NATURAL GAS VEHICLE ASSOCIATION (RUSSIA)

Russian NGV market development

Vasiliy Zinin

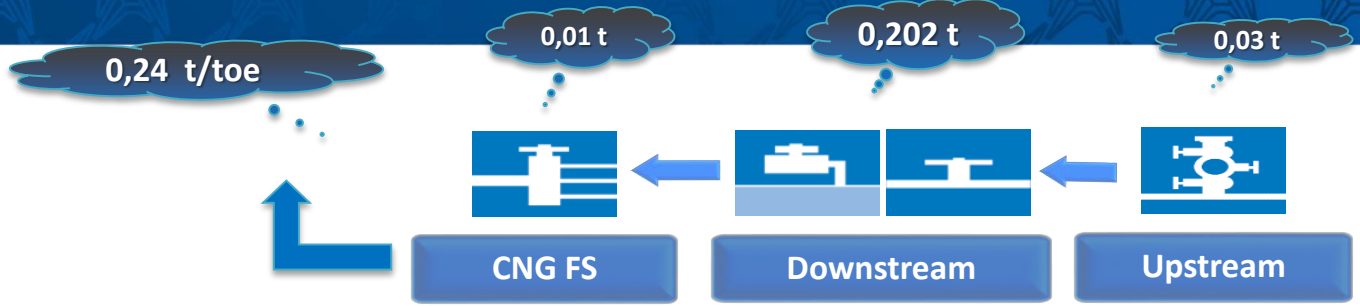
INFLUENCE ON FUEL TECHNOLOGIES DEVELOPMENT

			Drivers
Increased efficiency of the engine and transition to Euro-6			High oil prices
CNG and LNG			Limited oil resources
Hydrogen			Ecology
E-vehicles			Accessibility
Biofuel			Technology replication

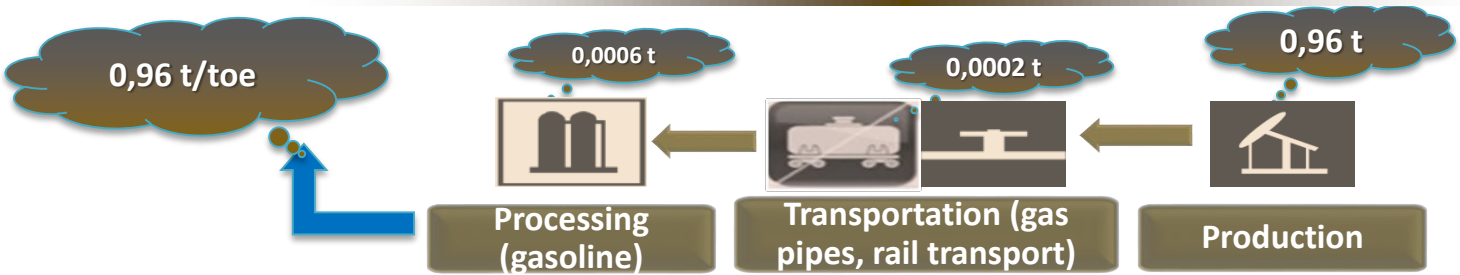
CARBON FOOTPRINT IN THE PRODUCTION OF MOTOR FUELS

Greenhouse gas emissions by the production of gasoline 4 times more, than for the life-cycle of CNG

Compressed Natural Gas (CNG)

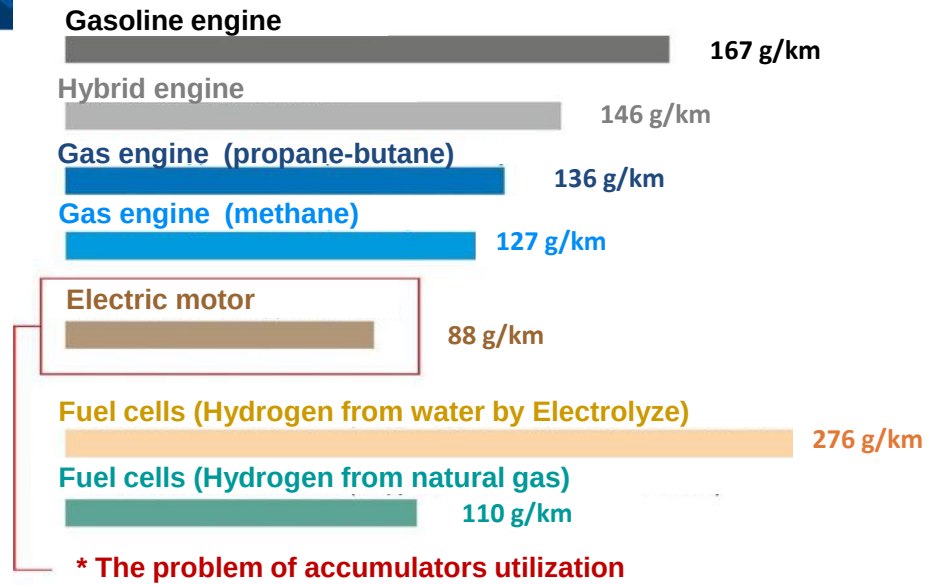


Gasoline

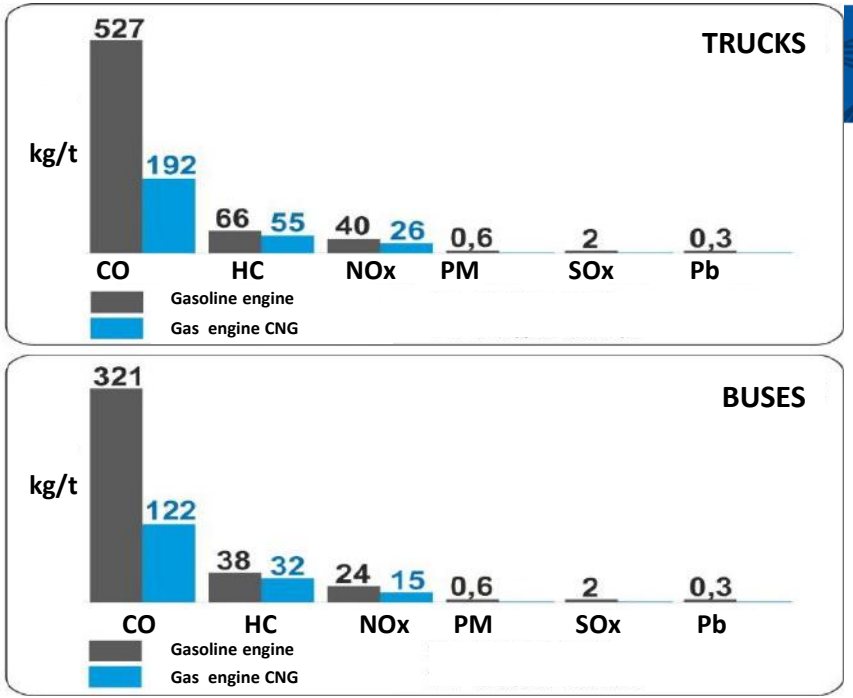


AIR POLLUTANT EMISSIONS FROM VARIOUS FORMS OF TRANSPORT

CO2 emissions
(Volkswagen Golf with variable speed drives as an example)



Source: Volkswagen Group



Source: the Flemish Institute of Technological Research

NATURAL GAS ROLE IN LOW CARBON DEVELOPMENT

NATURAL GAS

CO_2
NO_x
CO

«0» emissions

SO_2 PM

NATURAL GAS – BASIC ELEMENT OF TRANSITION PERIOD TO LOW CARBON DEVELOPMENT

METHANE-HYDROGEN MIXTURE

MHM

«0» emissions

SO_2 PM

CO_2 NO_x CO

Further decrease

EXISTING GAS POWER GENERATION INFRASTRUCTURE AND EQUIPMENT UTILIZATION
(with less constructive changes)

- Fuel gas for power generation units
- Gas for transport (fuel)

Hydrogen production from methane with zero CO_2 emissions

Cheaper and more efficient than electrolysis

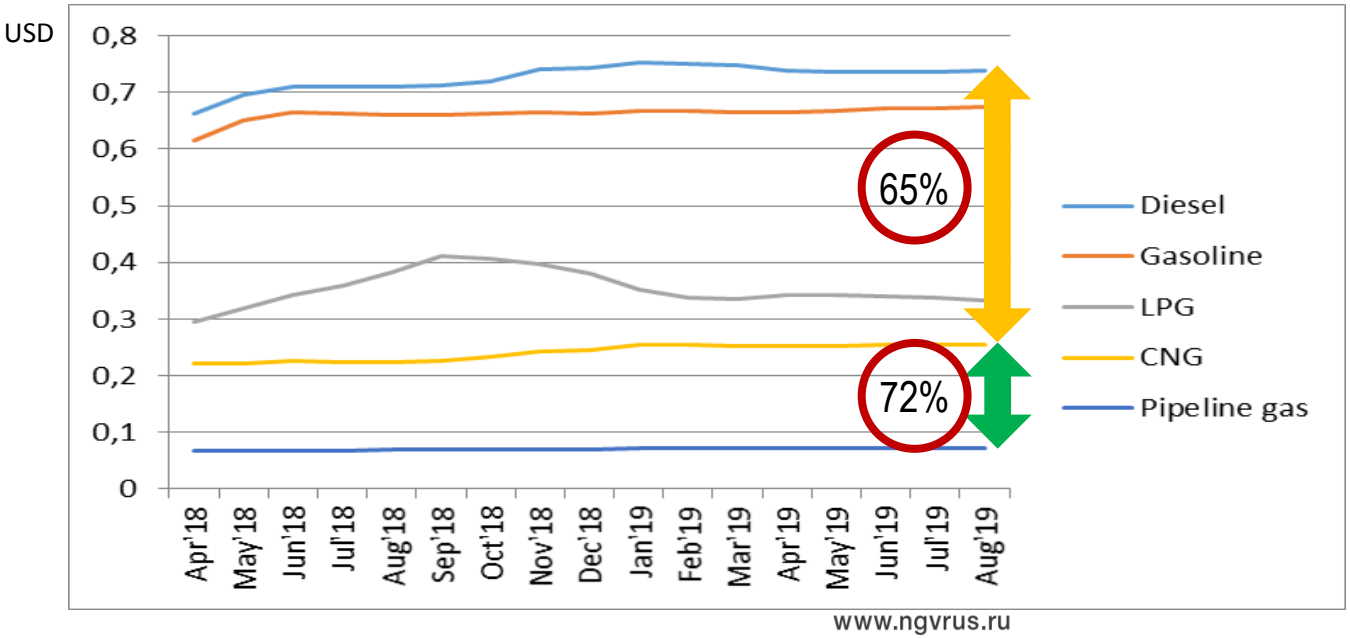
HYDROGEN

«0» emissions

CARBON (valuable material)

Natural gas increases efficiency of hydrogen technology

PRICES FOR FUEL ON RUSSIAN MARKET



There are pricing incentives for consumers and producers to enter Russian NGV market

REQUIREMENTS FOR GAS FILLING INFRASTRUCTURE IN THE RUSSIAN FEDERATION

Expected additional investments in creating minimum infrastructure

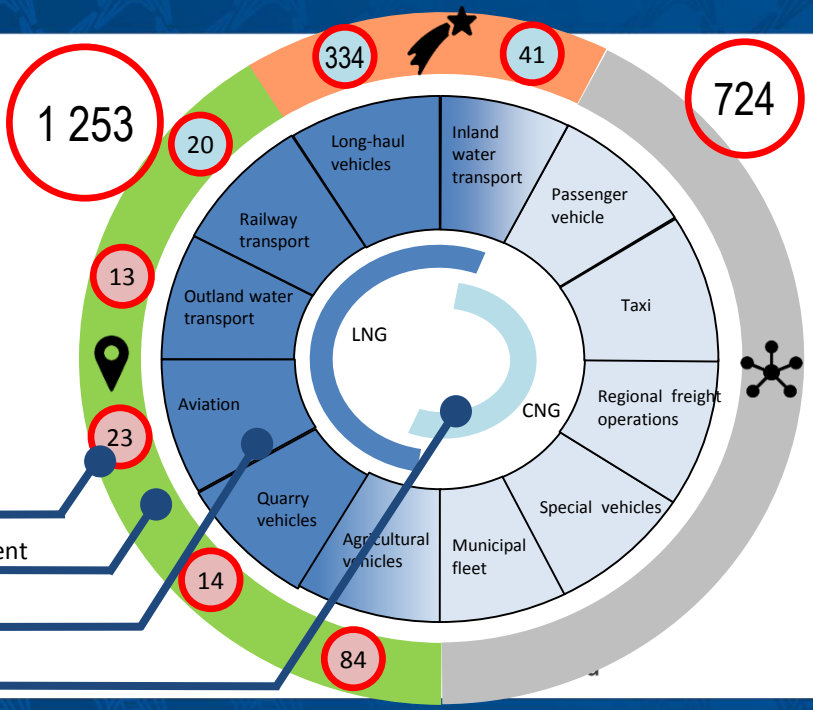
3,4 BLN USD

Number of fueling stations required

Model of infrastructure development

Market segment

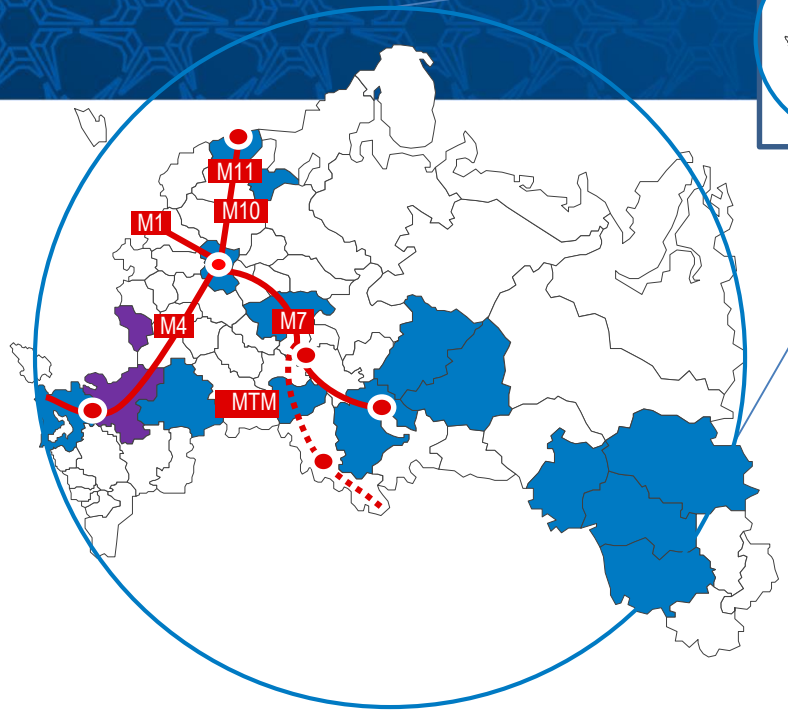
Type of fuel



Infrastructure Development Models:

- Network – to solve the problem of covering areas (city, region) when access to refueling for any customer
- Trunk – to solve the problem of covering the main highways
- Point – to create infrastructure for client`s needs within a specific asset (depot, port, quarry, etc.)

REGIONAL PRIORITIES FOR NGV MARKET DEVELOPMENT



2 PILOT REGIONS

1. Rostow region
2. Belgorod region

6 HIGHWAY PROJECTS

1. M-10 «Russia»
2. M-11 «Moscow – Saint Petersburg»
3. M-4 «Don»
4. M-1 «Belarus»
5. M-7 «Volga»
6. MTM «Europe – Western China»

15 MOST ACTIVE REGIONS

1. Krasnodar Region
2. Volgograd Region
3. Saint Petersburg
4. Saint Petersburg Region
5. Moscow
6. Moscow Region
7. Samara Region
8. Nizhny Novgorod Region
9. Bashkortostan
10. Omsk Region
11. Tomsk Region
12. Novosibirsk Region
13. Altay Region
14. Perm Region
15. Sverdlovsk Region

CURRENT PRODUCTION AND DISTRIBUTION INFRASTRUCTURE OF GAZPROM GAS-ENGINE FUEL

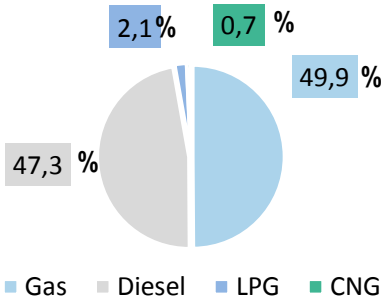
405 → **294** (73%)

Gas-filling stations in Russia

Assets owned by Gazprom PJSC

ENGINE FUEL MARKET IN RUSSIA

2018 Consumption of motor fuels by vehicles in Russia*, %



- Light motor vehicles – 29.9 million tons (46.7%)
- Trucks and specialized vehicles – 21.6 million tons (33.7%)
- Light commercial vehicles – 9.3 million tons of fuel (14.5%)
- Buses – 3.1 million tons (4.8%)
- Motorcycles – 0.1 million tons (0.3%)

CNG

Transport segments working on compressed natural gas:

- light motor vehicles;
- commercial transport;
- light-duty trucks;
- municipal vehicles.

LNG

Transport segments working on liquefied natural gas:

- long-distance haul motor transport;
- railway transport;
- water transport;
- quarry vehicles;
- agricultural vehicles

** According to Avtostat analytical agency*

GROWTH OF NATURAL GAS VEHICLES FLEET

FLEET EXPANSION OF GAS-ENGINE FUEL VEHICLES IN RUSSIA

2014

131 000

+32 000

2019*

163 000

14 079

Number of gas-engine fuel vehicles sold by Russian motor manufacturers in 2014-2017

MINISTRY OF INDUSTRY AND TRADE OF RUSSIA

8 811

The number of gas-engine fuel powered vehicles sold within the framework of the federal grants allocation in 2014-2017

GAZPROM

5 586

Number of equipment purchased by Gazprom within the framework of its own program in 2014-2017

www.ngvrus.ru

In order to achieve the self-sustainability effect at the gas-engine fuel market the annual gas-engine fuel vehicles fleet growth should be **50,000** units

*expected

GOVERNMENTAL PROGRAM FOR NGV MARKET DEVELOPMENT

MINISTRY OF ENERGY
OF THE RUSSIAN FEDERATION

20-25 Regions are to be chosen

- **30% of CAPEX for filling stations**
- **30% of Retrofit cost**

INCREASE IN SUBSIDIES

2019	2020	2021	2022	2023	2024
3,5 BILLION RUB.	10 BILLION RUB.	10 BILLION RUB.	10 BILLION RUB.	10 BILLION RUB.	10 BILLION RUB.
50 Mn USD	150 Mn USD	150 Mn USD	150 Mn USD	150 Mn USD	150 Mn USD

- Rule-making
- Standardization
- Popularization
- Expertise
- Communication
- Monitoring

Thank you for your attention!

Natural Gas Vehicles Association

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