The current oil infrastructure in the Energy Community

8th Oil Forum
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Albania

Romano Port - built 6.5 km north of the city of Durres:
• Oil cargo ships with capacity of 20,000 t
• Discharge capacity of the equipment is: 9,000 t gasoline in 24 hrs
• Water depth – 11.7m

Petrolifera Terminal - built 3.5 km north of the city of Vlore:
• Storage capacities: 72,000 m³ for crude and Products
• Marine infrastructure: 600 m long jetty;
• Water depth about 8.5 m

Available Storage Capacities:
• Around 800 thousand m³ (including 300 thousand m³ at the two main ports)
• Required storage capacity at 90 days of net imports by end-2022:
  65 thousand m³ of crude storage
  225 thousand m³ for refined products
Bosnia and Herzegovina

Oil infrastructure is currently not in good condition

Storage capacities are theoretically available but most of them are not fit for purpose

On the Federation, there are 8 terminals - 175,000 m³

Not in good conditions - first terminal will be fully reconstructed in 2016/2017

The Federation controls the oil terminal (81,000 m³) in the Port of Ploče

In the Brod oil refinery (285,000 m³), but the refinery is not reachable by railway or product pipeline and therefore can only store its own finished products
Kosovo does not possess a pipeline for crude oil nor for oil products.

Oil products are imported 75% by road transportation and 25% by railroad.

Currently there are 15 storage facilities that are licensed for fuel wholesale with approximately 80,000 m$^3$ and for retail approximately 50,000 m$^3$.

There are additional 50,000 m$^3$ of storage capacities that are not being used and are not licensed for fuel storage.
Up to 2013, the main avenue of oil supply was the crude oil pipeline, which connected Thessaloniki refinery in Greece with the OKTA refinery.

At present, oil imports are solely effected through the use of tank trucks, which transport oil products mainly from Greece and Bulgaria.

Usage of P. Product is divided approximately between the transport (60%), industrial (30%), and residential and commercial (10%) sectors.

Most of the oil storage capability is located at the OKTA refinery - 470 thousand m$^3$. Makpetrol can store a further 75 thousand m$^3$. This would correspond to a total storage capacity of around 485 thousand tonnes.
Detailed data on oil or petroleum products storage capacities are not available. However, it is estimated at some 150 thousand tones, including State and industry facilities.

99% of petroleum products are imported. Consumption of the petroleum products: transport (36%); industry (30%) residential sector (18% and agriculture (16%)

**GIFP – Oil Product Terminal:**
- One jetty on the river Danube with minimum water depth of 7 m
- 8 tanks – total capacity of 63,600 m³
- Accessible by both river barges and maritime vessels
- P. Products Imported last year - 280 thousand tonnes

40 km crude oil pipeline in Basin Petroleum Văleni
Mini Refinery - SA „Arnaut-Petrol” – 50 thousand TPA
There are no pipelines or refineries in Montenegro

Montenegro’s stockholding obligation: 72,000 tons of crude oil equivalent.

Total existing storage capacity in Montenegro amounts to around 205,000 m³, with these capacities concentrated within 6 terminals:

Bar – 124,800 m³; Bijelo Polje – 26,500 m³; Lipci – 22,400 m³; Cerovo – 21,000 m³; Tivat – 8,000 m³; Podgorica – 2,000 m³

Currently operational amounts to around 87,000 m³

Terminals in Bar: for gasoline, diesel/gasoil and jet-fuel and Tivat: only for jet-fuel
Emergency Oil Stocks Obligations:

495,000 tcoe using 61 days of average domestic consumption

Storage capacity requirement amounts to around 620,000 m$^3$ (594,000 m$^3$ for petroleum products and 26,000 m$^3$ for crude oil)

<table>
<thead>
<tr>
<th>Commodity Reserves</th>
<th>Transnafta</th>
<th>Total capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unleaded motor gasoline</td>
<td>30 000 m$^3$</td>
<td>30 000 m$^3$</td>
</tr>
<tr>
<td>Euro diesel</td>
<td>80 000 m$^3$</td>
<td>25 000 m$^3$</td>
</tr>
<tr>
<td>Jet fuel</td>
<td>10 000 m$^3$</td>
<td>10 000 m$^3$</td>
</tr>
<tr>
<td>Fuel oil</td>
<td>10 000 m$^3$</td>
<td>10 000 m$^3$</td>
</tr>
<tr>
<td><strong>Total oil products</strong></td>
<td><strong>20 000 m$^3$</strong></td>
<td><strong>155 000 m$^3$</strong></td>
</tr>
<tr>
<td>Crude oil</td>
<td>20 000 m$^3$</td>
<td>20 000 m$^3$</td>
</tr>
</tbody>
</table>

120,000 m$^3$ might be offered by the private companies for products 90,000 m$^3$ for crude oil
Petroleum Products Pipeline System – Serbia

Total length of approx. 402 km and capacity:
4,3 Mt/y (2.6 Mt/y – diesel and 1.7 Mt/y – Gasoline)

Envisaged in three phases:

I. Construction of the products pipeline connecting Oil Refinery in Pancevo with the existing storage tanks in Smederevo and Novi Sad

II. Construction of new storage tanks in Pancevo and Smederevo and providing conditions for further transport

III. Preparation of the Performing Design and Design for Building permit for Pancevo-Smederevo sections started in 2015. After that, the building permit should be obtained and the construction of the facility should begin

This pipeline that is planned for commissioning in 2020 will ensure the safest and the most cost-effective transport of petroleum products to consumer centers, reduced losses and reduced leakage possibility
Ukraine

### Required

<table>
<thead>
<tr>
<th>Petroleum products</th>
<th>Quantity (metric tons)</th>
<th>Density</th>
<th>Required nominal capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unleaded motor gasoline</td>
<td>460,000</td>
<td>755 kg/m³</td>
<td>670,000 m³</td>
</tr>
<tr>
<td>Diesel/gasoil</td>
<td>930,000</td>
<td>845 kg/m³</td>
<td>1,210,000 m³</td>
</tr>
<tr>
<td><strong>Total products:</strong></td>
<td><strong>1,390,000</strong></td>
<td></td>
<td><strong>1,880,000 m³</strong></td>
</tr>
<tr>
<td>Crude oil</td>
<td>580,000</td>
<td>850 kg/m³</td>
<td>750,000 m³</td>
</tr>
<tr>
<td><strong>Total emergency oil stocks:</strong></td>
<td><strong>1,970,000</strong></td>
<td></td>
<td><strong>2,630,000 m³</strong></td>
</tr>
</tbody>
</table>

### Available

<table>
<thead>
<tr>
<th>Petroleum products</th>
<th>Immediately available for use</th>
<th>Needing refurbishment</th>
<th>Total capacity (metric tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unleaded motor gasoline</td>
<td>30,000</td>
<td>170,000</td>
<td>200,000</td>
</tr>
<tr>
<td>Diesel/gasoil</td>
<td>140,000</td>
<td>510,000</td>
<td>650,000</td>
</tr>
<tr>
<td>Jet kerosene</td>
<td>7,000</td>
<td>83,000</td>
<td>90,000</td>
</tr>
<tr>
<td><strong>Total petroleum products</strong></td>
<td><strong>177,000</strong></td>
<td><strong>763,000</strong></td>
<td><strong>940,000</strong></td>
</tr>
<tr>
<td>Crude oil</td>
<td>120,000</td>
<td></td>
<td>120,000</td>
</tr>
</tbody>
</table>
Refineries in Ukraine

Kremenchuk Refinery

- Drehobych Refinery (Halychyna)
  - Total capacity: 8.7 million t per year
  - Refined in 2014
  - Year production halted: 2012
  - Maximum refinery quality: gasoline Euro-1; diesel fuel Euro-1, 63%

- Kremenchuk Refinery (Ukrtransnafta)
  - Total capacity: 18.6 million t per year
  - Refined in 2014
  - Year production halted: 2012
  - Maximum refinery quality: gasoline Euro-4; diesel fuel Euro-3, 74%

- Shebelynsky Refinery
  - Total capacity: 1.0 million t per year
  - Refined in 2014
  - Year production halted: 2014
  - Maximum refinery quality: gasoline Euro-3; diesel fuel Euro-3, 63%

- Nadviara Refinery (Naftohimik Prykarpatty)
  - Total capacity: 2.6 million t per year
  - Refined in 2014
  - Year production halted: 2014
  - Maximum refinery quality: gasoline Euro-1; diesel fuel Euro-1, 60%

- Odesa Refinery
  - Total capacity: 2.8 million t per year
  - Refined in 2014
  - Year production halted: 2014
  - Maximum refinery quality: gasoline Euro-3; diesel fuel Euro-4, 74%

- Kherson Refinery
  - Total capacity: 7.0 million t per year
  - Refined in 2014
  - Year production halted: 2005
  - Maximum refinery quality: gasoline Euro-4; diesel fuel Euro-5, 71%

- Lysychansk Refinery (LINIK)
  - Total capacity: 7.0 million t per year
  - Refined in 2014
  - Year production halted: 2012
  - Maximum refinery quality: gasoline Euro-3; diesel fuel Euro-5, 71%

Source: Ministry of Energy and Coal Industry of Ukraine
Ukraine Oil Pipelines Connections

Ukraine’s main oil transportation system consists of:

- 4.767 km of pipelines with a diameter of up to 1.22 m
- 51 pump stations
- 11 tank farms with a cumulative rated capacity of about 1 mill m³

The throughput capacity:
Inlet - 114 Mt/year;
Outlet – 56.3 Mt/year

In addition, there are about:
4.625 km of smaller oil product pipelines - mostly privately owned

The volume of oil transported through the Ukrainian system decreased from almost 40 mt to nearly 17 mt, including the oil transit, which decreased from 29 to 15 mt over this period 2009-2015
### EXISTING OIL PIPELINES (1)

<table>
<thead>
<tr>
<th>Project name</th>
<th>Route and countries crossed</th>
<th>Length (km)</th>
<th>Capacity (Mt/y)</th>
<th>Construction cost (EUR M)</th>
<th>Completed year</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADRIATIC PIPELINE (ADRIA)</td>
<td>Croatia, Slovenia, B&amp;H, Serbia, Hungary and possibility of oil transport to Slovakia</td>
<td>759</td>
<td>34/20</td>
<td>Estimated 1,200</td>
<td>Designed and built in the period from 1974 to 1979</td>
</tr>
<tr>
<td>Thessaloniki Skopje</td>
<td>Greece – FYR Macedonia</td>
<td>200</td>
<td>2.5</td>
<td>85</td>
<td>2001</td>
</tr>
</tbody>
</table>
Adamowo-Brody pipeline: pipeline connecting the JSC Uktransnafta's Handling Site in Brody (Ukraine) and Adamowo Tank Farm (Poland)

JANAF-Adria pipelines: reconstruction, upgrading, maintenance and capacity increase of the existing JANAF and Adria pipelines linking the Croatian Omisalj seaport to the Southern Druzhba (Croatia, Hungary, Slovak Republic); (Works on the Hungarian-Slovak section have already been completed.)
PECI OIL PROJECTS

The selection of priority infrastructure projects is done in line with the EU Regulation 347/2013, as adapted for the Energy Community:

1. 1\textsuperscript{st} call for project proposals ended on 25\textsuperscript{th} February 2016
2. 2\textsuperscript{nd} call for project proposals ended on 2\textsuperscript{nd} June 2016
3. Categories: energy infrastructure concerning electricity, gas and oil, as well as 1 thematic area covering smart grids

### Preliminary list of PECI Oil Projects

<table>
<thead>
<tr>
<th>Project ID</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil_01</td>
<td>Oil_01 Ukraine (Brody) - Poland (Adamowo) oil pipeline</td>
</tr>
</tbody>
</table>

### PECI POL-AZE-LIT

- Construction of the Brody-Adamowo oil pipeline
  - Existing storage: 815,000 m³
  - Planned new: 460,000 m³
  - 1\textsuperscript{st} stage: 153,300 m³
  - Pipeline capacity: 30 MTA
  - 2019

MPR Sarmatia Sp. z o.o.
### CRUDE OIL PIPELINE

**Latest development**

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>Route and countries crossed</th>
<th>Length (km)</th>
<th>Capacity (Mt/y)</th>
<th>Construction cost (estimated: EUR M)</th>
<th>Earliest completion date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pan-European Oil Pipeline (PEOP)</td>
<td>Romania (Constanta) – Serbia – Croatia – Slovenia – Italy (Trieste)</td>
<td>1320 (total, some use of existing lines)</td>
<td>40</td>
<td>1,800-2,600</td>
<td>Dismantled</td>
</tr>
<tr>
<td>AMBO</td>
<td>Bulgaria (Bourgas) – FYR Macedonia – Albania (Vlore)</td>
<td>870</td>
<td>30</td>
<td>1,750 – 2,000</td>
<td>uncertain</td>
</tr>
<tr>
<td>Bourgas - Alexandroupolis Pipeline</td>
<td>Bulgaria (Bourgas) – Greece (Alexandropoulos)</td>
<td>280</td>
<td>35 - 50</td>
<td>1,000</td>
<td>Suspended</td>
</tr>
</tbody>
</table>

AMBO LLC is a U.S. company supported to date by private investors and continuing its contacts with shippers and investors despite of keeping things low-key at this time.
Thank you for your attention!

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