

# OVERVIEW OF CANADA'S OFF-ROAD SECTOR

## 加拿大非道路领域概况

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Environment and  
Climate Change Canada

Environnement et  
Changement climatique Canada

Canada 

# PURPOSE

## 目的

- For the presentation:
    - To provide an overview of the off-road sector in Canada and the commitments made in the Emissions Reduction Plan for the off-road sector
  - At the workshop:
    - To learn what others are doing and the state of off-road machinery and technologies
    - To establish contact with others working in this area to share information and best practices moving forward
  - 本次发言的目的:
    - 为大家介绍加拿大非道路领域的整体情况和在非道路领域实施的减排计划
  - 在本次会议上:
    - 希望能够学习到其他国家和地区的做法，同时了解非道路机械及其技术的发展状况。
    - 希望与其他国家和地区的业内同仁建立工作联系，共同分享相关资讯和最佳实践经验，以期共同发展。
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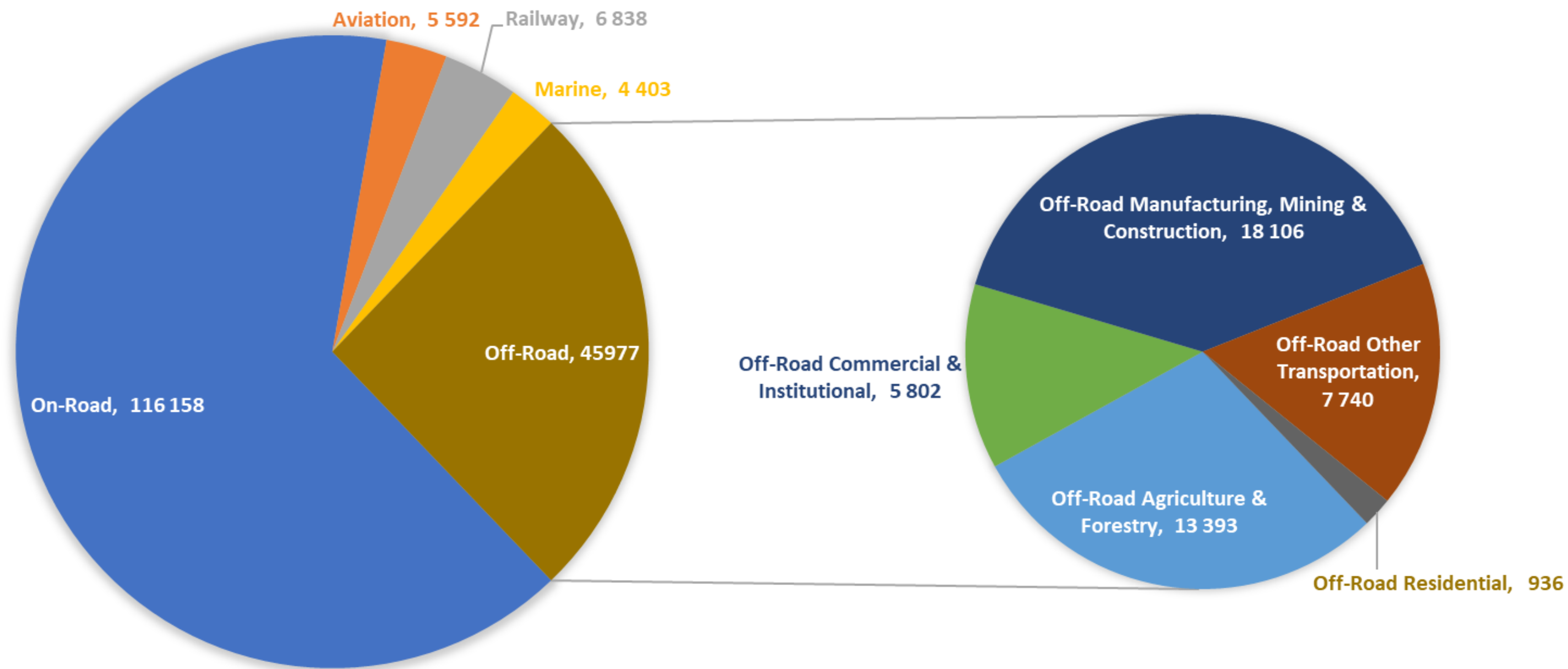
# CANADA TRANSPORT EMISSIONS

## 加拿大的交通排放

### Greenhouse Gases (GHG) by IPCC Sector

联合国政府间气候变化专门委员会 (IPCC) 发布的分领域温室气体排放

TRANSPORT GREENHOUSE GAS EMISSIONS FOR CANADA IN 2021 (TONNES CO2EQ)



In 2021, Canada emitted 670 Mt CO<sub>2</sub>eq

Transport is Canada's second largest emitter by IPCC sector, accounting for about 28% (188 Mt CO<sub>2</sub>eq) of Canada's emissions, including pipeline emissions

- Stationary Combustion is the largest source

Off-Road emitted 46 Mt CO<sub>2</sub> eq, about 24% of Canada's transport GHG emissions and 7% of Canada's total GHG emissions

2021年，加拿大的二氧化碳当量排放共计670Mt。

从IPCC发布的分领域排放数据来看，交通领域（含运输管线排放）是加拿大的第二大排放源，二氧化碳当量排放为188Mt，占加拿大二氧化碳当量排放总量的28%。

- 固定式内燃机是最大的排放源

非道路领域的二氧化碳当量排放为46Mt，占加拿大交通领域GHG排放的24%，占加拿大GHG排放总量的7%。

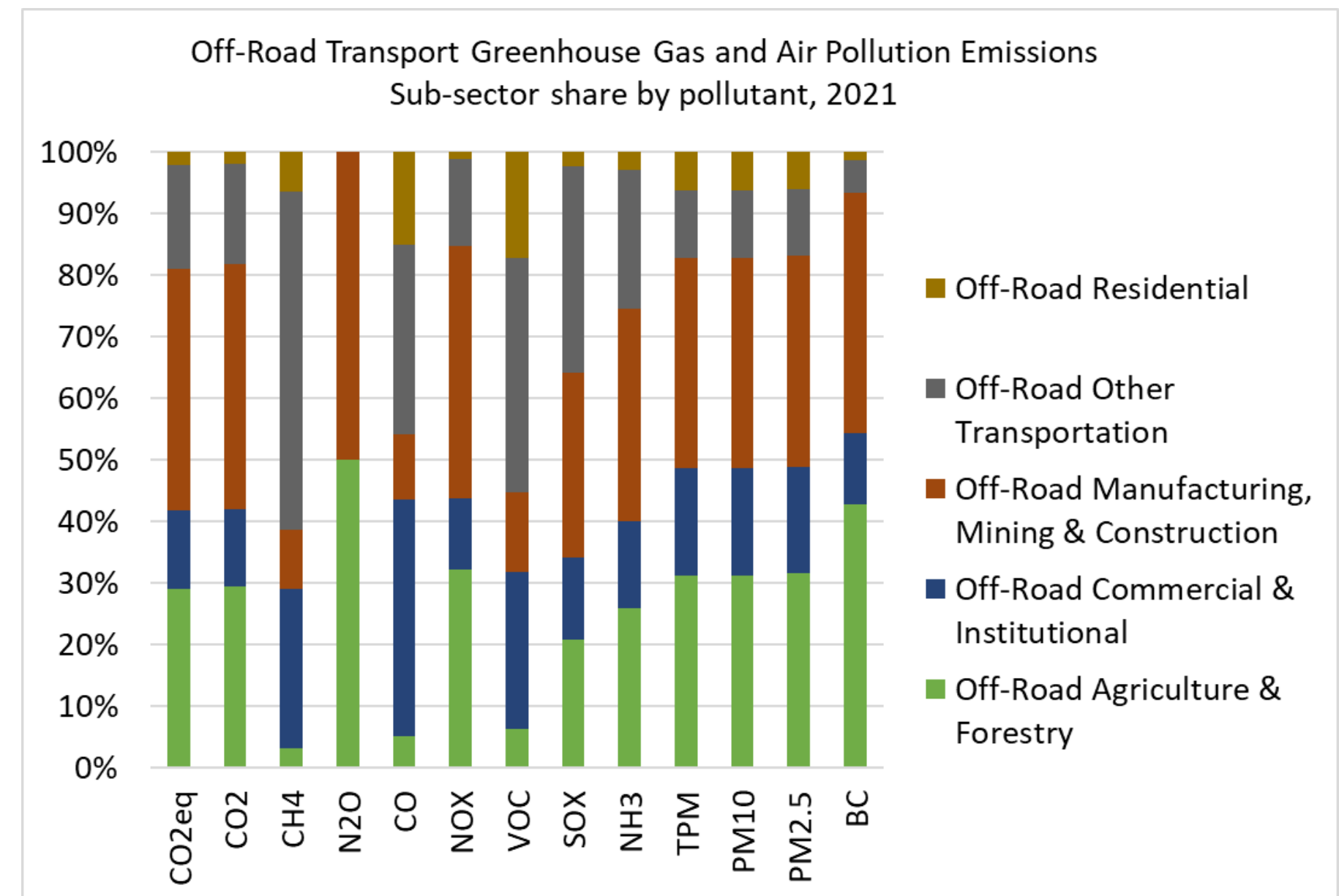
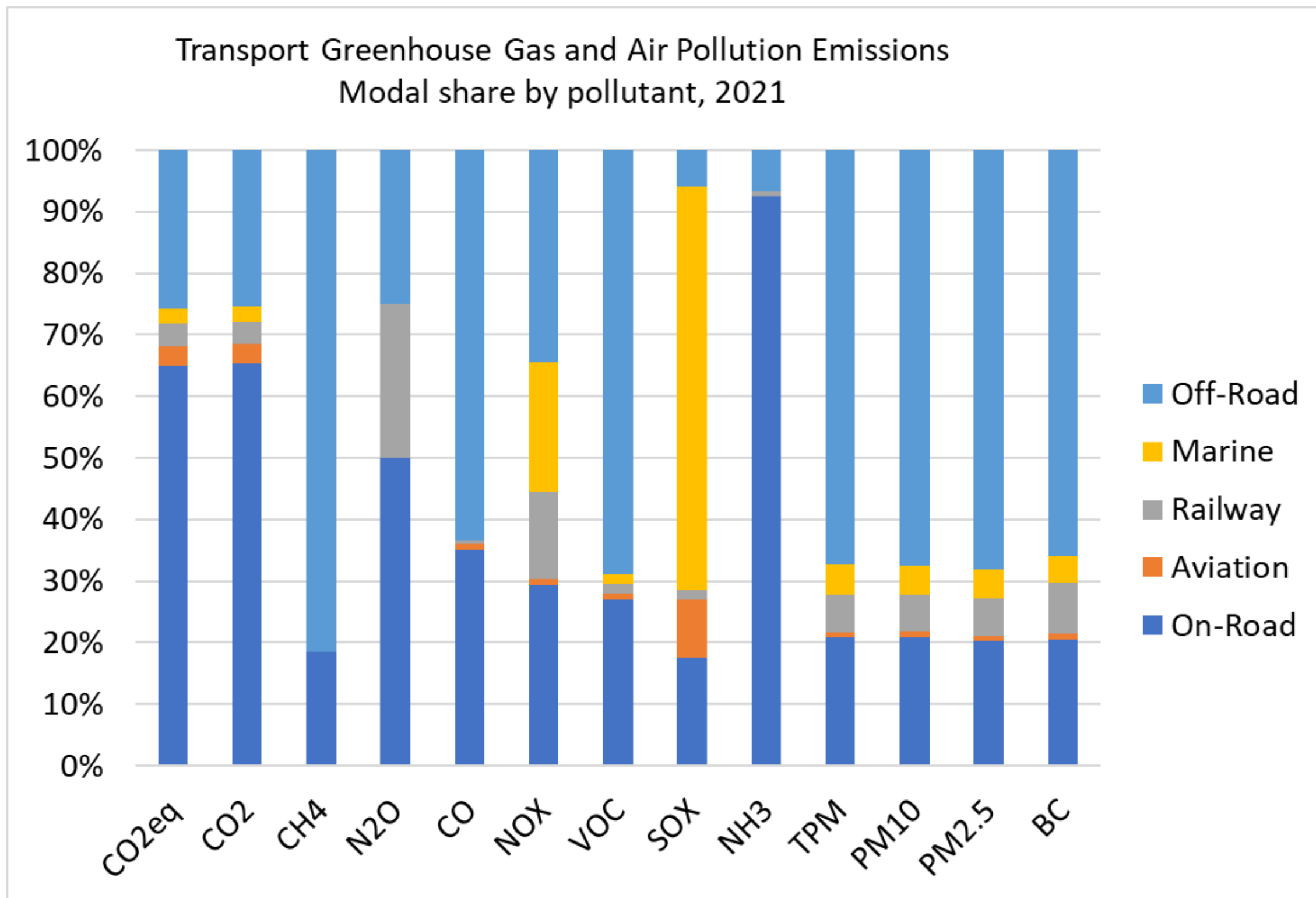
# CANADA TRANSPORT EMISSIONS

## 加拿大的交通排放

### Air Pollutants

### 空气污染物

- Off-road equipment and machinery produce a disproportionate amount of CO, VOC, TPM, PM10, PM2.5 and Black Carbon
- Agriculture, forestry, manufacturing, mining and construction are responsible for the majority of emissions
- 非道路机械设备的一氧化碳、挥发性有机物、总颗粒物、PM10、PM2.5和黑炭排放占比较高。
- 其中，农业机械、林业机械、制造业机械、矿业机械和建筑机械是主要排放源。





# CURRENT CANADIAN ACTS AND REGULATIONS IMPACTING

## THE OFF-ROAD SECTOR (1)

### 加拿大目前针对非道路领域实施的管理法规 (1)

- **Canadian Environmental Protection Act, 1999 (CEPA)**

- **Air Pollutants Regulations for Off-Road Engines**

- *Off-Road Small Spark-Ignition Engine Emission Regulations*
- *Off-Road Compression-Ignition (Mobile and Stationary) and Large Spark-Ignition Engine Emission Regulations*
- *Marine Spark-Ignition Engine, Vessel and Off-Road Recreational Vehicle Emission Regulations*

- **Clean Fuel Regulations**

- Regulated 15% decrease in the carbon intensity of gasoline and diesel used in Canada between by 2030
- Applies to fuel used by off-road machines in Canada

- **Impact Assessment Act (IAA)**

- For projects assessed under the IAA, the Strategic Assessment of Climate Change (SACC) proponents are required to complete the Best Available Technologies/Best Environmental Practices (BAT/BEP) Determination Process to reduce GHG emissions during the lifetime of their project
- For projects with a lifetime beyond 2050, a net-zero plan is required

- **《加拿大环境保护法》，1999年 (CEPA)**

- **非道路发动机空气污染物管理法规**

- *非道路小型点燃式发动机排放管理法规；*
- *非道路压燃式（移动式 and 固定式）及大型点燃式发动机排放管理法规；*
- *船舶点燃式发动机及船用&非道路娱乐车辆排放管理法规。*

- **清洁燃油管理法规**

- 管理要求到2030年，在加拿大使用的汽油和柴油碳强度降低15%；
- 管理要求适用于加拿大的非道路机械。

- **《影响评估法》(IAA)**

- 对于在IAA法案下开展评估的项目，要求进行气候变化战略评估，从而选定最佳可应用技术/最佳环境实践方案，以降低项目的全生命周期GHG排放；
- 对于项目生命周期持续至2050年以后的项目，需要制定净零排放规划。

# CURRENT CANADIAN ACTS AND REGULATIONS IMPACTING THE OFF-ROAD SECTOR (2)

## 加拿大目前针对非道路领域实施的管理法规 (2)

### • **Greenhouse Gas Pollution Pricing Act**

- Since 2019, every province and territory has a comparable price on carbon pollution either through their own carbon pricing system or the federal carbon pricing backstop
- The effective carbon price will increase from \$65 per tonne CO<sub>2</sub>e in 2023 to \$170 per tonne by 2030
- The two components of the federal carbon pricing backstop:
  - *Fuel Charge Regulations*
  - *Output-Based Pricing System Regulations*: Provides a price incentive for industrial facilities to reduce their GHGs while protecting against “carbon leakage”

### • **Canadian Net-Zero Accountability Act**

- Ensures accountability and transparency as government delivers commitment to achieve net-zero emissions by 2050.
- Outlines timelines and process for establishing emission reduction targets, reduction plans, and progress and assessment reports

### • **《温室气体污染定价法》**

- 自2019年以来，每个省和辖区都需要通过自己的碳定价系统或联邦碳定价支持系统来对碳污染进行定价，且定价要具有影响力；
- 到2030年，碳定价将从2023年的每吨二氧化碳当量65美元增至170美元；
- 联邦碳定价系统的两大构成元素：
  - *燃料收费管理法规*
  - *基于产量的定价体系*：为工业企业提供价格激励，以减少温室气体排放，同时防止“碳泄漏”

### • **《加拿大净零排放责任法》**

- 确保加拿大政府实现到2050年达到净零排放的承诺，落实责任，提高管理透明度；
- 制定了减排目标、减排计划、减排进度、效果评估时间表和流程要求。

# 2030 EMISSIONS REDUCTION PLAN

## 2030年减排规划

### Other Transportation Modes 其他交通模式

Meeting Canada's climate objectives will require efforts in all modes of transportation. The Government of Canada commits to explore additional opportunities, including:

- Exploring **zero-emission standards for new off-road small spark-ignition engines** (lawn and garden equipment):
  - ECCC will consult with the U.S. Environmental Protection Agency and California Air Resources Board along with federal departments, provinces, and territories, as well as stakeholders and Indigenous organizations
- Canada could also investigate the potential to **advance zero-emission technologies and clean fuels for other types and applications of off-road equipment** including:
  - Small marine engines and recreational vehicles
  - Larger equipment found in the agriculture, construction, mining and port sectors.

要实现加拿大的气候目标，需要所有交通模式的共同努力，加拿大政府已承诺要拓展更多的契机，具体包括：

- 针对新生产非道路小型点燃式发动机（草坪和花园机械）制定零排放标准：
  - 加拿大环境与气候变化部将咨询美国环保局和加州空气资源委员会的意见，同时与联邦其他部委、各省、辖区、利益相关方以及本地机构进行磋商。
- 加拿大还可以针对其他类型的非道路机械开展先进零排放技术和清洁燃料应用潜力研究，具体包括：
  - 小型船用和娱乐车辆发动机；
  - 大型农业、建筑、矿业和港口机械。



# FEDERAL CLEAN GROWTH SUPPORT

## 联邦清洁成长支持方案

Available for ZE off-road equipment and machinery investment  
适用于零排放非道路机械设备投资

- [AgriInnovate Program](#)
- [Accelerated Capital Cost Allowance for Non-road ZEV](#)
- [Business Development Bank of Canada Climate Tech Venture Fund II](#)
- [Clean Technology Investment Tax Credit](#)
- [农业创新方案](#)
- [非道路零排放提速投资](#)
- [加拿大商业开发银行的气候技术风险投资基金 II期](#)
- [清洁技术投资税收积分](#)





# NEXT STEPS

## 下一步

### Off-road equipment and machinery 非道路机械和设备

- Continue to build our knowledge of Canadian off-road fleets, including machinery and user requirements
  - Gather information on zero emission off-road machines and technologies, including state of technology, research, development and demonstration, costs and applications
  - Examine actions jurisdictions are taking to reduce emissions from off-road machinery and equipment including programs, policies and regulations.
  - Determine opportunities and options to accelerate the deployment of zero emission technology in Canada
  - Establish networks to share information and lessons learned about availability and applicability of zero emission machines or low carbon fuels for off-road machinery or equipment
  - 我们将继续积累对加拿大非道路机械的了解，关注点将同时包括机械设备本身和用户要求；
  - 收集关于零排放非道路机械和相关技术的信息，包括技术发展现状、研究进展、开发和示范、成本以及应用；
  - 通过管理措施降低非道路机械设备的排放，包括减排方案、政策以及管理法规；
  - 确定在加拿大加速推进零排放技术的契机和推进方案；
  - 构建协作网络，分享零排放机械或非道路低碳燃料的适用性资讯和实践经验。
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