International Business Congress Project

LNG in Road Transport

Preliminary Results

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Saint-Petersburg
The aim of the Project is to develop recommendations for IBC, which would facilitate increase in utilization of LNG as fuel for road traffic in Central and Eastern Europe (roughly the area between Germany and Russia).

The following associated positive effects are expected:

- Human footprint to environment
- Transport expenditures for national economies
- Development of regional economies
- Sales of natural gas
- National competitiveness

Significant part of the Project relates to the vision of LNG for road traffic infrastructure in the year **2030**.

The expected positive effects are mentioned in the Project Road Map signed by E.ON New Build & Technology, Gazprom Gas-Engine Fuel LLC, Gazprom transgaz Yekaterinburg.
Project Topics & Organisation

Steering Committee

Mr Aksyutin  Mr Fip  Ms Blagova

Project management

Uniper  Gazprom Gas-Engine Fuel  Gazprom Transgaz Yekaterinburg

Mr Weßling  Mr Likhachev  Mr Gaidt

Project office
• Russia
• Belarus
• Poland
• Estonia
• Latvia
• Lithuania
• Germany
• Finland
• Czech Republic
• Slovakia

Both TEN-T routes and main highways of Russia and Belarus including ITR “Europe – Western China” will be investigated in the course of the Project.
Expert Workshops

- 4 Expert Workshops organized in 2015 to promote LNG for trucks and to collect data need to prepare recommendations.
- During the workshops LNG market development was discussed with regional market experts and players:
  - **Over 100 Experts** representing key market participants (LNG producers, distributors, consumers, logistics and technology companies, consulting companies, government organizations, industry associations);
  - **Some of the companies represented in the workshops:** MAN, KAMAZ, Iveco, Volvo, Daimler, HAVI Global Logistics, Chart Ferrox, McKinsey & Co, Zukunft Erdgas e.V., etc.
- During the seminars we collected Expert opinion on key project topics (regulation, commercialisation, funding). Attendees additionally expressed their professional positions in special survey forms distributed before the workshops.
- The Project benefited from the experts sharing professional experience in the field of developing national LNG markets.
The aim of the Project is to develop a set of recommendations for IBC to facilitate LNG for transport adoption in Europe.

The Working Group prepares the Final Project Report for the governing bodies and members of IBC containing these recommendations.

The Report will cover a comprehensive set of topic including:

<table>
<thead>
<tr>
<th>General overview of the European LNG market</th>
<th>General overview of existing technologies</th>
<th>Current availability of LNG trucks and buses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target country profiles / LNG adoption in the target countries</td>
<td>Vision of LNG infrastructure in 2030 for the target countries</td>
<td>Obstacles to infrastructure development</td>
</tr>
<tr>
<td>Commercialization issues</td>
<td>Politics and Financing</td>
<td>Recommendations and next steps</td>
</tr>
</tbody>
</table>
LNG plants

<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>7</td>
</tr>
<tr>
<td>Poland</td>
<td>3</td>
</tr>
<tr>
<td>Germany</td>
<td>3</td>
</tr>
<tr>
<td>Finland</td>
<td>1</td>
</tr>
</tbody>
</table>

Total capacity approx 250,000 ton p.a. (0.36 bcm)

LNG production in Poland, Germany, Finland is aimed mainly to execute regional off-grid supply of natural gas.

Russian LNG plants are directed to LNG export to Eastern European countries as well as local off-grid and some cases of LNG for vehicles / rail.

LNG import terminals

<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithuania</td>
<td>1</td>
</tr>
<tr>
<td>Poland</td>
<td>1</td>
</tr>
</tbody>
</table>

Total capacity aprox 6,200,000 ton p.a. (9 bcm)

LNG is supplied to these terminals for subsequent regasification and onward transportation to local gas pipeline system.

The Lithuanian terminal is an FSRU (floating storage and regasification unit).

LNG stations

<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>3</td>
</tr>
<tr>
<td>Russia</td>
<td>2</td>
</tr>
<tr>
<td>Finland</td>
<td>1</td>
</tr>
<tr>
<td>Estonia</td>
<td>1</td>
</tr>
</tbody>
</table>

LNG market development in Europe remains robust.

Legal measures to provide incentives are being developed.
In order to determine the most suitable forecast of needed indicators, a number of analytical sources have been investigated:

<table>
<thead>
<tr>
<th>Source</th>
<th>Forecast Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxford Institute for Energy Studies</td>
<td>Additional details related to energy studies.</td>
</tr>
<tr>
<td>European Commission</td>
<td>Further details focusing on European community aspects.</td>
</tr>
<tr>
<td>OECD</td>
<td>Relevant details concerning broader economic contexts.</td>
</tr>
<tr>
<td>World Bank</td>
<td>Specific details related to global economic variables.</td>
</tr>
<tr>
<td>ATKearney</td>
<td>Detailed observations on forecast methodologies.</td>
</tr>
<tr>
<td>Delloite</td>
<td>Further insights into forecast frameworks.</td>
</tr>
<tr>
<td>OPEC</td>
<td>Critical details concerning specific economic sectors.</td>
</tr>
</tbody>
</table>

For the purpose of infrastructure allocation modelling, the following has been accepted:

- **HD trucks population growth**
  - 2% p.a. till 2030 in EU target countries
  - 0.6% p.a. till 2030 in Russia and Belarus

- **Share of LNG trucks in target countries**
  - Reaches 2% by 2030

**Main forecast results:**

- **LNG HD trucks population in target countries by 2030**
  - ~ 22,000

- **HDVs LNG forecasted consumption p.a. by 2030**
  - ~ 1 bcm (~ 700,000 ton)
The Working Group prepared a draft model for LNG infrastructure allocation in the target countries for the year 2030 using these key principles:

- Priority to TEN-T / Pan-European Routes
- Not more than 400 km between LNG Filling Stations (Directive 2014/94/EU)
- Required infrastructure for each country depends on demand forecast for the Year 2030
- Two types of LNG FS considered: 10,000 ton p.a. 3,000 ton p.a.
LNG Infrastructure by 2030 (Europe)
LNG Infrastructure by 2030 (Russia)
Next Steps

LNG for HD Vehicles demand 2030 model finalization and approval

Infrastructure allocation scheme finalization

Drafting recommendations for IBC to implement LNG for HD Vehicles in Europe

Final Report preparation for IBC management and members

Report presentation to the Project Steering Committee
LNG for HD Vehicles is a highly prospective market for Europe and beyond by the year 2030.

In order for LNG for HD Vehicles to reach its full potential, one needs to consider the possibility of developing truly international transit corridors.

In order to reach this end, it might be worthwhile to consider implementing LNG along the international transit corridor “Western Europe – China” through Russia and Belarus.

Investigating this opportunity through a separate Project might give IBC the international dimension it deserves.
Thank you for attention!