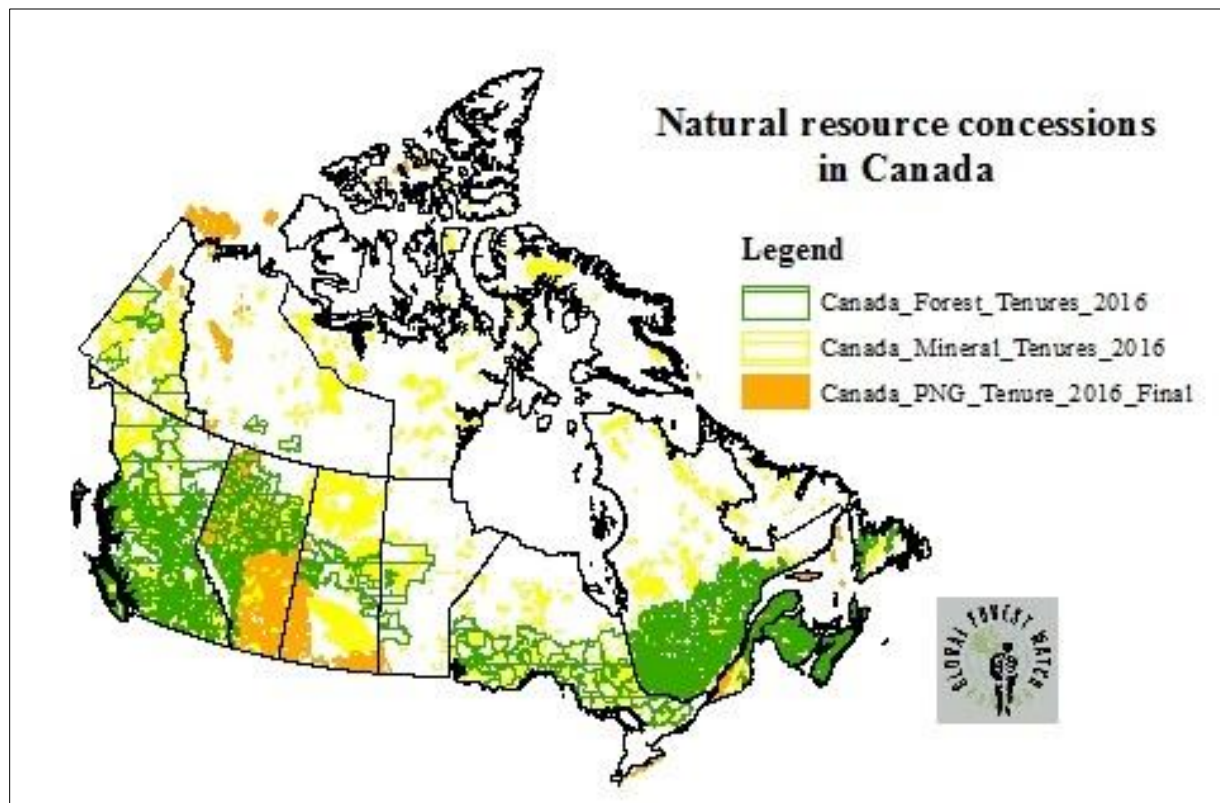




Open Data Assessment of Geospatial Concession Datasets in Canada

A report by Wynet Smith
Global Forest Watch Canada
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Executive Summary

Approximately 89% of Canada's surface lands are public lands and the Crown owns most sub-surface resources (minerals and oil/gas). Global Forest Watch Canada (GFWC) compiled data on forestry, mining, and oil/gas natural resource concessions from across Canada during late 2016 in order to update our national datasets. GFWC created these datasets to provide a consolidated picture of how governments manage and use Canada's Crown, or public, lands. GFWC assessed the status of geospatial datasets for forestry, mining, and petroleum/natural gas sectors against the Open Data definition, which requires data be free to access, use, modify, and share.

Key Findings

The Government of Canada and eight provinces and territories have official open government programs. The availability and openness of geospatial datasets for the three resource sectors vary by jurisdiction. Our findings are:

- Eleven provinces and territories issue forest concessions, or licences but GFWC was only able to obtain nine datasets; datasets were not available from Nova Scotia and Newfoundland and Labrador. Only six datasets meet the Open Data definition under all four criteria (access, machine readable, open format, and open licence).
- Governments currently issue permits/licences for mineral exploration and development in twelve of thirteen jurisdictions and all twelve provide on-line geospatial mineral concession datasets. Eight of these datasets meet the criteria for open data. Newfoundland and Labrador, Northwest Territories, Ontario, Quebec, and Yukon all impose licencing restrictions.
- Governments issue petroleum and natural gas licences in twelve of thirteen jurisdictions. They all provide on-line digital geospatial datasets, except for Alberta. Five of the twelve datasets meet the criteria for open data. The Alberta dataset required an email request so was not open access. Datasets from six jurisdictions - British Columbia, Newfoundland and Labrador, Northwest Territories, Ontario, Quebec, and Saskatchewan – have licence restrictions.
- Although many datasets are available on-line, not all government commitments for open data have yet translated into open data for natural resource geospatial concessions.

Our recommendations to governments to improve open geospatial datasets for natural resource concessions are:

- 1) Governments should eliminate the need to make email requests for geospatial concession datasets and make all of them available through on-line portals.
- 2) Governments should make all geospatial concession datasets available under explicit open data licences so there is no confusion or barriers to use of available datasets.
- 3) Each provincial/territorial government should develop and publish an action plan and timelines for making currently unavailable or non-open geospatial concession datasets open.
- 4) Governments should collaborate and develop pan-Canadian standards for open natural resources geospatial datasets.



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**A report by Wynet Smith
Global Forest Watch Canada**

The world is witnessing a significant global transformation, facilitated by technology and digital media, and fueled by data and information. This transformation has enormous potential to foster more transparent, accountable, efficient, responsive, and effective governments and civil society and private sector organizations, and to support the design, delivery, and assessment of sustainable development goals at a global scale. Open data is at the center of this global shift.¹

Introduction

In this era of open government and open data, Global Forest Watch Canada (GFWC) decided to assess whether existing Canadian federal, provincial and territorial government geospatial datasets of natural resource concessions are “open data”. Open government is defined as “the opening up of government processes, proceedings, documents and data for public scrutiny and involvement”² and open data is defined as “digital data that is made available with the technical and legal characteristics necessary for it to be freely used, reused, and redistributed by anyone, anytime, anywhere.”³ For many years, GFWC has compiled provincial and territorial datasets to create national geospatial datasets of industrial natural resource concessions, including forest tenures/licences, mining permits/leases, and petroleum and natural gas (PNG) permits/licences. GFWC created new versions for these three natural resource sectors during late 2016 and conducted this open data assessment as a complement to that work. We conducted this assessment for two main reasons.

First, in Canada, public, or crown lands, comprise 89% of Canada’s surface territory, and a majority of sub-surface resources (such as minerals and oil/gas).⁴ Given that such a high

¹ International Open Data Charter, preamble, article 1. Available at: <http://opendatacharter.net/principles/>

² <https://www.oecd.org/gov/open-government.htm>. Accessed May 14, 2017.

³ <http://opendatacharter.net/principles/>. Accessed March 12, 2017.

⁴ Statistics on crown land are available at multiple sites, but this statistic is from The Canadian Encyclopedia.



percentage of lands in Canada are in the public realm, it is reasonable to expect that the datasets related to resource use be available generally and for review by communities that have an interest in these lands and resources. The availability of data is particularly important for Indigenous communities that have land rights and title interests.

Second, we conducted this assessment given there is significant support for the idea that open data “has the power to revolutionize and disrupt the way societies are governed.”⁵ Proponents of open data argue that it is required for transparency, accountability, innovation, and public engagement. For example, Open Knowledge International notes that a well-functioning democratic society requires its citizens know what their government is doing and that they must be able freely to access government data and information and to share that information with other citizens.⁶ The International Data Charter’s compelling case for open data includes that it offers “opportunities to provide innovative, evidence-based policy solutions and support economic benefits and social development for all members of society”⁷ and that it can do this through various means.

Open data can help improve governance of natural resources by “increasing awareness about how countries’ natural resources are used, how extractive revenues are spent, and how land is transacted and managed.”⁸ Geospatial and earth observation data “support[s] comparability and interoperability and effective analysis by allowing data to be layered geographically.”⁹ Unfortunately, national land and environmental datasets are frequently unavailable as open data in most countries, according to national assessments conducted for the third edition of the Open Data Barometer.¹⁰

Open data commitments are often part of broader open government commitments. The Government of Canada defines open government as “a governing culture that fosters greater openness and accountability, enhances citizen participation in policymaking and service design, and creates a more efficient and responsive government.”¹¹ The Government of Canada became a member of the international Open Government Partnership in 2012 and it has an open government portal (www.open.canada.ca). This open government portal states that the Government of Canada “is working with the national and international open government community to create greater transparency and accountability, increase citizen engagement, and

Available at: <http://www.thecanadianencyclopedia.ca/en/article/crown-land/>. Accessed April 30, 2017.

⁵ Mike Cooray and R. Duus. 11 Feb. 2016. “The importance of open data”.

<https://www.weforum.org/agenda/2016/02/the-importance-of-open-data>. Accessed March 22, 2017.

⁶ Open Knowledge International. “Why Open Data?” Available at: <https://okfn.org/opendata/why-open-data/>

⁷ International Open Data Charter, preamble, article 8. Available at: <http://opendatacharter.net/principles/>

⁸ International Open Data Charter, preamble, article 8. Available at: <http://opendatacharter.net/principles/>

⁹ International Open Data Charter, preamble, article 8. Available at: <http://opendatacharter.net/principles/>

¹⁰ *Open Data Barometer Global Report*. 2015. Third Edition. Pages 19-20. Available at:

<http://opendatabarometer.org/3rdEdition/report/>. Accessed March 24, 2017

¹¹ Definition from: <http://open.canada.ca/en/frequently-asked-questions>. Accessed May 8, 2017.



drive innovation and economic opportunities through open data, open information, and open dialogue.”¹²

In the latest Open Data Barometer assessment, the Government of Canada received a score of 80.35, which put it in fourth place in relation to its peers in getting the basics of open data, readiness, implementation, and impact right.¹³ In the Global Open Data Index, Canada placed fifth with a score of 69%, which is a ranking score, based on weighted questions, displayed as a percentage of the maximum possible score, but only 40% of assessed datasets were open.¹⁴ There is thus still room for improvement.

According to the Government of Canada open government portal, nine provinces and territories have open government programs. They are: Alberta, British Columbia, Newfoundland and Labrador, the Northwest Territories, Nova Scotia, Ontario, Prince Edward Island, Quebec, and Saskatchewan.¹⁵ However, the latest Government of Canada self-assessment report notes that while governments have engaged on open data standardization at the pan-Canadian level “discussions have not yet translated into pan-Canadian standards.”¹⁶

Methods

GFWC undertook an open data assessment of three industrial sectors: forestry, mining, and PNG concessions. GFWC collected geospatial datasets from all thirteen provinces and territories, where available, as well as from the federal government in the case of mineral and petroleum/natural gas licences in Nunavut. We assessed datasets against the Open Definition, which states that “knowledge is open if anyone is free to access, use, modify, and share it — subject, at most, to measures that preserve provenance and openness.” To be considered open, products or works must meet the following criteria¹⁷:

- 1) Access: the work “*must* be provided as a whole and at no more than a reasonable one-time reproduction cost, and *should* be downloadable via the Internet without charge”;
- 2) Machine Readability: the work “*must* be provided in a form readily processable by a computer and where the individual elements of the work can be easily accessed and modified”; and

¹² Text from: <http://open.canada.ca/en>. Accessed March 24, 2017.

¹³ *Open Data Barometer Global Report*. 2015. Third Edition. Page 8. Available at: <http://opendatabarometer.org/doc/3rdEdition/ODB-3rdEdition-GlobalReport.pdf>. Accessed March 24, 2017.

¹⁴ Global Open Data Index assessment is available at: <https://index.okfn.org/place/ca/>. Accessed March 25, 2017.

¹⁵ Map and details available at: <http://open.canada.ca/en/maps/open-data-canada> Accessed March 24, 2017.

¹⁶ Government of Canada. January 2017. *Canada’s Action Plan on Open Government 2014-2016: End-of-Term Self Assessment Report*. Available at: https://www.opengovpartnership.org/sites/default/files/Canada_EoT-Self-Assessment-Report_2014-2016_2.pdf. Accessed March 24, 2017.

¹⁷ “Open Definition 2.1” Available at: <http://opendefinition.org/od/2.1/en/>. Accessed October 2016.



- 3) **Open Format:** the work must be open format, which is “one which places no restrictions, monetary or otherwise, upon its use and can be fully processed with at least one free/libre/open-source software tool.”
- 4) **Open Licence or Status:** the work “*must* be in the **public domain** or provided under an open **licence.**”

For geospatial data, open and machine readable data formats include ESRI shapefiles, KML files, GeoJSON, and other types of text-based files. Each of the vector formats has a mechanism for storing the geometry and attributes of each feature.¹⁸

The licence is a particularly important aspect of open data. To qualify as open, a licence must satisfy a number of conditions. An open licence must: 1) allow free use of the work; 2) allow redistribution of the work; 3) allow the creation of derivatives and distribution of the derivatives under the same terms; 4) allow any part of the work to be freely used, distributed or modified separately; 5) allow distribution along with other distinct works without restrictions; 6) not discriminate against any person or group; 7) provide rights to all to whom it is redistributed; 8) allow use/redistribution/modification/ compilation for any purpose; and 9) not impose any fee or royalty.¹⁹

To undertake the open dataset assessment, GFWC took the following steps:

1. GFWC compiled geospatial datasets for each jurisdiction, where available, and noted type of data access, whether through an open data portal, available upon email request, or not available. GFWC used the available datasets to prepare a national dataset for each sector, and has shared these with an open data licence on our website at www.globalforestwatch.ca.
2. GFWC collected and reviewed the associated metadata and licences for all available datasets, and any ancillary information, to determine if the governments made them available as open data. GFWC used the four open data criteria (access, machine readable, open format, and open licence) to assess whether datasets are open. Datasets had to be open under all four criteria for us to assess them as open data at an overall level. While machine readable and open format were straightforward to assess, we used some discretion in assessing access and open licences.
 - 2.1. We initially assessed datasets available upon email request and via data portals requiring registration as open data, but changed this assessment based on the review of our draft report and based upon methods used by the Global Open Data Index. In our revised assessment, access is deemed open only where datasets are available for direct download

¹⁸ See information at: <https://www.e-education.psu.edu/geog585/node/691>. Accessed March 14, 2017.

¹⁹ Open definition at: <http://opendefinition.org/od/2.1/en/>. Accessed October 2016.



from a data portal, or at most, a requirement to submit an email address to which the dataset link is then sent. We made this change as registration of any sort can be used to control access to data.

- 2.2. Open licences must meet all nine licence permissions set out in the Open Definition.²⁰ If there are restrictions on any of these, GFWC assessed the licence and thus the dataset as not open. In some cases, governments make datasets available without an explicit open licence, but impose no use restrictions. In these cases, GFWC assessed these as open licences given the lack of restrictions. However, it would be ideal if governments made datasets available under explicit open data licences to make them truly public, and maximally re-usable.²¹
3. GFWC reviewed which jurisdictions have committed to open government and have published open data licences. We used the Government of Canada open government website to research open government commitments, as well as searching individual provincial and territorial government websites.
4. GFWC prepared this open data report on the availability and status of open geospatial datasets on industrial concessions for natural resources in Canada as of May 2017.

The results of our open data assessment follow. Each sectoral summary provides a summary in both tabular and map format, with colour coding for easy reference. We categorize jurisdictions without concessions as not applicable (that is, we cannot assess them given there is no data) and colour code these in grey. Jurisdictions with open data are in green. Jurisdictions with data that are not open are in yellow.

Given there are four criteria required for a dataset to be open, we colour code each of the four criteria (access, machine readability, open format, and open licence), as well as by the overall assessment in the tables. If a jurisdiction only meets some of the open data criteria, we colour code the jurisdiction name and any non-compliant criteria in yellow in the table while the compliant criteria are colour-coded green. Jurisdictions without licences are in grey.

The maps depict the overall open data assessment. To be green, a jurisdiction must meet all four open data criteria, otherwise they are coloured yellow. Jurisdictions without resource concessions in a particular sector are shown in grey.

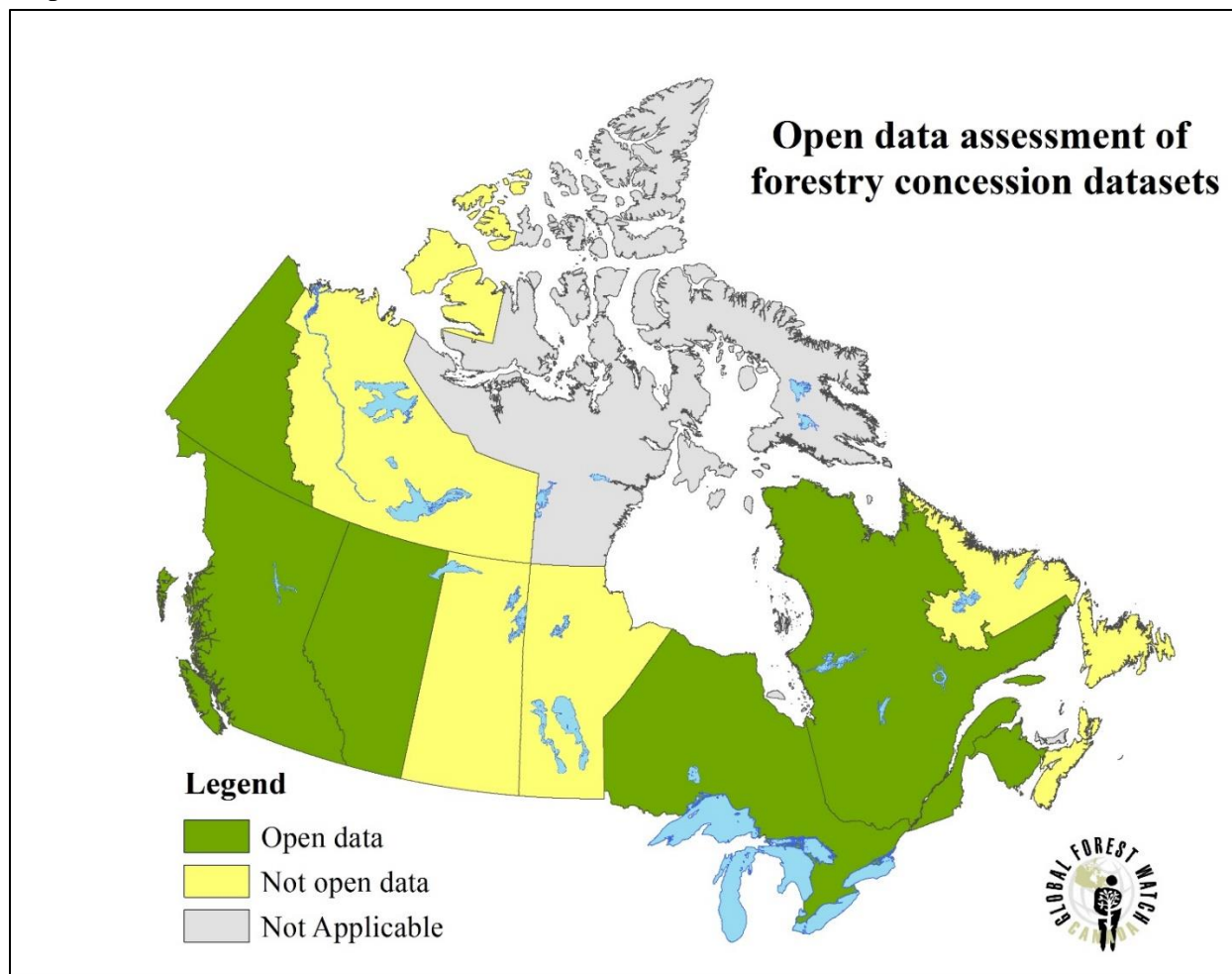
²⁰ The nine permissions are: use, redistribution, modification, separation, compilation, non-discrimination, propagation, application to any purpose, and no charge. See full details at: <http://opendefinition.org/od/2.1/en/>. Accessed March 2017.

²¹ For benefits of open licences see <https://sunlightfoundation.com/opendataguidelines/#license-free>. Accessed May 15, 2017.

Forest Concession Data Assessment

Eleven of thirteen Canadian jurisdictions issue forest licences or concessions for industrial logging. Prince Edward Island and Nunavut do not issue forest concessions. Forest concession datasets were available from nine of the eleven provinces and territories that issue forest licences. GFWC has assessed six of eleven jurisdictions issuing forest licences as having open datasets for forest concessions (see Map 1). As noted, we have assigned an overall open data assessment based on the four open data criteria. See further details below and in Table 1. Appendix 1 provides details on data sources.

Map 1. Assessment of forest concession datasets



Overall open data assessment: Six of nine available datasets are open under all four criteria.

Access: Six jurisdictions have datasets available for direct download from on-line portals. Manitoba requires registration at the Manitoba Land Initiative to access data.²² GFWC had to

²² See <http://mli2.gov.mb.ca/>.

request datasets of forest concessions from the Northwest Territories, Newfoundland and Labrador, Nova Scotia, and Saskatchewan.²³ GFWC assessed these jurisdictions as not having open data access, whether or not the government provided the data, as governments can use an email request or other access restrictions as a means of control and filtering who does obtain the dataset.

Machine readable: All available datasets are in machine readable formats.

Open format: All available datasets are in an open format (shapefiles).

Open licence: Eight of the nine available datasets have open data licences or equivalent conditions. Four provinces (Alberta, British Columbia, New Brunswick, and Ontario) provide an explicit open licence, which is the best option, for their forestry geospatial datasets. Four other jurisdictions (Northwest Territories, Quebec, Saskatchewan, and the Yukon) do not provide an open licence but do not specify any use limitations. Manitoba's dataset explicitly prohibits the sale of their dataset so is not available under an open licence.

Table 1. Open data assessment of forest concession datasets

Jurisdiction	Open Data	Access	Machine Readable	Open Format	Open Licence
Alberta	Yes	Yes	Yes	Yes	Yes
British Columbia	Yes	Yes	Yes	Yes	Yes
Manitoba	No	No	Yes	Yes	No: Limits on resale
New Brunswick	Yes	Yes	Yes	Yes	Yes
Newfoundland and Labrador	No	No	No	No	No
Northwest Territories	No	No	Yes	Yes	Yes: No use limits
Nova Scotia	No	No	No	No	No
Nunavut	N/A	N/A	N/A	N/A	N/A
Ontario	Yes	Yes	Yes	Yes	Yes
Prince Edward Island	N/A	N/A	N/A	N/A	N/A
Quebec	Yes	Yes	Yes	Yes	Yes: No use limits
Saskatchewan	No	No	Yes	Yes	Yes: No use limits
Yukon	Yes	Yes	Yes	Yes	Yes: No use limits

Green = Open data; Yellow: Not open data; Grey: Not applicable (N/A).

We colour code by the overall assessment and by the four open data categories (access, machine readability, format, and licence).

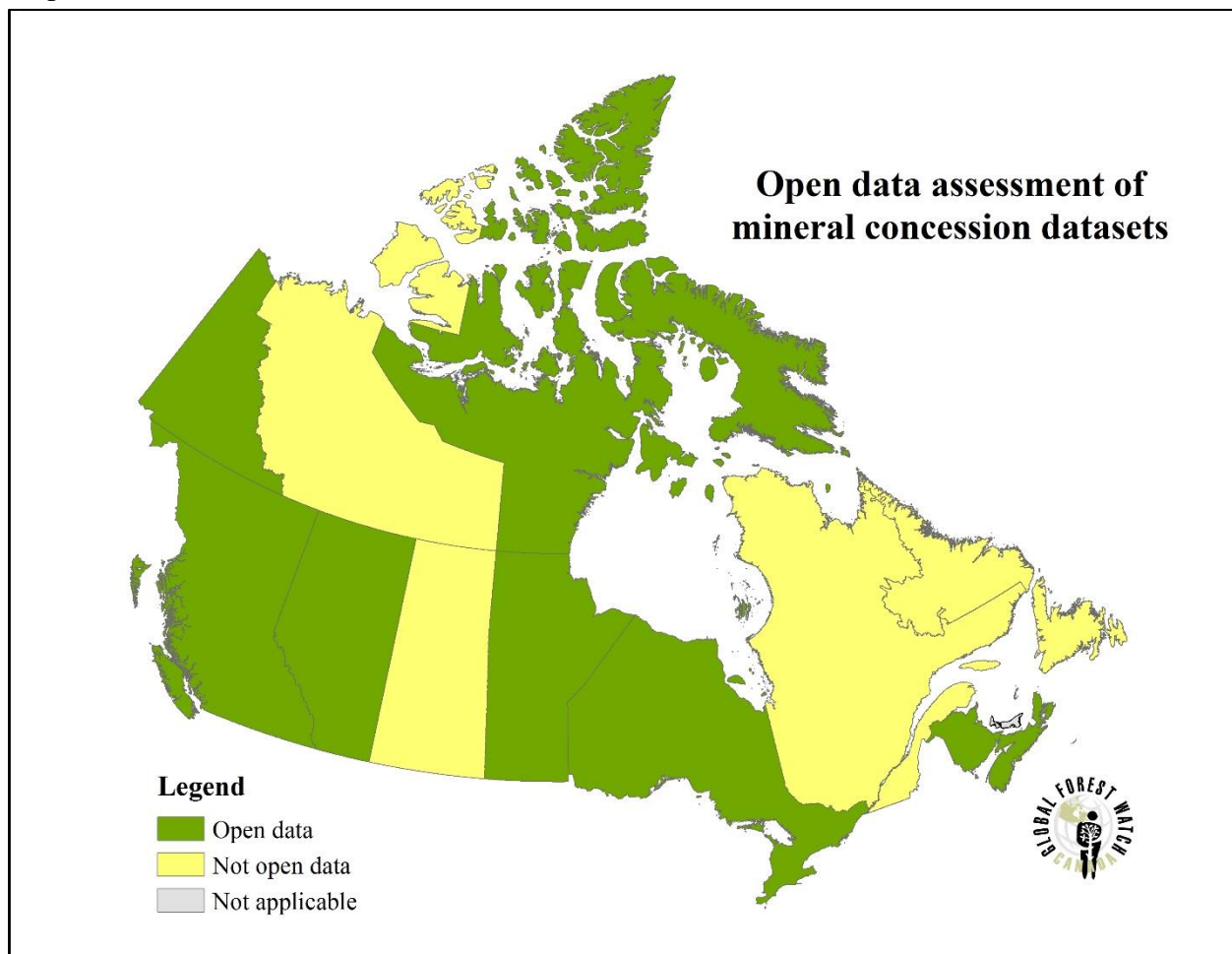
²³ In some cases, we requested additional data to add to available datasets, including timber quota data for Alberta and tenure holder information for New Brunswick. Nova Scotia does have some on-line datasets but these do not provide licence information.

Mineral Concession Dataset Assessment

Mineral exploration takes place in all jurisdictions except for Prince Edward Island. Datasets are available for all twelve jurisdictions that issue mineral permits, licences, and leases. The Government of Canada issues mineral concessions for Nunavut. Datasets for mineral concessions (permits/licences) are available for all twelve jurisdictions that issue mineral rights.

GFWC has assessed eight jurisdictions - Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Nunavut (via the federal government), and Ontario - as having open datasets for mineral exploration licences (see Map 2). As noted, we have assigned an overall open data assessment based on the four open data criteria. See further details below and in Table 2. Appendix 2 provides details on data sources.

Map 2. Assessment of mineral concession datasets



Overall open data assessment: Eight of twelve datasets are open under all four criteria.

Access: Eleven datasets are available for direct download from on-line portals without registration. Users must first register to access the Northwest Territories data so access is not open.

Machine readable: All twelve datasets are in machine readable formats.

Open format: All twelve datasets are in an open format (shapefiles).

Open licence: Eight governments make their datasets available with an open data or equivalent licence. The other four mineral datasets either do not allow redistribution of the original work or do not allow commercial use.

Table 2. Open data assessment of mineral concession datasets

Jurisdiction	Open Data	Access	Open Format	Machine Readable	Open Licence
Alberta	Yes	Yes	Yes	Yes	Yes
British Columbia	Yes	Yes	Yes	Yes	Yes
Manitoba	Yes	Yes	Yes	Yes	Yes: No apparent restrictions on use
New Brunswick	Yes	Yes	Yes	Yes	Yes
Newfoundland and Labrador	No	Yes	Yes	Yes	No: Only derived/modified works may be redistributed
Northwest Territories	No	No	Yes	Yes	No: Only derived/modified works may be redistributed via the internet
Nova Scotia	Yes	Yes	Yes	Yes	Yes
Nunavut (Federal government)	Yes	Yes	Yes	Yes	Yes
Ontario	Yes	Yes	Yes	Yes	Yes
Prince Edward Island	N/A	N/A	N/A	N/A	N/A
Quebec	No	Yes	Yes	Yes	No: Only derived/modified works may be redistributed.
Saskatchewan	No	Yes	Yes	Yes	No: Commercial use not permitted
Yukon	Yes	Yes	Yes	Yes	Yes: Free public service

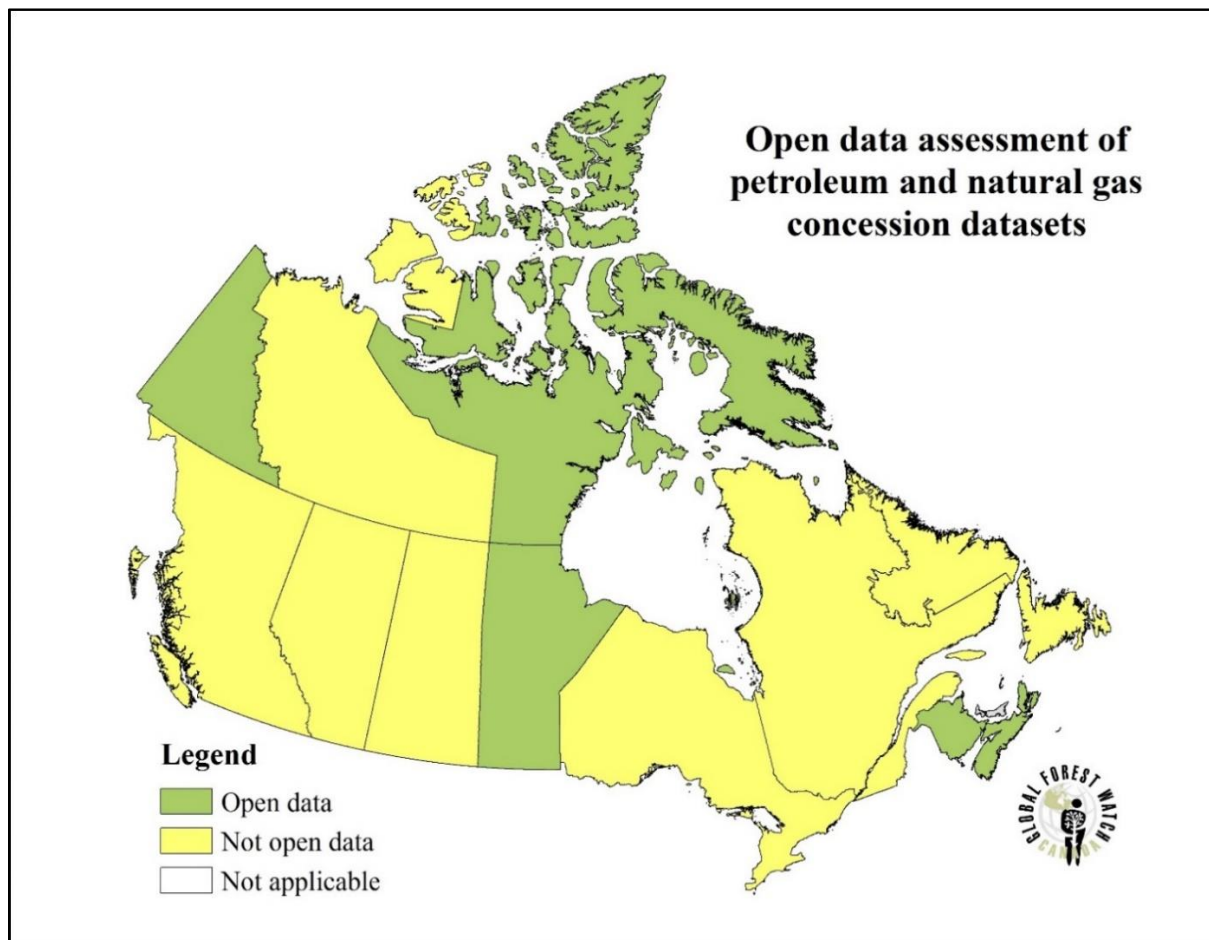
Green = Open data; Yellow: Not open data; Grey: Not applicable (N/A).

We colour code by the overall assessment and by the four open data categories (access, machine readability, format, and licence).

Petroleum and Natural Gas Geospatial Data Assessment

Twelve of thirteen jurisdictions currently issue petroleum and natural gas (PNG) concessions. The Government of Canada issues PNG licences on crown land in Nunavut, and Prince Edward Island does not appear to have any current licences/concessions. Geospatial datasets for PNG licences are available from all twelve jurisdictions issuing PNG permits/concessions. As noted, we have assigned an overall open data assessment based on the four open data criteria. Five of the twelve datasets meet all four open data criteria (see Map 3). See further details below and in Table 3. Appendix 3 provides details on data sources.

Map 3. Assessment of PNG concession datasets



Overall open data assessment: Five of the twelve datasets are open under all four criteria. These are: Manitoba, New Brunswick, Nova Scotia, Nunavut and the Yukon.

Access: PNG licence datasets are available for direct download from all jurisdictions in Canada, with the exception of Alberta. Alberta provided the data upon request and noted that it planned to

make the data available on an open data portal in the future.²⁴

Machine readable: All available datasets are in machine readable formats.

Open format: All available datasets are in an open format (shapefiles).

Open licence: Six governments make datasets available with an open data or equivalent licence while six governments do not provide their data with open licences. Ontario and Quebec permit the redistribution of derived works only. Newfoundland and Labrador does not allow redistribution. Saskatchewan only permits non-commercial use, while British Columbia and the Northwest Territories require consent for data redistribution.²⁵

Table 3. Assessment of PNG concession datasets

Jurisdiction	Open Data	Access	Open Format	Machine Readable	Open Licence
Alberta	No	No	Yes	Yes	Yes
British Columbia	No	Yes	Yes	Yes	No: Reproduction and redistribution require written consent
Manitoba	Yes	Yes	Yes	Yes	Yes: No apparent restrictions on use
New Brunswick	Yes	Yes	Yes	Yes	Yes: No apparent restrictions on use
Newfoundland and Labrador	No	Yes	Yes	Yes	No: Only derived/modified works may be redistributed
Northwest Territories (NWT)	No	Yes	Yes	Yes	No: Redistribution/reuse requires consent
Nova Scotia	Yes	Yes	Yes	Yes	Yes: Open Government Licence
Nunavut (Federal Government)	Yes	Yes	Yes	Yes	Yes: Open Government Licence
Ontario	No	Yes	Yes	Yes	No: Only distribution of derived works
Prince Edward Island	N/A	N/A	N/A	N/A	N/A
Quebec	No	Yes	Yes	Yes	No: Only distribution of derived works
Saskatchewan	No	Yes	Yes	Yes	No: Commercial use not permitted
Yukon	Yes	Yes	Yes	Yes	Yes: Free public service

Green = Open data; Yellow: Not open data; Grey: Not applicable (N/A).

We colour code by the overall assessment and by the four open data categories (access, machine readability, format, and licence).

²⁴ GFWC verified in mid-May that Alberta does not yet have timeline for availability on a portal.

²⁵ GFWC received permission from the Government of the Northwest Territories to reuse their data. However, as of early 2017, GFWC had not received any response from the British Columbian government. As a result, GFWC's 2016 national dataset for PNG does not include B.C.



Open Government and Open Licences in Canada

In this section, we present a summary of whether governments in Canada have open commitments, whether they have open data licences, and how these compare to the findings from the assessment of geospatial datasets for the three resource sectors. We assessed the federal government, as well as the thirteen provinces and territories, even if they do not issue licences for forestry, minerals, or PNG. Table 4 contains a summary of results.

As noted in the introduction, the federal government has committed to open government. Nine provinces and territories (Alberta, British Columbia, Newfoundland and Labrador, the Northwest Territories, Nova Scotia, Ontario, Prince Edward Island, Quebec, and Saskatchewan) have also made open government commitments. GFWC found open licences through internet searches for the federal government and seven provinces.

Besides an open government commitment, the federal government also has an open data licence, and provides open mineral and PNG geospatial datasets for Nunavut, where it issues permits. No province or territory has both an open government commitment and an open data licence, and provides all natural resource concessions as open datasets. Although the Government of Canada's open government website does not list New Brunswick as having an open government commitment²⁶, the province does have an open data policy, an open licence, and open geospatial data for all three natural resource sectors.

Alberta has an open government commitment and open licence, but only has two of its datasets available as open data. Its PNG dataset needs to be available on an on-line portal to be open data. British Columbia and Ontario both have open government commitments and open licences, but only provide two of their datasets as open data, as they both have limitations on use of their petroleum datasets. Nova Scotia has an open government commitment and open licence, but only has two open datasets, as it does not make a complete forest concession dataset available on-line.

The worst performer for governments with both an open commitment and an open licence is Newfoundland and Labrador. It provides no open geospatial datasets. It provides no forest concession dataset at all and although it does make mining and PNG datasets available, they do not have open licences. By contrast, Manitoba, the Northwest Territories, Saskatchewan, and Yukon do not have open government commitments or open licences but do provide some datasets on-line for direct download. However, none of the Saskatchewan or Northwest Territories datasets qualify as open data as they either have access or licence restrictions in all cases.

²⁶ A list of provinces and territories is available at: <http://open.canada.ca/en/maps/open-data-canada>. Accessed May 8, 2017.

Table 4. Summary of open government, licence, and geospatial datasets by jurisdiction

Jurisdiction	Open Government	Open Licence	Forestry	Minerals/ Mining	Petroleum and Gas
Canada	Yes	Yes ²⁷	N/A	Yes (Nunavut)	Yes (Nunavut)
Alberta	Yes	Yes ²⁸	Yes	Yes	No
British Columbia	Yes	Yes ²⁹	Yes	Yes	No
Manitoba	No	No	No	Yes	Yes
New Brunswick	No	Yes ³⁰	Yes	Yes	Yes
Newfoundland and Labrador	Yes	Yes ³¹	No	No	No
Northwest Territories	Yes	No	No	No	No
Nova Scotia	Yes	Yes ³²	No	Yes	Yes
Nunavut	No	No	N/A	*see Canada	*see Canada
Ontario	Yes	Yes ³³	Yes	Yes	No
Prince Edward Island	Yes	Yes ³⁴	N/A	N/A	N/A
Quebec	Yes	No ³⁵	Yes	No	No
Saskatchewan	Yes	No	No	No	No
Yukon	No	No	Yes	Yes	Yes

N/A = not applicable

²⁷ The Government of Canada's open licence is available at: <http://open.canada.ca/en/open-government-licence-canada>. Accessed March 29, 2017.

²⁸ Alberta's open data licence is available at: <https://open.alberta.ca/licence>. Accessed March 29, 2017.

²⁹ BC's open data licence is available at: <http://www2.gov.bc.ca/gov/content/data/open-data/open-government-licence-bc>. Accessed March 28, 2017.

³⁰ New Brunswick's open data licence can be accessed at: http://geonb.snb.ca/documents/license/geonb-odl_en.pdf. Accessed March 27, 2017.

³¹ Newfoundland and Labrador's open licence is available at: <http://opendata.gov.nl.ca/public/opendata/page/?page-id=licence>. Accessed March 28, 2017.

³² Nova Scotia's licence is available at: <https://novascotia.ca/opendata/licence.asp>. Accessed March 29, 2017.

³³ Ontario's open licence is available at: <https://www.ontario.ca/page/open-government-licence-ontario>. Accessed March 29, 2017.

³⁴ Prince Edward Island's open licence is available at: <https://www.princeedwardisland.ca/en/information/finance/open-government-licence-prince-edward-island>. Accessed May 8, 2017.

³⁵ GFWC did not find an open licence on-line for the province of Quebec.



Conclusion and Recommendations

GFWC found a number of open geospatial datasets for natural resource concessions available across Canada. However, there were some notable exceptions, especially in terms of availability in the forestry sector and in terms of licencing in the mining and oil/gas sectors. At the overall level, the federal government and nine provincial and territorial governments have open government programs.

Forest concession datasets were available for nine of eleven provinces and territories that issue forest licences. Six of these datasets met all open data conditions. Manitoba's dataset is not open data as the licence has a commercial use limitation. Despite having an open government commitment and an open data licence, Newfoundland and Labrador is does not have a forest concession dataset available through an on-line portal. Neither did it respond to GFWC's email request to obtain one. As noted, Nova Scotia does have some forest datasets on-line but does not make all forest concession data available.

Datasets for mineral concessions (permits/licences) are available for all twelve jurisdictions that issue mineral rights. These are all available for direct download from on-line portals, and are thus more easily accessible than many datasets in the forestry sector. Eight of the twelve mineral datasets are open, compared to six of nine forestry datasets. Four mineral concessions are not open due to licence restrictions.

Geospatial datasets for petroleum and natural gas are available for all twelve jurisdictions that issue PNG permits. Five of these datasets (Manitoba, New Brunswick, Nova Scotia, Nunavut, and the Yukon) meet all four open data criteria. Alberta's dataset is not open as it was not available on-line. The remaining seven datasets are not open data as they all have licence restrictions. Thus, PNG datasets have the most licensing restrictions compared to mineral and forest concession datasets.

Although many geospatial datasets are 'available on-line, open government commitments have not yet translated into open data for all provincial and territorial natural resource concessions. As noted, Newfoundland has an open government commitment and open data licence, but has no open data for natural resource concessions. Other provinces and territories have made many steps forward but all still have areas where progress is required. No provincial or territorial government has both an open government commitment, an open licence, and provides open geospatial data for all three natural resource sectors. However, some governments without open government commitments and open licences do make datasets available under open data conditions.



There is still substantial room for improvement in making available datasets on public resources more open for all citizens of Canada based on the analysis conducted for this report. While many datasets – especially in the minerals and petroleum sectors – are available via on-line data portals, there is considerable room for improvement regarding open licence permissions. Specific recommendations to improve access and openness of natural resource concession datasets follow.

Recommendations

GFWC makes the following recommendations to federal, provincial, and territorial governments to improve open geospatial data for natural resource concessions:

- 1) Governments should eliminate the need to make email requests for geospatial concession datasets and make all of them available through on-line portals.
- 2) Governments should make all geospatial concession datasets available under explicit open data licences so there is no confusion or barriers to use of available datasets.
- 3) Each provincial/territorial government should develop and publish an action plan and timelines for making currently unavailable or non-open geospatial concession datasets open.
- 4) Governments should collaborate and develop pan-Canadian standards for open natural resources geospatial datasets.

Glossary

Open data: Digital data that is made available with the technical and legal characteristics necessary for it to be freely used, reused, and redistributed by anyone, anytime, anywhere.

Open licence: An open licence must: 1) allow free use of the work; 2) allow redistribution of the work; 3) allow the creation of derivatives and distribution of the derivatives under the same terms; 4) allow any part of the work to be freely used, distributed or modified separately; 5) allow distribution along with other distinct works without restrictions; 6) not discriminate against any person or group; 7) provide rights to all to whom it is redistributed; 8) allow use/redistribution/modification/ compilation for any purpose; and 9) not impose any fee or royalty.



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Review Process

GFWC carries out reviews of all its original reports and datasets. We circulated a draft version of this report to all relevant government departments in the various jurisdictions, as well as some independent academics and non-governmental organizations.

The main comments and recommendations we received were:

- Overall, the report is well researched and written.
- Colour coding the tables would make them more user friendly.
- Data cannot really be considered open if it must be requested via email or other means, as government can then control access.
- It would be useful to include recommendations for governments on how to improve their sharing of data.

We have addressed the review comments as follows:

- We have added colour coding to the tables to match the colours shown in the maps.
- We have changed our assessments so that data that needs to be requested is not categorized as open.
- We have included recommendations for governments on how to improve their sharing of geospatial datasets on natural resources.

Appendix 1. Data sources for forest concession datasets

Jurisdiction	Licence Type/Name	Data portal or links	Other notes
Alberta: Forest Management Unit	Timber quotas	Forest Management Units and Agreement areas dataset are available in a bundle of Alberta administrative boundary datasets: http://www.altalis.com/products/base/20k_base_features.html	The dataset is of the FMU boundaries and contains no attribute data. GFWC requested timber quota data, which was provided in excel.
	Forest Management Agreement		Dataset contains company names and the start date of the FMA. GFWC added end date based on FMA information.
British Columbia: Timber Supply Units	Timber Supply Forest Licence	Timber supply area (TSA) obtained from BC Open data portal: www.data.gov.bc.ca https://catalogue.data.gov.bc.ca/datasets/forest-tenure-timber-licence	Dataset is of all management units, regardless of current forest harvesting. To identify TSAs with current volumes, GFWC linked to a TSA data table: https://www.for.gov.bc.ca/ftp/hth/external/!publish/web/timber-tenures/apportionment/aptr041.pdf
	Tree Farm Licence	Tree Farm Licence obtained from: https://catalogue.data.gov.bc.ca/datasets/fadm-tree-farm-license-tfl	Company and tenure date information must be linked to Tree Farm Licence data table: https://www.for.gov.bc.ca/ftp/hth/external/!publish/web/timber-tenures/apportionment/aptr041.pdf
	Pulpwood Agreement	Pulpwood Agreements https://catalogue.data.gov.bc.ca/datasets/fadm-pulpwood-agreement	Pulpwood agreement plans are available: https://www.for.gov.bc.ca/hth/timber-tenures/agreements/pulpwood-agreement.htm
	Community Forest	Forest Tenure Managed Licence https://catalogue.data.gov.bc.ca/datasets/forest-tenure-managed-licence	Dataset includes the name of the community forest authority and woodlot holders
	Woodlot Licence		
Manitoba: Forest Management Unit	Forest Management Licence Agreement Areas	Forest Management Licence downloaded from Manitoba Lands Initiative: http://mli2.gov.mb.ca . Email request sent for information on Timber Sale Agreements.	Dataset contains forest licences number. Company names added based on website listing: https://www.gov.mb.ca/conservation/forestry/manage/fml_crown.html
	Forest Management Units (Timber Sale Agreements)	Forest Management Units downloaded from the Manitoba Lands Initiative: http://mli2.gov.mb.ca	Boundary file for all FMUs; unknown which ones have active forestry.



New Brunswick: Crown Licence Holder	Timber Licence	Crownlands dataset and crown timber licences downloaded from GeoNB Open Data portal: http://www.snb.ca/geonb1/e/DC/catalogue-E.asp	Map showing licence boundaries at: http://www2.gnb.ca/content/dam/gnb/Departments/nr/images/CrownLicenceMap-e.jpg . GFWC requested and received dataset.
Newfoundland & Labrador: Forest Management Zones divided into Forest Management Districts	Timber Sale Agreement	No open data for forest management districts. Maps are available at: http://www.faa.gov.nl.ca/forestry/management/district.html	Data requested by email but not received.
	Crown Timber Licence (Corner Brook Pulp and Paper Licence)	Maps of CBPP tenure are available on the company website: http://www.cbpl.com/wp-content/uploads/2016/05/Forest-Management-Plan-Summary-v2.pdf	Dataset requested by email but not received, so GFWC used a previously created dataset for this tenure.
Northwest Territories	Forest Management Agreement	Timber Harvest Planning dataset was not available on the NWT open data portal: http://www.geomatics.gov.nt.ca/ although a map was available: http://www.enr.gov.nt.ca/programs/forest-resources/forest-management-agreements	Government of NWT provided shapefile following email request. Detail of the harvest plans terms are available at: http://www.mvlwb.ca/Boards/mv/SitePages/registry.aspx . GFWC added End date based on term of agreements.
Nova Scotia- No Forest Management Unit in Nova Scotia	Forest Licence	Crownlands dataset downloaded from: https://nsgi.novascotia.ca/gdd/	Dataset is for all crown lands. Requested forest concession dataset but none received.
	Forest Utilization Agreements		
	Western Crown Lands	Western Crown Lands dataset requested	Map of Western Crown Lands: http://novascotia.ca/natr/land/western-land/pdf/Forestry-SoftwoodProduction.pdf
	Medway Community Forest		Map of community forest: http://novascotia.ca/natr/forestry/community-forest/
	Harvest Plans	Fibre Allocations downloaded from Nova Scotia Harvest Operations Maps: http://novascotia.ca/natr/forestry/fibre-allocation/allocation-maps.asp	Dataset is of current harvest areas only and does not indicate areas that are open to forest harvesting. This dataset was not included in the final compilation.
Ontario - Forest Management Unit	Sustainable Forest Licence	Downloaded Forest Management Unit dataset from: Land Information Ontario Open Data portal www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home	Dataset contains the name of the SFL holder and start and end dates. It does not provide data for FMUs not under a SFL. Data for Crown managed and Crown Agency managed FMUs can be found at:



			https://www.ontario.ca/page/list-management-units-and-map#section-0
	Forest Resource Licence		GFWC requested forest resource licence info via email.
Quebec- L'unité d'aménagement (UA)	Permis de récolte	Unités d'Aménagement Forestier (UAF) downloaded from the Quebec Ministère de l'Énergie et des Ressources naturelles site: ftp://ftp.mern.gouv.qc.ca/	Dataset contains UAF boundaries and no other attribute information. Company names added based on allocation table available: https://mffp.gouv.qc.ca/forets/amenagement/amenagement-planification-droits-GA.jsp
	Garanties d'approvisionnement (GA)		GAs were created by grouping the UAFs. Company names added based on allocation table.
Saskatchewan - Timber Supply Areas	Forest Management Agreement	Timber supply Area dataset was not available on Open data portal (http://www.saskatchewan.ca/government/notarize-documents-queens-printer-maps-and-other-publications/maps) Data provided after email request.	GFWC requested and received a dataset from the Saskatchewan Forest Service, Ministry of Environment. Term dates obtained from Forest Management Plans, where available: https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/forestry/forest-management-planning
	Term Supply Licence		
Yukon - Forest Resources Management Plan Boundaries	Fuel Wood Licence	Harvest Licences downloaded from interactive map: http://www.geomaticsyukon.ca/data	Dataset contains company name, start date and expiry date.
	Timber Resources Licence		



Appendix 2. Data sources for mineral concession datasets

Jurisdiction	Licence Type/Name	Name of Dataset available	Data portal	Date of Download & Update Frequency
Alberta	Mineral Permit	Met Agreements Shape	http://www.energy.alberta.ca/OurBusiness/1072.asp	29/7/2016; updated daily
	Mineral Lease			
British Columbia	Mineral Claim	Data BC - MTA AT POLY	https://data.gov.bc.ca/	2/8/2016; updated daily
	Mineral Lease			
Manitoba	Mineral Exploration Licence	Mineral_Exploration_Licence	http://www.manitoba.ca/iem/geo/gis/index.html	29/7/2016; Updated
	Mineral Claim	Mining_Claim		
	Mineral Lease	Mineral_Lease		
	Potash Permits	Potash_Exploration_Permits_and_Leases		
New Brunswick	Mineral Claim	Claims	Downloaded from: http://www2.gnb.ca/content/gnb/en/departments/erd/energy/content/minerals.html http://www2.gnb.ca/content/gnb/en/departments/erd/energy/content/minerals.htm Now available at: http://www.snb.ca/geonb1/e/DC/catalogue-E.asp	2/8/2016; updated weekly
	Mineral Lease	MiningAgreements		
Newfoundland & Labrador	Mineral Claims	Map_Staked_Claims	http://gis.geosurv.gov.nl.ca/	29/7/2016; updated daily
	Mineral Lease	Mineral_Tenure		
Northwest Territories	Mineral Claim	MineralClaims	http://www.iti.gov.nt.ca/en/mining-recorders-office	2/8/2016; updated daily
	Mineral Lease	Mineral_Tenure		
Nova Scotia	Mineral Exploration Licence	t493nsal	http://novascotia.ca/natr/meb/download/dp493.asp	29/7/2016; updated daily
	Mineral Lease			
	Mineral Lease			



Nunavut (via Government of Canada)	Mineral Prospecting Permit	PPERMIT_NU	Initially accessed at: https://www.aadnc-aandc.gc.ca/eng/1100100027889/1100100027890 Available in May 2017 at: http://open.canada.ca/data/en/dataset/2e6f97df-eeae-462b-902d-4453a1c1034b	2/8/2016; updated weekly
	Mineral Claim	MC_ALL_NU		
	Mineral Lease	MINLEASE_NU		
Ontario	Mineral Claim/Licence of Occupation	CLAIMPLY	http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/claimaps	29/7/2016; updated daily
	Mineral Lease (also contains patent lands)	DISPLY		
Quebec	Permit to Explore	TITRES_TITLES	https://gestim.mines.gouv.qc.ca/MRN_GestimP_Presentation/ODM02401_ie.aspx	29/7/2016; updated weekly
	Mineral Claim			
	Mineral Lease			
	Mining Concession			
Saskatchewan	Mineral Claim	Mineral_Disposition	http://www.infomaps.gov.sk.ca/website/sir_geological_atlas/viewer.htm	29/7/2016; updated daily
	Mineral Lease			
	Potash Permit	Potash_Disposition		
Yukon	Mineral Claim	Placer_Claims_50k	ftp://ftp.geomaticsyukon.ca/Geo/Yukon/Mining/	2/8/2016; updated weekly
		Quartz_Claims_50k		
	Mineral Lease	Placer_Leases_50k		
		Quartz_Leases_50k		
	Mineral Claim	MC_ALL_NU		
	Mineral Lease	MINLEASE_NU		



Appendix 3. Data sources for PNG concession datasets

Jurisdiction	Dataset(s) Name	Data Source	Data Download/ Receipt Date
Alberta	PNG_Agreements	Available upon request. Contact: John.Davies@gov.ab.ca	12/02/2016
British Columbia	Petroleum Title Polygons	https://data.gov.bc.ca/	11/8/2016
Manitoba	Crown Lands	http://www.gov.mb.ca/iem/petroleum/gis/index.html	11/08/2016
New Brunswick	Mineral and Petroleum	http://www2.gnb.ca/content/gnb/en/departments/erd/energy/content/minerals.html	11/8/2016
Newfoundland and Labrador	GeoScience OnLine	http://gis.geosurv.gov.nl.ca/	11/8/2016
Northwest Territories	Industry, Tourism and Investment	http://www.iti.gov.nt.ca/en/services/oil-and-gas-gis-data	11/8/2016
Nova Scotia	Onshore Petroleum Tenure	https://data.novascotia.ca/Environment-and-Energy/Onshore-Petroleum-Tenure/8vwz-9w2v/about	11/8/2016
Nunavut (via Government of Canada)	Oil and gas rights digital files	https://www.aadnc-aandc.gc.ca/eng/1100100036298/1100100036301	11/8/2016
Ontario	Crown Land - MNR Non-Freehold Dispositions Public	https://www.javacoeapp.lrc.gov.on.ca/geonet/work/srv/en/main.home?uuid=ff382819-b4f8-4690-860b-8eac1c316ed	17/08/2016
Quebec	Permis de Recherche & Baux d'Exploitation	http://sigpeg.mrn.gouv.qc.ca/gpg/hydrocarbures/hydrocarbures.htm	15/08/2016
Saskatchewan	SIR Geological Atlas	http://www.infomaps.gov.sk.ca/website/sir_geological_atlas/viewer.htm	29/7/2016
Yukon	GeoYukon: Oil and Gas Dispositions- 50k	ftp://ftp.geomaticsyukon.ca/GeoYukon/Oil_and_Gas/	11/8/2016