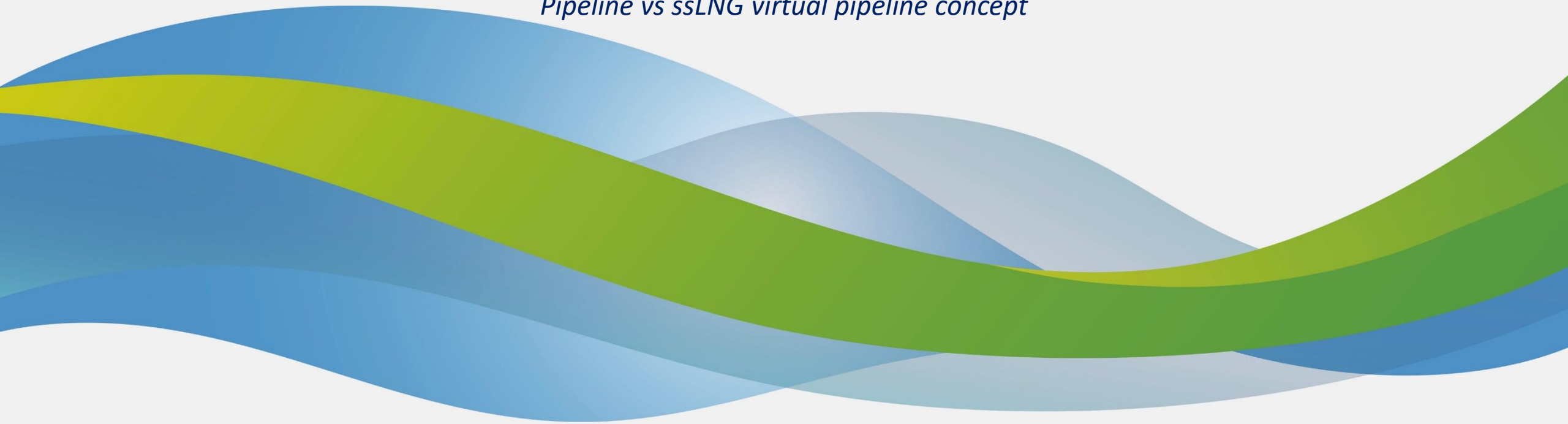




Alternative ways to supply natural gas to Ioannina

Pipeline vs ssLNG virtual pipeline concept



March 2022

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Alternative scenarios for the supply of Ioannina

Conclusions

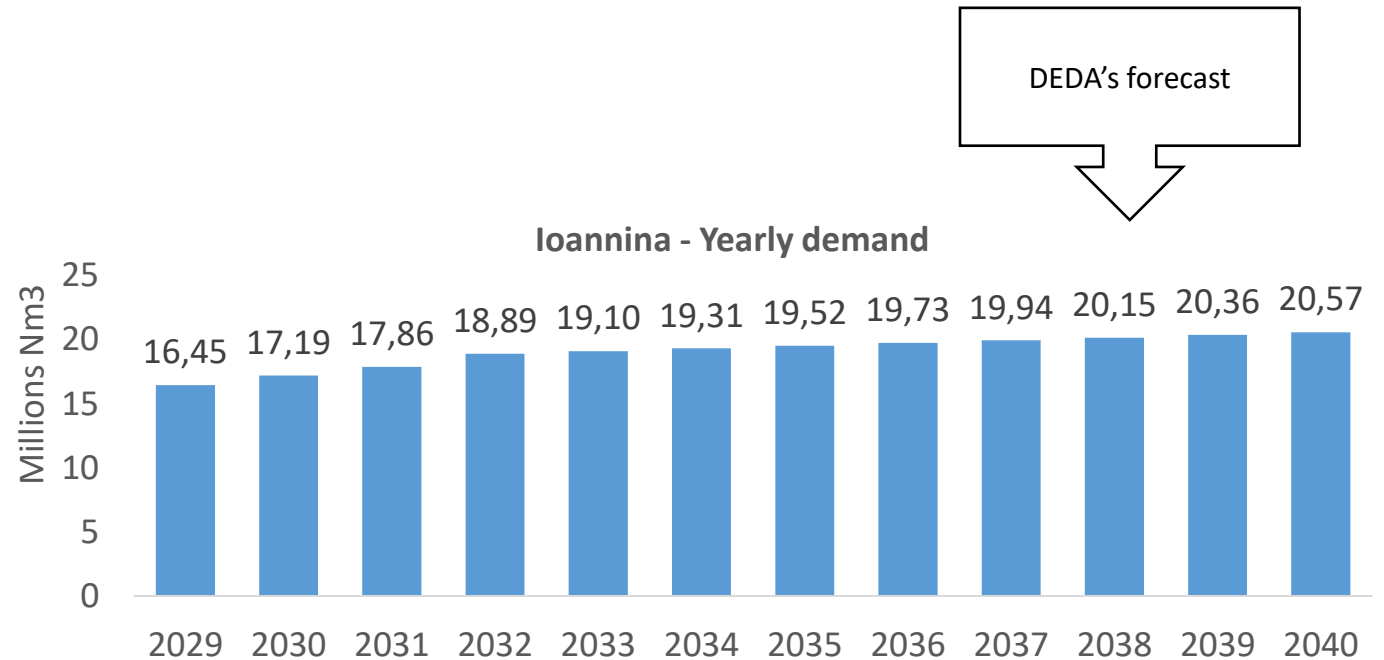
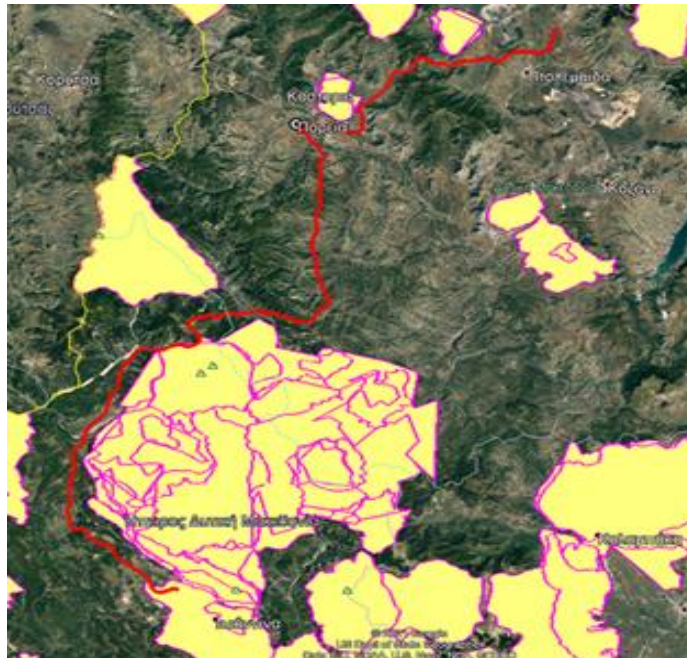


In the draft TYDP 2022-2031 it was for the first time included the project "Expansion of the NNGS to Ioannina" for the supply of natural gas to Ioannina

Main characteristics of the project

Project	Current Budget	FID	System Entry	Recovery method
New Projects				
Expansion of the NNGS to Ioannina	€ 156 Million	Jul -23	Sept-26	Included in the RAB of Transmission Services

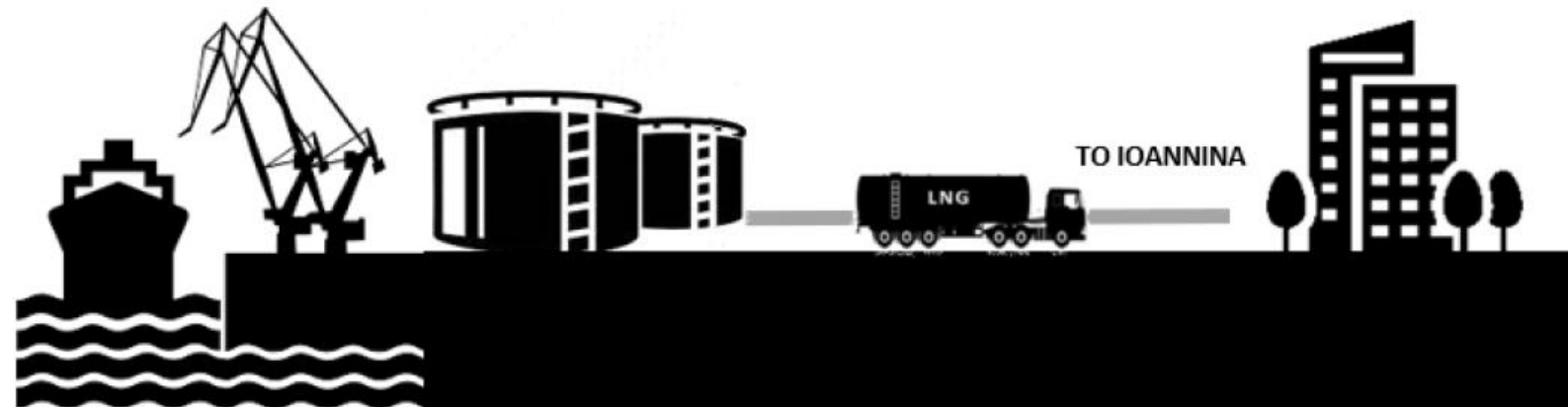
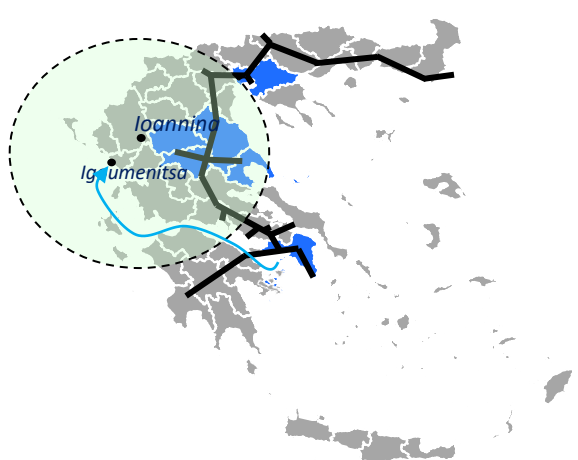
Expansion of the future high-pressure pipeline of West Macedonia to the city of Ioannina | 100% Hydrogen ready | 210 -220 km



DESFA is currently examining the possibility of supplying Ioannina through alternative solutions mainly based on SSLNG implementation with the view to achieve a more efficient and faster supply of the region

Main assumptions

Barge Vessel	<ul style="list-style-type: none"> Vessel Capacity : 3.500 m³ Owned by DESFA but outsourced daily management 	<ul style="list-style-type: none"> Extra costs for scheduled maintenances once every 5 yrs
Trucks	<ul style="list-style-type: none"> 2 trucks of 43,5 m³ 6 drivers assuming 10 hr working time 	<ul style="list-style-type: none"> Owned by DESFA
Igoumenitsa storage tank	<ul style="list-style-type: none"> 3000 m³ as per SAIPEM assumptions 	
Ioannina storage tank	<ul style="list-style-type: none"> 1000 m³ as per SAIPEM assumptions 	
Running opex related to Ioannina Pipeline	<ul style="list-style-type: none"> 10 employees for supervision, maintenance & operation / 2 employees for guarding purposes 	
Running opex related to Igoumenitsa terminal	<ul style="list-style-type: none"> 10 employees for the operation of the new terminal 8 employees for the maintenance 1 employee for guarding purposes 	



Based on the aforementioned two scenarios, from the analysis of capex and opex elements for the next 12 years derives that the supply of loannina using SSLNG installations in Igoumenitsa as well as LNG trucks is the most cost efficient



CAPEX - OPEX Requirements

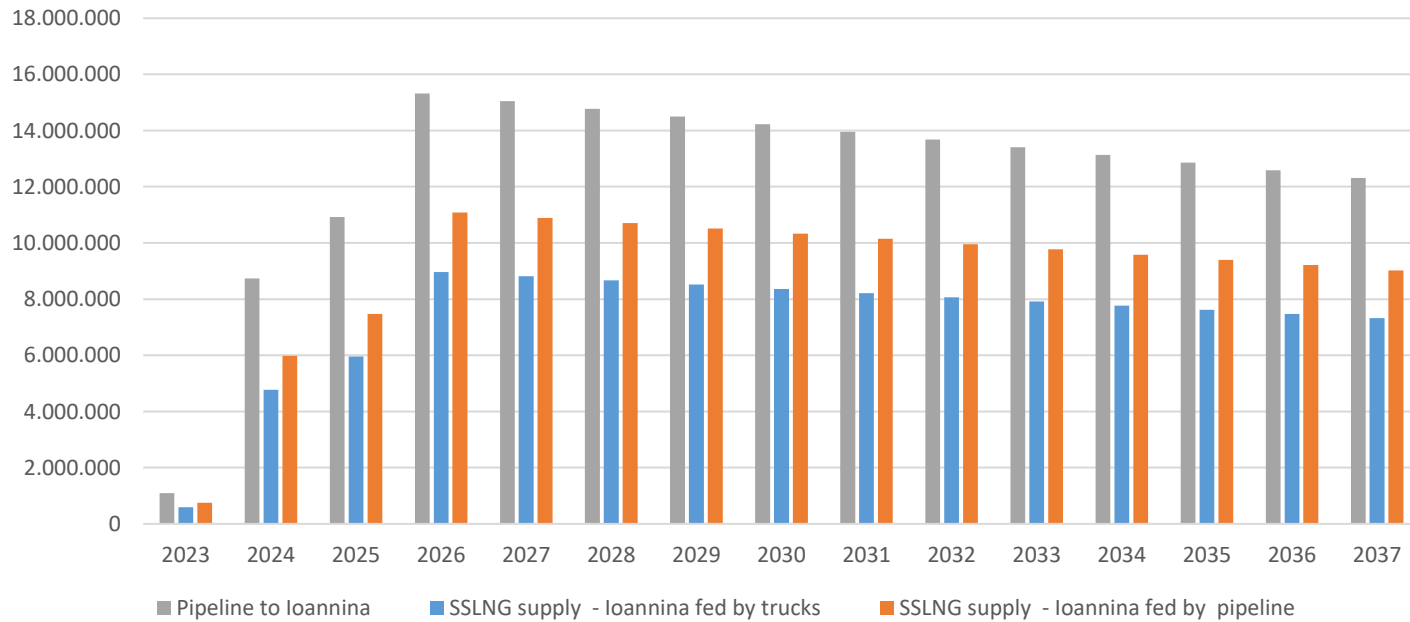
#	Scenario / TOTEX elements, €	Pipeline to loannina	SSLNG supply - loannina fed by trucks	SSLNG supply - loannina fed by pipeline
CAPEX ELEMENTS				
1	Site preparation & jetty facilities	-	31.838.571	28.854.283
2	Compressor Station	-	-	10.000.000
3	Regasification Plant	-	14.487.143	14.487.146
4	Barge Vessel	-	38.500.000	38.500.000
5	Trucks	-	320.000	-
6	Pipeline cost	156.000.000	-	14.960.000
Subtotal		156.000.000	85.145.714	106.801.429
OPEX ELEMENTS (sum 12 yrs)				
7	Barge Vessel	-	40.223.415	40.223.415
8	Trucks	-	4.006.663	-
9	Other opex for daily operation (incl. maintenance, security)	9.240.000	12.264.000	13.440.000
Subtotal		9.240.000	56.494.078	53.663.415
TOTAL		165.240.000	141.639.792	160.464.844

Translating the above results to Required Revenues...

Main assumptions

- Handled as stand-alone projects
- Capex expenditures between 2023-2025 (10%-70%-20%)
- No working capital has been assumed
- WACC = 7%

Required Revenue Calculation



NPV of RR (2023-2037)			
<i>In mil. €</i>	Pipeline to Ioannina	Supply with trucks	Pipeline Igoumenitsa-Ioannina
Total	109	63	78

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Alternative solutions for the supply of Ioannina

Conclusions



Based on the above analysis, DESFA considers the following steps as necessary

Next Steps

1 Include the new design in the draft TYDP 2022-2031, currently under public consultation

2 After receiving RAE's consent, discuss asap with DEDA on the new concept

3 Identify the relevant regulatory framework

4 Identify if there can be synergies ; supply of islands with the vessel and/or Balkan countries with trucks etc.

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