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ANCHOR Life
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1. Executive Summary

The report on sharing objectives of B2 Deliverable defines the methodology and goals of of the Action B2 “Design of a Smart Port Noise Monitoring System (SPNMS) and application to Patras port”.

This report is based on the experience of Municipal enterprise for Planning & Development of Patras (ADEP S.A.) in the European Project MESP, on ongoing noise mapping and noise management Patras Port Authority, the current concerns that arise from noise issues affecting local citizenship and our port expansion plans. In this report is defined how the SPNMS will be defined an applied to Patras Port sorrounding area, operations and activities and to Patras Port expansion plans.

2. Introduction

2.1 Ports and Noise reduction goals

Port activities and related transport produce sound that can be perceived as a serious environmental nuisance. This can be above or underwater sound. Noise may not only reduce the quality of life, but may also provide a health hazard and may have ecological impacts. The control of noise is a vital component of the integration of port planning into the local community. Often permanent or long-term noise related to cargo handling, road and rail transport brings in more complaints than temporary construction and dredging noise.

Generally the Environmental Impact Assessment for noise requires contours, indicating noise levels, around the source of noise. These need to be correlated to potential receptors to determine impacts, if any. Careful study needs to be executed to determine which frequencies, levels, intervals, build-ups, etc. impact the receptors before mitigation measures are determined to ensure that they are effective.

ANCHOR LIFE Project will improve Patras Port EMS through the Guidelines for Noise Management. As an integrating part in decision-making, the noise management guidelines will be taken into account when making decisions in port planning and will be included in the records of the implemented and certified environmental system.

In details will

- Develop acceptable sound contours in and around the port based on measurements taken during different seasons/meteorological conditions Work with sound budgets with the different users
- Noise mapping – tool allowing port manager to access the noise situation in the port
- Zoning of activities by planning noisy activities away from potential receptors
- Environmental Management Plans for Ports constructions

2.2 European & Greek Regulations.

The regulation we are going to keep in mind along the activity, are:

European legislation

Directive 2002/49 / EC of the European Parliament and of the Council of 25 June 2002 on environmental noise assessment and management.

Decision No 1386/2013/EU of the European Parliament and of the Council

The guideline IPPC (2008/1/EC)v

Greek Legislation

Joint Ministerial Decision 69269/1990

2.3 The Greek Port of Patras and Municipality of Patras.

The port of Patras is the gateway of Greece to Europe and is one of the most modern ports in the Mediterranean, offering modern port infrastructure, a modern cruise terminal and professional quality of hospitality services in high health and safety standards. The Patras port significantly contributes in the local economy, creating 2,504 jobs through the directly dependent businesses, 1,013 direct jobs with revenue 12.2 million Euros and 1,491 indirect jobs with revenue approximately 9.2 million Euros.

The port of Patras is connected with regular service to the ports of Brindisi, Ancona, Venezia, Bari, Genova, Ravenna, Trieste, Bar, Salerno, Catania.

The Patras Port plays an important role in the economic life of Patras, Western Greece and Greece in general. Today Patras Port is mainly a Passengers Port which handles an important part of the total passengers' sea traffic between Greece and other countries. Patras port also has the necessary facilities of a Commercial Port but this is currently very little utilized. Finally it is worth to mention the Marina.

Northern Passenger Port

The Northern Port of Patras has four main piers and wharfs of approximately 3.000m total length and 8.5-10.5m length. The Port capacity can afford mercantile ships up to 25.000 register tons and passenger ferry ships up to 16.000 register tons and up to 330 meters length.

Commercial Port

Patras Port Authority has in the North Port facilities, machinery and staff that can serve cargo transit. Moreover, it has an open storage area for deposition of general cargo. The operation of the customs service allows the traffic of imported and exported merchandise.

Furthermore, it has 3 weighbridges (two in the South Port and one in the North) for weight control of vehicles and weighing of cargoes.

All services provided by O.L.P.A. to port facility users are classified in 4 tariff categories, as set out by decision 48058/EGDEKO (Special Secretariat for Public Enterprises and Organizations) 1680.

Southern Passenger Port

On July 11th 2011 the new South Port of Patras has become operable for the itineraries between Patras and Italy.

The Southern Passenger Port of Patras has a platform of 992m total length, built with caissons of reinforced concrete in a zigzag alignment. It consists of 4 dock stations and it has 15 docks, 11 of which can be used for mooring by stern and 4 can be used for side-mooring. In addition the Southern Port has breakwaters of 1.236m total length, built with caissons of reinforced concrete.

Marina

At the Northern Port of Patras there is a Marina which can serve up to 450 boats (depending on their size). The marina has 3 small basins (of 3.5 meters depth), 8 permanent piers and 3 floating piers.

At the south basin there is a wharf and 3 wooden floating piers (68 meters long each), at the middle basin there are 6 wooden permanent piers (44 meters long each) and at the north basin there are 2 permanent basins.

The marina is protected by breakwaters 620 meters long (towards west) and 52 meters long (towards north).

Noise Measurement In the surrounding area of the Port

From noise measurements made in internal and external areas of the building of MUPAT, revealed the results reported in the following tables.

TABLE 1: Interior Noise Measurement Services - Series One: Open windows, A / C Off

jobs spread	SPL – L _{Aeq} – dB(A) (min - max)
1	51.0 – 51.2
2	50.3 – 51.0
3	49.1 – 51.3
4	51.4 – 51.8
5	51.0 – 51.7
Intermediate Average Office Term	50.5 – 51.4
6	48.8 – 50.1
7	48.6 – 51.2
8	48.3 – 50.4
Intermediate Average Office Term	48.6 – 50.6
9	42.6 – 43.1
10	45.8 – 50.6
11	45.0 – 50.0
12	42.1 – 51.0
Director Office	58.4 – 59.7
President Office	53.2 – 53.8
Administrative Council Office	47.9 – 51.1
Conference room	45.3 – 47.7

2.4 Objectives of the action

“ESPO/Ecoports Port Environmental Review 2016” stresses the importance for ports to implement an Environmental monitoring system to measure, analyse and tackle impacts of port operations. Noise is included in the monitoring system of less than 60% of the 91 ports considered in the report, whereas it is ranked 3th in the environmental priorities list of EU Ports for 2016. Relationship with local community is ranked at the 4th position. So, this action aims at designing and testing a low-cost noise monitoring system allowing ports to manage both of the aforementioned priorities. This system, named Smart Port Noise Monitoring System (SPNMS), will allow the sound pressure level realtime measurement and reading recorded at selected locations inside port area, in correspondence of main noise sources and at most disturbed receivers. The monitoring stations network will transmit data via wireless transmitters to a remote server located at MUPAT. Data will be processed and made available for real-time reading via project and website. The system will be able to receive reports from disturbed citizens and to send alerts to port companies whose noise emissions exceed

defined threshold levels. Furthermore, SPNMS will automatically inform registered users (via e-mail, SMS or social media) before the starting of disturbing events.

SPNMS will allow the port authority to:

- Understand which activities has the highest noise emissions (by data analysis)
- Understand which activities are the most disturbing (by data analysis and citizens' reports)
- Send alerts to citizens to inform them before the beginning of noisy activities
- Redefine time schedule of port activities in order to avoid that noisiest activities are carried out contemporarily
- Redefine port lay-out for future modifications SPNMS will allow the local community to: - Be informed in real-time about noise exposure
- Communicate with port authority
- Be involved in port activities

SPNMS will allow companies working in port area to:

- Be informed in real-time and receive weekly or monthly reports about their noise emission (a reference person for each company working in port area will be identified)
- Immediately take action to understand excessive noise emissions causes and contain issues
- Acquire awareness of their noise emissions for future improvements

3. Conclusions.

Involving all the stakeholders of a medium size port, in the design of the Guideline for a Common SPNMS will transfer capacity to port manager to evaluate the correct noise climate in harbours, identifying and classifying noise sources, suggesting to private stakeholders where focus their efforts and investments for noise reduction interventions.

The Smart Port Noise Monitoring System implemented in Patras port in Action B2 will inform citizens on noise levels to which they are exposed and on future noisy events, and in the meantime will receive complaints and comments from them concerning port noise emissions and disturbance.