborate with stakeholders in the energy sector to identify possible improvements to the identification, collection, and management of energy*

data, including greenhouse gas emissions in Canada.”

- The School of Public Policy at the University of Calgary, report on creation of Canadian Energy Information Organization (CEIO) *“there is a need for accurate data collection... ..to cut through the tangle of overlapping jurisdictions that confuse present attempts to understand the Canadian energy sector as a whole”*
- Statistics Canada: *“There have been a number of ongoing challenges for the improvement in quality, scope and relevance of Canada's energy statistics. The continually evolving nature of the energy sector; the diverse array of administrative, statistical and regulatory bodies across Canada; and the wide range of user needs to be met are just a few of them. Adding to these chronic obstacles are new challenges arising from the dynamic development in Canada's energy sector and in the global energy market.”*

WHAT ARE SOME POTENTIAL BENEFITS OF CANADA HAVING A CEIO?²⁶

The energy sector contributes more than 10 percent to Canadian GDP. Along with this investment are high paying jobs and indirect and induced economic activity. A productive energy sector will continue to make a significant contribution to Canada’s GDP.

Canada’s recent history is of energy policies based on an incomplete understanding of their economic impacts which have resulted in higher investment risks for demand management and supply development. Most policies have been driven by specific issues instead of broader economic

²⁶ This discussion is based in part on “An Energy Strategy for Canada” by Michal C. Moore. University of Calgary. October 2015

development or energy system objectives. In part, this is because information for those policy-based programs or projects is often developed on a one-time basis. This means debates are conducted within consultative or regulatory forums which may not be equipped to consider broader policy or economic impacts.

The demand for energy and the environmental impact of energy consumption is of increasing concern. Evolving to more efficient use of energy and the options for environmental mitigation need to be balanced with reliability and affordability. Without detailed information regarding the impacts of different policy options, there could be unintended impacts on the Canadian economy.

Canadian governments, consumers, investors, and stakeholders face increasing debates regarding the balance amongst demand management, economic development, and environmental protection. Often the debates become circular because there is no agreement on the underlying facts or guiding principles and design.

Energy supply and demand activities have a significant impact on the Canadian economy, demand management policies and supply developments are creating increasingly complex concerns regarding affordability and environmental protection. Export markets are evolving, and inconsistent policies are creating uncertainties for stakeholders, governments, and investors. The country needs a more coordinated approach to policies, a balance of environmental protection and economic growth, an understanding of the impact on the industrial, commercial, and residential sectors and a strong export market strategy. This can be facilitated by a fact-based and unbiased analysis of the issues. An independent data and sector analysis centre can benefit the country by:

- **Improving the effectiveness of environmental and carbon emissions management**
- **Improving public acceptance of energy developments**

- **Improving the understanding of policy impacts on energy consumers**
- **Increasing market and investment opportunities**
- **Improving the efficiency of regulatory processes**
- **Raising energy literacy for Canadians**
- **Meeting domestic and international trade and policy commitments**

A common understanding of the data and analysis regarding domestic and international energy markets and environmental impacts can facilitate trust-building and understanding of key issues.

CONCLUSION

Clearly, numerous parties in Canada recognize the need for such an agency. 83% of respondents of the recent CERI poll supported establishing such an organization; as well as many participants in the Toronto workshop.

However, organizations currently involved in the collection and dissemination of energy-related data, operate within their mandate, boundaries, methodologies, areas, and focuses. **Evolutionary improvements within the boundaries of each agency will not overcome chronic obstacles, as StatsCan rightly put it, and will not provide a solution, for which Canadian stakeholders spoke.** A partnership of several organizations, or an evolution of an organization to a CEIO, or a separate organization with a mandate to provide a Canada-wide data and sector analysis service to which all stakeholders can refer seems to be an inevitable and timely decision to further Canadian environmental and economic interests.