UNECE Group of Experts on Gas

Task Force D Removing barriers to the use of natural gas as a transportation fuel

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Manuel Lage
Secretary General

UNECE Structure

Contributing parties

European Union

International Gas Union; Study Group 5.3 (NGVs)

NGVA Europe

Associations and other experts

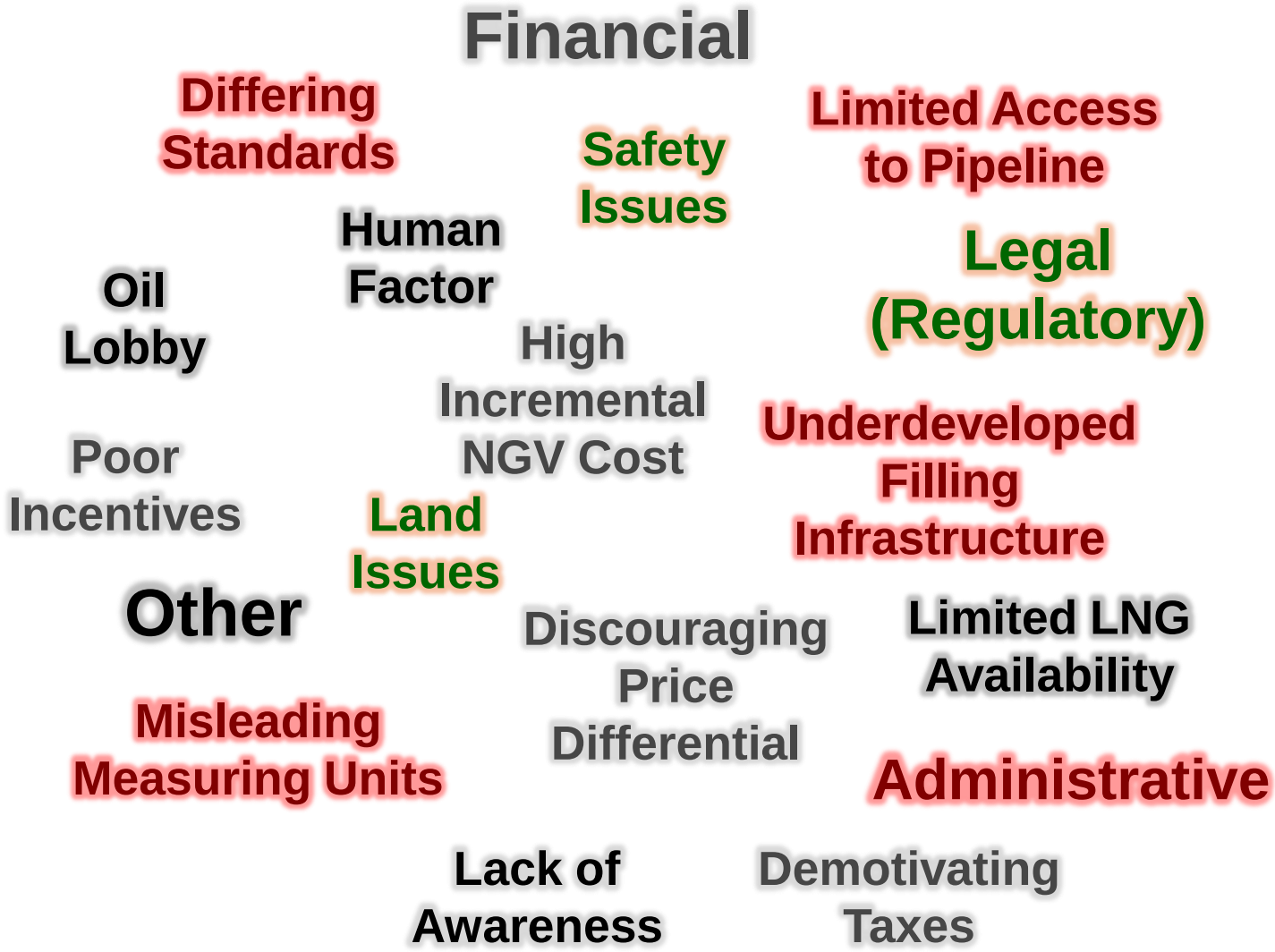
European Business Congress; Industry & Construction

Fleet Owners/ Operators

Vehicle Manufacturers

UN ECE, Sustainable Energy Department, Group of Experts on Gas, Task Force D

Some of existing barriers



Activities, for all vehicle modes

Define internal structure & responsibilities

Identify target groups & establish communications

Recruit contributing volunteers

Classify barriers

Propose Final report (Recommendations) format

Prepare & spread questionnaire

Develop work plan

Prepare presentation at WGC'2015 NGV Workshop

Members

The group of experts:

- Manuel Lage (Spain) (co-chair)
- Andrej Stusek (Slovenia)
- José Poblet (Spain)
- Nuno Moreira (Portugal)
- Eugene Pronin (Russia)
- Alberto Pincherle (Italy)
- Manfred Seitz (Austria)
- Nadège Leclercq (France)
- Dan Bowerson (USA)

Goal of the Task Force D

Work to be undertaken:

- Analyze the use of natural gas as a transportation fuel from the perspective of energy infrastructure
- In collaboration with a group of experts from different countries and other associations, to prepare Recommendations on Removing Barriers to the Use of Natural Gas as a Transportation Fuel.

Deliverable:

- Document containing Recommendations on Removing Barriers to the Use of Natural Gas as a Transportation Fuel.

Natural Gas for mobility

LNG

CNG

1 10 25 35 100 200 25.000

Cars, vans, light & medium delivery trucks, urban buses, urban services trucks and short distances heavy trucks.

Long distance heavy trucks, coaches, railway, auxiliary and main propulsion maritime use.

- **Natural gas is the only real alternative to diesel in all types of transport and use**
- CNG is the **recommended urban fuel** (taxis, delivery vehicles, urban services, buses, auxiliary marine engines). When in port, ship's auxiliary engines should be considered as urban polluters
- LNG with much higher energy density, is going to be the **future professional fuel**.

Our document

ASOCIACIÓN IBÉRICA DE GAS NATURAL PARA LA MOVILIDAD

UNECE
United Nations Economic Commission for Europe

2. Background

- 2.1 Are people aware of the natural gas as an alternative to oil derived fuels?
- 2.2 What is natural gas?
- 2.3 Natural gas across the world
- 2.4 LNG availability
- 2.5 Air pollution problems
- 2.6 Regional overview of Standards and Regulations

3. LNG in maritime section

- 3.1 Emissions in maritime transport
- 3.2 Barriers. LNG as maritime fuel
- 3.3 Infrastructure of LNG bunkering in sea ports and inland waters
- 3.4 Need for a European and world standard of LNG bunkering

Background

- Natural gas and bio-methane represent the easiest, most practical, and most realistic way to reduce pollution coming from road transportation.

- Natural gas —with its environmental, economic and availability advantages— will remain the only alternative to oil and diesel in the short and medium terms, and is the only primary fuel that is fully technically and economically applicable in any mode of transportation: on-road vehicles, scooters, heavy duty vehicles, ships, aircrafts, locomotives and others.

- Using natural gas as a transportation fuel is a critical area for natural gas demand growth, with specific relevant benefits such as improving environmental impacts (CO2, SO2, and NOx).

- **This activity explores removing barriers to the use of natural gas as a transportation fuel in the ECE region.**

Awareness and reserves

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- **Are people aware of the natural gas as an alternative to the oil derived fuels?**

No, they are not. There is a big problem with the confusion of NG and LPG because both are "gases", but they are very different and with different origins.

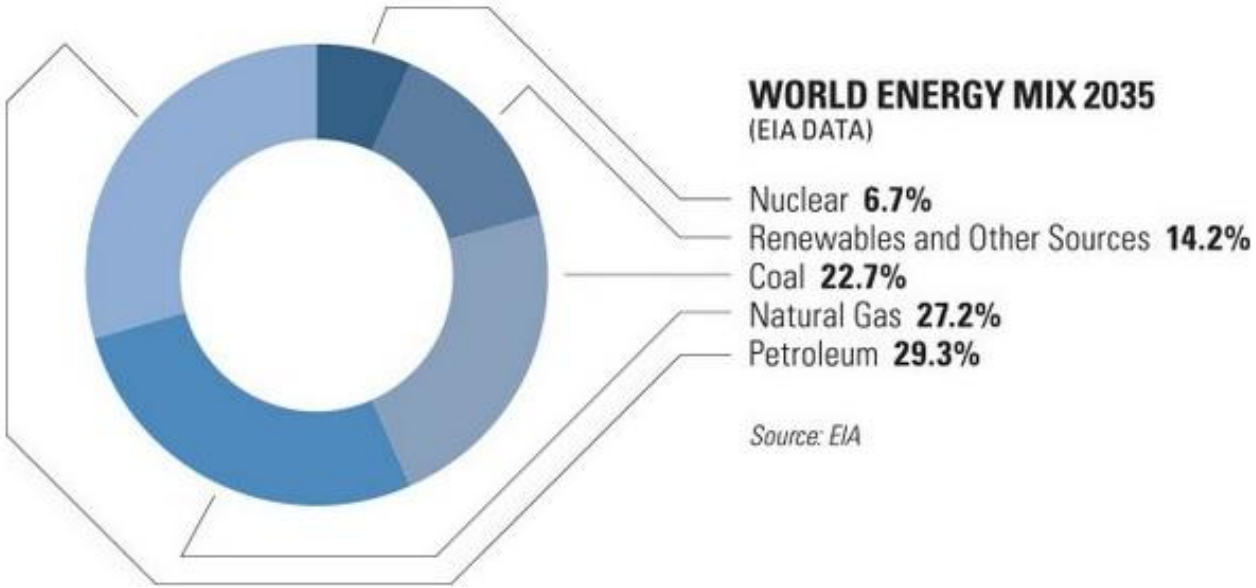
- **What is natural gas?**

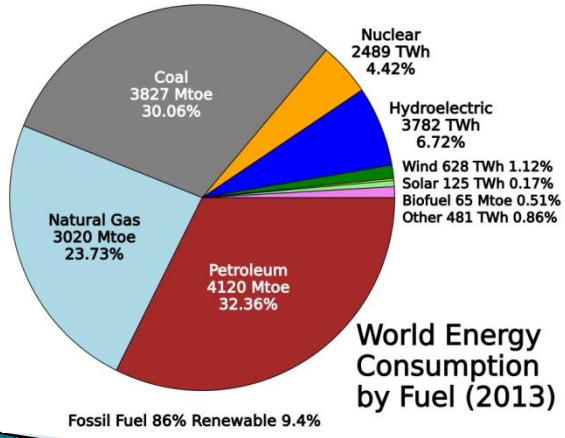
Natural gas (NG) – methane – is of fossil origin, but not derived from oil. Due to its composition, CH4 is an extremely light gas, optimum to be used as a fuel in internal combustion engines. Its RON (octane number) of 110/120 allows much better engine efficiency.

- **Natural gas over all the world**

The identified gas reserves in the world guarantee the supply of gas for more than 500 years

Forecast 2013-2035





	2013	2035	Trend
Coal	30 %	23 %	↓
Oil	32 %	29 %	↓
Natural Gas	24 %	27 %	↑
Renewables	9 %	14 %	↑
Nuclear	4,5 %	7 %	↑

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Availability

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- **LNG availability**

The number of countries offering NG in the world market is increasing, particularly due to the construction of new LNG liquefaction plants.

LNG is giving huge flexibility and competitiveness to the gas trade and supply.

- **Air pollution problems**

Air pollution has a very negative impact on human health and well-being, entailing also substantial economic consequences.
The use of NG as fuel for their urban buses will heavily reduce emissions and improve the air quality (NO_2) in cities.

- **Regional overview of Standards and Regulations**

The regulatory situation in the world of NG as a fuel is still very uneven

LNG in Maritime Section

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- **Emissions in maritime transport**

Shipping has not had any emission control to half of the twentieth century. Sulphur Emission Control Areas (SECAs) are sea areas in which stricter controls were established to minimize airborne emissions, starting with SOx, already not existing in land fuels.

- **Barriers - LNG as maritime fuel**

The relatively high capital cost of the system installation can be a barrier in some cases. It is highly recommended to facilitate procurement by public administrations to retrofits or build new ships with fuel GNL

- **Infrastructure of bunkering LNG in sea ports and inland waterways**

Need for construction of pipes and bunkering vessels. Truck-to-ship, Port-to-ship and Ship-to-ship schemes to be developed and implemented

- **GASNAM** has prepared a first ***Recommendation for LNG bunkering***, already shared with a number of organisations across the world

Fuel consumption of different vehicles. Equivalences

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A private car, doing 20.000-25.000 km per year uses **1.100 kg of fuel per year.**

An urban bus of 280 CV, doing 50.000 km per year in very severe traffic conditions, uses **28.000 kg of fuel per year (equivalent to 25 cars).**

A long distance truck, with 420 CV and 125.000 km per year, uses **38.000 kg of fuel per year (1,5 buses, 35 cars)**

A long distance coach with 400 CV and a yearly mileage of 400.000 km, uses **112.000 kg of fuel (3 heavy trucks, 4 urban buses, 100 cars).**

A diesel locomotive with 4.000 CV and 120.000 km of annual mileage uses **190.000 kg of fuel per year (5 trucks, 7 buses, 173 cars)**

A ferry uses **28.000.000 kg of fuel per year (370 trucks, 1.000 buses, 25.500 cars)**

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