

# **FEASIBILITY STUDY FOR PULA PORT AUTHORITY PILOT ACTION**

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## I. EXECUTIVE SUMMARY

According to application form of ADRIGREEN project, Pula Port Authority should implement its pilot action covering one of the four main pilot action goals identified:

- Adoption of smart solutions to improve waste and water management and to reduce energy consumption in small-medium regional Airports.

Main deliverables of pilot action implementation should be Feasibility study of implemented action as well as testing report of implemented action, which will be basis for further project steps, especially in conducting Capitalisation manual on identified and tested solutions within ADRIGREEN projects.

Therefore, this document should evaluate pilot action implemented with clear conclusion regarding its feasibility and transferability to other regions or airports, contributing to project transnational approach conclusion which shall be summarised in Capitalisation manual.

Testing results of implemented pilot action in Pula Port Authority have demonstrated its advantages from process optimisation point of view as well as from feasibility (cost-effectiveness) and environmental perspective.

In addition, Pula Port Authority has presented pilot action implementation plan covering all implementation process phases, from appointing project team, through identifying risks and risk mitigation procedures, conducting public procurement process and, in the end, implementation of equipment and monitoring of its performance.

Conclusion from this study represents recommendations to Dubrovnik Airport management board as well as to other interested parties on how benefits from green field process thinking and optimisation may contribute to the organisation.

Also, to have adequate knowledge on impact and in order to ensure durability of similar pilot actions implemented, it is essential that company implements environmental management system process in place, as an integrated tool for planning, implementation and monitoring of environmentally friendly activities.

## II. BACKGROUND OF THE PROJECT

Green and intermodal solutions for Adriatic ports and airports - ADRIGREEN is a project approved under the INTERREG V-A Italy Croatia CBC Programme 2014-2020. The programme is funded by the European Regional Development Fund under the European Territorial Cooperation objective during the programming period 2014-2020.

The managing body of the Cooperation Program is the Veneto Region, Italy. The national body of the Republic of Croatia coordinating the implementation of the joint programme with other participating countries is the Ministry of Regional Development and European Union funds.

The project has started in January 2019 and it is expected to end by January 2022. The total budget approved for the project amounts to 2.104.217,00 EUR, 85% of which is co-financed through the ERDF fund (European Regional Development Fund). The project will be implemented by 10 project partners.

### **Project description:**

One of the main problems that characterize the Adriatic coastal area is the imbalance in the development of infrastructures and modes of transport, caused by low level of investments and insufficient approach to innovation. In Italy and Croatia there are many maritime cities, which have to deal with a very high number of passengers, especially during the peak season. Even though the road transportation is still predominant, the number of people that are reaching Adriatic cities by ferries and airplanes is significantly increasing year by year. However, most of Adriatic ports and airports are suffering from lack of integration with various modes of transportation, causing serious traffic congestion problems during the summer season.

The aim of the project is to improve the integration of Adriatic ports and airports with other modes of transportation by testing several intermodal operational and technological solutions. By identifying and analysing already existing procedures, the project partners will test a number of intermodal practices in order to evaluate their adaptability and transferability into the Programme area.

Also, it is very important to create more environmental-friendly and less polluting transport between ports (cities) and airports by reducing CO<sub>2</sub> emissions. This can be achieved by purchasing electric vehicles for transport routes between ports and airports, or for use in port/airport premises.

### **III. PROJECT OBJECTIVES, PROJECT APPROACH, COOPERATION NEEDED**

#### **Project objectives**

Low level of integration among different modes of transportation and insufficient investments in sustainable and low-carbon transportation technologies are characterizing several regions in the Adriatic area. The Croatian and Italian Adriatic coasts are rich of touristic destinations, which are reached by millions of tourists every year. Even though the road transportation is still predominant, the number of tourists that are reaching Adriatic towns and cities by ferries and airplanes is significantly increasing. Unfortunately, most of Adriatic ports and airports are suffering from lack of connections with other modes of transportation, causing serious traffic congestions problems, especially during the summer seasons. In addition, the majority of ports and airports facilities are lagging behind the EU average when it comes to sustainable environmental performances.

The main objective of ADRIGREEN project is to improve the integration of Croatian and Italian ports and airports with other modes of transportation in order to enhance the processing of passengers during the summer seasons and to improve environmental performances of the Adriatic maritime and aviation systems.

In order to do that, the project will implement a set of structured activities based on transnational and cooperative approach. The main idea is to identify and analyse a number of existing operational and technological solutions that can be easily transferred and adapted by involved ports and airports. The partners are not interested in inventing new solutions as there are a plenty successful models and schemes implemented in other parts of the world that can be replicable also in the Programme area. Once the solutions have been identified and analysed, the project partner will test the operational and technological models on their facilities so as to improve intermodal connections and to put in practices new schemes for a sustainable management of ports and airports. The objective of the testing phase will be to demonstrate the feasibility, the effectiveness and the replicability of the identified solutions. The last but not least intention of the project is to disseminate the results of tested solutions so as to explain also to other ports and airports how the operational procedures and technological innovation can be successfully transferred and used.

These objectives will be reached by producing several outputs:

- International investigation on best solutions to be transferred on Adriatic coasts;
- Environmental assessments of involved ports and airports;
- Joint Actions Plans: intermodal measures and green and sustainable actions to be implemented;
- Testing of innovative solutions in involved territories;
- Technical Manual on identified practices;
- Cross-Border Forum of Green and Intermodal Ports and Airports to present solutions, explain benefits and share recommendations for new strategies.

### **Project approach**

Considering that all involved territories are facing similar problems (low integration between different modes of transportation and low environmental performances), the project will implement all activities with a participative and transnational approach.

The first step will be to perform a detailed and in-depth identification and analysis of existing solutions for lowering airports/ports environmental impacts and for intermodal connections of ports/airports with other modes of transportation and to identify a set of possible schemes to be easily adopted in territories involved in the project. It means that existing solutions, identified around the EU/world (mainly North Europe), will be the starting point of ADRIGREEN project. This activity will contribute to solve one of the main issues related to intermodal connections and low environmental performances: lack of knowledge regarding potential, smart and suitable solutions that could significantly improve the processing of passengers and decrease environmental impact of transport activities in Adriatic basin. The research will be followed by a deep environmental assessment and by realisation of specific Action Plans where all identified measures will be described.

The second step will be to test the adaptability and efficiency of identified solutions on ports and airports of ADRIGREEN project. Each partner already identified its major problems and a set of fields to be tackled by the testing phase: smart solutions to connect ports and airports to local public transportation systems; integrated timetabling and information for passengers; new services with public and private transportation services and reducing of energy consumption in airport/port facilities.



Each testing phase will strictly pursue a transnational perspective since the final aim is to test solutions, which could be easily adapted in each area involved in the project. In fact, the project will organize also 4 transnational trainings targeted to staff working on ports and airports (not only those involved as partner) to improve their knowledge on technological solutions and procedures for both lowering the environmental impacts and planning new intermodal connections.

The final step of the project will be to disseminate as much as possible the tested solutions to all ports and airports located in Adriatic area. The dissemination will be based on demonstrations how the situation could be improved once the solutions are adapted.

### **Cooperation needed**

Considering the specific objectives of the project (identification of innovative solutions to be adopted in all Adriatic area, testing of their replicability on ports/airports and spreading out of new tested technological solutions and procedures for improving intermodality and lowering environmental impacts), the cooperation among ports, airports, public authorities and research institutions is indispensable.

The project intends to support partners to test some innovative schemes to speed up the transit of passengers and to make their facilities environmentally friendly with the purpose to adapt and replicate them, not only within the partnership but also in other Adriatic regions not directly involved in the project. This is the main reason why the project goal cannot be efficiently reached at local/regional level. The local single action can be of course meaningful, but the challenge of the project is to contribute in the creation of convincing conditions for making entire Adriatic area better connected and its transport system more environmentally friendly. This challenge can be addressed only if existing practices, operational and technological solutions, and awareness raising campaigns melt together and produce a capitalization effect.

The testing phase (WP4) is a very important part of this project and its implementation will be done with highly transnational approach in order to give the possibility to each partner to benefit from results achieved by other partners. Following pilot actions are identified for the implementation:

- implementation of low-cost and smart solutions to better connect airports and ports with local public transportation system, such as railways and public bus lines;
- implementation of integrated timetabling and information for passengers that shall continue their travel by other means of transportation;



- adoption of smart solutions to improve waste&water management and to reduce energy consumption
- new protocols with public and private transportation providers to experiment new services to speed up the process of passengers from/to touristic destinations which are not well-connected.

In WP4 the partners will have the possibility to identify some possible win-win solutions and to test concretely their efficiency. Each partner will consequently benefit from testing solutions carried out in other partners' areas. During the testing phase, the partners will have the opportunity to evaluate together the feasibility and effectiveness of identified solutions in order to know how to act in case of further investments to be done in this sector.

Through the transnational approach, the definition of both Joint Action Plans and of the Manual on identified solutions and practices will ensure the comparability of data and also the complementarity of the work.

#### **IV. NEEDS ANALYSIS PULA PORT AUTHORITY**

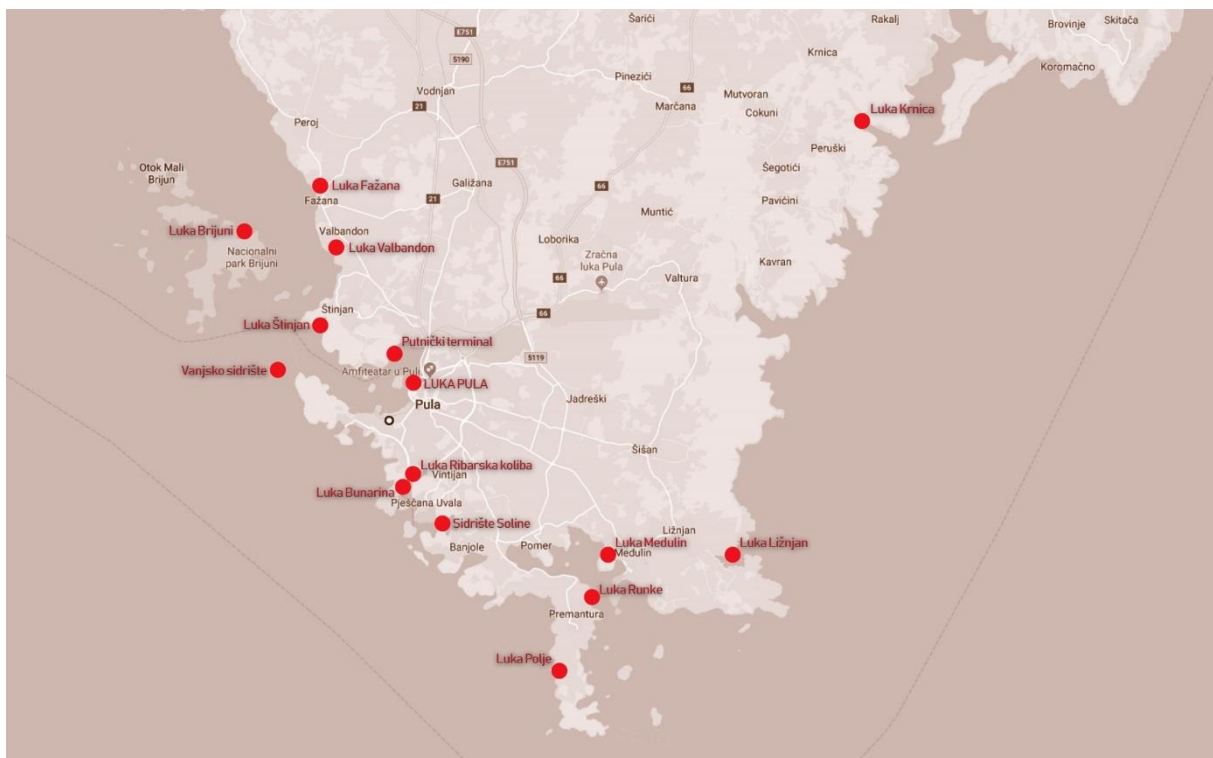
The Istrian Region has 445 km of seacoast. It passed through a significant development in maritime affairs in 1850 when the Austro-Hungarian Monarchy decided to construct its main port-the port of Pula. The entire construction of the port of Pula occurred in that period, as well as the construction of its coasts, shipyard, and the break-waters. Following the construction of the break-waters and due to its natural characteristics and geographic position (protected area and sufficiently deep sea), the port of Pula belongs among one of the best natural ports in the whole Adriatic.

According to the Decree on the Grouping of Ports Open for Public Traffic, the Istrian Region includes 7 ports with regional significance: Pula, Brijuni, Rovinj, Poreč, Novigrad, Umag, and Plomin.

Public traffic ports with regional and local significance (the total of 26) are administered by 5 regional port administrations founded by the Istrian Region (Port Administrations Pula, Rovinj, Poreč, Umag-Novigrad, and Rabac).

The Istrian Region has a regular ferry connection with the island of Cres through the ferry port going from Brestova to Porozina. Regarding other passenger connections on the sea, there is the connection from Pula to Mali Lošinj functioning during the season, and several boat tourist connections during the season to Venice and Trieste with ports in tourist centres (Poreč, Rovinj, Umag, and Pula).

Pula port Authority records a shift in the last 5 years. Pula Port Authority accepts ships up to about 200 m on the operational shore, and larger ships at anchor. Areas of competence of the Port of Pula Authority are dispersed. The existing infrastructure is not sufficient for ferry traffic, and from Pula to the Croatian islands and Zadar there is only one passenger ferry line. During the summer months there is a line to Venice. The Port of Pula Authority generates the largest revenue from small cruise ships.



In addition to passenger ships, fishing and cargo ships also enter the port.

Pula port Authority is located in Istria County. The main transport branch is road transport, which has developed a lot in the last 20 years. The existence of the Airport contributes the most to passenger traffic. Istria County is currently a car destination, but in recent years (before the COVID-19 pandemic) air traffic has become more prevalent.

The port of Pula is not adapted to ferries or large cruisers, and the share of passenger traffic by ships is low. Sea traffic is represented in the summer months when small boats, yachts, sailboats, tourist and excursion boats sail.

Rail traffic is very poorly represented.

In the last 10 years, the Port of Pula Authority has built approximately 500 m of coastal wall intended for the needs of the users it currently serves. The Pula Port Authority operates at 13 locations shown in the picture (the Vinkuran bay is not indicated in the picture).

As pointed out, in the last ten years the Port of Pula has developed the possibility of uninterrupted traffic of passenger ships, fishing boats, cargo ships, tourist ships, small yachts, etc. The forthcoming development of the Port Authority brings the construction of passenger terminals, cruisers and ferries. As only the initial soil testing was performed in order to design and plan the construction of the future terminal, there are all the prerequisites for it to be operated according to ecological principles and to receive ships that are adapted to it. Sustainability is one of the basic provisions that the Port of Pula Authority has focused on. In addition to environmental development and port planning, the local community needs to adapt in smart waste management and the promotion and increased representation of electric vehicle traffic. With these intentions, it could be the first such terminal in the eastern part of Europe.

There are other emerging environmental challenges that were identified in recent years. Such new challenges are mostly due to the increase of traffic and the introduction of new infrastructure. The additional manoeuvring areas, buildings and facilities need to be integrated in existing systems and exploited in efficient way with lesser possible negative environmental effects.

The ADRIGREEN project represents a unique opportunity for the Pula port Authority to continue its development towards an environmentally friendly port. Thanks to the project, the port will analyze and evaluate and set strategies, concepts and technology to improve intermodal solutions. Pula port Authority is particularly interested in improving and integrating communication and transport between units and in the possibilities of applying new innovative technologies according to the latest principles of environmental protection and sustainable development. Consequently, the pilot action of the Pula port Authority includes the purchase of electric shore cleaning machines, electric bicycles and scooters to be used in the day-to-day running of the business. These port-tested solutions will not increase the current air pollution in the port, and will better integrate dispersed ports.

## V. SAFETY AND INDUSTRY REGULATIONS

Security in ports is defined by the law on security protection of ships and ports. Each port should have a port security assessment and a port security plan approved and adopted by the Ministry of Maritime Affairs, Transport and Infrastructure.

The Port Authority or the Special Purpose Port Concessionaire shall be responsible for the security protection of the port to which this Act applies, including the preparation of a security assessment, the development of a security plan and the application of all measures set out in the Security Plan and this Act. The director of the port administration or the responsible person of the authorized concessionaire of the special purpose port is obliged to appoint a person responsible for the security protection of the port operational area and a person responsible for the security protection of the port. The Port Authority or the Director of the Port Authority, is the responsible person of the special purpose port concession holder, is obliged to inform the Ministry about the appointment and change of data of the appointed person within 15 days from the appointment or change. The Port Authority or the concessionaire of the special purpose port is obliged to establish a service in charge of port security, which must be active 24 hours a day.

All legal and natural persons residing or performing activities in the port or in the port operational area are obliged to apply security protection measures by order of the port authority or the concessionaire of the special purpose port. All concession holders in ports managed by port authorities must appoint an employee in charge of security protection, in order to communicate and cooperate with the competent person responsible for security protection of the port operational area.

The Harbor Master's Offices perform navigation supervision in the internal sea waters and territorial sea of the Republic of Croatia, search and rescue of human lives and property at sea, navigation safety inspections, inspection of maritime domain, registration and deletion of ships, determination of seaworthiness, calibration of boats, tasks of registration and deletion of boats and keeping of boat registers, tasks of issuing seaman's books, tasks of determining professional competence of assistance for acquiring a maritime profession, issuing and keeping records of issued authorizations for service on ships and other and technical affairs of safety of navigation at sea according to a special law and other regulations.

## VI. DESCRIPTION OF PILOT ACTION IMPLEMENTED

Pula port Authority pilot action implemented is in compliance to third main pilot action field identified within the project: *“adoption of smart solutions to improve waste&water management and to reduce energy consumption in small ports”*; and is divided into different types of vehicles purchased:

- electric cleaning machine
- electric scooters and bicycles to be used by port staff for faster and cleaner service offering

According to the need’s analysis performed, Pula port Authority has identified following fields for improvement in landside and airside area:

- energy efficiency improvements within port processes,
- cost effective optimisation of business processes.

The purchase and application of an electric vehicle for cleaning the stone part of the coastal wall and pier, and the purchase of electric bicycles and scooters will reduce CO2 emissions and will reduce fuel consumption and regular maintenance costs that have been outsourced so far area. The cleaning machine, electric bicycles and scooters will be visible to stakeholders and the general public and will contribute to sustainable environmental policy, awareness and reduction of greenhouse gas emissions.

The daily operational activities carried out by the staff, sailors, of the Pula Port Authority, required more time and the usage of cars. The process was not only more polluting but also slower due to the use of local roads on which other vehicles also operate. Electric bicycles and scooters can be used on roads where there are no traffic jams, especially in the summer months. In the summer months, there is less rain and a higher flow of people, and therefore the need to clean the coast is greater. With the electric shore washing machine Pula port Authority became independent of the external company that maintained the waterfront, and the costs of maintaining it were reduced.

Prior to ADRIGREEN project, several personal vehicles on petrol or diesel performed these processes, and the local company for maintenance is using regular machine with regular cleaning agents.

Therefore, within ADRIGREEN project Pula port Authority has purchased three electric bicycles, two electric scooters, and one electric cleaning machine.

## VII. FINANCIAL AND ENVIROMENTAL ANALYSIS

### Financial analysis

Pula port Authority has performed financial analysis of equipment purchased and used. In conducting financial analysis following assumptions were taken into the consideration:

- purchase price of new cleaning machine and costs of maintenance,
- The current cost of maintaining and cleaning the coast

Other information:

- electric machine was purchased and put in use 16.07.2020.
- electric scooters and bicycles were purchased and put in use:  
E CITY APOLO - 1.04.2021.  
2 \* MS ENERGY E-BIKE - 30.04.2021.  
2 \* MS ENERGY E20 - 26.03.2021.

### **Electric machine**

**T17 Heavy-Duty Battery Ride-On Scrubber-Dryer**





### **Electric scooters**

MS Energy e20 10 inch 500 W (2 peaces)





## **Electric bike**

E-city Apollo (1 peace)



MS Energy e-bike i10 20 inch 250W disc brakes (2 peaces)



Scooters are changed usage of two cars:

Volkswagen cady

**Bikes are changed or decreased usage of three cars:**

Volkswagen Passat (1.6 TDI, 2012. Diesel)



Peugeot 206, 1400 ccm, 75hp, godište 1999



Peugeot 308 SW 80kw 112 ks 1600ccm diesel, 2008.





Nisan Quashqai 2016. 96 kw



Peugeot partner 1,6 HDI 2011.



## **Electric machine**

### Cleaning of costal surface

Until the beginning of the use or purchase of the electric machine for cleaning open outdoor spaces, the Port of Pula Authority used services of the local company for maintenance and cleaning Herkulanea d.o.o. Cost of cleaning for a part of the coastal wall at the border crossing area (approx. 4500 m<sup>2</sup>) was 2268.28 kn (302.43 eur) upon arrival. During the summer season it was cleaned twice a month, and during the winter once every two months. A total of minimum 10 times a year. The total annual amount of the cleaning cost was HRK 22,682.80 or EUR 3,024.30)

It is important to note that with the construction of the new coast, the area became larger, an additional equally large or larger area was built and now amounts to approximately 9000 m<sup>2</sup>. So twice the area is cleaned, which should generally result in twice the cost. If the coast cleaning service were rented now, it would amount to approximately EUR 600.00 for each cleaning, or EUR 6,000 per year.

The company that has performed cleaning work so far has done so with machines of the previous generation, those that are powered by gasoline, and has used regular cleaning products.

The cleaning agent that is now used is environmentally friendly, and its price is HRK 350.00. One bucket of this agent is sufficient for 4 cleanings if the surface is maintained and if the cleaning agent is used rationally.

The cost of charging the machine can be a maximum of 15 euros for one battery charge. The battery is sufficient to clean the entire surface, but after one cleaning the battery is not empty but half-empty. One charge is enough for almost two cleanings.

The cost of cleaning that would occur in the next 10 years, and if we used the services of the city company will be shown in Table 1.

(The calculation for 2020 is projected from the date of putting the machine into use, 4 cleanings or 1200 eur.)

**Tabl.No.1 Basic costs overview**

year	annual cost
2020.	1.200,00 €
2021.	6.000,00 €
2022.	6.000,00 €
2023.	6.000,00 €
2024.	6.000,00 €
2025.	6.000,00 €
2026.	6.000,00 €
2027.	6.000,00 €
2028.	6.000,00 €
2029.	6.000,00 €
2030.	6.000,00 €
SUM	61.200,00 €

If we look at the cost of cleaning in the basic version, which means that everything is the same and that we did not buy the machine, and that the price has not increased over the years, we could conclude that in 10 years spent almost the entire amount spent on buying this cleaning machine . The price of the machine is 61,611.73 eur, and cleaning at the stated costs for 10 years is 61,200 EUR.

**Tabl.No.2 A statement of costs if the cost of cleaning would grow by 3% per year**

year	annual cost	annual cost + 3% annual increase
2020.	1.200,00 €	1.200,00 €
2021.	6.000,00 €	6.000,00 €
2022.	6.000,00 €	6.180,00 €
2023.	6.000,00 €	6.365,40 €
2024.	6.000,00 €	6.556,36 €
2025.	6.000,00 €	6.753,05 €
2026.	6.000,00 €	6.955,64 €
2027.	6.000,00 €	7.164,31 €
2028.	6.000,00 €	7.379,24 €
2029.	6.000,00 €	7.600,62 €
2030.	6.000,00 €	7.828,64 €
SUM	61.200,00 €	69.983,28 €

If we observe that the price of cleaning costs would increase by 3% per year, the total cost of the same shows an increase of 8,783.28 Eur. The same shows that according to that logic, we achieved savings of EUR 8,783 for the next 10 years.

Annually, they would set aside 875 kn or 117 eur for the cleaning agent. The costs should be added to the service of the machine and the purchase of replacement cleaning brushes. The same can be estimated at 100 euros per year. If we add to that the cost of electricity on average 120 EUR per year. The costs are currently lower than stated, but we will distribute them evenly over the years as we anticipate that with the use of the machine some costs will increase.



**Tabl. No 3. Maintenance costs of the electrical machine**

year	annual cost of electricity	annual cost of cleaning liquid and service
2020.	60,00 €	110,00 €
2021.	120,00 €	220,00 €
2022.	120,00 €	220,00 €
2023.	120,00 €	220,00 €
2024.	120,00 €	220,00 €
2025.	120,00 €	220,00 €
2026.	120,00 €	220,00 €
2027.	120,00 €	220,00 €
2028.	120,00 €	220,00 €
2029.	120,00 €	220,00 €
2030.	120,00 €	220,00 €
<b>SUM</b>	<b>1.260,00 €</b>	<b>2.310,00 €</b>

The total maintenance costs of the machine are EUR 3,570.00

By all accounts, the range of costs we have lost by purchasing an electric cleaning machine far exceeds the cost of maintaining it. Economically, this cleaning machine has contributed to reducing the costs of the Port of Pula.

In addition to contributing to the image of the Port Authority, which has opted for an electric drive machine and environmentally friendly cleaning products, it has contributed to reducing CO2 and reducing environmental pollution. It can be said that it has indirectly improved the image of the Port Authority because it is important that the users of our services perceive how the transition to the use of innovative environmental management models has begun.

## 1. ELECTRIC SCOOTERS AND BICYCLES

Some of the old diesel vehicle (described upper in the text) fleet for landside and airside day-to-day operative activities were replaced with electric bicycles and scooters.

- day-to-day processes are more effective since bicycles and scooters are used by larger group of employees,
- usage of bicycles and scooters are more feasible and environmentally friendly.

Financial analysis for purchase of electric scooters and bicycles is not applicable due to the fact that total of 5 electrical items have replaced 5 existing diesel vehicles.

Total costs of electric scooters and bicycles are approx. 4150 EUR.

Also, processes in Pula Port Authority are more optimised by operating with new smaller items.

### **Environmental analysis**

At this stage, environmental analysis performed relates to basic calculation of CO2 emissions according to technical specifications of equipment purchased compared to the one replaced. In further steps of the pilot action testing, evaluation grid will be developed in order to assess action performance and to show how the environment and transit of passengers benefited from pilot actions. Also, it is important to specify that it is not yet fully investigated the impact of changing electric battery each five years on environment in respect of battery production and battery disposal.

## **VIII. RISK ANALYSIS**

Pula Port Authority has participated on several project meetings in order to discuss project implementation.

Qualitative risk analysis for different stages of feasibility study (FS) and Action plan implementation as follows:

- Preparation phase – includes steps that are to be fulfilled prior to developing of FS and Action plan
- Implementation phase – includes steps that are to be taken for purchase of equipment necessary for testing pilot action
- Testing phase – includes steps that are to be undertaken during the testing phase of the Action plan and producing FS.

Per each phase of the Action plan lifecycle, following activities will be performed:

- Risk identification – all types of risks that can occur needs to be identified and addressed,
- Risk assessment – each risk shall be measured and assessed based on the probability of occurrence and impact on the project objectives achievement,
- Corrective measures and mitigation measures – measures prescribed by engaged parties in order to mitigate risk to acceptable level.

## IX. CONCLUSION

Pula Port Authority has implemented process for monitoring and implementation of pilot action. Process consisted of following:

- identifying project team with clear responsibilities of each project team member,
- preparation of project implementation plan including pilot action implementation steps,
- identifying risks that can occur during pilot action implementation process with continuously monitoring and evaluation process,
- conducting timely public procurement processes for purchase of needed equipment,
- implementing purchased equipment in practice and measuring their performance,
- establishing monitoring system for environment analysis and process optimisation analysis for future benefits.

Furthermore, pilot action implemented is in compliance to third main pilot action field identified within the project: *adoption of smart solutions to improve waste&water management and to reduce energy consumption in small-medium regional Airports*; and is divided into three main areas / types of vehicles purchased:

- electric cleaning machine for outside hard surfaces,
- electric scooters and bicycles to be used for trafficking between few different ports and receiving optimisation.

Finally, according to testing results of implemented actions, feasibility of each implemented action is demonstrated as well as their positive impact on environment.

Employees are well accepted the usage of environmental friendly devices. The image of port are getting higher it the sense of usage of electrical devices.