

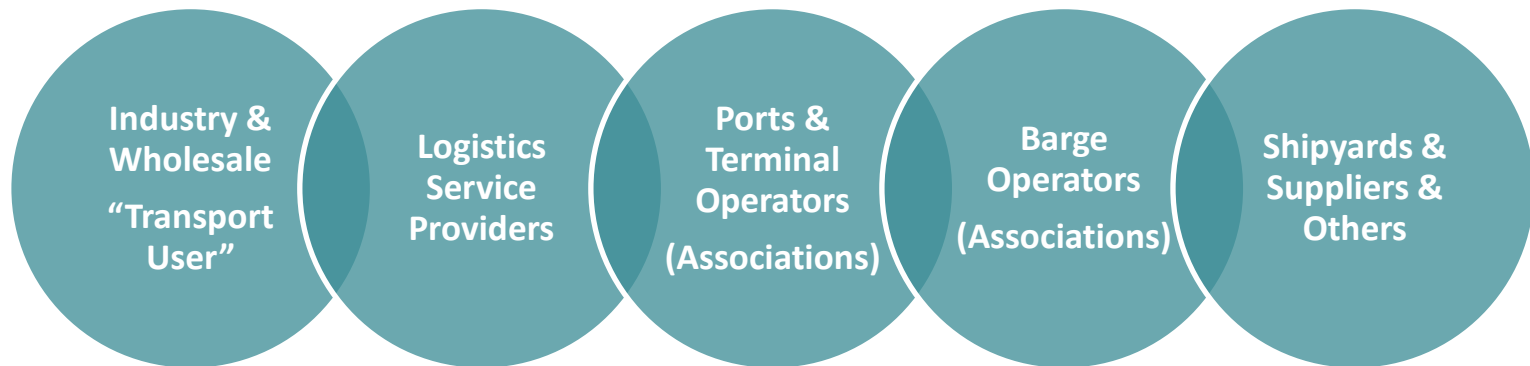


CNG Romania Launch Event Natural Gas Projects in the Danube Region

Manfred Seitz, General Manager
Bucharest, 28 April 2017

Introduction to Pro Danube International

Platform of private companies with strategic economic interest in better framework conditions and higher public investment in the Danube transport & logistics system



- Established autumn 2011 by a group of companies & associations
- Non-profit association based in Vienna
- Network of currently more than 180 companies
- More than a lobbying organisation as it initiates and executes projects
- Service company: **Pro Danube Management GmbH**
- Local representations: **Pro Danube Romania, Pro Danube Serbia**
- Initiator & coordinator of policy initiatives & projects in IWT, port development & LNG
- More info at: www.prodanube.eu

PRIORITIES OF PRO DANUBE

1 Engagement for better waterway maintenance & execution of TEN T bottleneck projects

- **Push governments & administration** for minimum standards in waterway maintenance (2,5 m fairway depth at LWRL);
- **Engage in permanent monitoring** of infrastructure maintenance & proposing improvements;
- **Promote quicker implementation** of TEN T projects (2,5 m draught according UNECE/AGN);
- **Support waterway administrations** to use EU programs in financial period 2014-2020;

Promotion of investment in Danube ports

- **Promote ports** as hubs for regional development strategies & cross-border initiatives;
- **Support public and private stakeholders** in port development programs/projects;

2

Support to modernization of Danube fleet

- **Promote & support the implementation of LNG** as fuel as well as cargo for Danube navigation;
- **Propose & implement EU funded projects** for higher efficiency of operations & environmental performance;
- **Promote development** of long-term public funding schemes for fleet renewal;

3

Elimination of administrative barriers

- **Identification of barriers** and engagement in dialogue with administrations/policy makers to achieve elimination/reduction;
- **Harmonizing administrative procedures** - “Same River – Same Rules” initiative of PDI;

4

Active involvement in EC initiatives & programs

- **Special focus** on EUSDR/PA1A;
- **Facilitation of projects** in Horizon 2020, TEN T/CEF, regional development programs.

5

Lead Project for IWT: LNG Masterplan for Rhine-Main-Danube

ELABORATION OF TECHNICAL DESIGN AND OBTAINING PERMITS

LNG BUNKER STATION IN THE PORT OF ANTWERP

Capacity: 400 m³ of LNG

Facilities: storage of LNG and CNG, bunkering inland ships with LNG, fuelling road transport with LNG & CNG

Investment & operation: by concessionaire

Start of operations: by January 2019

FEASIBILITY STUDIES CHECKING THE OPTIONS

LNG INFRASTRUCTURE IN THE PORT OF MANNHEIM

Capacity: 500 m³ of LNG

Facilities: LNG storage, truck fuelling, vessel bunkering

Estimated investment: 6-7 MEUR

Operational costs/year: 250,000 EUR

Interested investors are welcome

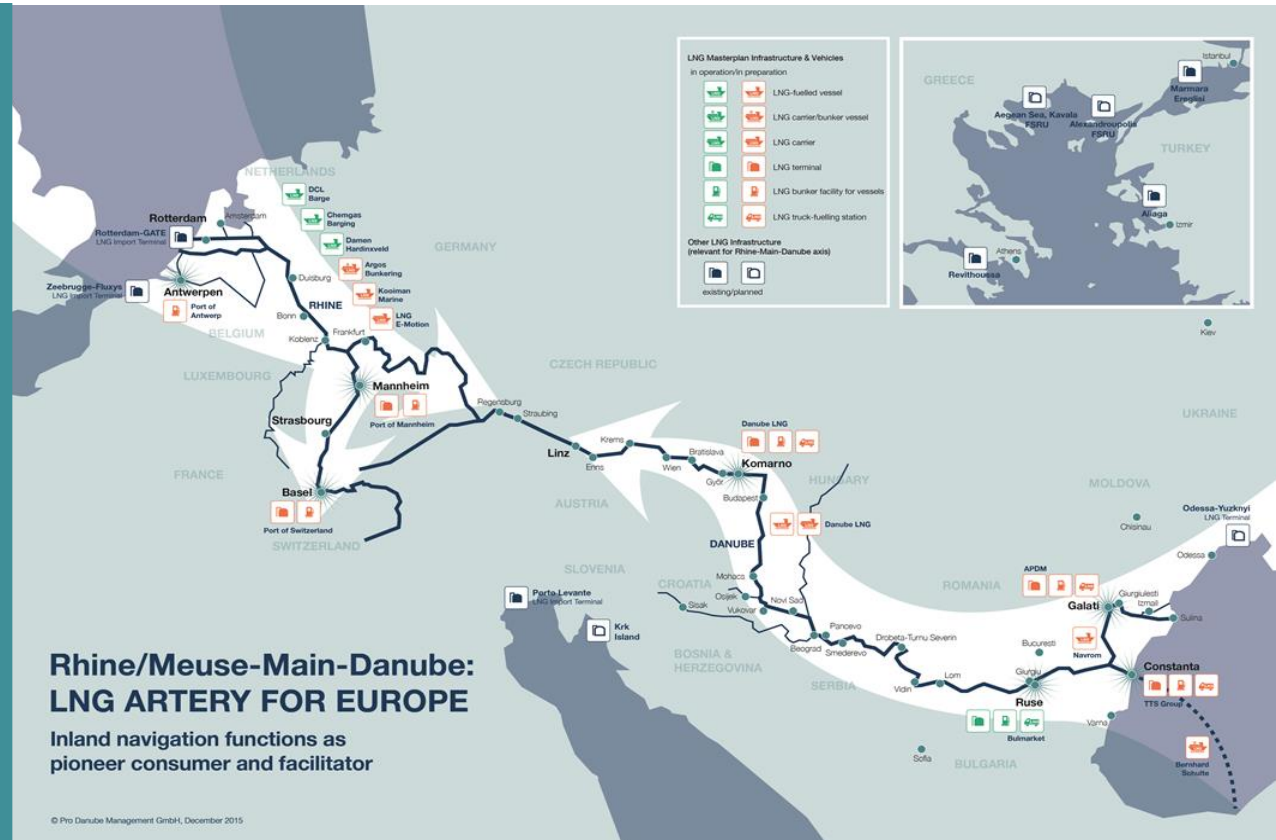
LNG INFRASTRUCTURE IN THE PORT OF SWITZERLAND

Capacity: 1,000 m³ of LNG

Facilities: LNG storage, truck fuelling, vessel bunkering

Estimated investment: 6-7 MEUR

Operational costs/year: 250,000 EUR



LNG FLOATING TERMINAL IN KOMARNO (SLOVAKIA)

Size: 126 x 24 m (L x W). Draught: 2 m

Capacity: 12 x 350 m³ of LNG

Facilities: LNG storage, vessel bunkering, facilities for other services, e.g. ship waste reception facilities, potable water, etc.

LNG TERMINAL IN GALATI (ROMANIA)

Capacity: 4,000 m³ in semi-pressurised tanks with option to increase up to 8,000 m³

Facilities: LNG storage, truck fuelling, vessel bunkering

Estimated investment: 17 MEUR

SMALL SCALE LNG TERMINAL IN CONSTANTA (ROMANIA)

Capacity: 5,000 m³

Facilities: LNG storage, (un-) loading of (smaller) seagoing vessels, fuelling of inland vessels and trucks

LNG experiences in TEN-T & CEF & HORIZON 2020

- **Masterplan for LNG as fuel and as cargo on the Rhine/Meuse-Main-Danube corridor** (TEN-T 2012 / Innovation)
- **ReaLNG** – Turning LNG as marine fuel into reality in the North Sea-Baltic region (CEF-T 2014 / MoS)
- **Blue Baltics** – LNG infrastructure facility deployment in the Baltic Sea region (CEF-T 2015 / MoS)
- **INtoLNG** – Innovative LNG solutions to provide clean transport fuel (CEF-T 2015 / Innovation)
- **PASCAL** – Study for a small scale LNG bunkering network for the European ECA (TEN-T 2013)
- **PROMINENT** – Promoting Innovation in the Inland Waterways Transport Sector



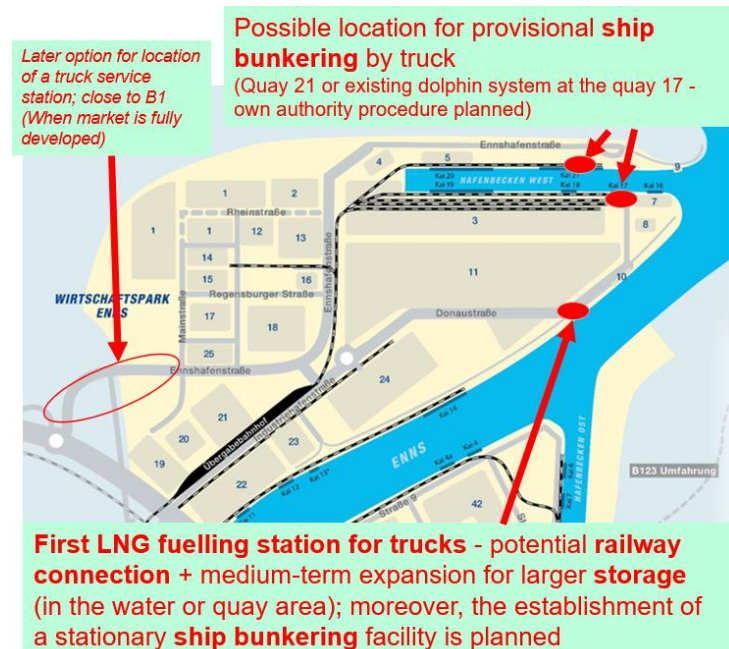
LNG PROJECTS IN DANUBE REGION – ONGOING & IN PREPARATION



LNG FOR UPPER AUSTRIA



- Exploitation of (fossil) natural gas resources in Upper Austria by small scale **liquefaction**
- Building a strong **bio-LNG** component
- Deploying **supply infrastructure** at Ennshafen for refuelling of trucks & subsequently bunkering of inland vessels
- Developing **LNG filling stations (L-CNG)** on further transport hubs in Upper Austria
- **Generating the demand for LNG** as an alternative fuel in trucking / food distribution / other market segments
- Originate a **critical number of LNG trucks** for market development
- Creating synergies along the LNG value chain
- Regional partners under lead of RAG AG, Ennshafen OÖ GmbH, Iveco Austria, trucking companies, et al.

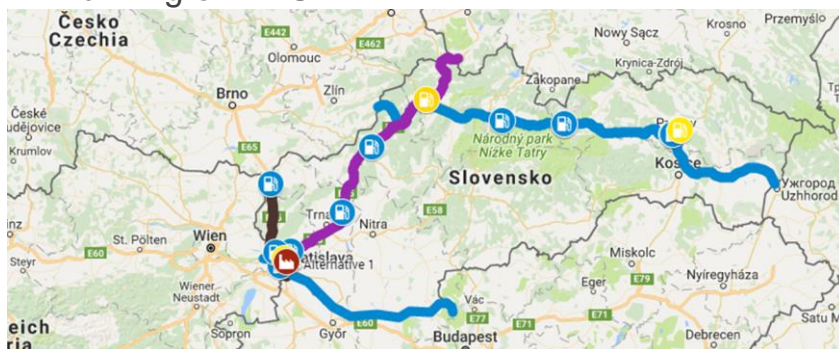


PROJECTS IN SLOVAKIA



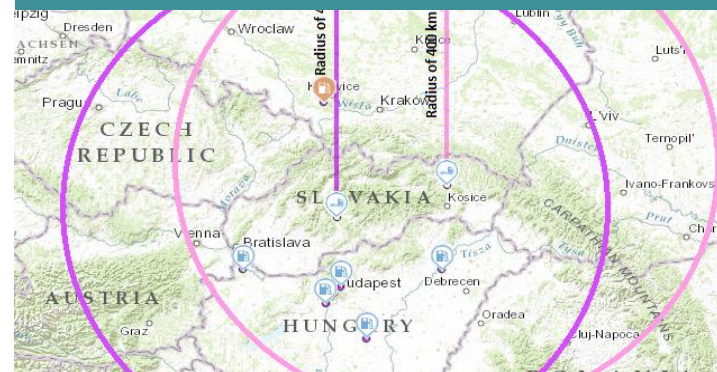
*fuel*LCNG project

- Project applied for **CEF Transport Call 2016**
- **Small scale LNG production plant** (of assumed 1,25 ton/h production capacity)
- **3 large LNG stations** for filling vehicles along the core TEN-T corridors with LNG fuel
- **14 L2CNG stations** along the TEN-T core corridors on D1 and D2 highways.
- **LNG logistics supply infrastructure** (LNG semi-trailers) – creation of fuelLCNG Virtual Pipeline with truck-to-ship and truck-to truck filling
- creating a **pilot fleet** of more than 50 vehicles running on LNG



LNGFT - LNG AS ALTERNATIVE FUEL FOR TRANSPORT

First pilot deployment of 1 LNG-fuelling open access point for road transport in Zvolen & 15 LNG mono-fuelled buses in Slovakia – first infrastructure in line with the Directive 2014/94/EU on the deployment of alternative fuels infrastructure.



TIME: 10/2016 – 12/2019
BUDGET: 5,036,700 EUR
PROGRAMME: CEF 2015 (2015-SK-TM-0348-S)
PARTNERS:

- Danube LNG – EEIG – coordinator
- SAD Zvolen – public (bus) transport provider

CONTACT

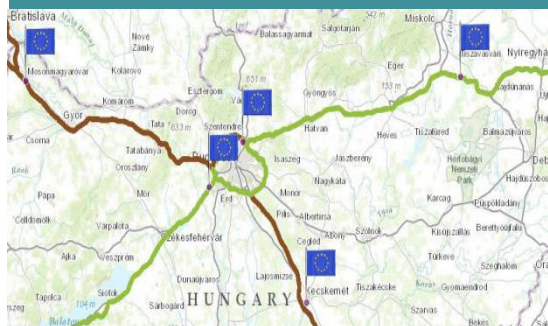
- Robert Kadnar, kadnar@danubelng.eu
- Dusan Behun, behun@danubelng.eu

THREE EU-FUNDED PROJECTS IN HUNGARY



PAN – LNG PROJECT

Studies, works & Pilot deployment for 5 L-CNG fuelling stations and one small scale liquefaction plant based on fossil gas wells & bio-methane sources .



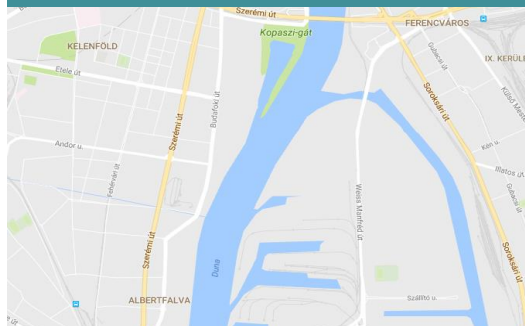
TIME: 09/2014 – 09/2017
BUDGET: 16,983,290 EUR
PROGRAM: CEF 2014 (2014-HU-TMC-0629-M)

Implementing Body & Contact:

- Hungarian Gas Transport Cluster Association (MGKKE)
- Henrik Domanovszky - domanovszky@panlng.eu

PAN-LNG-4-DANUBE

Making LNG available for Danube IWW transport at Csepel Freeport by deploying a fixed LNG refuelling station. Also fuelling trucks and possibly locomotives. In addition, retrofit of existing vessels for LNG propulsion.



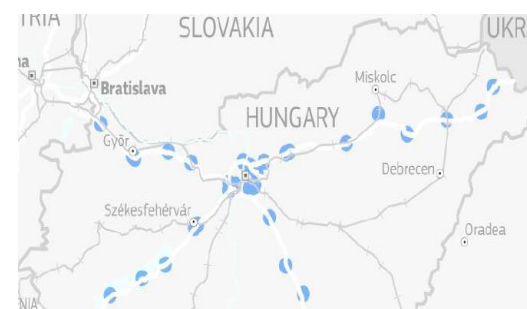
TIME: 06/2016 – 09/2019
BUDGET: 7,097,150 EUR
PROGRAM: CEF 2015 (2015-HU-TM-0349-M)

Project Promotor:

- Ministry of National Development

CNG Clean Fuel Box Project

CNG availability & use at country level with “Clean Fuel Box (CFB)” that is a LCNG self-service, compact compressor & refuelling station able to refill CNG vehicles independently of gas network. Deployment of 39 stations & purchase of LNG feeder & natural gas vehicles.



TIME: 10/2016 – 12/2018
BUDGET: 11,615,100 EUR
PROGRAMME: CEF 2015 (2015-HU-TM-0315-M)

Implementing Body & Contact:

- Hungarian Gas Transport Cluster Association (MGKKE)
- Henrik Domanovszky – domanovszky@panlng.eu



LNG TERMINAL CONSTANTA

Pre-feasibility study and a preliminary design for a small-scale LNG terminal in the port of Constanta

Location

- Port of Constanta

Functions

- The considerations were made for a terminal of an initial capacity of 5,000 m³ with a future expansion up to a maximum of 10,000 m³. The layout includes a storage facility, (un-)loading facilities for maritime vessels, bunkering of inland vessels and fuelling of trucks. The chosen location will allow vessels with a draught up to 7 m.



Technical solution

- For its gradual expansion bullet-type horizontal storage vacuum-isolated tanks of 2,500 m³ each are recommended.

QUICK FACTS

LNG small scale terminal: 5,000 m³ (up to 10,000 m³) with LNG storage, (un-)loading of (smaller) seagoing vessels, fuelling of inland vessels and trucks.

LNG regasification terminal (onshore): 130,000 m³ (up to 260,000 m³) with regasification facility connected to the gas grid, (un-)loading of seagoing & inland carriers, bunker vessel supplying small-scale terminal and vessels



CONTACT

- Ion Stanciu, ion.stanciu@tts-group.ro

Proposed integrated project - LNG for Constanta



LNG Fuelling Stations & Vehicles in City

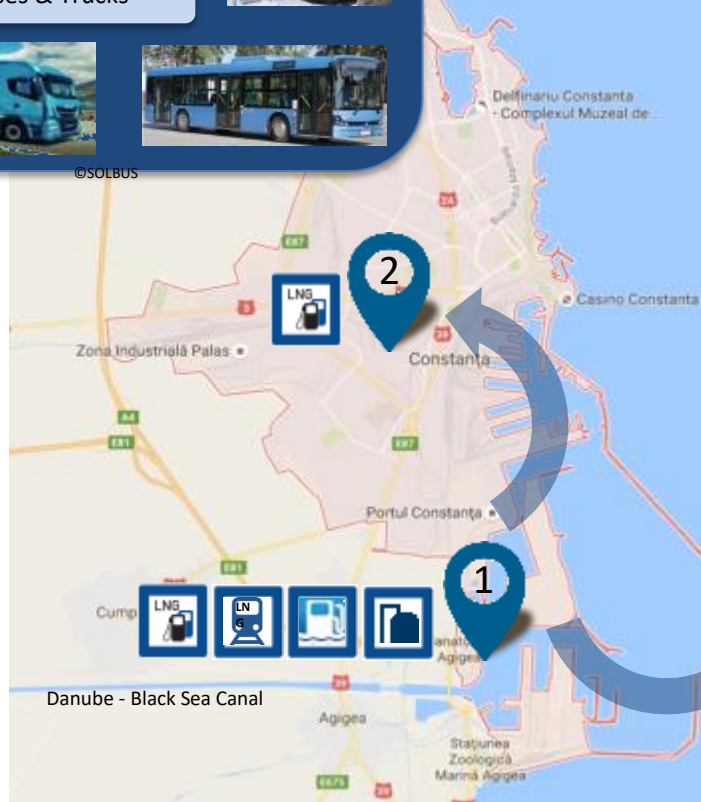
L-CNG-fuelling stations



LNG-fuelled Buses & Trucks



Project in preparation



LNG Terminal in Constanta Port

Storage tanks

Truck loading station

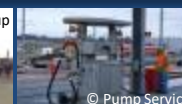
Truck & railroad fuelling station



©Shell



©SINARA Group



© Pump Service

Bunker Station Maritime & Inland Vessels



©Shell



©Navrom

LNG-fuelled ferries to Georgia



LNG TERMINAL IN GALATI

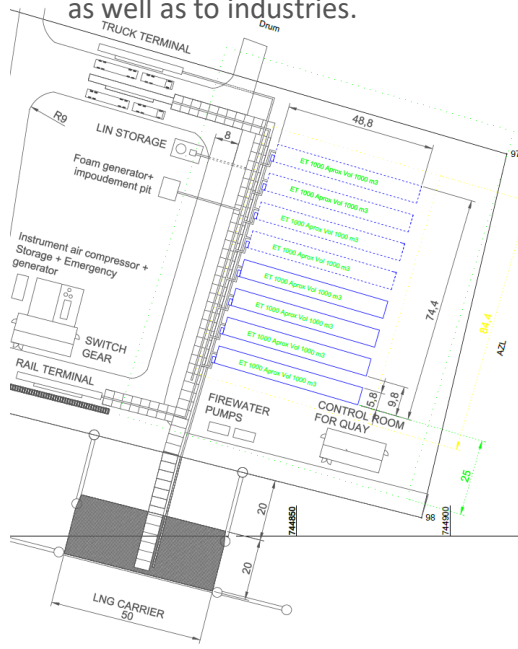
Pre-feasibility study and a preliminary technical concept for a LNG terminal in the maritime Danube area in Romania

Location

- Eastern part of the Port of Galati situated on the riverbank inside the Industrial Park Galati - area of 20,000 m². It has a convenient road access and is located in the vicinity of the Oil Terminal Galati (dangerous goods zone) and of other currently operating industrial areas (e.g. Damen Shipyard).

Functions

- A proposed LNG terminal with an initial storage capacity of 4,000 m³ (design capacity up to 8,000 m³) may offer a wide range of distribution: LNG bunkering for inland and maritime vessels, supplying LNG to road transport as well as to industries.



Technical solution

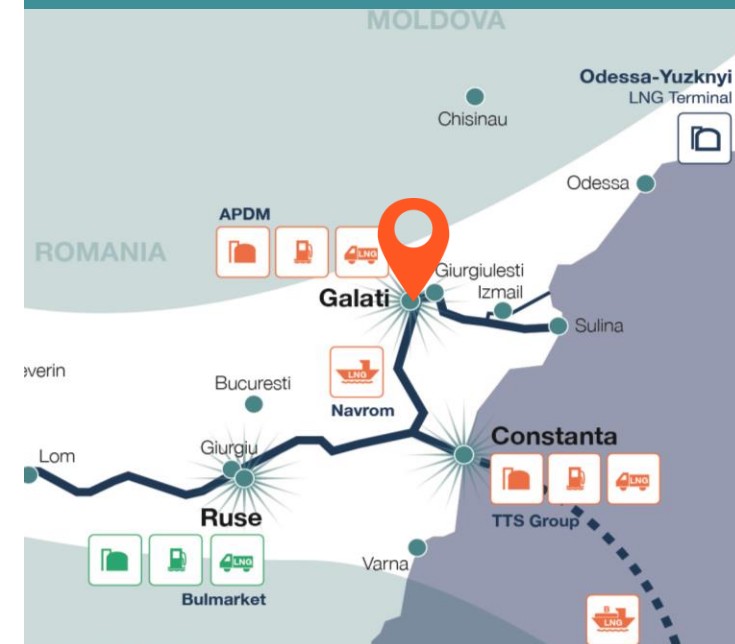
- Implementation of semi-pressurised tanks option in two phases is recommended, envisaging at first a LNG terminal with a capacity of 4,000 m³.

QUICK FACTS

Capacity: 4,000 m³ in semi-pressurised tanks with option to increase up to 8,000m³

Facilities: LNG storage, truck fuelling, vessel bunkering

Estimated investment: 17 MEUR



CONTACT

- Mrs Lumenita Meterna: hidro@apdmgalati.ro

Proposed integrated project - LNG for Galati



Project in preparation

L-CNG Fuelling Stations & Vehicles

L-CNG-fuelling stations

LNG & fuelled Buses & Trucks

IVECO



IVECO



SOLBUS



2



L- CNG Fuelling Stations

3

Municipal Biomethane Sources



Bio-methane Sources



Landfill



Wastewater treatment facility

LNG Terminal & Facility

Agro bio-methane production

Liquefaction

Small-scale LNG Terminal

Bunker Station Maritime & Inland Vessels



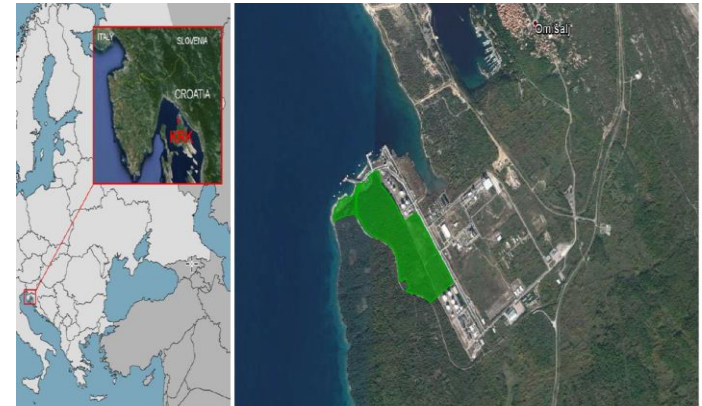
A map of Europe highlighting the 12 member states of the European Central Bank (ECB) and the European Central Bank (ECB) building in Frankfurt. The member states are: Germany, France, Italy, Spain, Greece, Portugal, Ireland, Finland, Sweden, Austria, Belgium, and Luxembourg. The ECB building is located in Frankfurt, Germany. The map also shows the borders of the member states and the location of the ECB building in Frankfurt.

- Stage I: FSRU based LNG terminal in Krk/Croatia
- Stage II: On-shore LNG terminal by retaining and upgrading the benefits of the FSRU solution

- Northern part of the Island of Krk, within the Municipality of Omišalj

- FSRU with a storage capacity of 150,000 - 180,000 m3
- Dedicated jetty and auxiliary systems
- Connecting high pressure pipeline

- Second 2016 CEF Energy Call for Proposals



CHALLENGES FOR LNG IN DANUBE REGION



- **LNG supply to Danube** region is complex and more costly
 - regional fossil sources / liquefaction / pipeline gas
 - exploitation of high bio-methane potential
- **Multi-client strategy & combination of transport & energy projects** is essential
 - maritime & road sector, off-road sector
 - peak shavers, off-pipeline industrial clients add significant high market potentials for industrial fuel
- Significant **price gap LNG – Diesel essential** for sustainable business case
 - still extremely high prices for LNG equipment / standardized solutions / economies of scale
 - transparent and competitive pricing of LNG required
- Despite “proven technologies” **technical challenges for inland vessels** significant
- **Retrofitting** makes sense for certain types of vessel (e.g. container vessels, tankers) but requires **public co-funding & facilitation of finance** due to structural shortcomings of sector
- **Lack of public support schemes & severe restrictions of EU programs to fund critical mass of LNG vehicles**
- Politicians/Authorities tend to **overestimate safety risks** of LNG & **underestimate contribution to air emissions reductions** – more information needed
- **Future taxation policy of LNG** as transport fuel in several countries not predictable on mid/long-term perspective

And by the way when talking about trucks...

		Alternative Technology				
		Full Electric	Parallel Hybrid	Plug-in Hybrid	CNG Bio CNG	LNG Bio LNG
Range	Urban	+++	+	+++	+++	+++
	Regional	Not feasible	No benefit	+	+++	+++
	Light Off-Road	Not feasible	No benefit	+	+++	+++
	Mid Distance	Not feasible	No benefit	No benefit	+++ Chassis only	+++
	(International) Long Distance	Not feasible	No benefit	No benefit	Not feasible	+++

+++ Benefit for environment

... LNG is ONE alternative but **for HDV** it is the **ONLY ONE** which is economically feasible, now and for the next decade

[LNG HD Truck € 130.000 (range 1.500 KM / Full Electric € 325.000 (range 200 KM (Status 2017))]

Further information & Contact

Manfred Seitz

General Manager

Pro Danube Management GmbH

E seitz@prodanube.eu

M +436764067878



The image shows a promotional banner for Pro Danube International. At the top, the logo consists of the word 'pro' in a white lowercase font inside a dark teal square, followed by 'DANUBE' in a large, bold, white uppercase font, and 'INTERNATIONAL' in a smaller, white uppercase font below it. Below the logo is a horizontal strip of three images: a construction site with yellow cranes, a large ship at a dock, and a map of the Danube river basin. The bottom half of the banner is a solid dark teal color with the text 'THE VOICE FOR BETTER INFRASTRUCTURE AND INNOVATION IN DANUBE TRANSPORT' in white, bold, uppercase letters. At the very bottom, the website 'www.prodanube.eu' is written in a yellow, lowercase font.

pro DANUBE
INTERNATIONAL

**THE VOICE FOR BETTER
INFRASTRUCTURE AND
INNOVATION IN DANUBE
TRANSPORT**

www.prodanube.eu

INDanube - Centre for Innovation Transfer in the Danube Region

Welcome to INDanube, the facilitator and promoter of innovation in inland waterways transport on the Danube and its navigable tributaries.

[More information](#)