



Energy Plan

Version n.1

D.T3.4.1

06/2023

Project acronym: SMARTPORT

Project name: Smart and Sustainable Energy Port

Project code: 437

Document Information

Document ID name: SMARTPORT_ (D.T3.4.1)

Document title: Table of D.T3.4.1 - Energy Plan

Type:

Date of Delivery: 06.23

Work package WP3

Work package leader:

Document History

Versions	Date	Changes	Type of change	Delivered by
0.01	30/03/2023	Initial Document		Municipality of Termoli
0.02	29/06/2023	Review and Finalization		Municipality of Termoli

Disclaimer

The information in this document is subject to change without notice. All rights reserved.

The document is proprietary of the SMARTPORT Consortium. No copying or distributing, in any form or by any means, is allowed without the prior written agreement of the owner of the property rights. This publication reflects the views only of the author, and the INTERREG IPA CBC Italy – Albania – Montenegro Managing Authority cannot be held responsible for any use which may be made of the information contained therein.

Table of Content

1. PREMISE.....	4
2. INPUT DATA BEING PROCESSED.....	4
3. DESCRIPTION OF THE PORT OF TERMOLI.....	7
4. DETERMINATION OF ENERGY REQUIREMENT.....	9

1. PREMISE

This document has been written by the undersigned ing. Roberto Favot, with office in Pordenone (PN) in via G.B. Bertossi 7, registered in the Order of Engineers of the Province of Pordenone at number 1071/A, qualified for fire prevention with number PN01071100200, following the receipt of a professional assignment from the Municipality of Termoli.

The above-mentioned assignment is related to the execution of technical services within the Interreg Italy, Albania, Montenegro "Smart Port" project aimed at improving energy efficiency in the port of Termoli.

As part of the above-mentioned Interreg project, it is planned to draw up an Energy Requirements Report document to identify the energy needs of the Port under study, the sources of supply exploited and the carbon footprint (CO₂ emissions), in order to identify possible energy efficiency and/or resource optimization interventions.

This document therefore illustrates the study carried out to identify energy needs, related sources of supply and carbon footprint.

2. INPUT DATA BEING PROCESSED

In order to comply with the requirements, prior to the drafting of this document, it was necessary to provide, in agreement and coordination with the contracting authority, to find the data being processed, data concerning the energy needs of the port and the activities located.

In this regard, the following bodies were consulted, in collaboration with the R.U.P.:

1. Municipality of Termoli
2. Molise Region
3. A.R.P.A. of the Molise Region
4. Harbour Master's Office of the Port of Termoli

From the feedback received it immediately seemed improbable to be able to have available in a short time and above all to have available certain and complete data relating to the Port and its operation as most of the activities are managed by private individuals through state concessions or other types of concessions.

The results of the various "queries" to the above-mentioned bodies are therefore reported below.

2.1 MUNICIPALITY OF TERMOLI

On 20.03.2023, the Municipality of Termoli responded to the above request by reporting that the following electricity utilities in the name of the Municipality of Termoli appear to be present at the port:

CODICE POD	DESCRIZIONE UTENZA
IT001E69272559	Fish Market
IT001E68640364	Charging stations
IT001E68640365	Charging stations
IT001E68623415	Charging stations
IT001E69234138	Charging stations + access bar + dock lighting

At the same time, providing data on annual electricity consumption for the year 2022, electricity consumption taken into account for data processing for the preparation of this Energy Requirements Report.

2.2 MOLISE REGION

On 17.03.2023, the Molise Region responded to the above request by reporting that the following electricity utilities in the name of the Molise Region are present at the port:

CODICE POD	DESCRIZIONE UTENZA
IT001E67242062	Shipyards (6 light towers)
IT001E69272607	Purifier (7 light towers)

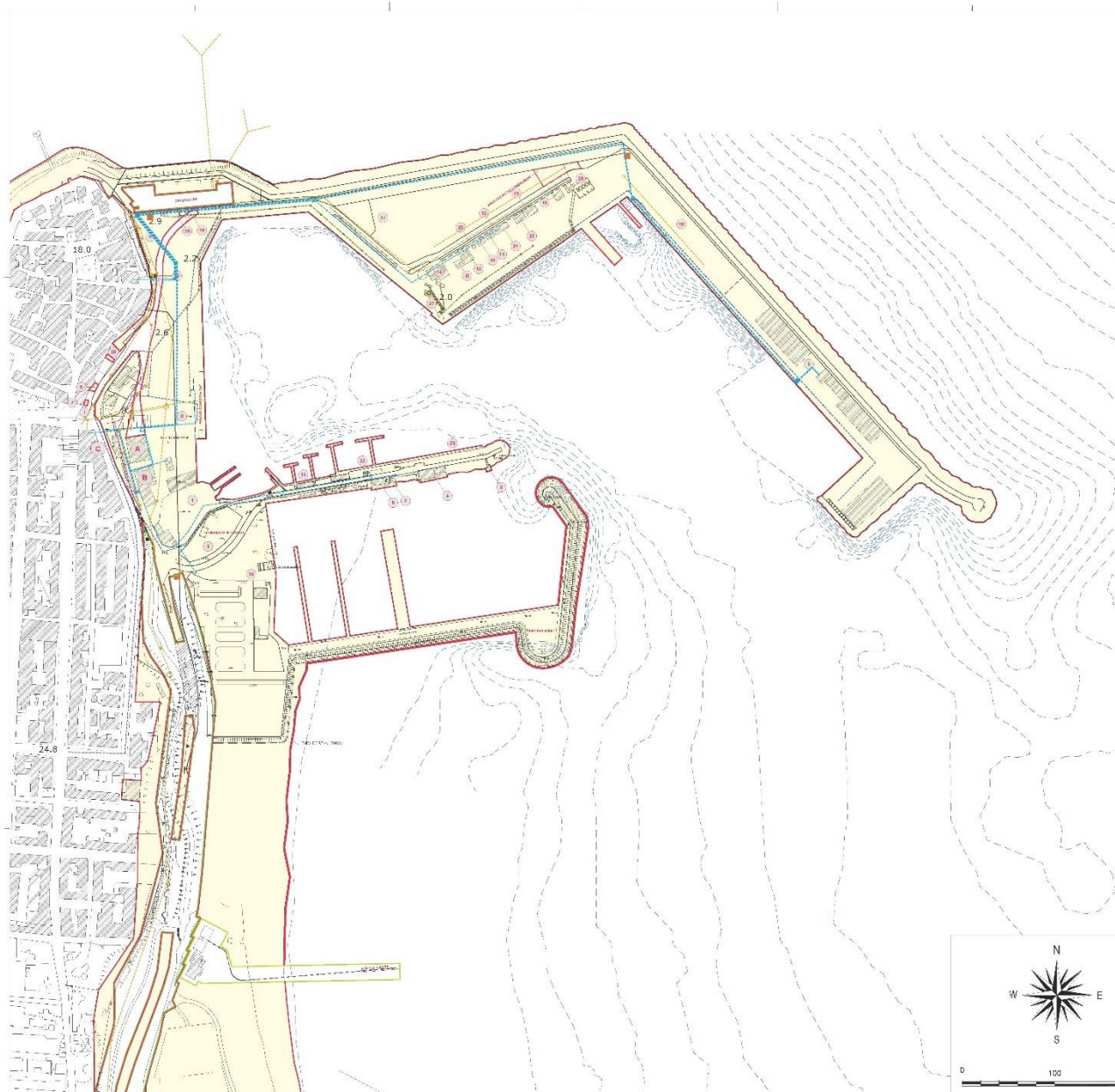
IT001E69338879

Harbour Master's Wall (projectors)

At the same time, providing data on annual electricity consumption for the year 2022, electricity consumption taken into account for data processing for the preparation of this Energy Requirements Report.

At the same time, the Region has also taken steps to point out that in the table "A6 – Legal Regime of the Areas" of the Port Regulatory Plan of the Port of Termoli, a document drawn up by the Directorate General IV of the Road Transport Service for Maritime Works of the Molise Region in the year 2010, the activities hosted at the port are indicated in detail without however being able to provide data relating to energy needs.

An excerpt from the above document is given below.



Picture 1 – excerpt from table "A6 – Legal Regime of the Areas" of the Port Regulatory Plan

A CONCESSIONARI SEDE MERCATO ITTICO		
	DITTA	ATTIVITÀ
	New Coop S.C.A.R.L. DEL CINQUE Alberto SCIARRETTA Francesco Di Palma Primiano D'Ippolito Giovanni Catterino Basso & C. s.n.c. Cannarsa Michelangelo Menadeo Marco Barone Davide	Deposito olii e rete gasolio Deposito di prodotti ittici freschi Deposito di prodotti ittici freschi Deposito di prodotti ittici Deposito di prodotti ittici Deposito di prodotti ittici Deposito di prodotti ittici Deposito di prodotti ittici freschi Deposito di prodotti ittici freschi
B CONCESSIONARI SEDE CAPITANERIA DI PORTO		
	DITTA	ATTIVITÀ
	Iacobucci Lorenzo Mondomare S.r.l. Montesanto Luca Lanzone Francesco D'Abramo Nicola di D'abramo Michele e F.lli S.n.c. Perfetto & Venitelli s.n.c. New Coop S.C.A.R.L.	Deposito di prodotti ittici Deposito di prodotti ittici Deposito di prodotti freschi Deposito di prodotti ittici freschi Deposito frigorifero Deposito frigorifero Locale conservazione e distribuzione del ghiaccio
C CONCESSIONARI SEDE A.N.M.I.		
	DITTA	ATTIVITÀ
	Recchi Roberto & C. s.n.c. Co.Ge.Vo. Consorzio Marpesca S.r.l. FERMAR s.a.s. New Coop S.C.A.R.L.	Deposito di prodotti ittici Deposito di prodotti ittici Deposito di prodotti ittici Vendita al dettaglio di prodotti ittici Sede della locale A.N.M.I.
ALTRI CONCESSIONARI		
progressivo id.	DITTA	ATTIVITÀ
1	C.R.A.N. di Ciarabellini Umberto	Cantiere navale
2	Eredi D'abramo Nicola e D'Ippolito Antonio	Deposito cassette vuote
3	Marinucci Yatching S.r.l.	Deposito di unità da diporto
4	D'abramo Nicola di D'abramo Michele e F.lli S.n.c.	Impianto di stabulazione mitili
5	Cantieri navali Termoli S.p.A.	Cantiere navale
6	Marinucci Mario	Bilancia di pesca fissa denominata Trabucco
7	Foto De Gregorio s.n.c.	Chiosco vendita materiale fotografico
8	Marinucci Valter	Bilancia di pesca fissa denominata Trabucco
9	VALMAR Group S.r.l.	Bar e Rosticceria
10	N.L.G. S.r.l.	Box biglietteria
11	Tirrenia di navigazione S.p.A.	Box biglietteria
12	Gruppo ormeggiatori di Marinucci Pasqualino	Box assistenti all'ormeggio
13	Circolo Nautico Termoli	Strutture per la nautica da diporto
14	Marinucci Valter	Biglietteria, Assistenza natanti Bar-Punto ristoro
15	Barile Carmela	Bar, Rivendita Giornali, Tabacchi
16	POLARIS S.r.l.	Deposito e ricarica attrezzature subacquee distribuzione carburante marino
17	Marinucci Pasqualino	Parcheggio per auto
18	New Coop S.C.A.R.L.	Rimessaggio e movimentazione unità navali
19	SAFEMAR S.r.l.	Deposito bagagli e materiale vario
20	Istituto Gesù e Maria	Giardino per giochi bimbi
21	Di Pardo Antonietta	Servizio traffico passeggeri
22	Marinucci Yatching S.r.l.	Approdo turistico
23	Agenzia viaggi e turismo Di Brino	Biglietteria
24	Marinucci Stefano	Stazione di "Pratici Locali"
25	TERMAR S.r.l.	Vendita articoli turistici e biglietteria
26	ENI S.p.A. divisione Refining e marketing	Distributore carburanti per motopescherecci
27	ENI S.p.A. divisione Refining e marketing	Distributore carburanti per motopescherecci
28	Molittica S.C.a.R.L.	Distributore carburante marino
29	Consorzio Diportisti Nautici	Ormeggio unità da diporto
30	Marinucci Yatching Club S.r.l.	Porto turistico
CONCESSIONI DATE AL COMUNE DI TERMOLI		
progressivo id.		
I	Area verde	
II	Cippo commemorativo	
III	Box informativo	
IV	Scala a chiocciola	
V	Parcheggi riservati ai residenti del borgo vecchio	

Picture 2 – excerpt from table "A6 – Legal Regime of the Areas" of the Port Master Plan – list of companies

2.3 A.R.P.A. MOLISE REGION

The Regional Environmental Protection Agency (A.R.P.A.) of the Molise Region has provided the following table relating to the estimate of the Port's CO₂ emissions for both recreational and port activities.

Description	NOMPOL	UNI_mis	YEAR OF REFERENCE						
			1990	1995	2000	2005	2010	2015	2019
Domestic maritime traffic: recreational activities	Carbon dioxide	Mg	240.49	277.49	690.92	1'462.34	2'080.62	1'162.17	1'082.43
Domestic maritime traffic: port activities	Carbon dioxide	Mg			8'403.35	6'636.37	7.89	7.20	3'984.77

Given that the data reported in the above table refer to different years than those reported with the electricity supplies reported by the Municipality of Termoli and the Molise Region, the data are difficult to use in order to determine the CO₂ emissions and reference needs for the year 2022.

2.4 HARBOUR MASTER'S OFFICE OF THE PORT OF TERMOLI

The Harbour Master's Office responded to the request for information, reporting that it was not in possession of specific data to detect the energy needs relating to port and pleasure activities, referring the request to the individual activities present on site.

3. DESCRIPTION OF THE PORT OF TERMOLI

The Port of Termoli is located in a natural bay on the Adriatic coast, in the Molise Region, the Port of Termoli is classified by Law 84/1994 as a port of regional and interregional economic importance.



Picture 3 – Planimetric view of the port of Termoli

The Port is administered by the Molise Region, which has the task of planning, designing, implementing and maintaining infrastructural interventions concerning the port area. The total area of the port basin is 360,000 square meters while the maximum depth of the seabed is 6 meters.

The port is adjacent to the historic center of Termoli (Borgo Vecchio) and stands at the foot of the fortified historic center; It is, therefore, perfectly integrated into the urban context.

Termoli is classified as a multifunctional port and its operations are mainly related to tourism (passengers and ferries, yachting), fishing, commercial activities and shipyards.

The infrastructure is characterized by the presence of three piers: the southern one of the marina of San Pietro used as a tourist port and the northern one (about 1,200 m long), houses the shipyards of Termoli (CNT).

The quay between the south pier and the arm hosts, like the first part of the port arm itself, the fishing port and the vehicles of the Coast Guard and the Guardia di Finanza while the second part of the arm welcomes passenger ships bound for the Tremiti Islands, with which connections are guaranteed all year round.

The tourist port of Termoli, recently expanded with the construction of a new pier parallel to the existing one, has about 300 berths, from 8 to 30 meters.

The Marina di San Pietro, opened to the public in 2009, has 4 piers and 2 quays.

The operations are mainly related to tourism (passengers and ferries, yachting), fishing, commercial activities and shipyards.

The Marina di San Pietro, opened to the public in 2009, has 4 piers and 2 quays. The structure has hosted private boats of considerable capacity (40 m) in relation to the size of the port itself and offers different types of services including refreshments.

The berth is owned by Marinucci Yachting Club s.r.l.

Currently, the following services are available:

- Harbour Trailer
- Pilotage
- Moorers
- Divers
- Slipway
- Water supply
- Diesel and benzine depots (24 hours a day) or tanker trucks
- Security service
- Shipping agencies
- Waste collection
- Warehouse for supplies to fishing vessels
- 2 machine shops
- Supply of ice with a daily production of 60 quintals
- 20 fish storage refrigerators
- Cables for electricity supply
- Dock lighting
- Fixed crane up to 20 t
- Mobile crane up to 250 t
- Outdoor storage
- Engine repair
- Electrical repairs
- Repair of wooden, GRP and steel casings
- Toilets
- Food ref in the city
- Car Parking
- Phone booth ☐ Bar/refreshment

A recent study published by the Italian Ministry of Transport, estimates for the period 2016-2019, an average annual flow of 200,000 passengers, about 3,000 cars and more than 19,100 linear meters of goods, handled along the Termoli-Tremiti route (40 nautical miles long).

It is worth mentioning that the port is heavily influenced by seasonality, with traffic peaks during the summer and lower flows during the winter. The port of Termoli is the only port in the Molise region. From the port of Termoli, it is possible to reach, faster than any other port of call (both in Puglia and Abruzzo), the Tremiti Islands. In addition, a fast connection to Croatia is possible.

The Port of Termoli benefits from the presence, along the north-south axis, of three main transport infrastructures of national importance, A14 motorway, Bologna-Bari railway line, it is on a transversal connection axis with the Tyrrhenian side consisting of the road network (SS.647-SS.17-SS.85-A1 (Rome-Naples section, San Vittore exit) and the Termoli-Campobasso-Isernia-Rome railway network.

Therefore, the port of Termoli potentially represents a significant logistical node.

The Molise Region, together with the coastal regions of Marche, Abruzzo and Puglia, have signed a Memorandum of Understanding with the aim of sharing a common strategy and a unified position, in view of the revision of the EU regulation for transnational transport.

The strategy identifies four main priorities that could really contribute to bridging the infrastructure gap that afflicts the transport networks of the Adriatic regions involved, both along the east-west and north-south axis.

Priorities include the following policy actions:

1. Corridor I, Baltic-Adriatic: extension of the corridor along the entire Adriatic-Ionian coast
2. Corridor 5, Scandinavian Mediterranean: extension of the corridor from north to south
3. Strengthening East-West links between Spain, Italy and the Western Balkans
4. Upgrading of port infrastructure to improve connections between the two shores of the Adriatic and to Central Europe.



Picture 4 – European routes and corridors

4. DETERMINATION OF ENERGY REQUIREMENTS

Given the premises relating to the input data reported in paragraph 2 of this document, it is not possible to determine the overall energy needs of the Port and its activities as the minimum data necessary to proceed with the assessment are not available, considering that the only certain data available are the energy consumption for the year 2022 provided by the Municipality of Termoli and the Molise Region, consumption related to public lighting and charging stations at the port.

Therefore, the following is an analysis of these consumptions and an estimate of the atmospheric emissions assessed by comparing the electricity consumption with the conversion factors explained at the bottom of the data processing tables.

ELECTRICAL REQUIREMENTS – YEAR 2022

MUNICIPALITY OF TERMOLI						
CODICE POD	USER	ANNUAL CONSUMPTION [kW/h]	NOx [g/kWh]	SO2 [g/kWh]	PM [g/kWh]	CO2 [g/kWh]

IT001E69272559	Fish Market	18'526	3'612.57	1'130.09	370.52	9'022'162
IT001E68640364	Charging stations	174	33.93	10.61	3.48	84'738
IT001E68640365	Charging stations	3'707	722.87	226.13	74.14	1'805'309
IT001E68623415	Charging stations	1'899	370.31	115.84	37.98	924'813
IT001E69234138	Charging stations + barra access + dock lighting	18'860	3'677.70	1'150.46	377.20	9'184'820

REGIONE MOLISE						
CODICE POD	UTENZA	CONSUMO ANNUO [kW/h]	Nox [g/kWh]	SO ₂ [g/kWh]	PM [g/kWh]	CO ₂ [g/kWh]
IT001E67242062	Shipyards (6 light towers)	35'375	6'898.13	2'157.88	707.50	17'227'625
IT001E69272607	Purifier (7 light towers)	16'485	3'214.58	1'005.59	329.70	8'028'195
IT001E69338879	Harbour Master's Wall (projectors)	20	3.90	1.22	0.40	9'740

Fattori di conversione delle emissioni		
kWh electric	NOx [g/kWh]	0.195
kWh electric	SO ₂ [g/kWh]	0.061
kWh electric	PM [g/kWh]	0.020
kWh electric	CO ₂ [g/kWh]	487