



Methane as a vehicle fuel in Europe

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NGVA Europe – the European Association for gas in transport

NGVA Europe, the European Natural & bio Gas Vehicle Association:

- Main objective is the promotion of Natural Gas & biomethane as fuels for transport
- We represent more than 160 manufacturers and associations (22 Board members)

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Hei, l'energia cresce.

NGV Brussels 2014 (8-10 July)



Commissioner for Transport and Vice President Siim Kallas: “Gas will play a major part as the most attractive option to replace oil-based fuels such as diesel. (...) While the technologies are already mature, it is the lack of infrastructure that is holding up a broader uptake of gas as a vehicle fuel.”



Director General DG MOVE, J. Aguiar Machado: “The use of oil is responsible for major GHG emissions, 24% comes from the transport sector. The transition to alternative fuels is urgent, both from the perspective of energy security and climate. Natural gas has a very important role to play, as does biogas.”

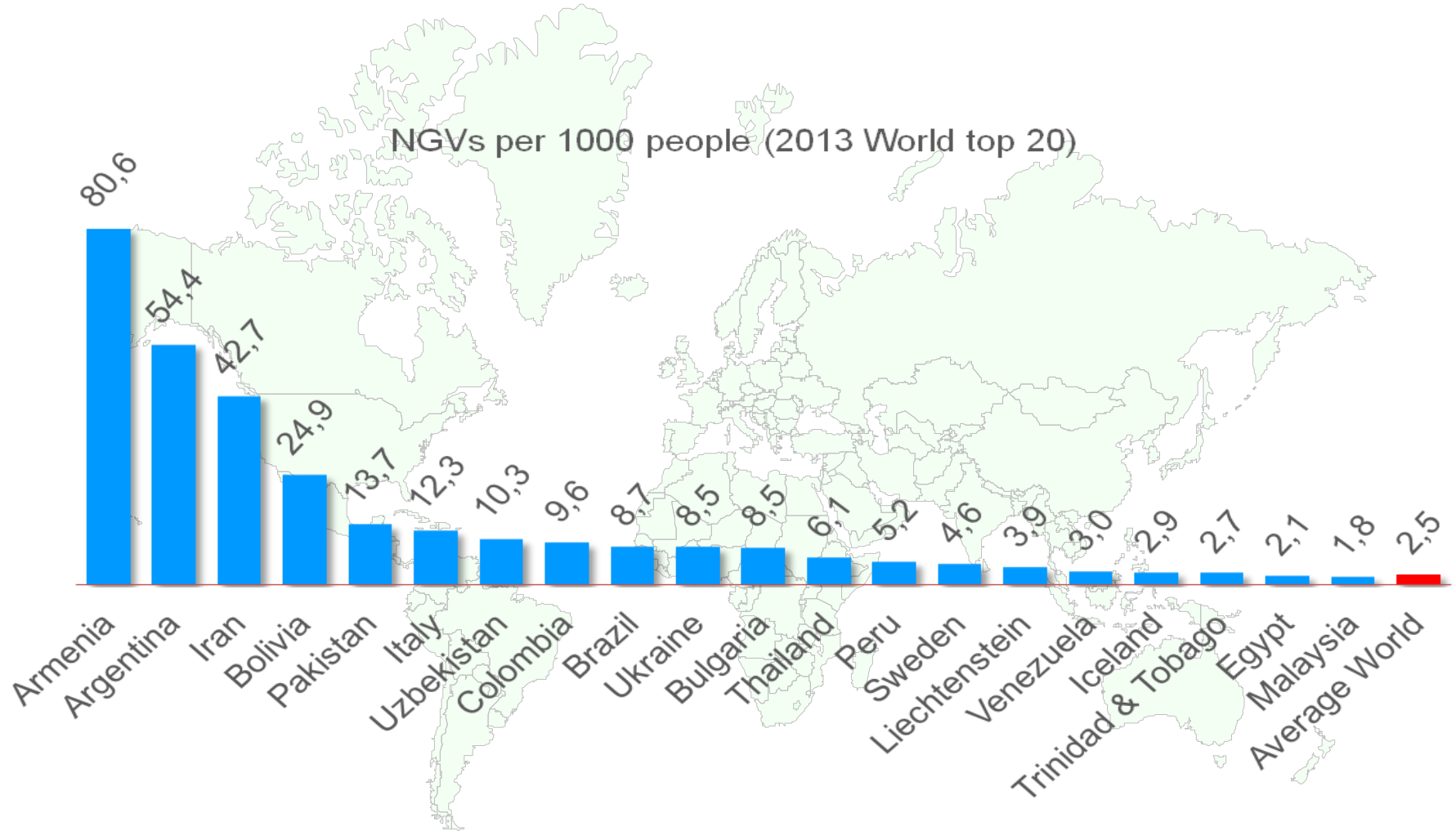
The European alternative fuels strategy

- **Reduce** the EU transport systems **oil dependence** in order to diversify and secure energy supply
- **Reduce** EU **GHG emissions** in line with the 20-20-20 Climate and Energy Package and the 2011 White Paper on Transport
- **Improve** the **air quality** in urban areas in order to meet EU air quality obligations
- **Enhance** the **competitiveness of the European industry**, boost innovation and generate economic growth



Source: European Commission

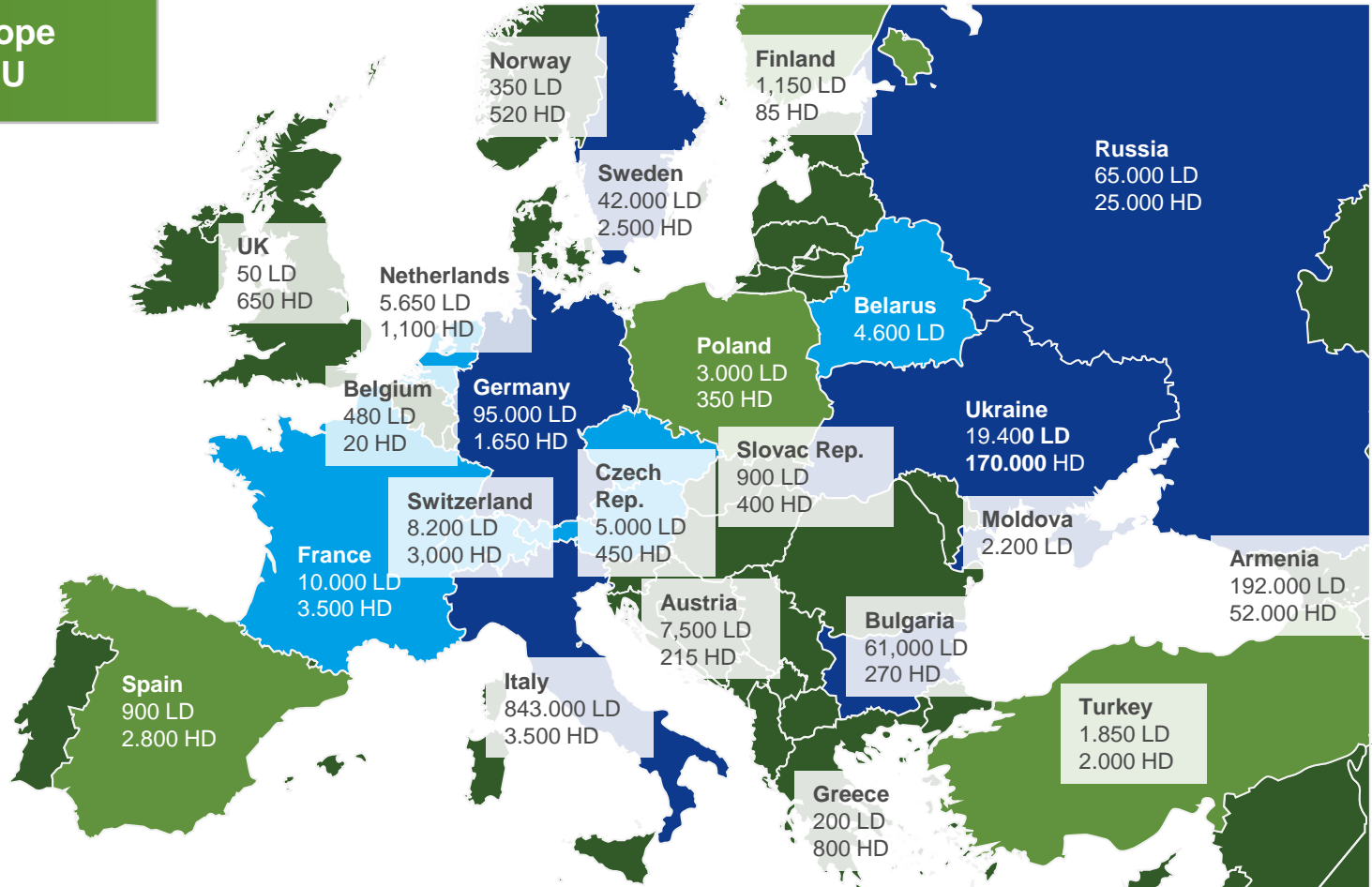
NGVs per 1000 people (2013 world top 20)



Source: NGVA Europe, Worldwide shares in vehicle market ,

Current European NGV Market

1,85 M NGVs in Europe
1,1 M NGVs in the EU



- > 20.000
- 5.000 – 20.000
- 1.000 – 5.000
- < 1.000

Source: NGVA Europe, 31.12.2013

LNG trucks for long distance transport

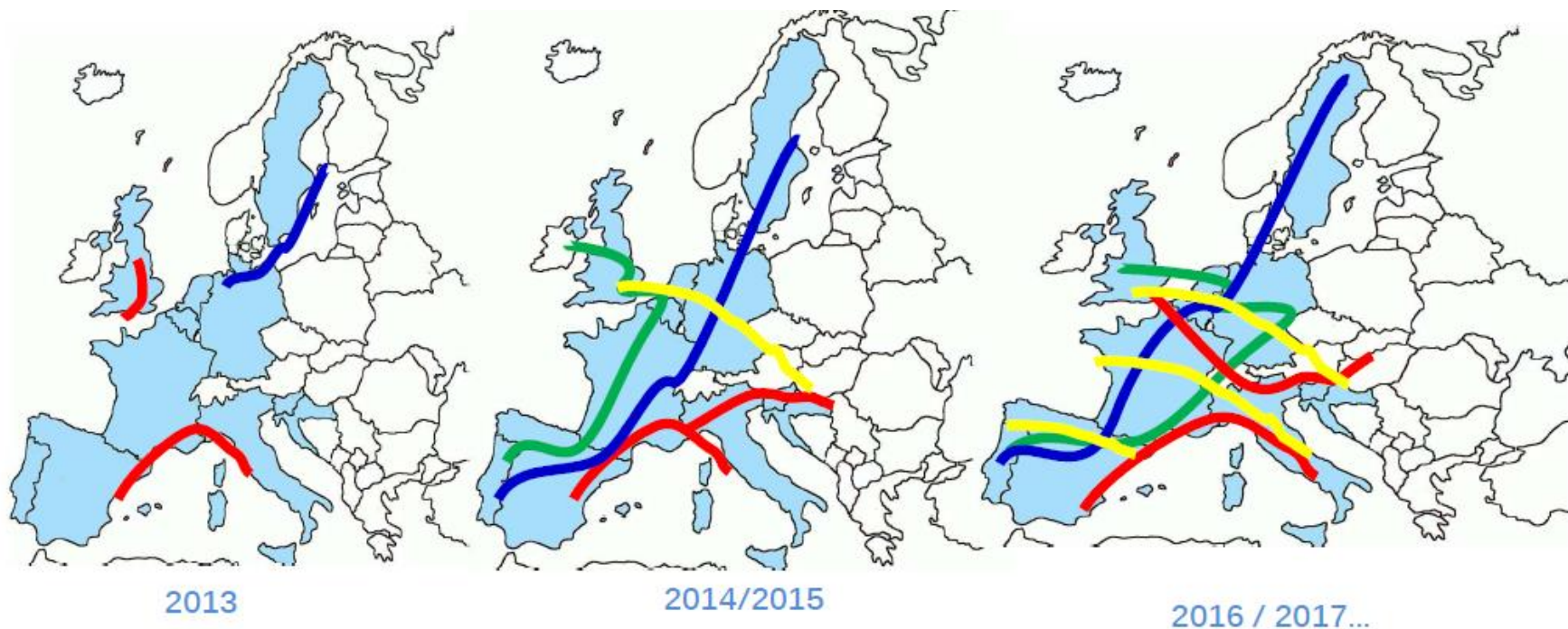


The LNG Blue Corridors Project

Large scale project to demonstrate the LNG as a real alternative for medium and long distance transport, as complementary fuel first, and substitute of diesel in the future.

- 27 partners from 11 countries
- 100 Heavy Duty vehicles running on LNG
- 14 new fuel stations
- Total investment: 14.33 M€
- EC funding: 7.96 M€
- 4 years

Roadmap of the LNG Blue Corridors

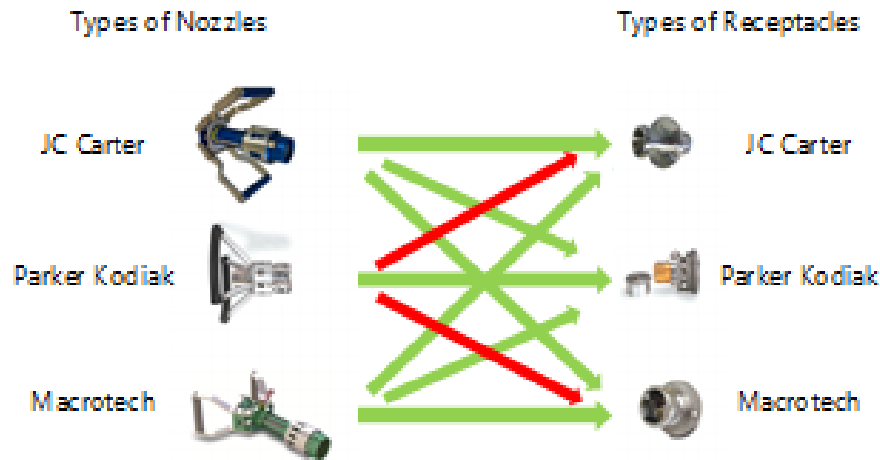


Source: LNG Blue Corridor

LCNG technology used on trucks

Examples of aspects uncovered in the current regulations and standards:

- Compatibility between nozzle and receptacles



In addition to this, other technical aspects have to be taken into account like the pressure delivered at the stations. This working pressure can be:

- Normal pressure (8-10 bar)
- High pressure (18 bar)

Regulation 110

LNG trucks & components

- ✓ New version regarding the type-approval provisions for vehicles equipped with LNG propulsion
- ✓ All on-board CNG related aspects were approved according to ECE-110, but LNG was missing in its scope (rely on national approvals)
- ✓ It covers the approval of specific components of motor vehicles using LNG as well as their installation in the propulsion system



Source: NGVA Europe

ADR – Dangerous goods

LNG

A new EU regulation will come into force starting 2017, which enables ADR goods to be carried by LNG-fuelled vehicles, with compressed ignited engines.

A temporary national agreement will cover the gap until then, titled M276. UK, Belgium, Spain and The Netherlands have already signed it, others will follow.



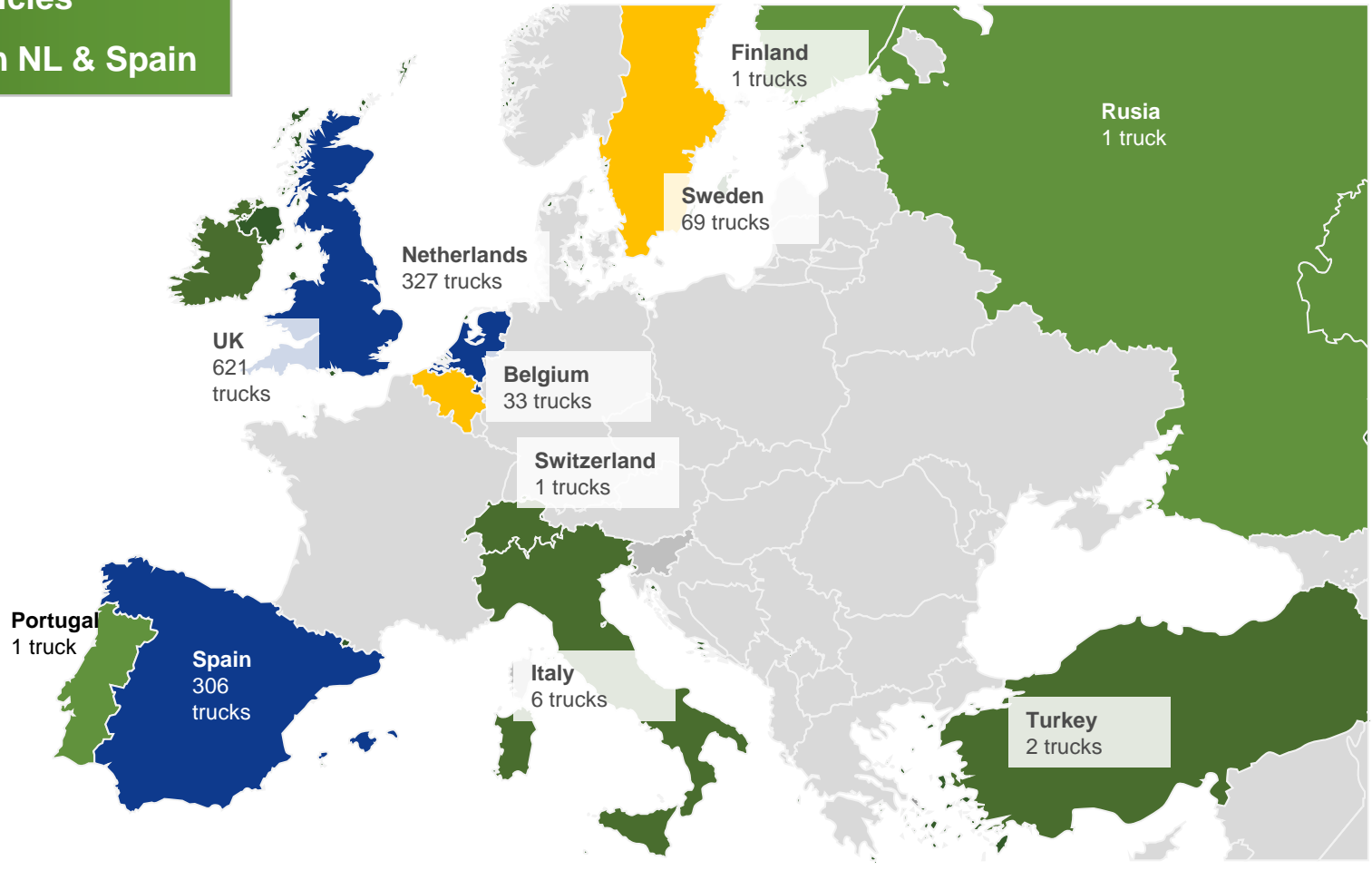
CNG

NGVA is now proposing a similar decision to be taken concerning CNG-vehicles and spark ignited engines.

Current European LNG vehicle fleet

1.500 LNG Vehicles

UK leader, then NL & Spain






Source: NGVA Europe, 01.06.2014

Existing and planned LNG stations



Next stations:

- Malaga (Spain) by GNF
- Lisbon (Portugal) by Gold
- Lyon (France) by GNVERT
- Porto (Portugal) by GALP
- Jesenice (Slovenia) by ENOS
- Brussels Airport (Belgium) by Drive system
- Siges (Portugal)
- Paris (France) by GNVERT
- Nimes (France) by GNVERT
- Dortmund (Germany) by Erdgas
- Livorno (Italy) by ENI

-  Existing LNG stations
-  LNG Blue Corridors station under construction
-  Opened LNG Blue Corridors station

Source: LNG Blue Corridor

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