

# THE ROLE OF SUSTAINABLE TRANSPORTATION IN CLIMATE ADAPTATION

ESTIMATED READ TIME: 5 MINUTES





# KEY TAKEAWAYS

*Transportation contributes 15% of the total global greenhouse gas (GHG) emissions and 22% of carbon dioxide (CO<sub>2</sub>) emissions.*

*Greener mobility solutions can not only mitigate the impacts of transportation on climate but can also play an active role in climate adaptation and sustainability.*

*Some options for decarbonisation of transportation include compressed natural gas (CNG), electric vehicles, alternative fuels, such as hydrogen and biodiesel, and practices such as carpooling, biking and using public transportation.*



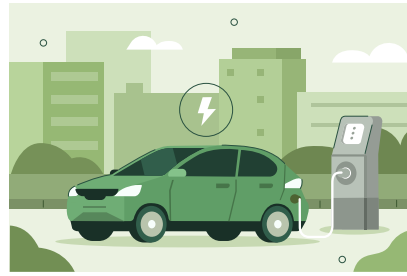
**T**ransportation is an essential facet of our daily lives. Cars, buses, trucks, trains, airplanes, and more — transportation connects people and delivers the goods and services required for societies and economies to function and grow. There is a paradox, however. As transportation systems expand and modes of transport become more affordable and accessible, the deleterious impacts of transportation on the environment also increase.

*Transportation contributes 15% of the total global greenhouse gas (GHG) emissions and 22% of carbon dioxide (CO<sub>2</sub>) emissions* (Rodrigue, 2020).

In addition to GHG emissions, the transportation sector emits particulates that have been linked to respiratory and cardiovascular illnesses. Other forms of pollution, including noise pollution and the generation of solid waste from vehicles and parts, can also be

attributed to transportation. Companies and countries are therefore investing in research and development of sustainable transportation solutions to address this global issue.

The United Nations has defined sustainable transportation as transportation that “achieves better integration of the economy while respecting the environment, improving social equity, health, resilience of cities, urban-rural linkages and productivity of rural areas.” Sustainable transportation



can not only mitigate the impacts of transportation on climate, it can also play an active role in climate adaptation and sustainability. The concept of sustainable transportation is integrated into the UN 2030 Agenda for Sustainable Development and features in several Sustainable Development Goals (SDGs), including SDG #3 – Good Health & Wellbeing, SDG#9 – Industry, Innovation and Infrastructure, and SDG#11 – Sustainable Cities and Communities.

## FORMS OF SUSTAINABLE TRANSPORTATION

*As an interim solution, compressed natural gas (CNG) was introduced in several countries, including Trinidad and Tobago, over the last three decades.*

CNG produces lower levels of CO<sub>2</sub> emissions than gasoline and diesel when used as fuel for vehicles with internal combustion engines (ICEs).

NGC subsidiary, NGC CNG, promotes and manages the distribution of CNG throughout the country.

*At the end of 2021, there were 1,775 (sedan equivalents) Original Equipment Manufacture (OEM) and converted CNG vehicles on the road in T&T.*

During the period 2014 through 2021, CNG vehicles contributed to the reduction of 44,007 tonnes of CO<sub>2</sub> emissions from the country’s road transportation system.

While CNG is a recognised transition fuel that is helping to reduce carbon emissions, zero-carbon solutions are being developed and promoted. Of the many sustainable transportation technologies on the market, electric vehicles (EVs) are the fastest growing. Three types of EVs are available.

Hybrid electric vehicles are powered by gasoline/diesel and electricity and the car alternates between the two energy sources to maximise efficiency. Plug-in hybrid EVs contain both an electric battery and an ICE and the vehicle can be recharged by either electricity or by internal combustion. The third type of EVs are all-battery EVs, which do not utilise ICEs for propulsion.

Battery EVs are powered by electricity stored in a battery that can be charged by plugging the vehicle in to charging equipment either at home, at fuel stations outfitted with EV chargers or EV charging ports located in large cities. When powered by electricity generated from renewable sources, EVs can be zero-carbon emitters. The Preysal Service Station – collaboratively constructed by NGC subsidiaries National Energy and NGC CNG with The Trinidad and Tobago National Petroleum Marketing Company Limited (NP) – is outfitted with solar-powered EV chargers as well as 10 CNG fuel pumps.

*The government of Trinidad and Tobago has signalled its intention to support the country’s transition towards sustainable transportation.*

In the country’s Nationally Determined Contributions to the Paris Climate Agreement, transportation is identified as one of three sectors through which the country will achieve a target of 15% reduction in GHG emissions by 2030. Incentives have also been put in place to facilitate conversion to CNG as well as the purchase of OEM CNG vehicles, and from January 2021, customs duties, motor vehicle tax and value-added tax were removed from the importation of EVs.

Several global motor vehicle companies, including General Motors, have also announced plans to phase out ICEs from their vehicles in the next 10 years. This may be driven in part by the continuous growth in sales of battery EVs in regions such as Asia, North America and Europe. The International Energy Agency (IEA) reported that there were more than 10 million battery EVs on the world’s roads in 2020, resulting from exponential growth in the number of EVs bought from 2010 to 2020 (IEA, 2022).

Alternative fuels such as hydrogen and biodiesel, are also being used for transportation. Hydrogen fuel cells (HFC) are used to power vehicles by combining hydrogen with oxygen from the air to produce electricity that propels the vehicle and emits water vapour.



The process does not produce harmful GHGs, but adoption of HFCVs has been slow, due to the need for hydrogen fuel stations and the tendency of HFCVs to perform best only at steady speeds.

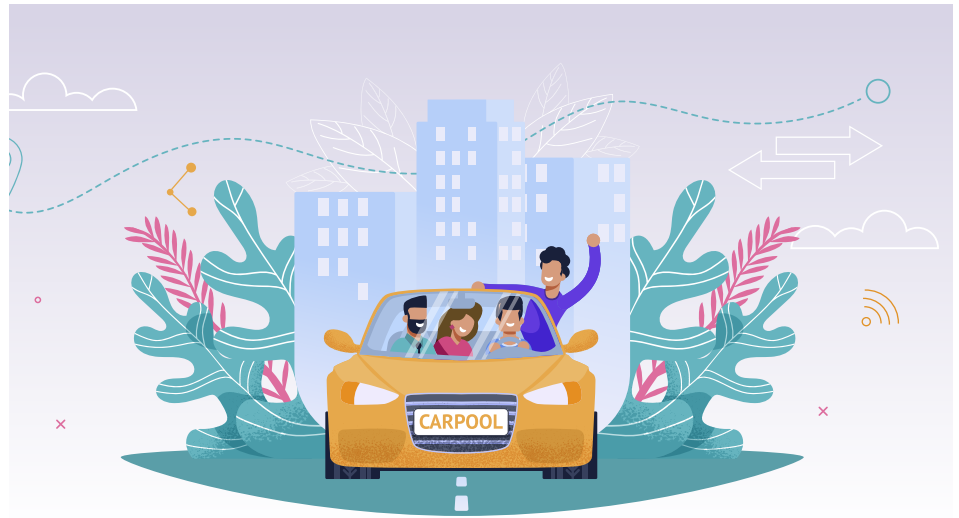
Biofuel produced from waste and residues are considered important for the trucking, shipping and aviation industries in the energy transition. Utilisation of biofuels has been increasing steadily, albeit at a slower rate than required to meet the world's 2050 net zero emissions target.

*The NGC Group continues to explore opportunities for partnership and investment in sustainable transportation technologies.*

In 2021, NGC, National Energy and NGC CNG, executed a Memorandum of Understanding (MOU) with The Trinidad and Tobago Solid Waste Management Company Limited (SWMCOL) to evaluate possibilities for the capture and commercialisation of landfill gas to be used for the manufacture of renewable CNG. National Energy also signed an MOU with Methanex Trinidad Limited to conduct a feasibility study to determine the potential for use of methanol as a fuel for marine transportation in the region and vehicular transportation in Trinidad and Tobago.

## HOW CAN INDIVIDUALS SUPPORT SUSTAINABLE TRANSPORTATION

We can all contribute towards the sustainable transportation transformation by practicing prudent and responsible mobility. For example, we can employ context-appropriate transportation



**//** We can employ context-appropriate transportation methods, such as walking instead of driving over short distances... Car-pooling can also be a useful time and energy saver.

methods, such as walking instead of driving over short distances. Journey planning and management is another means by which we can reduce the number of trips we make monthly. Car-pooling can also be a useful time and energy saver. Additionally, as far as practicable, using public transportation can be an effective energy- and cost-saving measure, especially in large cities and on thoroughfares where traffic congestion is a major concern. ■

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