Decarbonization of the transport sector in UNECE member states

Natural Gas Vehicles Association of Russia

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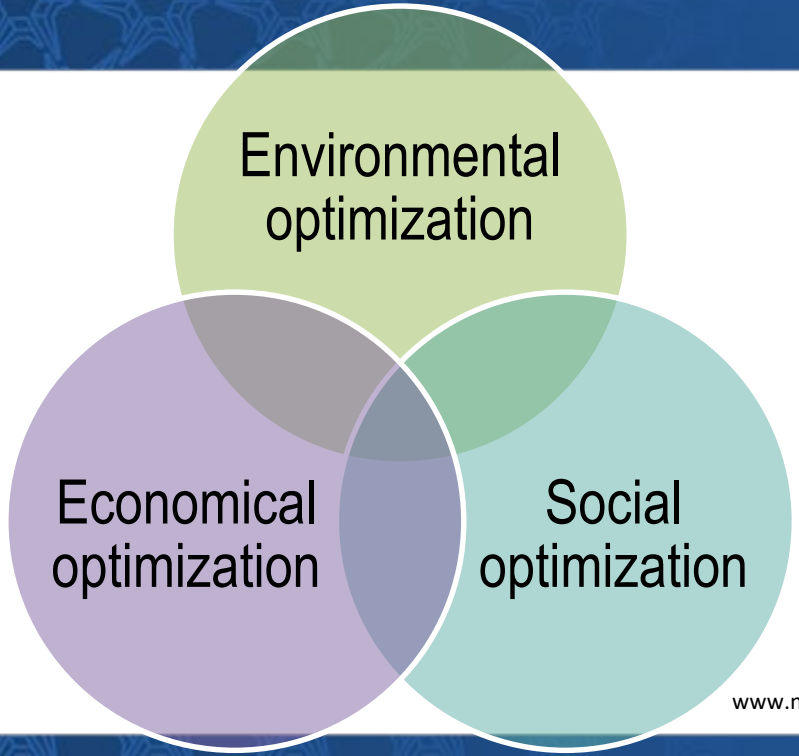
Sustainable Development Approach

The model of transition in transportation sector is discussed



Prioritization of indicators:

- Emissions (not only CO_2 but mainly PM, SO_x, NO_x, benzopyrene, aldehydes etc)
- Cost of transportation
- Unemployment
- Taxes & public debt
- Life expectancy

Methane as alternative fuel

Technology

- CNG and LNG technologies are mature and ready for global replication
- Safety standards for NGV are much higher than for gasoline vehicles

Economy

- CNG and LNG are cheaper than gasoline and diesel fuel
- There are not any prerequisites for declining gasoline prices globally
- Methane cannot be stolen from the vehicle

Ecology

- Lower sulfur and nitrogen compounds emissions, GHG, aldehydes, benzopyrene
- Absence of PM emissions that absorbs harmful substances and causes diseases
- No fuel spills during transportation and storage

Social policy

- Option to hold tariffs for passenger transportation
- Increasing competitiveness of goods by reducing logistics costs
- Methane is attractive cheap alternative fuel for households

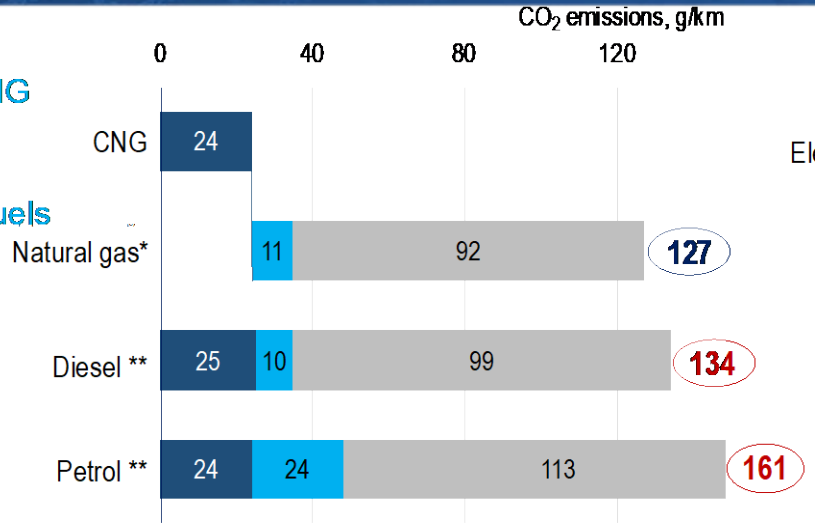
Goals 2030 and NGV

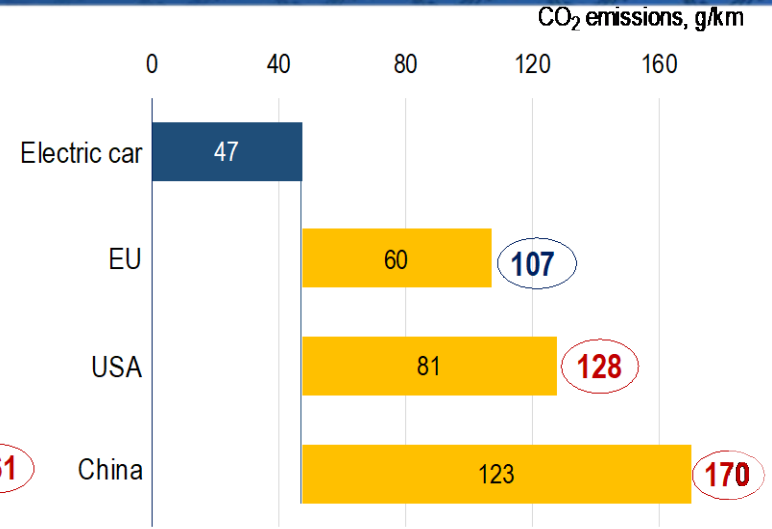
NGV market development contributes to at least 10 SDGs: environmental, social and economical indicators

Carbon footprint of NGV

"Carbon footprint" of CNG vehicles is significantly lower than the one of transport on oil-based fuels

CNG has advantage at the significant share of coal in the energy balance in comparison with electric cars





Fuel assumptions:
** – Calculated for natural gas without biogas*
*** – Calculated according to the requirements of the EU Directive 2009/28 / EC with the addition of 7% biodiesel and 5% bioethanol*

Car manufacturing
Fuel use
Fuel production and delivery
Power generation

Source: Volkswagen AG, 2017
Calculation base: Volkswagen Golf (run 200 000 km)

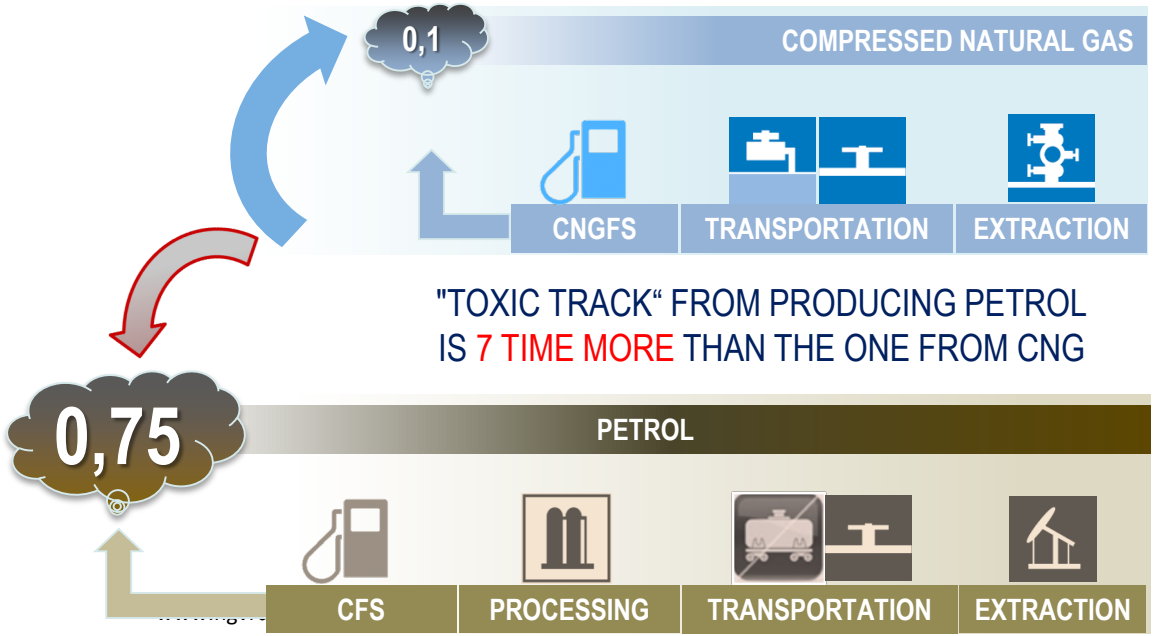
Toxic track of fuel

URBAN POPULATION

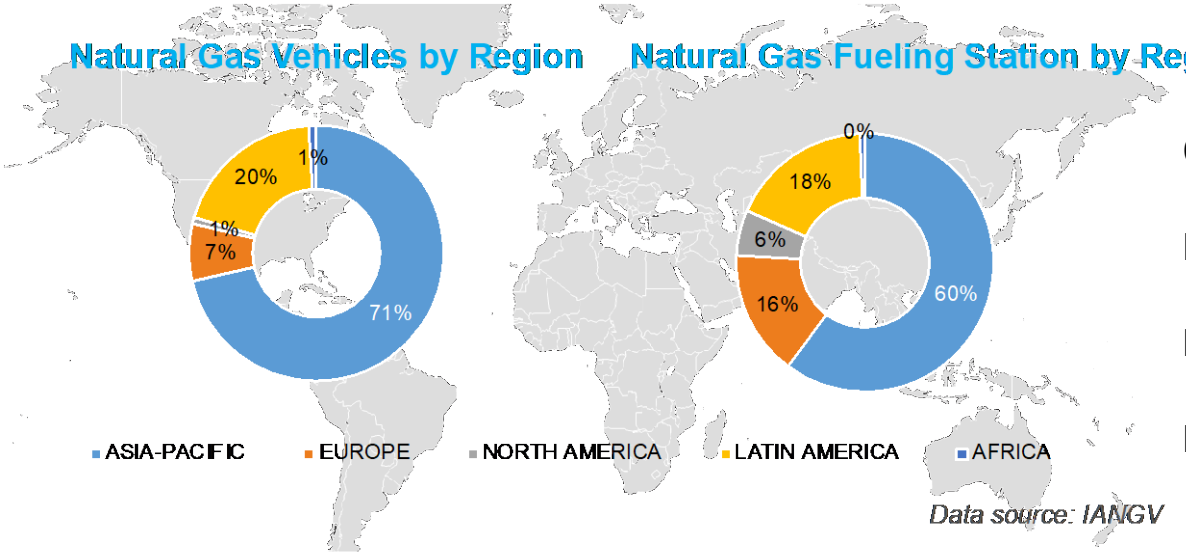
3,5 BLN PEOPLE

URBAN POPULATION SUFFERING FROM AIR POLLUTION

90%



Global NGV market



Current demand	**32.2 bcm**
Potential demand by 2035	**up to 150 bcm**
Number of vehicles	**27.8 mln. cars**
Number of stations	**32.6 th. stations**

Goals of the Research

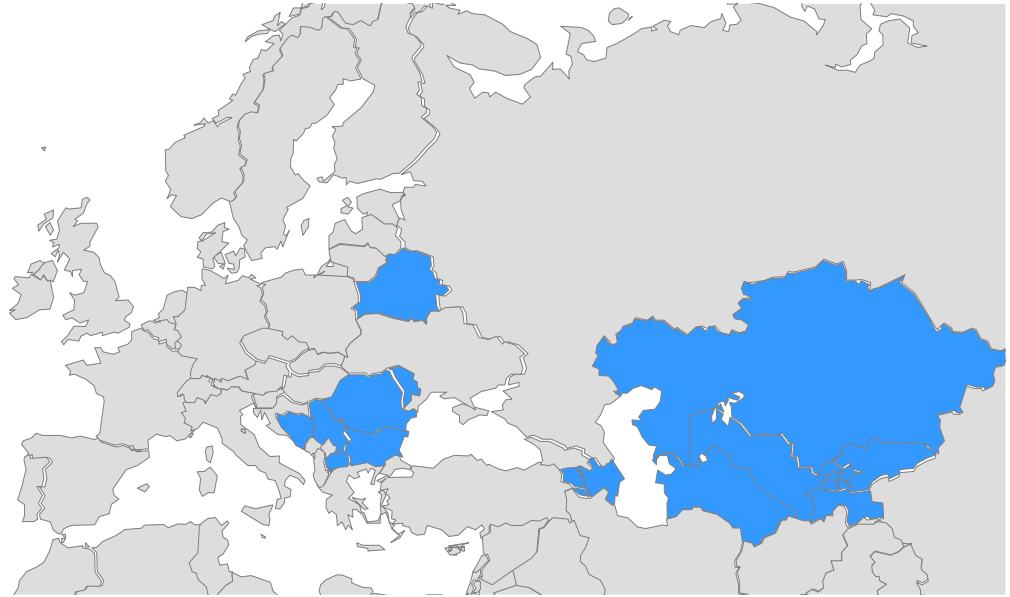
The main goal of the research is to contribute to NGV markets development in UNECE countries

- accumulating the best practices for NGV market development,
- analyzing the specifics of selected countries,
- estimating an effect of natural gas usage for sustainable development.

Deadline: 01 March 2021

UNITED NATIONS
ECONOMIC COMMISSION
FOR EUROPE

Scope of the Research



Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Kazakhstan, Kyrgyzstan, Moldova, North Macedonia, Romania, Serbia, Tajikistan, Turkmenistan and Uzbekistan

- All the countries are interested in balanced approach for sustainable development
- The majority of countries have access to pipeline gas
- Some countries have mature NGV market

Description of selected NGV markets

Initial stage

- Azerbaijan
- Bosnia and Herzegovina
- Kyrgyzstan
- North Macedonia
- Romania
- Tajikistan
- Turkmenistan

Early growth

- Kazakhstan
- Moldova
- Serbia

Confident growth

- Belarus
- Bulgaria

Mature market

- Armenia
- Uzbekistan

Specific task

For selected countries

- To identify the specific of each NGV market with case studies and barriers
- To compare safety requirements for refueling stations as one of the most serious barriers to market development
- To collect a case studies on popularization of using natural gas for vehicles

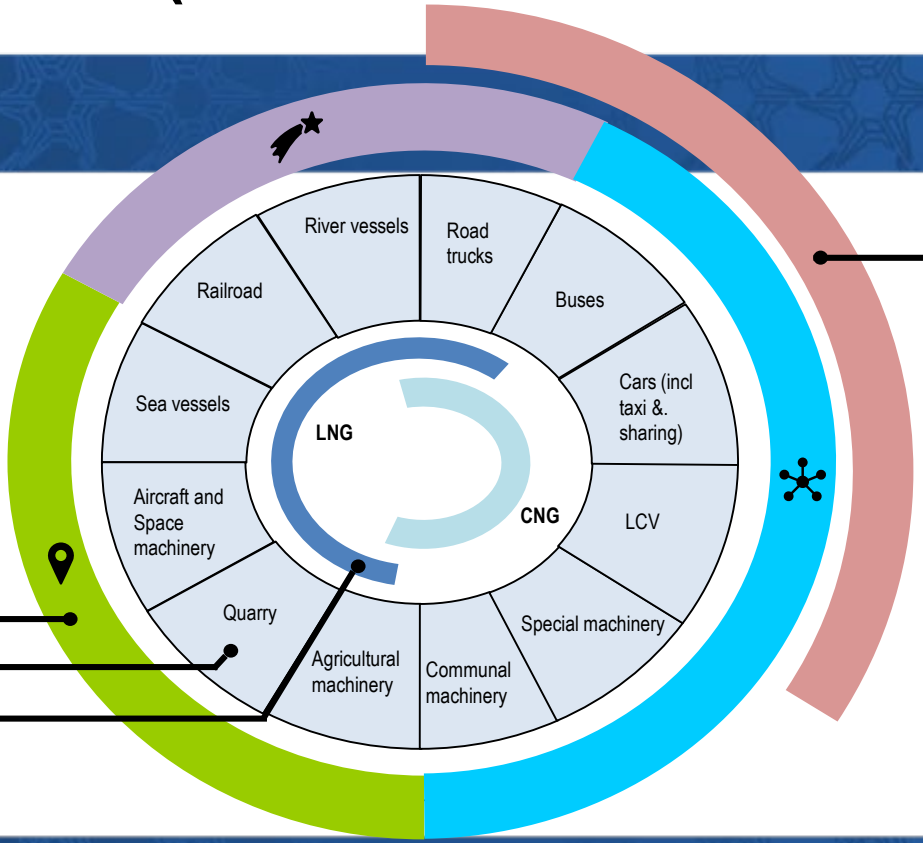
For all UNECE countries

- To identify case studies with effective regulatory, legal, economic, technical, and public perception promotional activities
- To make a life cycle analysis of competing fueling options
- To organize a public opinion research on introducing natural gas as a motor fuel

Structure of the Transportation Sector (*incl off-road machinery*)

Types of infrastructure:

- Network covers the area for limited logistic routes
- Highway covers the main transportation routes between agglomerations
- Pointed covers closed logistic routes



Type of infrastructure

Segment

Type of fuel

Scope of Study

Water transport, Railroads and off-road machinery should be covered at the next stage of the research

Thank you for attention!

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