NATIONAL STRATEGY FOR LAMPS CONTAINING MERCURY 2019





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Environment and Climate Change Canada Public Inquiries Centre 12<sup>th</sup> Floor, Fontaine Building 200 Sacré-Coeur Boulevard Gatineau QC K1A 0H3

Telephone: 819-938-3860

Toll Free: 1-800-668-6767 (in Canada only) Email: ec.enviroinfo.ec@canada.ca

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# INTRODUCTION

Lamps containing mercury – such as compact fluorescent lamps used mostly in homes, fluorescent tubes commonly used in offices, and high intensity discharge lamps used for street lighting – are energy efficient and have long lifespans. However, the mercury contained in these lamps can be released when they are broken or disposed of improperly, posing potential risks to human health and the environment.

Tens of millions of lamps containing mercury have been sold in Canada over the last few decades (e.g. about 60 million in 2012, and about 35 million in 2017). In 2016, lamps that were manufactured or imported into Canada contained 423 kilograms of mercury. The quantity of mercury in a lamp can range from more than 1,000 milligrams to less than 1 milligram per lamp, depending on the type. Sales of lamps containing mercury in Canada are declining as consumers shift to more energy-efficient mercury-free alternatives, but millions are still purchased every year. Furthermore, the use of lamps containing mercury could persist for several more decades particularly in the institutional, commercial and industrial (ICI) sectors.

Governments, the private sector and civil society have taken action. In 2009, the Canadian Council of Ministers of the Environment (CCME) adopted the Canada-wide Action Plan for Extended Producer Responsibility, wherein jurisdictions committed to working toward managing lamps containing mercury through extended producer responsibility (EPR) programs by 2015. Four provinces have implemented EPR programs for lamps containing mercury, and one province has a voluntary diversion program for all products containing mercury. In other jurisdictions, municipalities, retailers, and non-profit organizations have implemented voluntary diversion programs. Environment and Climate Change Canada (ECCC) placed limits on the amount of mercury in most lamps through the *Products Containing Mercury* Regulations (2014). Amendments are planned for the Products Containing Mercury Regulations to reduce allowable amounts of mercury in some lamps to align with the Minamata Convention on Mercury, and to eventually prohibit the manufacture and import of the most common types of lamps. ECCC has also published the voluntary Code of Practice for the Environmentally Sound Management of End-of-life Lamps Containing Mercury (2017) to encourage lamp collectors, transporters, and processors to adopt best practices aimed at preventing releases of mercury to the environment.

There is, however, room for improvement. In 2017, 20% of lamps sold in Canada contained mercury. In that same year, only about 34% of lamps containing mercury were diverted, with EPR program results ranging from about 15% to 46% diversion. As a result, lamps contributed about 300 kilograms of mercury that was improperly disposed in landfills.

Public awareness of the need to safely divert lamps containing mercury is low. For example, in provinces with EPR, only 32% to 55% of people are aware that some lamps contain mercury and should be diverted from landfills. Most Canadians have reasonably good access to lamp collection sites, but accessibility is much lower in Indigenous and northern communities and rural areas. Guidelines and best practices are available for most lamp management activities to encourage their environmentally sound management. There are, however, gaps that need filling, and the extent to which best practices have been implemented is generally not measured or documented.

More effort is needed to eliminate all lamps as a source of mercury pollution in Canada. The national strategy aims at enhancing existing activities, developing new ones, and building greater participation by Canadians. The strategy aligns with the Canadian Council of Ministers of the Environment's (CCME) vision for Canada to be a leader in waste management, and includes recommendations for improvements, targeted actions, and a performance measurement approach. It was developed in cooperation with provinces, territories and other governments in Canada, and in consultation with stakeholders. The Minister of Environment and Climate Change has submitted the strategy to Parliament, and will report on its effectiveness every five years.

Linear fluorescent lamps and compact fluorescent lamps are the most common lamps containing mercury and should be familiar to most Canadians, but many other lamps contain mercury, including:

- High-intensity discharge (HID) lamps used for street lighting and for large areas like warehouses, parking lots, and arenas
- Lamps that produce ultraviolet (UV) light for applications like water treatment and tanning
- Cold cathode fluorescent lamps used for backlighting in electronic displays
- Some types of neon signs
- Xenon automobile headlamps



# THE STRATEGY

#### **VISION**

# Eliminate lamps as a source of mercury pollution in Canada.

# **GOALS**

The goals support the vision, and were developed with organizations across Canada that play a role in delivering environmentally sound management of lamps containing mercury.

- Canadians increasingly use mercury-free alternatives Canadians are aware of lamps containing mercury, they purchase mercury-free alternatives where feasible, and fewer lamps containing mercury are available in the marketplace.
- Canadians do their part to properly manage lamps containing mercury - Canadians are aware of and participate in diversion programs.
- Diversion is performed in an environmentally sound manner Collection, processing and disposal/ recycling activities are conducted in a manner that minimizes the risk of mercury releases to the environment.

# **PRIORITIES**

The consultations highlighted six priorities for the strategy:

- Prohibit the manufacture and import of the most common types of lamps containing mercury Amend federal regulations to prohibit the manufacture and import of the most common lamps containing mercury in Canada.
- Increase awareness Increase awareness that some lamps contain mercury, encourage Canadians to purchase mercury-free alternatives and dispose of existing lamps containing mercury in an environmentally sound manner.
- Increase participation in diversion programs by strengthening requirements and reducing barriers Significantly increase diversion across Canada by building on existing initiatives and adding new ones.
- Improve government operations Purchase mercury-free alternatives where feasible, ensure lamps containing mercury are diverted, and track and report on progress.
- Increase accessibility and implementation of guidelines and best practices Promote the use of guidelines and best practices for purchasing mercury-free lamps and managing existing lamps containing mercury in ways that are environmentally sound.
- Improve performance measurement and reporting Consistent performance measurement and reporting are in place to evaluate the implementation and effectiveness of the national strategy.

# **APPROACH**

The national strategy recommends actions to engage and mobilize public, private, and non-profit sectors to ensure that lamps containing mercury are diverted in an environmentally sound manner and that a transition to mercury-free lamps occurs as soon as feasible. The priorities for action focus efforts where the most progress can be made. Stakeholders across the country will work towards common goals, and progress will be evaluated and reported every five years.

# **PRIORITY 1:**

PROHIBIT THE
MANUFACTURE AND
IMPORT OF THE MOST
COMMON TYPES OF
LAMPS CONTAINING
MERCURY

# **ISSUE**

Lamps containing mercury could continue to be available in the marketplace indefinitely, even though energy-efficient mercury-free alternatives exist for most types of lamps at a competitive cost.

In 2016,

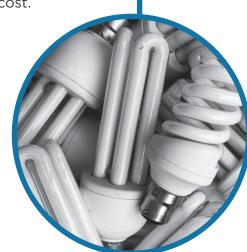
# 65 million lamps containing mercury

were reported as manufactured or imported into Canada:

59% of these were **linear fluorescent lamps**, commonly used in the ICI sector, and

23% were compact fluorescent lamps.

Unless regulatory action is taken, these lamps, in particularly linear fluorescent lamps, could continue to be available indefinitely, even though energy-efficient mercury-free alternatives exist at a competitive cost.



#### **NEXT STEPS**

- ECCC proposes to amend the <u>Products Containing Mercury</u>
  <u>Regulations</u> to reduce the availability of lamps containing mercury
  in Canada by prohibiting the manufacture and import of:
  - Screw-based compact fluorescent lamps (CFLs) by 2023
     and pin-based CFLs as soon as feasible and no later than 2028
  - Automobile headlamps by 2023
  - Linear and non-linear fluorescent lamps as soon as feasible and no later than 2028
  - Cold cathode fluorescent lamps commonly used in electronics as soon as feasible and no later than 2028
- ECCC will also prohibit the manufacture and import of other types of lamps containing mercury when alternatives become available

Based on 2016 data, it is estimated that, when these amendments come into effect, they would prohibit the manufacture and import of approximately 80% of lamps containing mercury and reduce the use of mercury in lamps by about 55%.

For more information on the regulations and to view the consultation document on the proposed amendments please consult the <u>Products</u> <u>Containing Mercury Regulations</u> webpage on the <u>Canadian Environmental Protection Act Registry</u>.

# **PRIORITY 2:**

# INCREASE AWARENESS

#### **ISSUE**

Most Canadians are not aware that some lamps contain mercury, that they need to be diverted in an environmentally sound manner, and that energy-efficient mercury-free alternatives are available.

# **NEXT STEPS**

- Provinces, territories, municipalities, stewardship organizations, retailers, and non-profit organizations are encouraged to intensify their efforts to increase awareness in both the residential and ICI sectors that lamps may contain mercury, have environmental and health impacts, and mercury-free alternatives are available. They are also encouraged to improve awareness that existing lamps containing mercury need to be handled and disposed of in an environmentally sound manner and there are options for doing so.
- ECCC will collaborate with provinces, territories, municipalities, stewardship organizations, retailers and non-profit organizations to exchange knowledge and experience on existing awareness raising efforts, for both the ICI and residential sectors, and to develop additional communication materials that provide clear information on the types of lamps that contain mercury, local options for diversion, and how and why to select energy-efficient mercury-free alternatives.

- ECCC will develop and promote a website with information and downloadable communications material for all Canadians on the types of lamps that contain mercury and their energy efficient mercury-free alternatives, along with a tool that allows Canadians to search for nearby diversion options (including lamp processors and organizations and programs that offer lamp take-back services).
- ECCC will also develop fact sheets and guidance for the ICI sector including reasons to procure non-mercury alternatives, and will provide information on lamp processing services and local diversion options. This will include a mapping tool that allows members of the ICI sector to search for local diversion programs (including lamp processors, organizations and programs that offer lamp take-back services).

# **PRIORITY 3:**

INCREASE

PARTICIPATION
IN DIVERSION
PROGRAMS BY
STRENGTHENING
REQUIREMENTS
AND REDUCING
BARRIERS

# **ISSUE**

In 2017, in the four provinces that have EPR programs (British Columbia, Manitoba, Quebec, and Prince Edward Island), 15% to 46% of lamps containing mercury were diverted from landfills. These rates are low. To improve diversion rates, stakeholders have suggested that mandatory measures may be more effective than voluntary measures. For the residential sector, retail stores provide convenient and accessible locations for lamp collection, however only some retailers offer this service. The lower rate of diversion in Indigenous, northern and remote communities and rural areas is due in part to the lack of accessible collection sites.

#### **NEXT STEPS**

- Jurisdictions with existing EPR programs are encouraged to consider strengthening regulations, improving public awareness, reducing barriers to participation, and improving diversion results. Regulatory improvements could include:
  - More stringent requirements or targets for public awareness, collection site accessibility, and diversion rates
  - Broadening the scope to include all types of lamps (mercury and mercury-free)
  - Broadening the scope to cover all lamp generators (ICI and residential)
  - Other complimentary approaches such as bans on lamp disposal in municipal solid waste landfills
- Provinces and territories that have not yet put diversion or EPR programs in place are encouraged to consider implementing EPR or other types of programs with dedicated funding to improve public awareness, encourage participation, and increase lamp diversion from landfill by both the ICI and residential sectors.
- In addition, ECCC will continue to work with provinces, territories and stakeholders to study the potential for and effectiveness of regulatory measures such as EPR and landfill disposal bans. ECCC will issue an interim report in 2022 on initial findings, in order to gather feedback and allow for a more-informed first report to Parliament in 2024.

Extended producer responsibility (EPR) is a policy that extends the responsibility for end-of-life management to a product's manufacturer, first importer or brand owner. EPR programs may be mandatory through legislation or adopted voluntarily.

- Harmonization of EPR programs and extending EPR across
  Canada should be considered as part of efforts through the CCME
  to achieve the Aspirational Canada-wide Waste Reduction Goal
  (30% by 2030 and 50% by 2040), and its vision for
  Canada to be a leader in waste management.
- Currently, three large retailers and a large number of small retailers offer take-back programs. Additional retailers are encouraged to offer this type of program for residential lamp collection, given their success. The high level of accessibility and convenience that retail locations offer for lamp collection, and the role of retailers as the main source of new residential lamps containing mercury sold in Canada, make them a key partner in diversion.
- To improve diversion in Indigenous, northern and remote communities, jurisdictions are encouraged to consider approaches like lamp exchange programs and lamp collection programs with short-term storage.
- Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and Indigenous Services Canada (ISC) have completed a pilot project to exchange lamps containing mercury for energy-efficient mercury-free alternatives.
  - ECCC will work with CIRNAC and ISC to review the results of the pilot project to determine feasibility of expanding a lamp exchange program to other Indigenous communities.
- CIRNAC and ISC already provide guidance, tools, and financial support for solid waste management in Indigenous communities, including the collection, storage and transportation of household hazardous waste (including lamps). CIRNAC and ISC will continue to support communities for the removal of lamps containing mercury from reserves.
- ECCC will continue to work with CIRNAC and ISC to support further action for environmentally sound management of lamps containing mercury on reserves.

# **PRIORITY 4:**

# IMPROVE GOVERNMENT OPERATIONS

#### **ISSUE**

Many government organizations in Canada implement policies and procedures in their operations to manage lamps containing mercury in an environmentally sound manner, but there is little tracking and information sharing. There may also be missed opportunities to make greater use of energy efficient mercury-free alternatives.

# **NEXT STEPS**

- All orders of government are encouraged to use procurement requirements to phase out, as soon as feasible, the purchase of new lamps containing mercury for use in government operations, wherever energy efficient mercury-free alternatives are available.
- ECCC will work with other federal departments to evaluate and implement policies, procedures, and guidance to ensure that mercury-free lamps are purchased for federal operations when and wherever possible. ECCC will also ensure that existing lamps containing mercury are properly managed. This will involve improved tracking and reporting of purchase decisions and management of spent lamps, from collection to final disposal.
- Provinces, territories, and municipalities are encouraged to establish and implement policies, and procedures (where not already in place) to ensure that mercury-free lamps are purchased when and wherever possible for their operations. They will also ensure that lamps containing mercury are properly managed, and improve the tracking and reporting of spent lamps, from collection of to final disposal.

# **PRIORITY 5:**

# INCREASE ACCESSIBILITY AND IMPLEMENTATION OF GUIDELINES AND BEST PRACTICES

# **ISSUE**

While guidelines and best practices are available for most aspects of end-of-life management of lamps, some gaps have been identified and the extent to which best practices have been implemented is not clearly measured or documented. Also, guidance on the use of mercury-free lamps in retrofits and new construction is not widely available.

#### **NEXT STEPS**

- ECCC will work with provinces, territories, municipalities, industry, retailers, and non-profit organizations to develop guidance or best practices for the use of mercury-free alternatives in retrofits and new construction.
- ECCC will work with provinces, territories, municipalities, industry, retailers, and non-profit organizations to develop guidance or best practices for the environmentally sound management of lamps containing mercury in construction, renovation and demolition (including tracking and reporting).
- ECCC will work with provinces, territories, municipalities, industry, retailers, and non-profit organizations to develop, promote and measure the implementation of supplementary guidance or best practices, as needed (e.g. for the use of lamp crushing devices, and for collection and storage in northern and remote areas).
- ECCC will work with provinces, territories and other federal departments to review existing requirements for the storage, transportation, and disposal of mercury waste, as they relate to lamps, and will consider developing supplementary guidance or best practices as needed.
- ECCC will also continue to promote and measure implementation of its <a href="Code of Practice">Code of Practice</a> to ensure environmentally sound end-of-life management of lamps containing mercury.
- Provinces and territories are encouraged to support the implementation of ECCC's Code of Practice by referencing it in regulations and requirements for end-of-life management of lamps within their jurisdictions.



- While the *Products Containing Mercury Regulations* currently require all lamps containing mercury to be labeled to inform ICI and residential consumers about the presence of mercury, ECCC will consider adding new requirements for manufacturers and importers under the regulations to indicate where consumers can find information about safe disposal options.
- Organizations engaged in lamp collection, transportation, processing and disposal are encouraged to form networks to increase awareness, implementation, and documentation of guidelines and best practices and to demonstrate implementation.
- Lamp processing facility operators are encouraged to ensure that best practices for environmentally sound end-of-life management of lamps containing mercury are implemented, measured and reported. These facilities are also encouraged to consider third-party verification to demonstrate that their operations are environmentally sound.

# **PRIORITY 6:**

# PERFORMANCE MEASUREMENT AND REPORTING

#### **ISSUE**

To assess the effectiveness of the national strategy, performance measurement and reporting is required.

# **NEXT STEPS**

- ECCC has worked with provinces, territories and interested stakeholders to develop a performance measurement framework for diversion of lamps containing mercury from landfills in Canada. The framework will be used to help assess the effectiveness of the national strategy and identify any additional issues requiring action (Annex).
- ECCC will work with provinces, territories and interested stakeholders, through the measurement framework, to improve tracking of lamp sales (mercury and non-mercury) to assess the shift to the purchase of mercury-free alternatives and determine effectiveness of actions to accelerate this transition.

- The measurement framework includes:
  - Data points such as numbers of mercury-containing lamps manufactured, imported, and sold, in Canada
  - Consistent performance metrics for lamp diversion across Canada (including federal government operations)
  - A tool for consistent reporting (data collection) through ECCC
  - A national database
  - Consideration of expanding the framework in the future to include other metrics such as collection site accessibility and public awareness

# PATH FORWARD

This national strategy identifies actions, recommendations, and further engagement to ensure that lamps containing mercury are phased out as soon as possible, and that lamps containing mercury are managed in an environmentally sound manner, to ultimately eliminate lamps as a source of mercury pollution in Canada. ECCC will continue to work with all orders of government and the private and non-profit sectors to implement the national strategy in 2019. There may be opportunities for further collaboration as part of broader discussions through the CCME on improving waste management in Canada.

ECCC will table a report in Parliament on implementation and progress to date on national strategy actions in 2024 and every five years thereafter.

# **ANNEX:**

# MEASUREMENT FRAMEWORK

# INTRODUCTION

This performance measurement framework describes how information will be collected, analyzed and reported to assess the effectiveness of the National Strategy for Lamps Containing Mercury.

# **OBJECTIVES**

The objectives of the framework are to:

- Ensure reporting on the sale of new lamps containing mercury and their end-of-life management in Canada in a consistent manner
- Quantify and report the number of lamps containing mercury diverted annually
- Estimate the quantities of mercury diverted from the environment through the shifts in purchasing mercury-free alternatives and better management of lamps containing mercury

# PERFORMANCE INDICATORS

#### Manufacture, import and sales of all lamps

ECCC will report the number of lamps containing mercury manufactured and imported every three years and the annual trends in lamp sales (mercury and non-mercury) by province, if possible. Sales by sector will be estimated based on the best data available.

#### **Absolute diversion**

ECCC will report the annual number of lamps diverted from landfill in each province and territory and nationally. Diversion by sector (residential and non-residential) and by lamp type will be estimated based on the best data available.

#### **Diversion rate**

To estimate the diversion rate for lamps containing mercury, ECCC will compare the number of lamps diverted each year with the number of lamps sold 5 years prior. For example, the diversion rate for 2019 would be the number of lamps diverted in 2019 compared to the number of lamps sold in 2014. While this is on the lower end of the expected lifetimes for most lamps containing mercury, it takes into account the rapid market shift to LEDs across sectors, which is reportedly causing some lamps to be diverted before they reach end-of-life. A national diversion rate and a diversion rate for each province and territory will be reported. Where data is available, diversion rates by sector and by lamp type will be reported.

# Quantities of mercury diverted and released to the environment

The quantity of mercury diverted from landfills, and the estimated quantity of mercury entering the environment from lamps that were not diverted, will be reported. The average mercury content for each lamp type, based on reporting under the *Products Containing Mercury Regulations*, will be used to calculate these quantities. As the average mercury content in lamps has been declining over time, an adjustment factor will be applied to represent the expected mercury content in lamps being diverted.

# Management of mercury and other lamp components

The downstream fate of lamp components will be quantified. These components include mercury, phosphor powder, glass, metal, and residual materials. The majority of mercury in spent lamps is present in the phosphor powder and is generally sent for off-site treatment or disposal, though on-site treatment to separate the mercury is possible. There are a variety of options for re-use, recycling, or environmentally sound disposal of the remaining (non-hazardous) components.



#### **Other Performance Metrics**

ECCC will work with provinces, territories and interested stakeholders to incorporate other performance metrics, over time, where they add value to assessing the effectiveness of the national strategy.

This could include:

- Trends in sales of lamps containing mercury and mercury-free alternatives
- Awareness of alternatives to lamps containing mercury and lamp diversion options in the residential and ICI sectors
- Quantifying mercury emissions from lamp processing/crushing activities
- Accessibility to lamp collection sites, events and services (residential and ICI sectors)
- The convenience of lamp diversion options and its effect on lamp diversion by residential and ICI sectors
- The cost-effectiveness of lamp diversion programs

# **DATA COLLECTION AND SOURCES**

**Data collection** will focus mainly on lamp sales (both with and without mercury) and on the processing of end-of-life lamps. Data will also be gathered on the management of mercury and other lamp components after processing. In some cases, data on the collection of lamps (for the purpose of diversion to processors) will be used to supplement processing data.

To the extent possible, the data collected will categorize lamps containing mercury by:

# Province or territory

- Where they were sold, or where they were diverted, which may be a different jurisdiction than where they were processed
- Purpose: to compare jurisdictional performance in order to identify which programs are most successful

# Sector

- **Two streams** residential and non-residential (ICI sectors)
- Purpose: to compare performance by sector to identify ways to improve awareness of mercury-free alternatives and increase diversion of lamps containing mercury, since these sectors generally have different purchasing and diversion options

# > Type of lamp

- Four categories compact fluorescent lamps (CFL), linear fluorescent lamps (LFL), high intensity discharge (HID) lamps, and other
- **Purpose:** to improve measurement of mercury quantities, since mercury content varies between lamp types

**Sales data** will be used to estimate the number of lamps sold in the market and those available for diversion, based on the estimated lamp lifetimes. Sources of sales data will include:

- Electro-Federation Canada (EFC), a national association whose membership includes the majority of lamp manufacturers selling into the Canadian market, which tracks sales in Canada by jurisdiction, sector, and type of lamp.
- Where available, EFC data will be supplemented by sales data from:
  - Product Care Association (EPR program) for British Columbia,
     Quebec, Manitoba, and Prince Edward Island
  - Manufacturers that are not EFC members

Collection data will be used, in some cases, to supplement processing data.

Collection refers to lamp diversion activities (collection sites, events, pickups, etc.) where lamps are destined for lamp processors. Every effort will be made to avoid double-counting of lamps being diverted when collection data is used. Sources of collection data may include:

- Product Care Association (EPR program) for British Columbia, Quebec, Manitoba, and Prince Edward Island
- Nova Scotia Power (Mercury Collection Program)
- New Brunswick Department of Environment and Local Government or Regional Waste Commissions of New Brunswick
- Newfoundland and Labrador Multi-Materials Stewardship Board or Regional Waste Authorities of Newfoundland and Labrador
- Territorial government departments responsible for waste management

**Processing data** will be used to measure the number of lamps diverted. Processing is defined as any method that breaks down lamps to separate the mercury from other components while minimizing releases of mercury. Lamp processing may only occur at an authorized facility<sup>1</sup>. Lamp processors will be the source of this data. There are currently nine licensed facilities in Canada that process lamps.

**Disposal data** will be used to determine the quantity of mercury recovered from lamp diversion, and the quantities of non-hazardous lamp components (such as glass) diverted from or disposed of in landfills. Disposal refers to activities that occur after lamp processing. The mercury should be sent for environmentally sound disposal, distillation/retort for recovery of mercury, or long-term storage. Environmentally sound disposal of mercury means that it undergoes stabilization/solidification treatment followed by disposal in a hazardous waste (engineered) landfill. The non-hazardous components of lamps should be diverted from landfill to the extent possible. Sources of disposal data may include:



#### **Lamp processors**



#### Downstream receivers of materials, if required

For all areas of the lamp lifecycle, alternative data sources will be sought and considered going forward.

<sup>&</sup>lt;sup>1</sup> "Authorized" means, with respect to activities conducted by a person, company or facility, that this person, company or facility meets the requirements of all levels of jurisdiction (that is, federal, provincial, territorial, municipal, other) that apply to those activities at the location where the person, company or facility is located or at the location where the activities are conducted.

#### REPORTING BY STAKEHOLDERS

Data will be requested annually by May 15 of the year following the reporting year. For example, 2019 data will be requested by May 15, 2020. A reporting form (spreadsheet) will be provided to the reporting community and will be available on ECCC's website.

All data will be stored in a national database. ECCC will perform quality control on the data and follow-up with stakeholders where required.

Third-party data management, development of a different reporting format (e.g. online) and other changes to the reporting process may be considered at a later date.

#### REPORTING TO THE PUBLIC

ECCC will aggregate data for public reporting to protect confidential business information.

The first report on the effectiveness of the national strategy is due within 5 years of submission of the national strategy to Parliament (June 2024). Interim reports may be issued.