Transnafta

www.transnafta.rs

# PETROLEUM PRODUCT PIPELINE SYSTEM THROUGH SERBIA

## Green supply chains

OIL Forum, October 2024.

## ***Why a pipeline?***

**Pipeline transport is more economic, efficient and ecologically the most acceptable mode of transport**

**All developed economies mostly depend on energy supply, in terms of guaranteed delivery and price stability**

**Potential  vulnerability of energy supply by conventional modes of transport (barges, railway and tank trucks)**

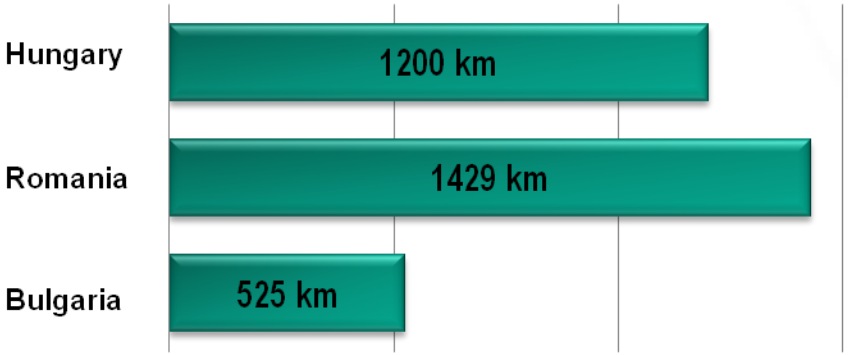
**Reduced environmental pollution (soil, water and air)**

**Increased security of supply**

**Cooperation of the countries in region**

**De monopolization, regulated transport prices**

# OIL PRODUCTS PIPELINE SYSTEMS IN SURROUNDING COUNTRIES


## Brief History

Transnafta
www.transnafta.rs

Long distance and large diameter oil product pipelines were pioneered in the USA in 1940s due to the energy demands of the Second World War. In 1941 oil industry executives began to plan the building of two pipelines, 24” in diameter called the „Big Inch” to transport crude oil and another 20” in diameter, called „Little Big Inch” to transport refined products. Pipeline was to travel 2.300 km from East Texas to the northeast states. It was the longest pipelines ever built up to that date.

In Europe 1944 was launch „Pluto” project. This project was to construct undersea product pipeline under the English Channel between England and France, to provide vital fuel form Britain to Allied forces in France. Pipeline had 3 inches diameter.

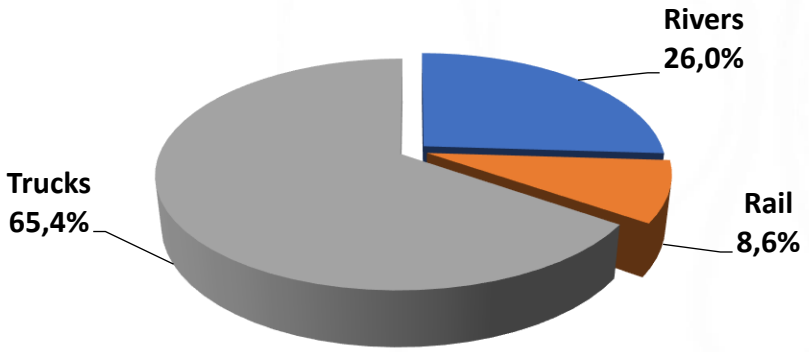
# SERBIA MARKET OVERVIEW

Transnafta
www.transnafta.rs

## MODELS OF TRANSPORTATION OF MOTOR FUELS IN SERBIA

### Conventional modes of transport: roads, rails, rivers

***Distribution by various modes of transport in the total transport of motor fuels in Serbia***




- In 2022 Serbia consumed around 2.2 million tons of motor fuels (gasoline and diesel)
- The increase in consumption of motor fuels in Serbia is 2-3% per annum

# Transport volume and growth rate estimates (t)

Transnafta
www.transnafta.rs

| Country | Channel | Product | Product 2 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Serbia | Retail | Euro diesel | Euro diesel | 498,066 | 509,814 | 523,256 | 531,778 | 542,112 | 545,454 | 547,844 | 548,298 | 544,878 | 544,878 | 544,878 | 544,878 | 544,878 | 544,878 | 544,878 | 544,878 | 544,878 | 544,878 | 544,878 |
| Serbia | Retail | Euro diesel G drive | Euro diesel | 166,022 | 169,938 | 174,418 | 177,260 | 180,704 | 181,818 | 182,616 | 182,766 | 181,626 | 181,626 | 181,626 | 181,626 | 181,626 | 181,626 | 181,626 | 181,626 | 181,626 | 181,626 | 181,626 |
| Serbia | Wholesale | Euro diesel | Euro diesel | 1,011,276 | 1,022,904 | 1,039,430 | 1,027,264 | 1,023,394 | 1,025,672 | 1,025,826 | 1,028,242 | 1,033,418 | 1,033,418 | 1,033,418 | 1,033,418 | 1,033,418 | 1,033,418 | 1,033,418 | 1,033,418 | 1,033,418 | 1,033,418 | 1,033,418 |
| **Total diesel Serbia** | | | | **1,675,364** | **1,702,656** | **1,737,104** | **1,736,302** | **1,746,210** | **1,752,944** | **1,756,286** | **1,759,306** | **1,759,922** | **1,759,922** | **1,759,922** | **1,759,922** | **1,759,922** | **1,759,922** | **1,759,922** | **1,759,922** | **1,759,922** | **1,759,922** | **1,759,922** |

| Country | Channel | Product | Product 2 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Serbia | Retail | Euro Premium BMB-95 | Gasoline | 155,912 | 158,582 | 160,560 | 164,088 | 167,526 | 167,762 | 168,578 | 168,846 | 167,358 | 167,358 | 167,358 | 167,358 | 167,358 | 167,358 | 167,358 | 167,358 | 167,358 | 167,358 | 167,358 |
| Serbia | Wholesale | Euro Premium BMB-95 | Gasoline | 185,726 | 187,198 | 189,408 | 184,274 | 182,334 | 183,426 | 182,840 | 182,992 | 182,930 | 182,930 | 182,930 | 182,930 | 182,930 | 182,930 | 182,930 | 182,930 | 182,930 | 182,930 | 182,930 |
| **Total gasoline Serbia** | | | | **341,638** | **345,780** | **349,968** | **348,362** | **349,860** | **351,188** | **351,418** | **351,838** | **350,288** | **350,288** | **350,288** | **350,288** | **350,288** | **350,288** | **350,288** | **350,288** | **350,288** | **350,288** | **350,288** |

| Country | Channel | Product | Product 2 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bulgaria | Retail | Euro diesel | Euro diesel | 37,162 | 38,005 | 37,723 | 37,300 | 36,896 | 36,445 | 35,992 | 35,386 | 34,774 | 34,774 | 34,774 | 34,774 | 34,774 | 34,774 | 34,774 | 34,774 | 34,774 | 34,774 | 34,774 |
| Bulgaria | Retail | Euro diesel G drive | Euro diesel | 13,311 | 13,702 | 13,971 | 14,196 | 14,433 | 14,656 | 14,884 | 15,051 | 15,215 | 15,215 | 15,215 | 15,215 | 15,215 | 15,215 | 15,215 | 15,215 | 15,215 | 15,215 | 15,215 |
| Bulgaria | Wholesale | Euro diesel | Euro diesel | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 | 18,000 |
| **Total diesel Bulgaria** | | | | **68,474** | **69,707** | **69,694** | **69,496** | **69,329** | **69,101** | **68,876** | **68,437** | **67,988** | **67,988** | **67,988** | **67,988** | **67,988** | **67,988** | **67,988** | **67,988** | **67,988** | **67,988** | **67,988** |

| Country | Channel | Product | Product 2 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bulgaria | Retail | Euro Premium BMB-95 | Gasoline | 12,931 | 13,389 | 13,757 | 13,928 | 14,100 | 14,278 | 14,466 | 14,644 | 14,688 | 14,688 | 14,688 | 14,688 | 14,688 | 14,688 | 14,688 | 14,688 | 14,688 | 14,688 | 14,688 |
| Bulgaria | Wholesale | Euro Premium BMB-95 | Gasoline | 15,000 | 15,000 | 15,000 | 25,562 | 25,784 | 26,342 | 26,842 | 27,340 | 27,440 | 27,440 | 27,440 | 27,440 | 27,440 | 27,440 | 27,440 | 27,440 | 27,440 | 27,440 | 27,440 |
| **Total gasoline Bulgaria** | | | | **27,931** | **28,389** | **28,757** | **39,490** | **39,884** | **40,620** | **41,308** | **41,984** | **42,128** | **42,128** | **42,128** | **42,128** | **42,128** | **42,128** | **42,128** | **42,128** | **42,128** | **42,128** | **42,128** |

| Gasoline | | | | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **KOSOVO*** | | | | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** | **30,000** |
| **N. Makedonija** | | | | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** | **8,000** |
| **Albania** | | | | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** | **2,500** |

* Source NIS a.d.

# total shares of shipping to terminals (%)

| Shipping to terminals diesel: | | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Smederevo** | **18.69%** | 333,685 | 319,192 | 325,499 | 324,515 | 326,367 | 327,625 | 328,250 | 328,814 | 328,929 | 328,929 | 328,929 | 328,929 | 328,929 | 328,929 | 328,929 | 328,929 | 328,929 | 328,929 | 328,929 |
| **Niš** | **13.62%** | 101,164 | 232,900 | 237,450 | 236,454 | 237,804 | 238,721 | 239,176 | 239,587 | 239,671 | 239,671 | 239,671 | 239,671 | 239,671 | 239,671 | 239,671 | 239,671 | 239,671 | 239,671 | 239,671 |
| **Novi Sad** | **21.41%** | 352,851 | 366,095 | 373,350 | 371,742 | 373,864 | 375,305 | 376,021 | 376,667 | 376,799 | 376,799 | 376,799 | 376,799 | 376,799 | 376,799 | 376,799 | 376,799 | 376,799 | 376,799 | 376,799 |

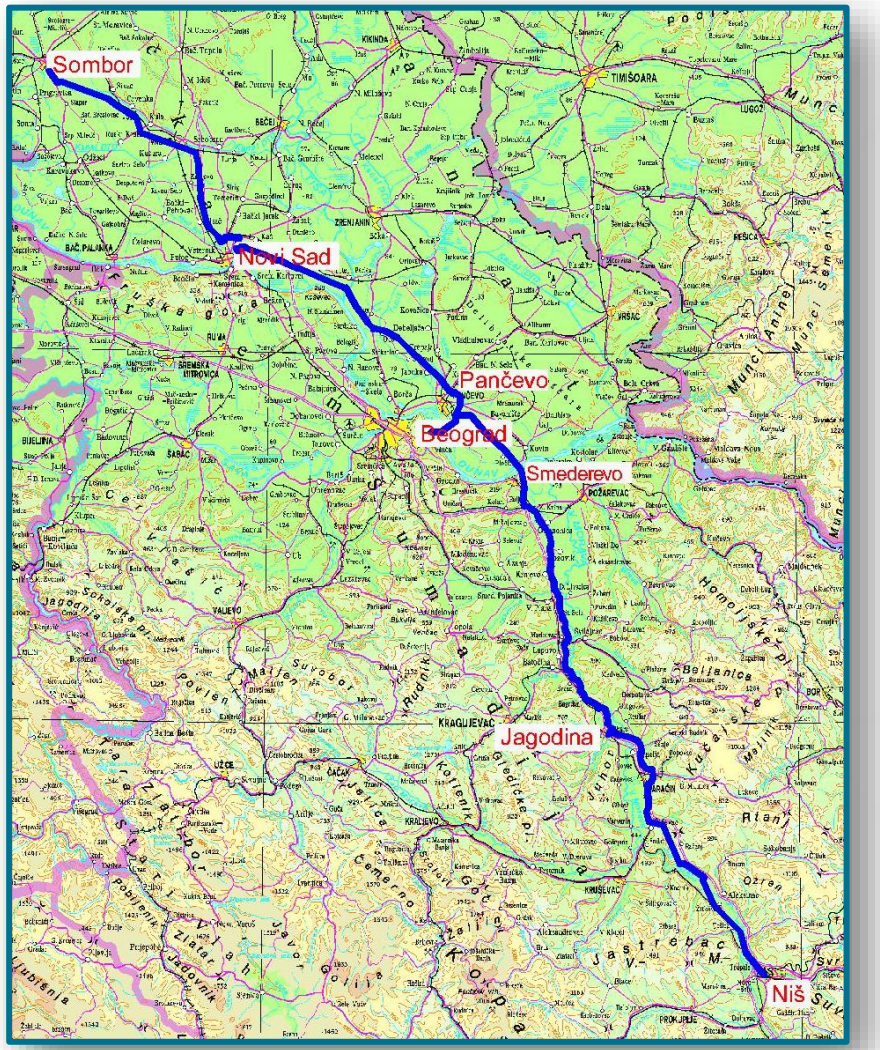
| **Shipping to terminals gasoline:** | | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Smederevo** | **11.36%** | 58,698 | 42,000 | 43,500 | 39,557 | 39,727 | 39,878 | 39,904 | 39,951 | 39,775 | 39,775 | 39,775 | 39,775 | 39,775 | 39,775 | 39,775 | 39,775 | 39,775 | 39,775 | 39,775 |
| **Niš** | **16.32%** | 37,561 | 56,963 | 59,202 | 56,853 | 57,097 | 57,314 | 57,351 | 57,420 | 57,167 | 57,167 | 57,167 | 57,167 | 57,167 | 57,167 | 57,167 | 57,167 | 57,167 | 57,167 | 57,167 |
| **Novi Sad** | **19.60%** | 72,201 | 72,700 | 75,100 | 68,292 | 68,586 | 68,846 | 68,891 | 68,974 | 68,670 | 68,670 | 68,670 | 68,670 | 68,670 | 68,670 | 68,670 | 68,670 | 68,670 | 68,670 | 68,670 |

* Source NIS a.d.

**Market growth rate**

| Time horizon | | |
|---|---|---|
| **2026-2030$^{+}$** | **2031-2040$^{+}$** | **2041-2050$^{+}$** |
| **2,2%** | **1,5%** | **1,0%** |

# PETROLEUM PRODUCTS PIPELINE SYSTEM THROUGH SERBIA




**Single pipeline transport for gasoline and diesel**

**Transport routes:**

- Pančevo - Novi Sad - Sombor
- Pančevo - Smederevo - Jagodina – Niš
- Pančevo - Beograd

**Total pipeline lenght: 402km**

**Total pipeline capacity: 4,3 Mt/y**

I FACILITY
sections Pančevo – Novi Sad and
Pančevo – Smederevo

II FACILITY
sections Smederevo – Jagodina and
Jagodina – Niš

III FACILITY ( optional )
sections Pančevo – Beograd and
Novi Sad – Sombor

# PIPELINE SYSTEM THROUGH SERBIA
# I FACILITY : SECTIONS PANČEVO – NOVI SAD AND PANČEVO - SMEDEREVO

- I phase - 32,8 million EUR:
  - section Pančevo – Smederevo
  - section Pančevo – Novi Sad
- II phase – 18,3 million EUR:
  - Tanks 4x5.000 $m^3$ for diesel and 4x5.000$m^3$ for gasoline at the Pančevo Terminal
  - Tanks 2x13.000 $m^3$ for diesel and 2x5.000 $m^3$ for gasoline at the Smederevo Terminal
- III phase – 6,2 million EUR:
  - New pumps for further shipment

# PIPELINE SYSTEM – FIRST FACILITY:

## Pipeline sections Pančevo-Smederevo and Pančevo-Novi Sad

Transnafta
www.transnafta.rs

### Pančevo – Smederevo Section

**Length:** approx 26.9 km
**Pipeline diameter:** 12”
**Route:** parallel to gas pipeline RG-01-10

Danube river crossing

- **Pančevo Terminal**
  - pumping station
  - metering station
  - tanks

- **Smederevo Terminal**
  - pumping station
  - metering station
  - tanks


### Pančevo – Novi Sad Section

**Length**: 91.4 km
**Pipeline diameter**: 10”
**Route**: parallel to existing crude oil pipeline

3 river crossings (Tisa and Tamiš)

- **Pančevo Terminal**
  - pumping station
  - metering station
  - tanks

- **Novi Sad Terminal**
  - existing tanks (Terminal NS)
  - pumping station
  - metering station

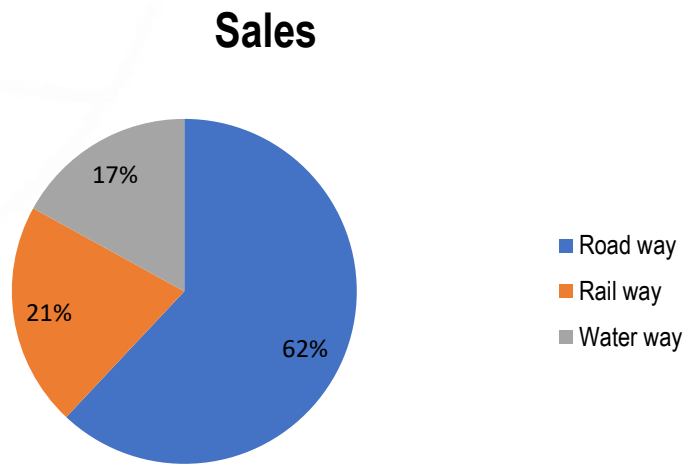
# Market supply, quantity and tariff structure assessment

| DISTRICTS | 2027. annual transported quantity (t) | Tariff for section (€/t) |
|---|---|---|
| Mačva, Kolubara, Podunavlje, Braničevo, Pomoravlje, Šumadija, Morava, Raška, Zlatibor, Rasina districts **from terminal Smederevo** | **660,995** | **PA-SD, 2,00*** |
| City Novi Sad, South Bačka, Srem, North Bačka, West Bačka, North Banat, Middle Banat districts **from terminal Novi Sad** | **442,710** | **PA-NS, 4,50*** |
| **TOTAL:** | **1,103,705** | |

- **Tariff are expressed without VAT**
- **Source: Feasibility Study**

annual quantity to terminal Smederevo can be increased adding state obligatory reserve storigin on that terminal and supplying 50% of Belgrade needs

Existing structure for fuel sale from Refinery Pancevo by transport types



# BASIC DESIGN – COST ESTIMATE

## Pipeline sections Pančevo-Smederevo, Pančevo-Novi Sad

Transnafta
www.transnafta.rs

- Feasibility Study with Basic Design for pipeline sections Pančevo-Smederevo and Pančevo-Novi Sad
- Three-phased construction:

**PHASE I:** **construction of oil products pipeline connecting oil refinery in Pančevo with existing tanks in Smederevo and Novi Sad**
**PHASE II:** construction of new tanks in Pančevo and Smederevo
**PHASE III:** new pumps for transport to Jagodina and Sombor

**Cost Estimate for the first phase of the First Facility Construction**

| | Material (€) | Construction (€) | Investment cost including Engineering (3%) – total (without VAT) | |
|---|---|---|---|---|
| **1. PIPE ROUTING** | **7.653.794** | **10.253.059** | | |
| Pipeline Pa-Sd DN 300 | **2.226.806** | **2.615.403** | | |
| Pipeline Pa-NS DN 250 | **5.426.988** | **7.637.656** | | |
| **2. TERMINALS** | **9.079.381** | **2.477.791** | | |
| Terminal Pančevo | **6.967.604** | **1.815.881** | Material (€) | Construction (€) |
| Terminal Smederevo | **1.441.955** | **484.201** | **16.733.175** | **16.127.850** |
| Terminal Novi Sad | **669.822** | **177.709** | TOTAL | |
| **3. OTHER COSTS** | **0** | **2.440.000** | **32.861.025** | |

# PIPELINE SYSTEM

## Sections Smederevo-Jagodina and Jagodina-Niš

Transnafta
www.transnafta.rs

**Length:** approx 92.3 km
**Pipeline diameter:** 12”
**Route:** parallel to gas pipelines RG-08-01 and MG-08

Velika Morava river crossing

Bagrdan mountain crossing

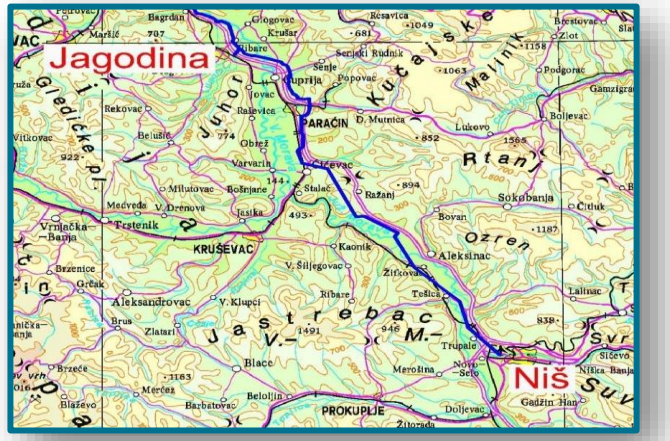
- **Jagodina Terminal**
  - pumping station
  - metering station
  - tanks


**Length:** approx 102.1 km
**Pipeline diameter:** 10”
**Route:** parallel to gas pipelines MG-08, MG-09 and RG-09-01

2 Južna Morava river crossings

“Mečka” mountain crossing

- **Niš Terminal**
  - metering station



# PIPELINE SYSTEM

## Sections Novi Sad-Sombor and Pančevo-Beograd - optional

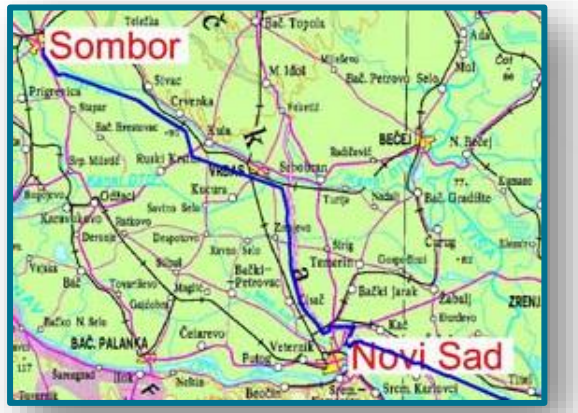
Transnafta
www.transnafta.rs

### Novi Sad-Sombor Section

**Length:** approx 92.2 km
**Pipeline diameter:** 8”
**Route:** parallel to gas pipeline RG-04-15 and E-75 highway

4 irrigation canal crossings

- **Novi Sad Terminal**
  - pumping station
  - metering station
- **Sombor Terminal**
  - metering station
  - tanks




### Pančevo-Beograd Section

**Length:** approx 15 km
**Pipeline diameter:** 8”

Danube river crossing

- **Pančevo Terminal**
  - pumping station
  - metering station
  - tanks
- **Beograd Terminal**
  - metering station
  - tanks

# PETROLEUM PRODUCTS PIPELINE SYSTEM THROUGH SERBIA

## Activities on the project

Transnafta
www.transnafta.rs

- **Done**
- Prefeasibility Study with Conceptual Design for all pipeline sections
- Signing up MoU
- Completion and adoption of the Spatial Plan of Special Purpose for Petroleum Products Pipeline in Serbia
- Feasibility Study with Basic Design and EIA for pipeline sections Pančevo-Novi Sad and Pančevo-Smederevo
- Cadastral Study (NS-PA-SD)
- Proclamation on Public interest for the partial expropriation
- Detailed regulation plan for the central complex of Pančevo terminal
- Location permit for first facility
- Submited a request for construction permit for first facility
- **To be done**
- Detail Design for Pančevo-Smederevo and Pančevo-Novi Sad section
- Procurement & Construction (construction of Pančevo-Smederevo section is planned in 2026.
- Commissioning & Start up

# Is this project feasible?

Transnafta
www.transnafta.rs

- Relatively high CAPEX oposite relatively small annual quantity for transport
- First several years tariff for transportation probably will be higher than present for barges

Benefits for NIS and potential other users:

- Increase security of supply in order to respond to growing demands
- No problems with bad weather (fog, high wind, low river water levels etc.)
- No necessary needs for maintenance and repair services for trucks
- Other company solve logistic problems
- No necessary losses during loading and unloading
- No green tax should be paid
- De monopolization, regulated transport prices

Benefits for State and community:

- Increase security of supply in order to respond to growing demands
- Significantly prevent possible accidents on roads and rivers
- Decreasing pollutions (water, air, soil)
- Energy efficiency
- Decreasing traffic jam
- Possible cooperation with surrounding countries and open market
- New jobs opportunity
- Regional development

# Concluding remarks

- This project provides more efficient way to security of supply and environmental impact in order to downstream petroleum industry business

- Realization of the Project needs support of the State (increasing existing ECO taxes and new regulations on inland water transport - loading and unloading petroleum prodacts on open river ), in order with EU standards and directives

**BUT ...**

- As we have shown there is some beneficial for „both sides“ (potential users and State)
- Next phase of the Project could be constructing an interconnection with neighbor countries to provide higher security and green supply chain of derivates on Southeast Europe

Transnafta
www.transnafta.rs


# thank you for your attention