The Bet on Cleaner Mobility

Many countries are promoting using natural gas vehicles and electric energy in their mass transit systems to decrease environmental pollution in major cities. Colombia is beginning to take steps towards advancing sustainable transportation.

According to the World Health Organization (WHO), one in nine deaths in the world are related to atmospheric pollution. Major cities are conscious of this problem and the public and private sectors have jointly developed strategies to reduce particulate matter emissions and improve the quality of the air their inhabitants breathe.

One of the main alternatives is to decrease the use of liquid fuels (gasoline and diesel) in public transportation, promoting it with clean, inexpensive, low-emission energy.

In the world, cities such as Oslo, Vancouver, Copenhagen, Tokyo, Paris, New York, Barcelona, Milan, Madrid, London and Sao Paulo have begun innovative public transportation plans by promoting natural gas vehicles (NGV) and electric energy.

Some countries are more ambitious and have expressed their commitment to reducing liquid fuel consumption to zero by 2030. Norway, for example, in an unprecedented event, announced that it would prohibit the sale of vehicles that use gasoline or diesel by 2025. The United Kingdom, France, Germany, the Netherlands, India, and other countries joined this decision to restrict the sale of vehicles that run on fossil fuels, setting slightly longer deadlines between 2030 and 2040.

Latin America has not been lagging behind in this trend, taking into account that its major cities also face serious environmental pollution problems. That is why countries such as Peru, Argentina and Brazil are promoting the use of cleaner energy.

Lima, in Peru, is an example of a city that is taking measures to reduce its environmental pollution. With 1.7 million vehicles in the city, it is the second-most polluted city in Latin America. But it does not want to stay in this ignominious spot. That is why Cálidda, a Grupo Energía Bogotá

(GEB) company, has been promoting the use of natural gas vehicles and supplies this fuel to the Sistema Metropolitano de Transporte, the only public transportation system in the region that has a fleet that completely relies on natural gas.

Petrol stations and charging stations are currently being installed in Lima for buses and cars. A fleet of 600 of the Metropolitano's buses have been connected and close to 250,000 cars have been converted and fill up at the 240 Natural Gas Vehicle stations, with an estimated 14% penetration of the city's vehicles.

This fact has had positive effects on the quality of the air that this city's inhabitants breathe. Thanks to NGVs, the Metropolitano has kept from emitting 70,132 tons of CO_2 into the environment, which is equal to the pollution that 5.8 million trees absorb every year.

The picture is not too different in Colombia. Citizens have health problems related to poor air quality in its major cities. Even though there have been advances in improving the quality of fuels, especially reducing the sulfur content of diesel, problems related to a fleet of old vehicles, which is an obstacle to improving air quality, still persist.

There are currently more than 550,000 private vehicles and taxis that are natural gas vehicles in the country. Complementary to this, the mass transit systems in various cities, such as Medellín and Cartagena, already have vehicles dedicated to gas. Additionally, Medellín has 63 garbage trucks that are dedicated to gas.

During 2017, Bogotá commissioned an NGV garbage truck for seven days on the capital's most complex routes. This pilot project, in which Transportadora de Gas Internacional (TGI), a GEB company, Ecopetrol and Gas Natural participated, yielded satisfactory results. It recorded a 95% reduction in particulate matter, a reduction in nitrous oxides compared to a traditional vehicle and a 25% decrease in CO_2. Additionally, it is silent, which is a huge advantage, especially during night shifts. Using this Natural Gas Vehicle also demonstrated that it generates significant financial benefits: it costs COP 9,937 per ton for the truck dedicated to gas, compared to COP 11,443 per ton for the diesel truck.

There have also been tests with Transmilenio buses that operate as NGVs, which have also demonstrated significant environmental and financial benefits compared to traditional buses.

Electric Mobility

Another alternative to contribute to cleaner air is electric mobility, which is gaining strength in major cities that have decided to substitute diesel.

A very striking case is that of the Chinese city, Shenzhen, which just made 100% of its buses electric. Shenzhen, a city with 12 million inhabitants, considered the “Silicon Valley” of this Asian giant, now has 16,359 electric buses, which allows it to save up to 70% more energy compared to buses that use diesel.

China is the country that sells the most electric vehicles in the world, with about 40% of market share, followed by the United States and Europe.

In the Old Continent, Madrid currently has the third-largest electric bus fleet, after Paris and London. The fleet’s renovation seeks to reduce air pollution by 20% by 2020.

In Latin America, Sao Paulo is a benchmark in operating and testing electric transportation vehicles. Electric buses with diverse technology operate in this city, and it even carries out tests on fuel cell electric buses. Its experience has been positive, and government studies have demonstrated the convenience of maintaining these initiatives and subsidizing their operation, recognizing their significant environmental benefits and high service quality levels for users.

Buenos Aires, Argentina, has set the goal to have an all-electric bus fleet of more than 15,000 buses by 2030.

Last year in Colombia, Codensa, the Capital District, BDY (a Chinese company specialized in electric mobility) and Transmasivo launched a pilot project with a 100% electric Transmilenio bus. This bus, designed to carry out Bogotá's demanding operational conditions, has demonstrated a high average energy efficiency in operating conditions, low sound levels on board, more than 120,000 passengers transported and a decrease of 39 tons of CO_2 (a scalable amount with a larger operating electric fleet).

The Transmilenio is the fundamental piece in Bogotá's transportation plan. It is estimated that the system carries out about 60% of its daily trips using diesel buses of various typologies. Keeping in mind the useful life of its vehicles, with more than 12 years of operation and more than one million traveled kilometers, a program for replacing the buses is being planned.

Colombia has a great opportunity to be in tune with international trends, to improve the air quality in major cities and to comply with its commitments at the Summit in Paris (COP 21) if it follows the example of the world's other major cities, which are taking a turn towards cleaner technology.

FIGURE

THE COSTS OF AIR POLLUTION

According to a study by the National Planning Department (DNP in Spanish), health costs related to air pollution are up to COP 15.4 trillion pesos, equal to 1.93% of the GDP in 2015, and caused 10,527 deaths in the country.

This study indicated that, in Bogotá, 10.5% (3,219) of deaths in the city are attributed to urban air pollution, which generated estimated costs of COP 4.2 trillion, equal to 2.5% of the city's GDP. On its part, in the Área Metropolitana del Valle de Aburrá, 12.3% (2,105) of deaths in the area are attributed to urban air pollution, which generated estimated costs of COP 2.8 trillion, equal to 5% of the area's GDP.

In the face of this complex situation, the DNP will design and implement economic and regulatory instruments to control the growth in number of vehicles, the industry's technological overhaul and the promotion of alternative modes of transport. This is fundamental, taking into account that 86% of the country's population will be concentrated in urban centers by 2050.