

# Environment and Climate Change Canada

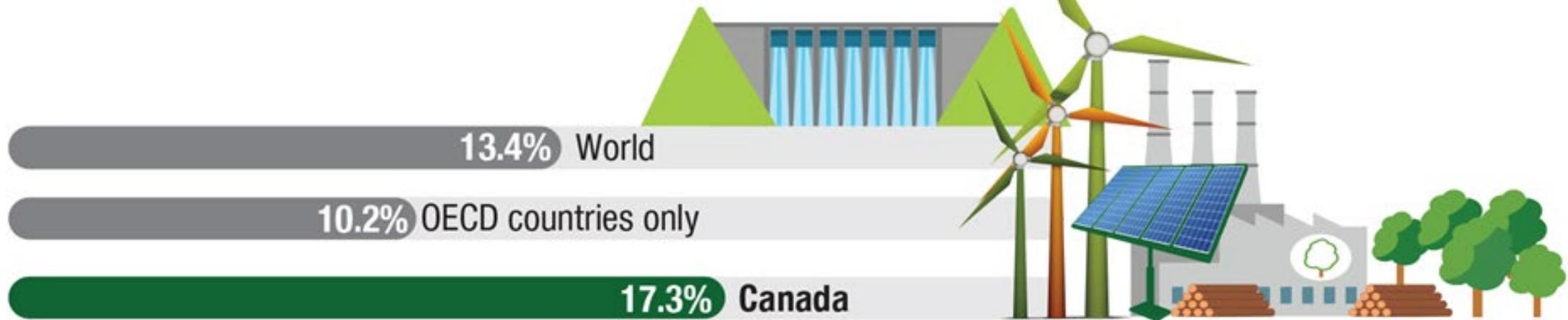
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GMI Biogas Subcommittee Meeting 28 October 2019



# Canada is a Leader in Renewable Energy

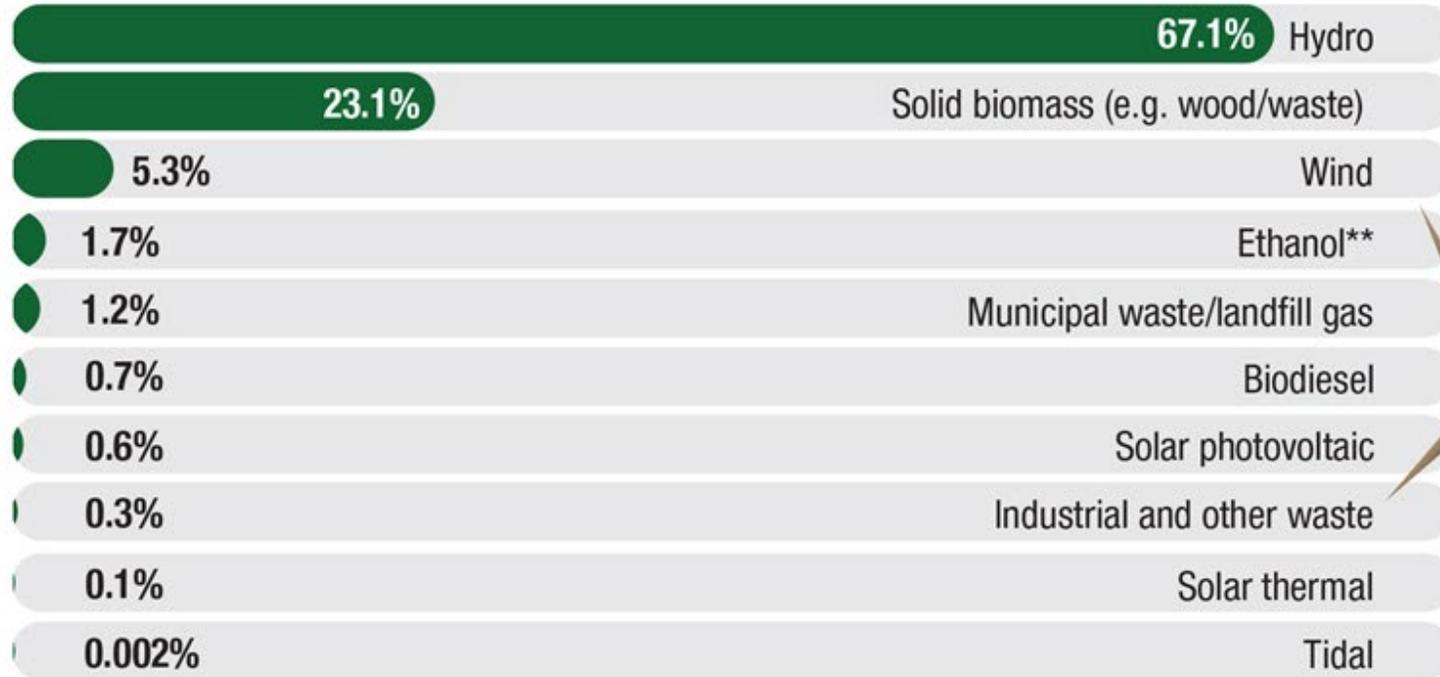
Share of energy supply from renewable sources (2017)



Source: Natural Resources Canada

<https://www.nrcan.gc.ca/science-data/data-analysis/energy-data-analysis/energy-facts/renewable-energy-facts/20069>

# Canada's Renewable Energy Sources



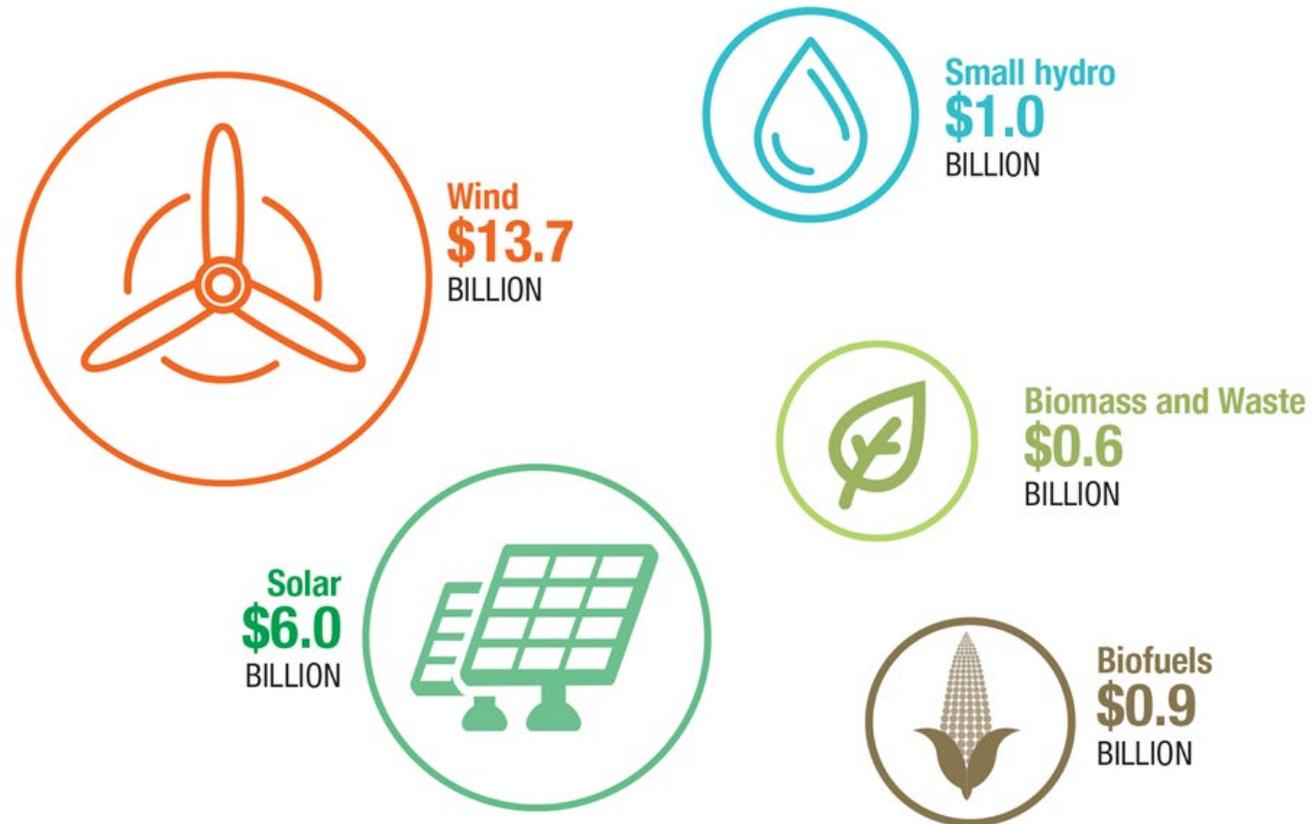
**Total Renewable Energy  
2,119 PJ or 50.6 MTOE**

**(Includes energy consumed  
for electricity and heat  
production, and biofuels for  
transportation)**

Source: Natural Resources Canada

<https://www.nrcan.gc.ca/science-data/data-analysis/energy-data-analysis/energy-facts/renewable-energy-facts/20069>

# Canada's Investment in Renewable Energy (2013-2017)



Source: Natural Resources Canada

<https://www.nrcan.gc.ca/science-data/data-analysis/energy-data-analysis/energy-facts/energy-and-economy/20062>

# Biogas and RNG in Canada

## Biogas and RNG Energy Capacity

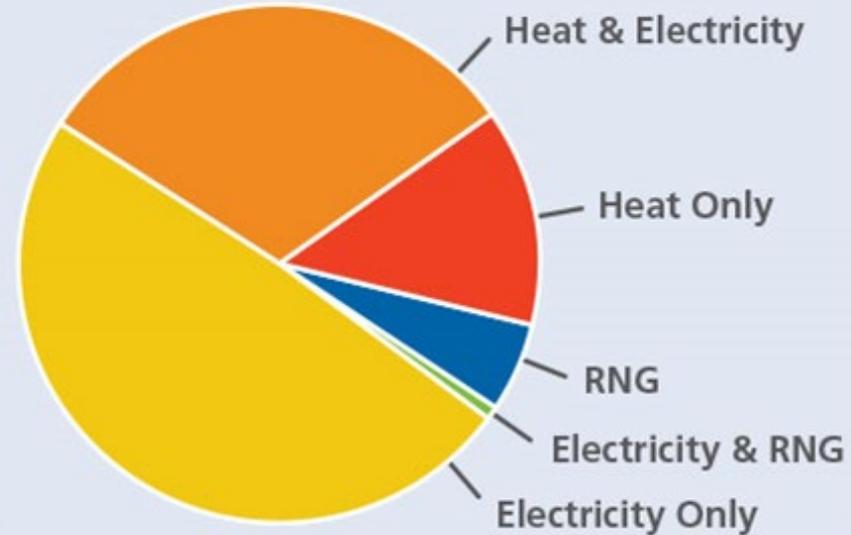
Operational and initiated projects generate:

Greater than

**196 MW**

Greater than  
**& 400,000 GJ**  
from RNG

## Biogas Energy Utilization



## Operating Biogas and RNG Projects in Canada



Agricultural  
& Food Waste  
Digesters



Wastewater  
Treatment  
Facilities



Landfill  
Gas  
Projects

# Opportunities for Biogas and RNG in Canada

- Realizing the full potential of biogas development from all major sources – agricultural organics (excluding energy crops), landfill gas, residential and commercial source separated organics, municipal wastewater – can lead to:
  - Biogas production equivalent to 3% of Canada’s natural gas demand, or about 1.3% of Canada’s electricity demand
  - Capital investment of \$7 billion (CDN)
  - Economic spin-off of \$21 billion (CDN) to the Canadian Economy
  - 17,000 construction jobs for a period of one year
  - 2,650 ongoing long term operational jobs
  - 100 new and expanded Canadian companies, including biogas system designers and developers, equipment suppliers, and laboratories

Source: Canadian Biogas Association [https://biogasassociation.ca/about\\_biogas/biogas\\_potential](https://biogasassociation.ca/about_biogas/biogas_potential)

# Opportunities for Biogas and RNG in Canada

- Federal “Clean Fuel Standard” under development
- Natural gas suppliers/utilities are increasing renewable content
  - Canadian Gas Association aiming for 5% renewable content by 2025, and 10% by 2030
  - E.g. Fortis BC (British Columbia), Enbridge/Union Gas (Ontario), and Energir (Quebec) are entering into long-term supply agreements with biogas producers
- Diversion of organics (municipal solid waste) is increasing
  - Federal, provincial and territorial governments committed to reduce total waste disposal by 30% by 2030, and by 50% by 2040
  - 80% of households will have curbside organics diversion (under existing and proposed provincial and municipal plans)

# Challenges for Biogas and RNG in Canada

- Cost / raising investment
- Economics of small scale operations
- Feedstock supply
- Connections to the grid and gas network
- Operator training and technical support
- Community resistance
- Land application of digestate

Source: Canadian Biogas Association

## Landfill Gas Capture and Utilization Feasibility



- Environment and Climate Change Canada is working to encourage greater LFG collection and utilization across provinces and municipalities through feasibility studies of LFG capture in small, medium and large landfills
- This work includes developing a comprehensive landfill database, LFG modelling, assessment of existing technologies, and cost-per-tonne assessments
- Capture and utilization information will be made available to regional governments in order for them to make informed decisions about managing GHGs from landfills in their jurisdiction

## Initiatives to Prevent GHG Emissions through Diversion and Prevention of Organic Waste



- Environment and Climate Change Canada is doing extensive work to provide information to provincial, municipal and private sector organizations on the waste reduction and diversion options available for organics
  - GHG calculator for waste diversion scenario planning
  - Canadian Forum on Food Waste and Loss
  - "Taking Stock Report" that will identify current actions and opportunities
  - National Framework to measure and report food waste and loss
- Expected outcomes are greater awareness of food loss, and informed decision making by jurisdiction when planning waste diversion infrastructure

## International Collaboration to Address Methane Emissions



- Environment and Climate Change Canada is working collaboratively with several international partners to address methane emissions in 6 countries
- Work includes helping countries account for methane in their National Determined contributions, and achieving methane reductions in major methane-emitting sectors, including waste



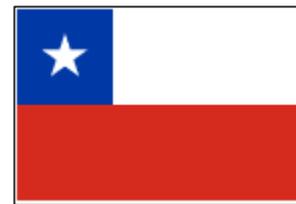
Vietnam



Senegal



Côte d'Ivoire



Chile



China



Mexico

## Canadian Agricultural Partnership

- The *Canadian Agricultural Partnership* is a five-year, \$3 billion investment by federal, provincial and territorial governments to strengthen the agriculture and agri-food sector
- It includes cost-shared programs by federal, provincial and territorial governments
- It supports initiatives that have the potential to lead the way to broader adoption or application of BMPs on farms and by the sector more generally
- The program also aims to support efforts to understand the potential impacts of GHGs as well as approaches to mitigate agricultural GHG emissions