Decarbonization of the transport sector in UNECE member states: Kazakhstan

Natural Gas Vehicles Association of Russia

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Structure of the Report

- Connection to SDG
- Life cycle analysis
- Countries’ profiles & guidelines
- Case studies
  - Public opinion research
  - Safety requirements overview
- Recommendations
- Video promo materials overview
- Draft Scenarios of UNECE sessions

- 8 SDG;
- 4 LCA studies;
- 14 countries;
- 5 regional cases;
- 15 promo-materials
Life cycle analysis

1. According to the life cycle analysis natural gas allows to decrease GHG emissions and to get rid of the most harmful substances absorbed by particulate matter.
2. The use of biogas from municipal and agricultural waste allows implement a comprehensive approach to solving environmental problems.
3. Retrofitting of old vehicles to CNG is the most fast and cheap way to decrease harmful emissions.
4. The transition to e-mobility implies a mandatory change in the power mix, while the transition to NGV does not require huge investments in the power generation.
5. It is worth conducting a detailed analysis of the transport transition opportunities in each country, taking into account the prospects for energy development (including power mix forecasting)
Number of existing CNG stations

- Armenia: 400
- Azerbaijan: 6
- Belarus: 42
- Bosnia & Herzegovina: 2
- Bulgaria: 121
- Kazakhstan: 21
- Kyrgyzstan: 6
- Moldova: 14
- North Macedonia: 6
- Romania: 3
- Serbia: 24
- Tajikistan: 53
- Turkmenistan: 0
- Uzbekistan: 1,070
Motorization level (per 1000 inhabitants)

- Armenia - 110
- Azerbaijan - 119
- Belarus - 334
- Bosnia & Herzegovina - 263
- Bulgaria - 393
- Kazakhstan - 209
- Kyrgyzstan - n/a
- Moldova - 173
- North Macedonia - 194
- Romania - 330
- Serbia - 252
- Tajikistan - 37
- Turkmenistan - 107
- Uzbekistan - 70
Natural Gas Market

NG Network coverage

CNG/gasoline price difference

www.ngvrus.ru
Kazakhstan Factsheet

- According to the UN Human Development Index classification, Kazakhstan ranks 51st and belongs to a group with a very high level of development.
- As part of its obligations under the Paris Agreement, Kazakhstan announced its intention to reduce greenhouse gas emissions by 15% compared to 1990, or by 25%, subject to assistance from international funds.
- Outdated vehicle fleets is the key reason behind high GHG intensity in the transport sector, especially in large cities.
Environmental effects

- 20%- and 50%-scenarios for Kazakhstan
- The additional gas consumption in 50% scenario is 11.4 bcm annually
- Complex analysis requires specific LCA with power mix forecasting
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
- River vessels
- Sea vessels
- Railroad
- Aircraft and Space machinery
- Quarry
- Agricultural machinery
- Communal machinery
- Special machinery
- Buses
- Cars (incl taxi & sharing)
- LCV
- LNG
- CNG
- LNG
- CNG

Scope of Study
Water transport, Railroads and off-road machinery should be covered at the next stage of the research.
Guideline for Kazakhstan

• Main obstacles are limited access to natural gas in some regions as well as insufficient financing and governmental support. The further development needs complex measures for NGV promotion.
• CNG is 40% cheaper than gasoline, so there is an economic incentive. Hazardous air urban quality is environmental incentive.
• In areas with low gas distribution network coverage it is worth to create an infrastructure for small-scale LNG and start the transition from commercial segments of transport sector, primarily long-distance heavy trucks and machinery.
• The construction of international Western Europe - China route provides great perspectives for LNG infrastructure development.
1. Each country should have a comprehensive development program for the NGV market including different segments of the transport sector: private cars, buses, LCVs, heavy trucks, construction and communal machinery, agricultural and quarry machinery, railway transport, water transport etc.

2. A comprehensive development program should be based on the long-term scenario of power sector (including power mix forecasting). We recommend to organize a specific research of power mix for every target country within the framework of the project.

3. A comprehensive development program should include a layout for filling infrastructure (CNG and LNG) with pipeline connection and supporting infrastructure (cylinder inspection centers, service centers, retrofitting points etc). The layout should be based on the potential demand research for the different segments of the transport sector.

4. The meaningful result of the UNECE project would be the start of a pilot project to develop a comprehensive development program for one of the developing NGV markets in target UNECE countries.
Recommendations

• To organize a specific research of power mix perspectives
• To initiate a pilot projects for implementation a comprehensive development program
• To support creation of a unified interstate register of cylinders to control their circulation and simplify procedures for the end user when crossing borders
• To initiate a project to create promo video-materials clarifying the specifics of NGV fuel in the UNECE countries involving industrial associations
Thank you for attention!

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