



# ENEMED Platform

Live demonstration

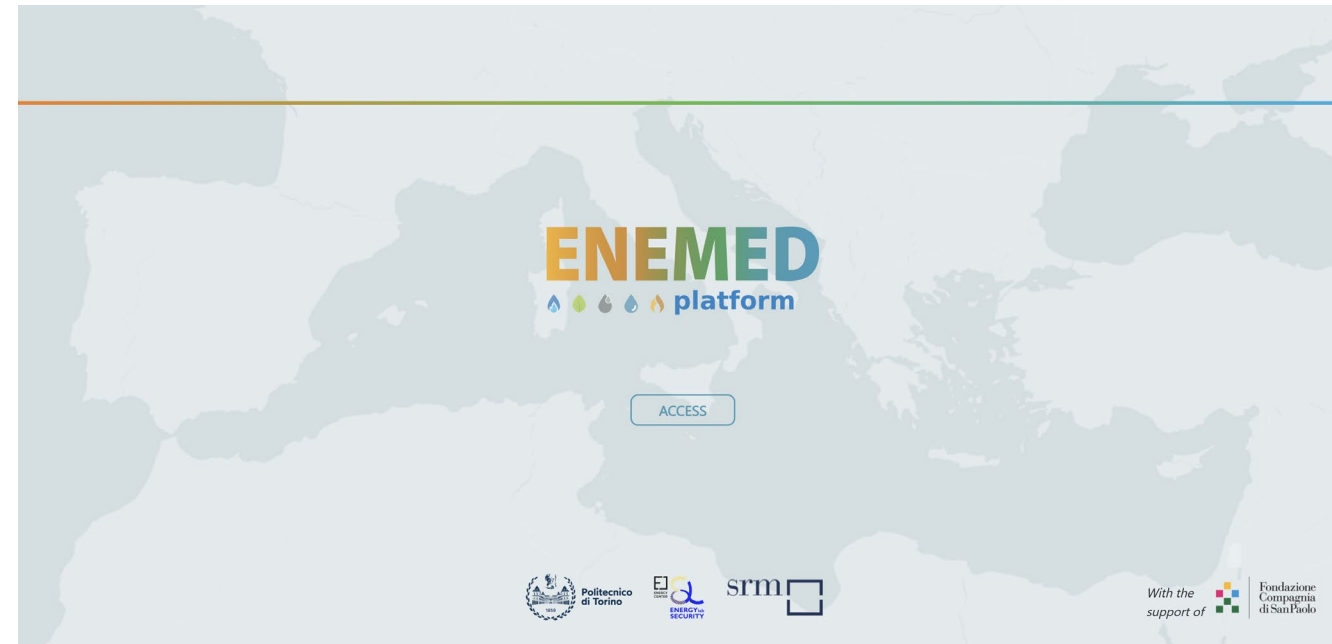
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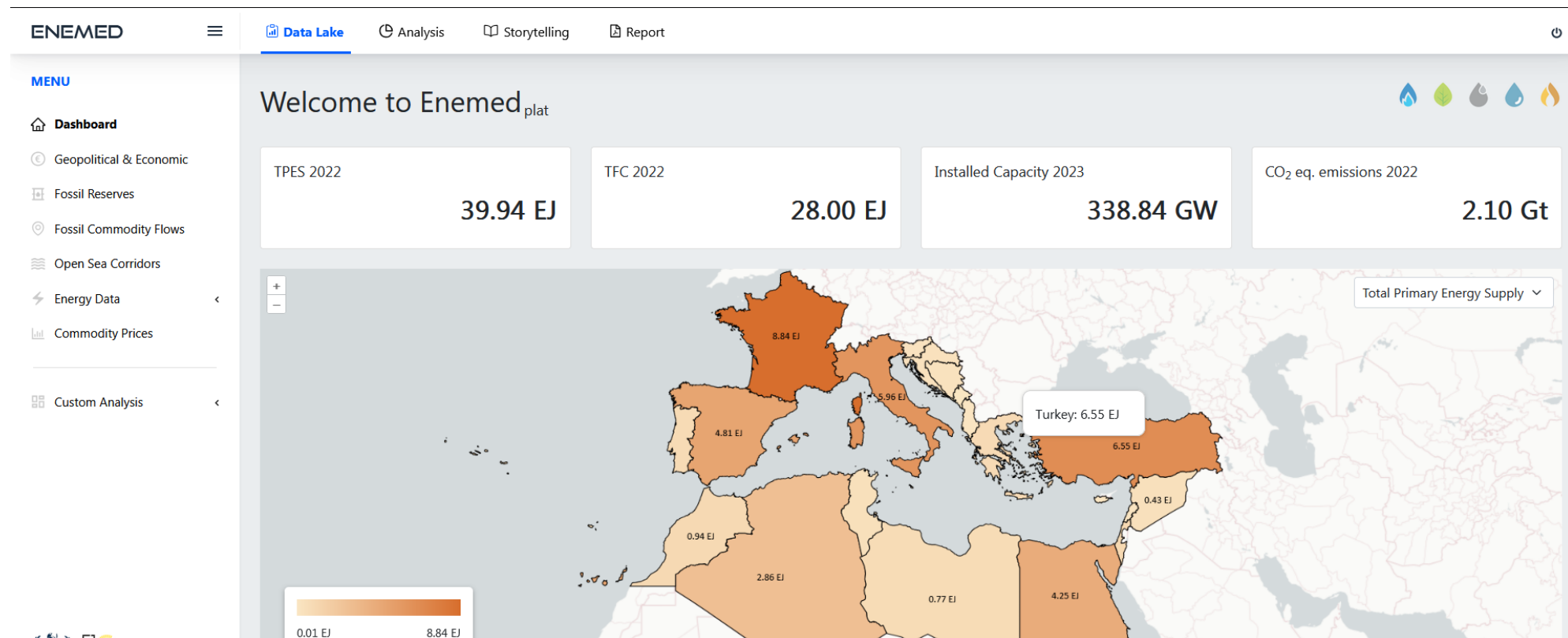
# The platform

- The ENEMED-Plat is an interactive, web-based platform that allows users to make customized analyses and to provide an answer, in a user-friendly way, to their questions on the Mediterranean energy system, with particular reference to security and sustainability issues
- The platform implements the concept of dynamic think-tanking for science-based support to policy decision-making
- The ENEMED-Plat platform has been used for performing all the analyses presented in the ENEMED – MED & Italian Energy Report 2024



# Dashboard

- After the login, users access to the dashboard, which provides a synoptic view of a set of key parameters relevant to the users and selected by them, explorable at single country level by clicking on the interactive map



# Datalake - consistency



- A first pillar of the platform is the Datalake section, which hosts a vast collection of data from 11 data sources and 71 datasets, with almost 3 billions of records and almost 1 TB in terms of storage. Data are automatically collected, validated and constantly updated through ad hoc web crawlers

The screenshot displays the ENEMED Data Lake interface. The main content area is titled "Geopolitical Economic" and features a table of data. The table has columns for Geopolitical Entity (Repor...), Thematic Area, Data, Details, Date, and Last Updated. The data rows show various countries and their associated economic indicators, such as Savings and Income, with dates ranging from 2024-01-04 to 2025-01-24. The interface also includes a sidebar menu with options like Dashboard, Geopolitical & Economic, Fossil Reserves, and Energy Data. A right-hand panel allows for column selection and row grouping.

Geopolitical Entity (Repor...)	Thematic Area	Data	Details	Date	Last Updated
Slovenia	Socio-economic data	Savings	Total	2024-01-04	2025-01-24
Portugal	Socio-economic data	Savings	Total	2024-01-04	2025-01-24
France	Socio-economic data	Savings	Total	2024-01-04	2025-01-24
Malta	Socio-economic data	Savings	Total	2024-01-04	2025-01-24
Spain	Socio-economic data	Savings	Total	2024-01-04	2025-01-24
Croatia	Socio-economic data	Savings	Total	2024-01-04	2025-01-24
Cyprus	Socio-economic data	Savings	Total	2024-01-04	2025-01-24
Portugal	Socio-economic data	Income	Total	2024-01-04	2025-01-24
Spain	Socio-economic data	Income	Total	2024-01-04	2025-01-24
France	Socio-economic data	Income	Total	2024-01-04	2025-01-24
Italy	Socio-economic data	Income	Total	2024-01-04	2025-01-24
Malta	Socio-economic data	Income	Total	2024-01-04	2025-01-24
Slovenia	Socio-economic data	Income	Total	2024-01-04	2025-01-24
Cyprus	Socio-economic data	Income	Total	2024-01-04	2025-01-24
Croatia	Socio-economic data	Income	Total	2024-01-04	2025-01-24



# Datalake – customized data analyses



- Data from different sections, sources, and dataset can be matched to allow for customized data analyses, thanks to specific filtering and pivoting techniques
- Ad hoc selection masks allow to define the countries, the type of data needed and the related sources. The resulting table can be then customized by the user through pivot mode and filters

The screenshot displays the ENEMED Data Lake interface. On the left, a 'Values' panel allows filtering by 'Geopolitical entity (reporting)', 'Geopolitical entity (partner)', 'Charterer', and 'Vessel type'. Below it, an 'Indicator' section is visible. A dropdown menu is open, listing various energy products such as Gas Oil, LNG, and Jet Fuel. The main panel shows the 'Create custom analysis' configuration for 'Weight of natural gas and LNG imports over TPES', with 'GWh' selected as the unit of measure. A data table is displayed with columns for 'Geopolitical Entity (Reporting)', 'TPES [Source A]', 'Total Natural Gas Imports [Source A]', and 'Total Lng Imports'. The table is in pivot mode, showing a summary of GWh for each entity. On the right, a 'Filters' panel is active, showing selected filters for 'Geopolitical Entity (Reporting)', 'Indicator', 'Date', and 'GWh'. The bottom of the interface features logos for Politecnico di Torino and ENERGY CENTER.

Geopolitical Entity (Reporting)	TPES [Source A] GWh	Total Natural Gas Imports [Source A] GWh	Total Lng Imports GWh
Gibraltar			2226.09
Greece	239.892,52	57.267,56	40.951,08
Israel	279.690,32	478,80	680,99
Italy	1.668.427,88	696.963,96	133.214,51
Lebanon	41.583,08		
Libya	215.031,88		
Malta	9066,96	3789,80	4296,40
Montenegro	12.238,52		
Morocco	263.876,48	1558,20	
Portugal	238.350,56	58.529,24	54.831,80
Republic of Turkiye	1.834.600,60	527.627,52	
Slovenia	75.246,36	7969,64	

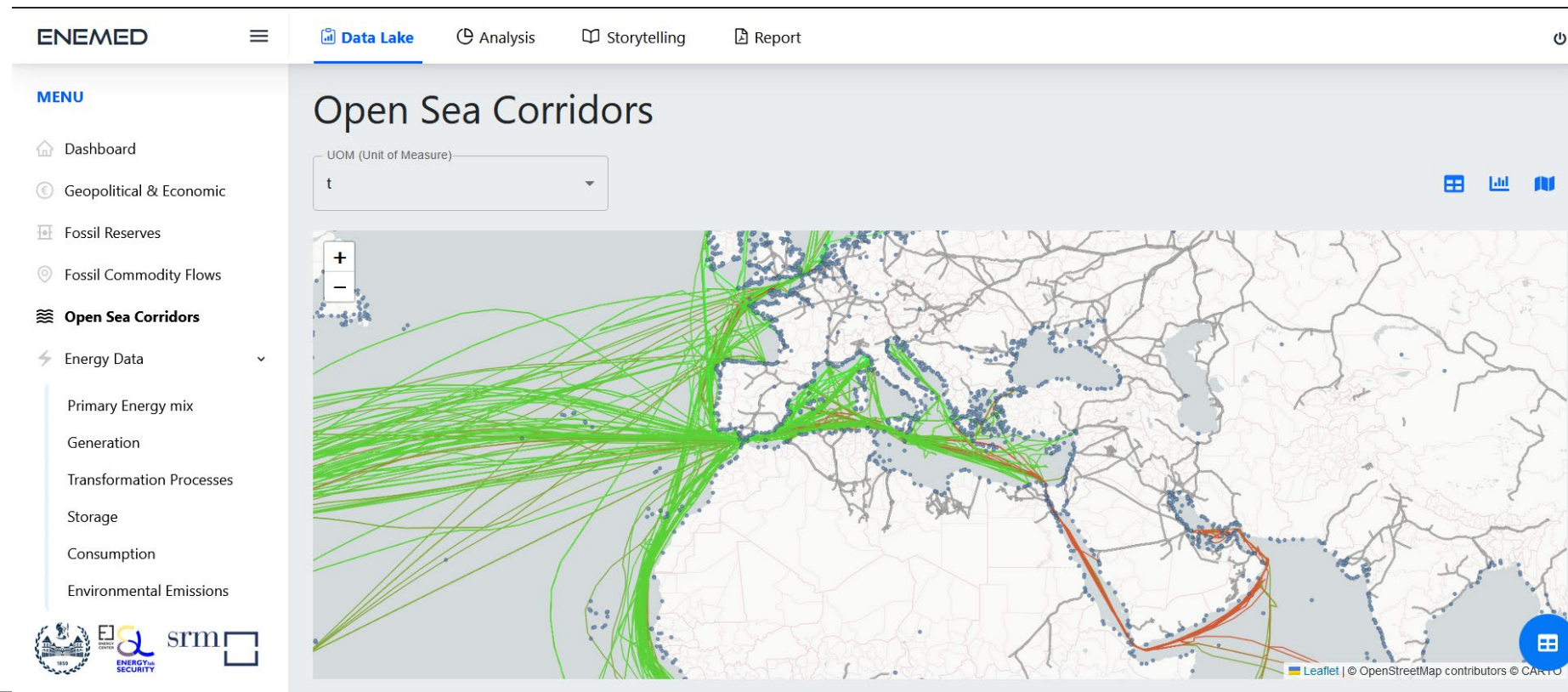
# Analysis



- The second pillar is a library of mathematical functions (Analysis section) that implement ad hoc models at the core of the “what if” scenario analyses
- The model functions are fed by data from the Datalake
- Currently there are functions for assessing for assessing the security of oil and LNG supply and the productivity from onshore RES
- In principle, the combination of the datalake and of the model functions allows the user to decide which question to pose to the platform choosing from an almost unbounded set of questions the user itself can autonomously decide

# Analysis – risk model

- Model function for assessing the security of oil and LNG supply, by tracking all the maritime routes of crude oil, refined petroleum products and LNG at single trip level; the risk associated to each route is quantified through an ad hoc risk model, taking into consideration the geopolitical risk of source and crossed countries, and the presence of piracy and chokepoints)



# Analysis – RES productivity model



- Model for assessing the productivity from onshore RES (solar PV and wind onshore), by directly selecting on map the area of interest, automatically prefiltering it based on several factors that can enable or hinder the installation of RES technologies (roughness of the terrain, slope, presence of desertic areas, military areas or protected zones, ...) and choosing the type of technology to be installed and the related technical parameters. After the run, the results show the exploitable area, the amount of maximum installable capacity in the area, and the related hourly power generation profile

The screenshot displays the ENEMED software interface, divided into two main panels. The left panel shows the 'Analysis' workflow with tabs for 'Map', 'PV parameters', 'Wind Turbine parameters', and 'Create'. A table titled 'Selection of the suitable areas' lists various parameters and their values. The right panel shows the 'Hourly Power Profile (chart)' for PV production and load active power.

name	Description	Range	Units	Value
max_rou...	Indice rugosità del terreno derivato dalla copertura d...	0 - 1		1
max_ele...	Altitudine massima	-415 - 4...	m	1000
slope_rate	Percentuale di terreno nella cella con pendenza inferio...	0 - 1		1
urban_r...	Percentuale di terreno nella cella che interseca aree ur...	0 - 0.915		0.7
suburba...	Percentuale di terreno nella cella che interseca l'area "...	0 - 1		0
desert	Pari a 1 se la percentuale di deserto dell'area è maggi...	0 - 1		1
park_ind...	Pari a 1 se la percentuale di terreno nell'area coperta ...	0 - 1		0
artificial...	Pari a 1 se la percentuale di terreno nella cella coperta...	0 - 1		0
militar_j...	Pari a 1 se la percentuale di terreno nella cella coperta...	0 - 1		0
airport_j...	Pari a 1 se la percentuale di terreno nella cella coperta...	0 - 1		0

Area percentage dedicated to PV: 0

Maximum installable PV capacity: 0 GW  
Annual PV electricity generation: 0 GWh

Hourly Power Profile (chart): PV\_production and Load Active Power (in kW)

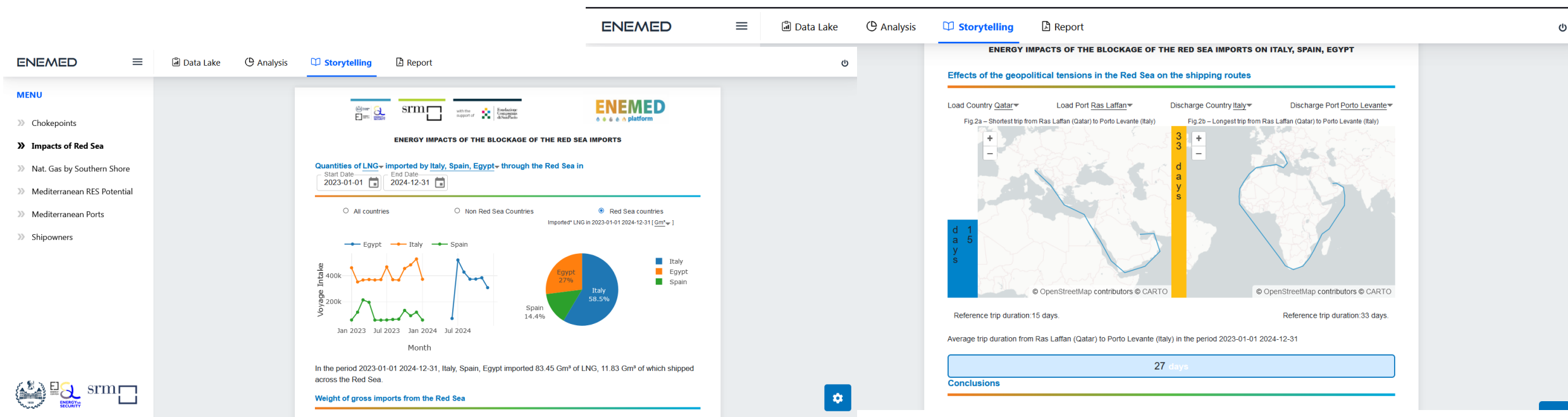
Dec 17, 2026, 14:00  
Power in alternate current: 1.583548B kW



# Storytelling

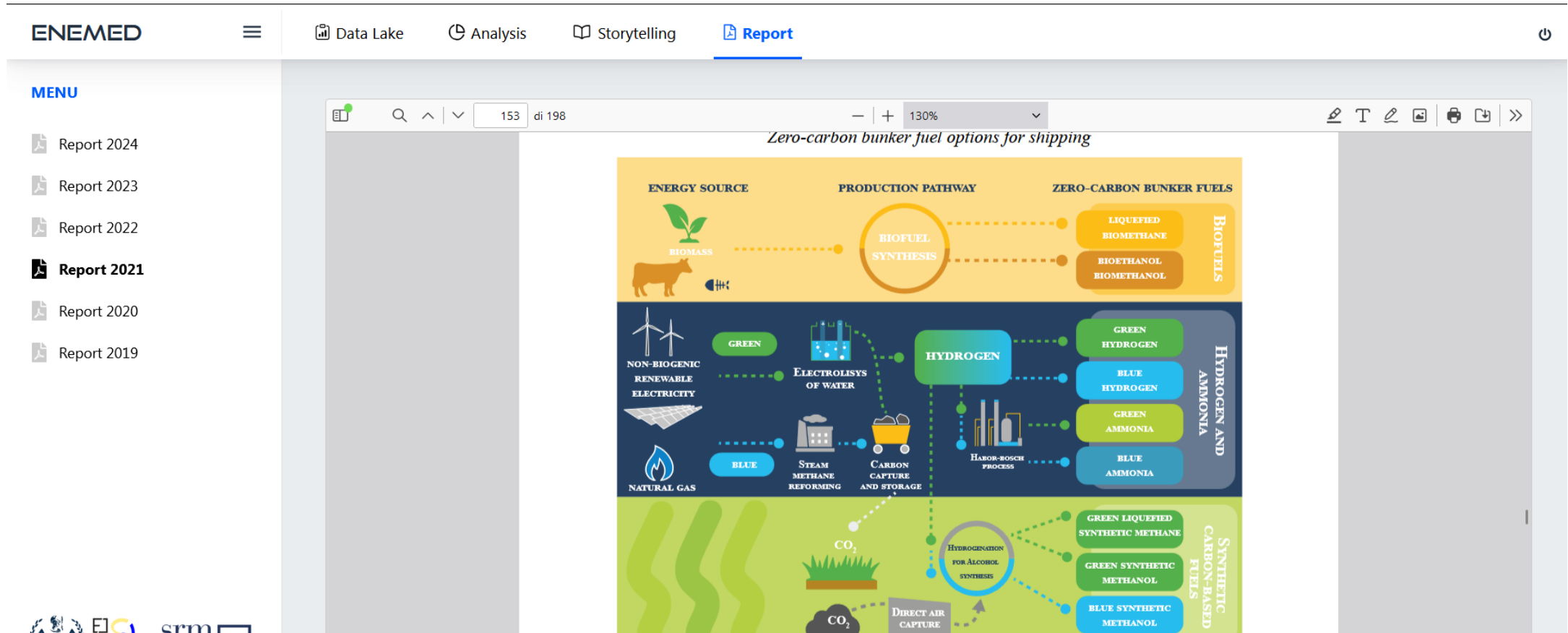


- The platform can accommodate a set of predefined questions of interest of given stakeholders, allowing them to completely customize the answers through the “interactive storytelling”,
- Storytelling is a flexible way to provide these synthetic answers, contained in few (1-2 maximum) “live” pages the users can interact with. Users can select f.i. the countries of interest, the period of the analysis, the energy commodities, and can fully modify tables and charts according to their needs.
- Each “story” is connected to the datalake and to the model functions, and automatically changes according to the selections of the user



# Report

- The Report section allows the users to access to all the published issues of the ENEMED – MED & Italian Energy Report for consultation or download



The screenshot displays the ENEMED web interface. The top navigation bar includes 'ENEMED', a menu icon, and links for 'Data Lake', 'Analysis', 'Storytelling', and 'Report'. A left sidebar menu lists reports from 2019 to 2024, with 'Report 2021' highlighted. The main content area shows a report viewer for 'Zero-carbon bunker fuel options for shipping' at page 153 of 198. The infographic is organized into three horizontal sections:

- BIOFUELS:** Energy source: Biomass (represented by a cow and a plant). Production pathway: Biofuel Synthesis. Zero-carbon bunker fuels: Liquefied Biomethane, Bioethanol, Biomethanol.
- HYDROGEN AND AMMONIA:** Energy sources: Non-biogenic Renewable Electricity (wind, solar) and Natural Gas. Production pathways: Green Hydrogen (via Electrolysis of Water), Blue Hydrogen (via Steam Methane Reforming), and Ammonia (via Haber-Bosch Process). Zero-carbon bunker fuels: Green Hydrogen, Blue Hydrogen, Green Ammonia, Blue Ammonia.
- SYNTHETIC CARBON-BASED FUELS:** Energy source: CO<sub>2</sub> (from Direct Air Capture). Production pathway: Hydrogenation for Alcohol Synthesis. Zero-carbon bunker fuels: Green Liquefied Synthetic Methane, Green Synthetic Methanol, Blue Synthetic Methanol.

Thank you for your attention

