



Treasury Board of Canada  
Secrétariat

Secrétariat du Conseil du Trésor  
du Canada

Canada



## Net zero 2050

*Tackling Embodied Emissions Through  
Procurement*

## Circular Procurement Summit

October 2021

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[www.canada.ca/greening-government](http://www.canada.ca/greening-government)

[www.canada.ca/gouvernement-vert](http://www.canada.ca/gouvernement-vert)

# Overview

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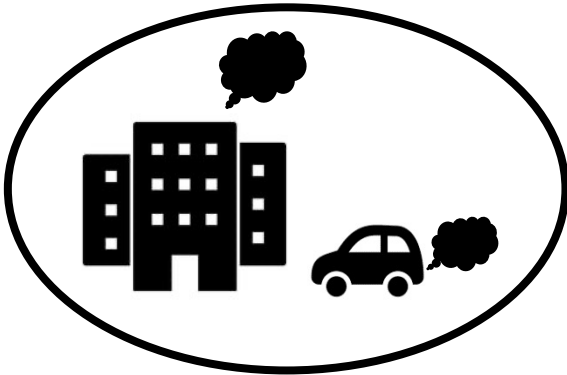
- What are embodied emissions and how are they connected to the circular economy?
- Government of Canada - embodied carbon initiatives
- Greening Government Strategy commitments for disclosure and reductions in construction materials
- Leading strategies and suggestions on getting started

# What is embodied carbon?

## MEASURING GREENHOUSE GAS EMISSIONS ATTRIBUTED TO ORGANIZATIONS AND TO GOODS & SERVICES

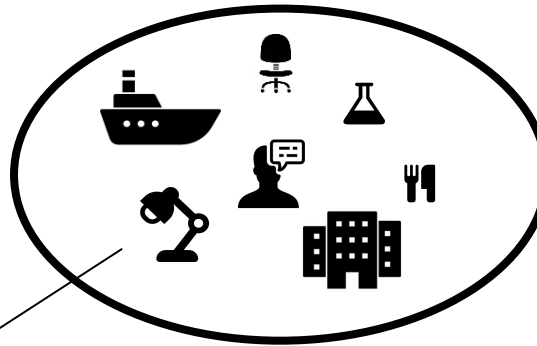
### Scope 1 and 2

(direct – occurs in the generation and use of energy)



### Scope 3

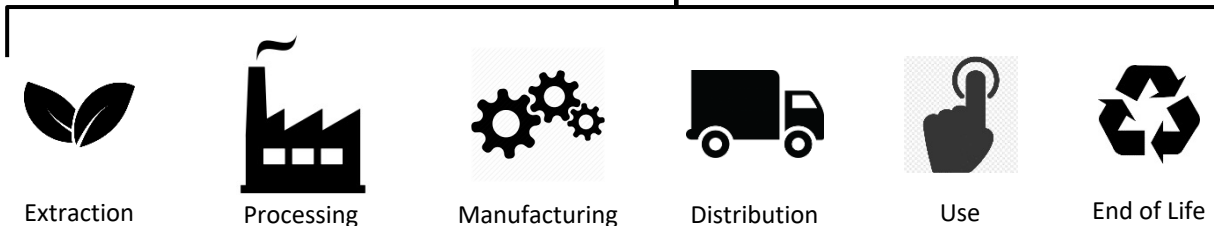
(indirect – occurs along the value chain)  
(i.e. in goods and services procured)



### Emissions inventory

Emissions accounted for by organizations are classified as Scope 1, 2 and 3 depending on their source.

This is also known as an organization's emissions inventory, or its carbon footprint.



Extraction

Processing

Manufacturing

Distribution

Use

End of Life

**Life cycle emissions**

## Embodied carbon

Emissions attributed to a good or service are measured along its life cycle, using a calculation called a life cycle assessment (LCA).

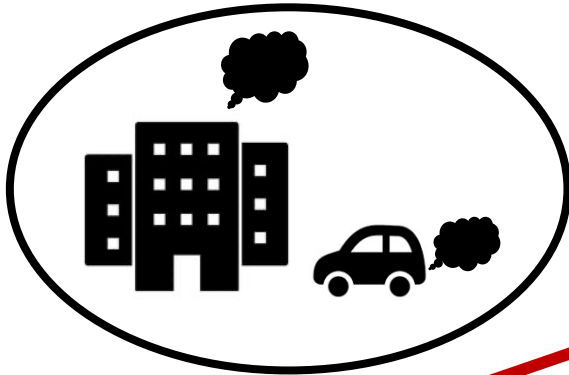
This is also known as the embodied carbon of a good or service, or its carbon footprint.

# How is embodied carbon linked to circular procurement?

## MEASURING GREENHOUSE GAS EMISSIONS ATTRIBUTED TO ORGANIZATIONS AND TO GOODS & SERVICES

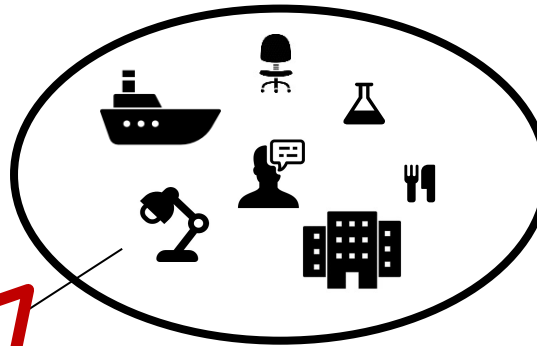
### Scope 1 and 2

(direct – occurs in the generation and use of energy)



### Scope 3

(indirect – occurs along the value chain)  
(i.e. in goods and services procured)



### Emissions inventory

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**Reduce your Scope 3 inventory (owned assets) by sharing, repairing and refurbishing..**

# How is embodied carbon linked to circular procurement?

Reduce your Scope 3 inventory more by requiring low carbon goods and services (including repurposed and recycled)..

driving market transition at the same time.



Extraction



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Life cycle emissions

## Embodied carbon

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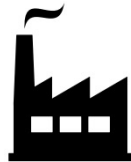
This is also known as the embodied carbon of a good or service, or its carbon footprint.

# How is embodied carbon measured?

- A **life cycle assessment (LCA)** is used to measure embodied carbon (as well as other environmental impacts). (ISO 14040)
- Results of a product LCA are communicated on an **environmental product declaration (EPD)**. (ISO 14025)
- Suppliers need to measure and report emissions at each stage of their product's life cycle.
- There are databases for raw data, EPD libraries, LCA calculators and accredited practitioners.
- Very little Canadian data is available.



Extraction



Processing



Manufacturing



Distribution



Use



End of Life

**Life cycle emissions**

# Government of Canada's climate change policy



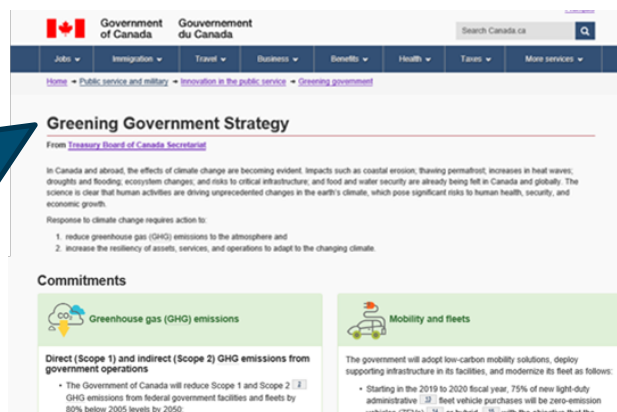
Keep the global temperature increase to well below 2 degrees Celsius

2020: Canada's enhanced climate plan targets net zero carbon by 2050 and includes greening government



Federal Sustainable Development Strategy: Goal 2 Greening Government

2020: Updated Greening Government Strategy Net zero emissions by 2050 for govt operations



2018: Updated Policy on Green Procurement



# Greening Government Strategy (GGS) overview

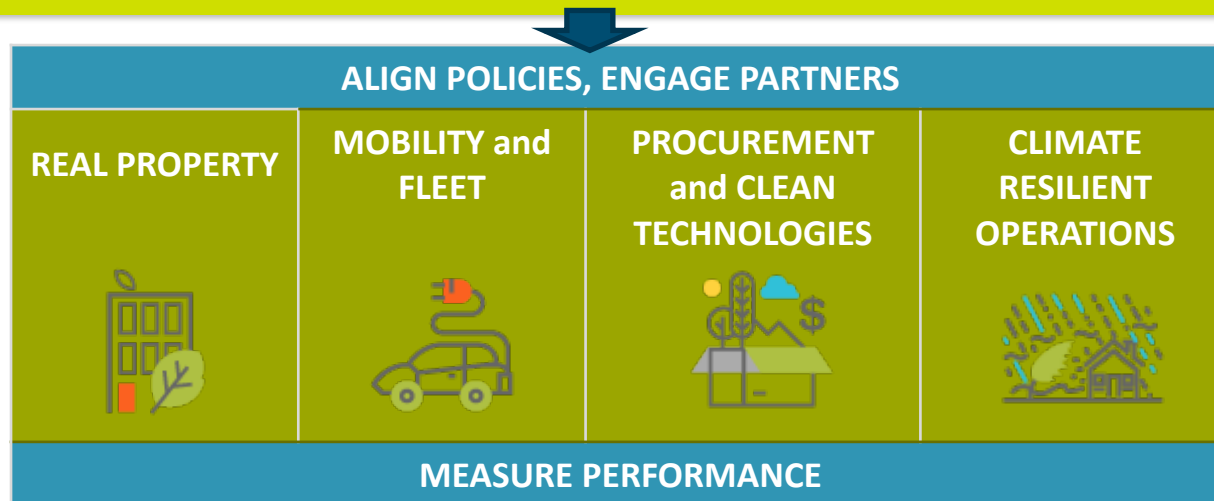
## Objective:

- ❖ 40% reduction of real property and conventional fleet emissions by 2025
- ❖ Net-zero emissions by 2050
- ❖ Overall green & climate resilient government operations

In-line with:



Strategy (GGS)  
developed to  
get there:



## Implementation:

- TBS providing direction, guidance, Greening Government Fund
- Expert depts. providing support (TBS/NRCan/PSPC/NRC/ECCC)
- **DEPARTMENTS TAKING ACTION**

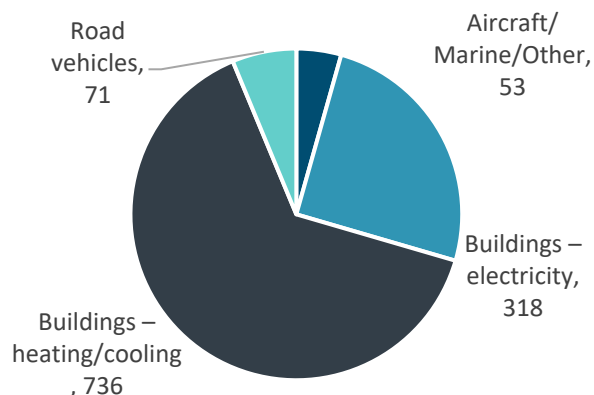
## Performance:

34.6% reduction in GHG emissions to date (buildings and conventional fleet)  
12% increase in emissions from National Safety and Security operations

# Sources of all Federal Emissions – 2019-20

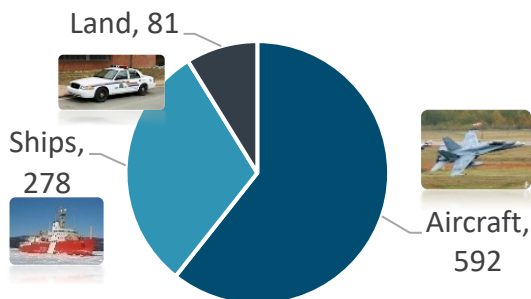
## Buildings and Conventional Fleet

1,177 kt (Scope 1-2)



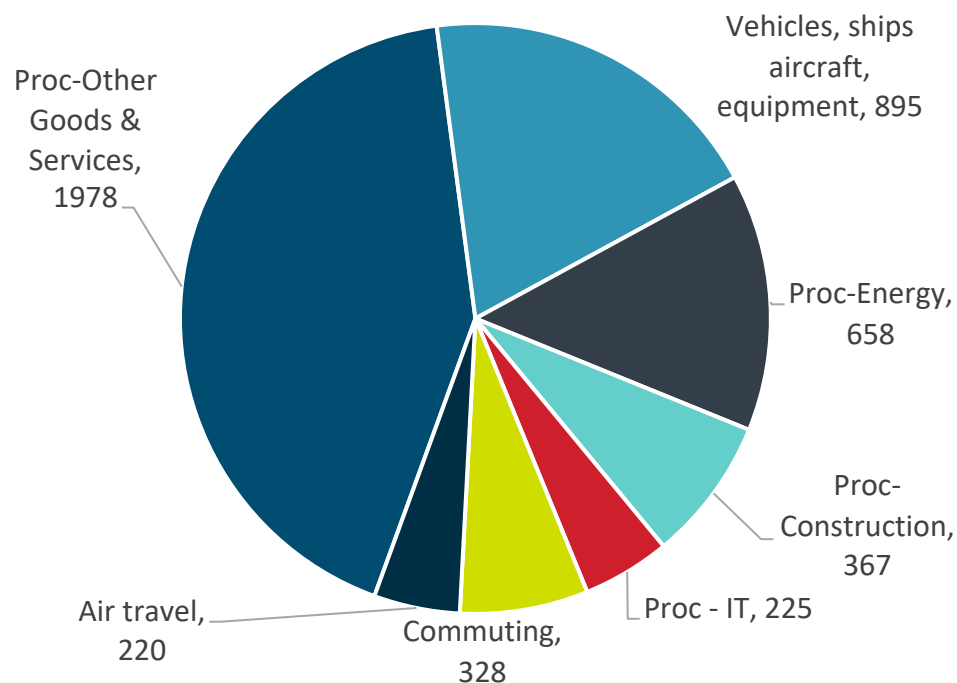
## National Safety and Security Fleet

951 kt (Scope 1)



## Estimated Procurement/Air Travel/Commuting

4,671 kt (Scope 3-Indirect emissions)



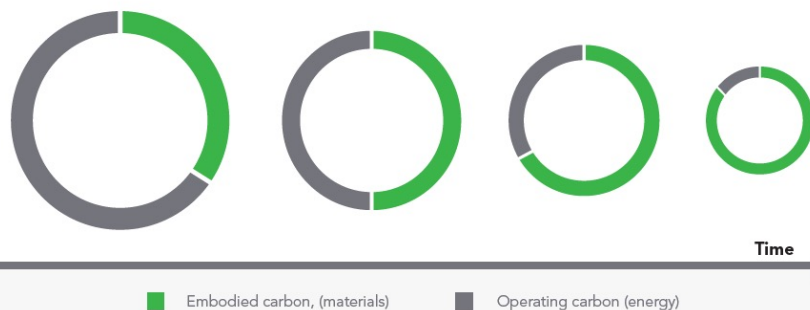
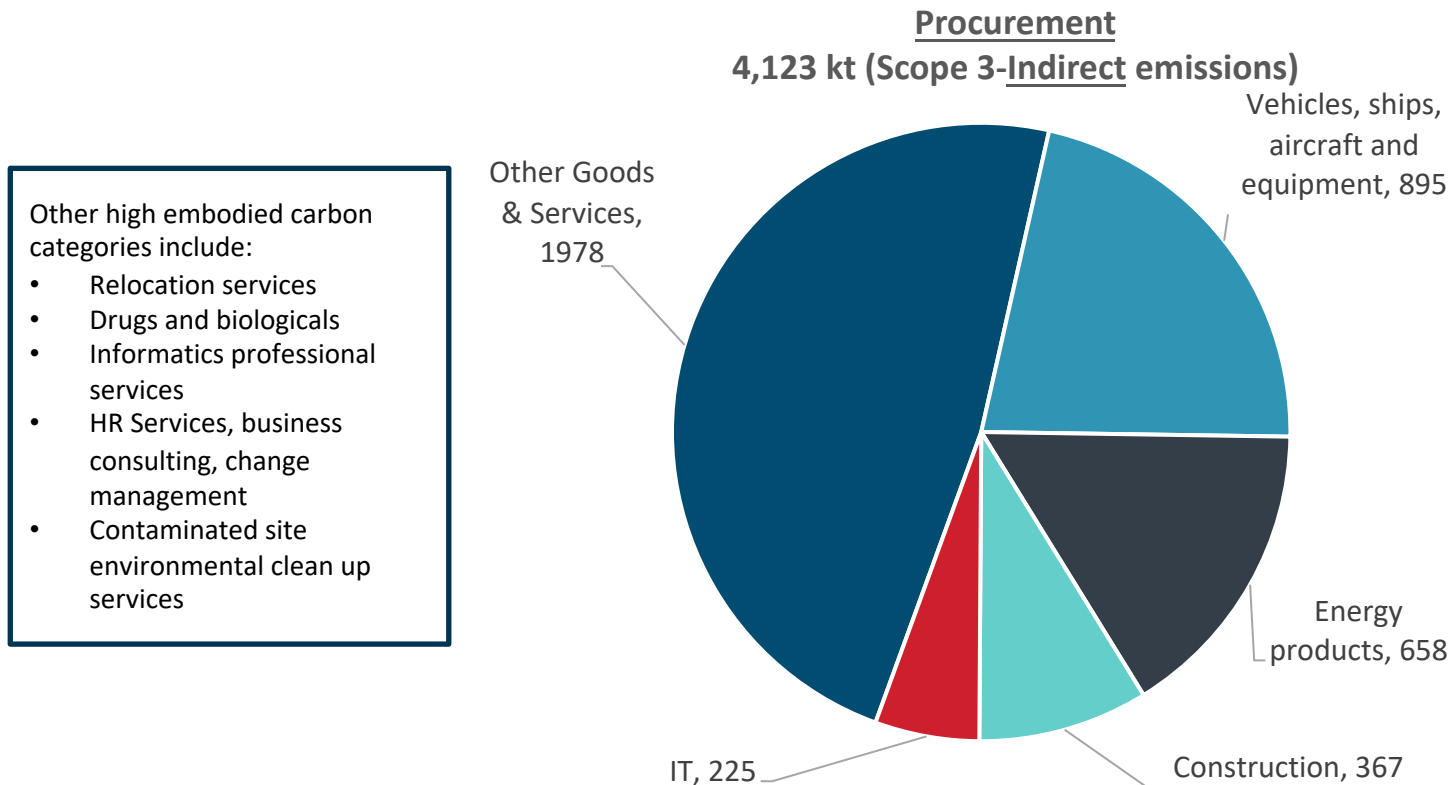
### Other sources of emissions:

- **Crown corps:** Canada Post- 138 kt (Scope 1&2), 1195 kt (Scope 3); Via-137kt; CBC/SRC-35kt
- **Missions abroad** (TBD)
- **Domestic Office Leases** (approx. 130 kt)
- **Fugitive gases** (approx. 2% of building emissions – based on Canada's national data, GC specific estimate TBD)
- **Emissions from decentralized procurement** (TBD)

Note: All numbers in kilotonnes (kt) of carbon dioxide equivalent

The GoC owns 30,000 buildings, 20,000 engineering assets, 30,000 fleet and buys over \$18B/year – largest asset owner and public procurer in Canada.

# Embodied carbon in goods and services



Embodied carbon will be increasingly important over time, as operational carbon decreases

# The GGS was updated in 2020. Embodied carbon is now included in Government's net-zero 2050 target

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GoC's operational target was aligned with the new national target set out in the Speech from the Throne:

## **Net-zero emissions by 2050**

- The Government of Canada's operations will be net-zero emissions by 2050 including:
  - Government owned and leased real property
  - Mobility: fleets, business travel and commuting
  - **Procurement of goods and services**
  - National safety and security operations

Specific commitments were set for structural materials:

## **Materiel**

- The government will reduce the environmental impact of structural construction materials by:
  - **disclosing** the amount of embodied carbon in the structural materials of major construction projects by 2022 based on material carbon intensity or a life cycle analysis
  - **reducing** the embodied carbon in the structural materials of major construction projects by 30% starting in 2025 using recycled and lower carbon materials, material efficiency and performance-based design standards
  - conducting whole building (or asset) life cycle assessments by 2025 at the latest for major buildings and infrastructure projects

# Government of Canada – embodied carbon initiatives

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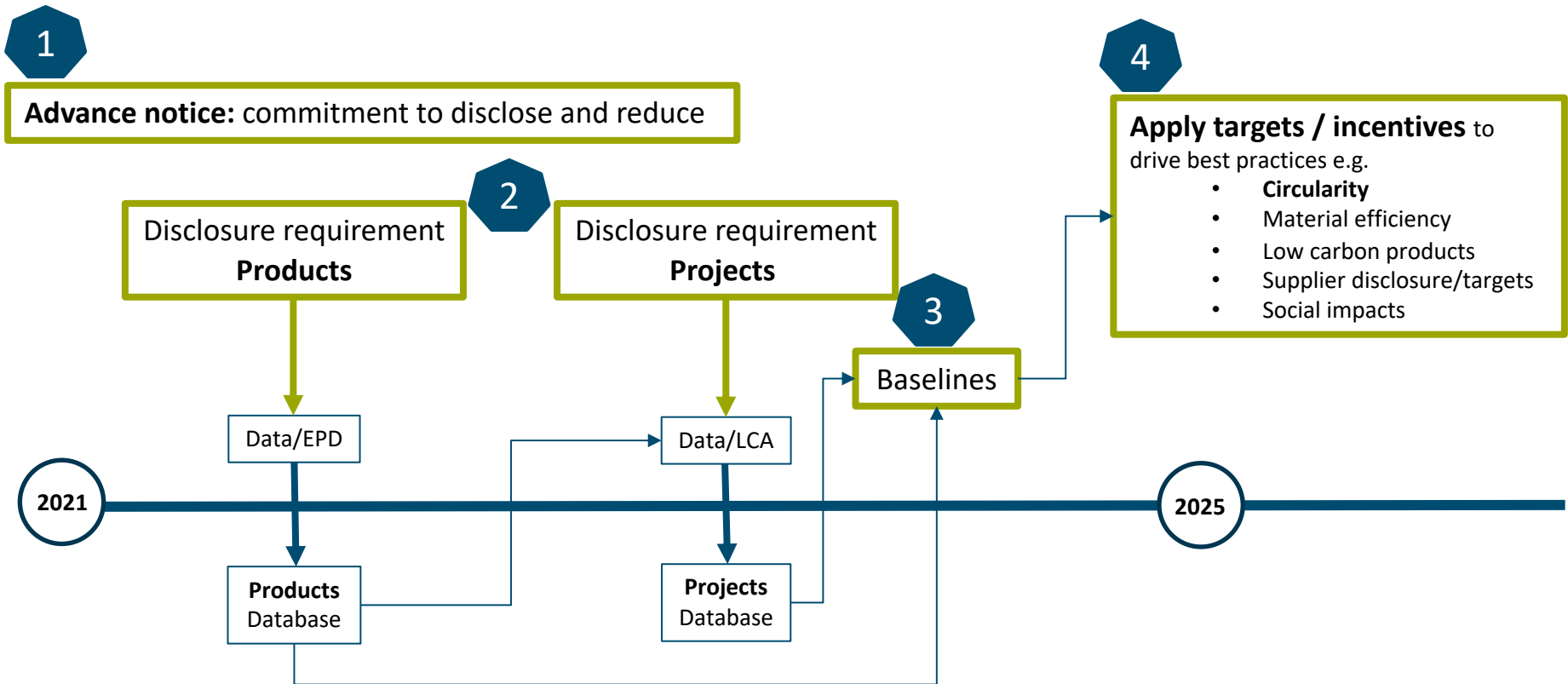
- Procurement requirement for embodied carbon in structural materials, starting with concrete (under development)
- National Research Council (NRC) is developing a national database of LCA data for construction materials (LCA<sup>2</sup>)
- Public Services and Procurement Canada is developing methodology to measure embodied carbon in three categories of goods and services
- Industrial Deep Decarbonization Initiative – GoC supports an international project to set procurement commitments and harmonize standards for embodied carbon in steel and concrete across multiple trading partners
- Healthy Environment, Healthy Economy plan includes development of a low-emissions building materials supply chain
- Innovation Science and Economic Development & NRC announced a partnership to “support a roadmap to net-zero carbon concrete”, including support for development of data required to measure progress

# Leading strategies

Name	Requirement	Submittals	Incentives	Circular
Netherlands Co2 Performance Ladder	Voluntary for suppliers	Suppliers are certified by Co2 Ladder, submit certificate to Tender	5 levels of performance, buyers assign point weighting	Level 4 and 5 encourages e.g. secondary resources or bio based materials
Buy Clean California Act	Department of General Services - maximum acceptable GWP / material	Suppliers submit EPDs to Tender	n/a	
City of Vancouver	40% reduction in embodied carbon by 2030	Criteria for disclosure in Tender, submit EPDs when available	Minimum 5% points for sustainable operations / materials	Criteria in Tender for durability, refurbishing, recycled content
Government of Canada	Disclose embodied carbon 2022 30% reduction 2025	Suppliers submit EPDs to Tender	TBD	TBD
US Green Building Advisory Cmtee – <b>advice letter</b>	EPDs for 75% of materials used	Suppliers submit EPDs to Tender	Select materials based on a combination of price and embodied carbon value	EPDs not required for salvaged or reused materials/products

# Leading strategies

All give notice to suppliers to produce data, then collect data to set baselines for targets and incentives.



# How can you get started?

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- **Consult with suppliers**
  - Ask suppliers if they disclose their own emissions, Scope 1, 2 or 3?
  - Do they have any EPDs or LCA reports for goods or services?
- **Target high impact categories as part of a supply strategy**
- **You will need expertise in LCA / GHG accounting**
- **If no EPDs exist, give suppliers notice and start simply** – set a requirement for an EPD in ~2 years time for primary emission sources only
- **Encourage data collection** – encourage suppliers to submit EPDs to databases



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