

# Local action plan for the ports of Venice and Choggia

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## Introduction

The objective of this document is to draft a local Action Plan for the ports of Venice and Chioggia, in order to enhance ports environmental sustainability and energy efficiency, identifying the measures to be realized in the short, medium and long term to tackle the challenges assessed in the previous Territorial Needs Assessment (D.3.2.4), as well as the funding needs and opportunities. The local action plan is the base for the pilot actions (WP4) and the cross-border strategy (WP5).

## Weaknesses and Threats of the SWOT analysis included in the TNA tackled by this Action Plan

This action plan will tackle mainly weaknesses and threats that are both grounded on the framework of the energy transition.

Below weaknesses and threats are reported from the SWOT Analysis presented in the TNA by the North Adriatic Sea Port Authority (hereinafter NASPA):

### WEAKNESSES

1. Absence of dedicated PODs (Point of Delivery) for some of the terminal operators involved in the analysis makes difficult installing systems for self-generation of electricity (i.e. photovoltaic systems) and obtaining more focused energy data.
2. Absence of reward / incentive mechanisms for terminal operators wishing to invest in low CO2 emissions processes and technologies: these mechanisms could increase their commitment to the adoption of good practices aimed at reducing and containing environmental impacts.
3. Lack of the possibility (NASPA) to directly manage aspects related to naval traffic in port (e.g. environmental aspects).

## THREATS

1. Financial gap: the use of alternative fuels requires high investments: deep feasibility assessments are required to evaluate the expected return on investment.
2. Public-Private cooperation is needed to achieve further developments in order to leverage the results and harmonize energy consumptions in the public and private areas of the Cargo commercial port of Venice Marghera (high complexity, one of the biggest industrial areas in Europe).
3. Technological and digital gap.
4. Different levels of laws and guidelines can rule out the private interest for port investments

Falling within a context oriented to energy transition that sets itself ambitious development objectives, weaknesses in particular turn out to be opportunities. This opportunity is specifically represented by the fact that since the past few decades forms of cooperation between the public and private sectors have existed and are feasible (Public Private Partnership - PPP). It deals with specific financial schemes designed for the financing of projects and works of public interest, where the public plans a concerted operation in which several subjects, even of various kinds, can participate depending on the characteristics of the operation itself.

This opportunity, which however implies appropriate and considerable time to activate synergies and projects with high degrees of complexity, also brings out and highlights those further opportunities that can be carried out immediately, or in any case in significantly quicker times, depending on the economic availability too. These opportunities are expressed in solutions that see NASPA as a possible direct implementing subject and which are represented, by way of example, by the implementation of preparatory studies on new technologies and fuels with low or zero "carbon footprint" for the energy transition, along also with actions such as the replacement of diesel / petrol powered cars with electric ones, the replacement of traditional lighting systems with LED lighting systems, or the construction of photovoltaic systems on state-owned buildings, etc. In this context, and to this end, the needs of NASPA are basically translated into economic needs, as a "*conditio sine qua non*" to be able to develop its own projects for energy efficiency in view of energy transition and, ultimately, of ecological transition.

## Actions for environmental sustainability and port energy efficiency

ACTION - DESCRIPTION	REDUCTION OF POLLUTING EMISSIONS / ENERGY EFFICIENCY
<b>a) New lighting systems</b>	
1) Replacement of the existing lighting system with LED lighting installation in public port areas - Sant'Andrea, San Basilio (WP4 Pilot Action SUSPORT Project).	Reduction of CO2 emissions of 125 ton/year.
2) New lighting systems at the port of Chioggia: - New installations and plants - Replacement of the old lighting system with LED lighting installation	Consumption reduction of 240 Mwh/year Reduction of CO2 emissions of 106.800 kg/year.
3) Replacement of old lighting system with LED lighting installations in port terminal buildings at the port of Venice	297.363 kWh/year energy savings
4) Replacement and installation of lighthouse towers in port terminal at the port of Venice	Reduction of emissions estimated: 246 TonCO2eq/year.

<p>5) New lighting systems at passenger terminal Venice:</p> <ul style="list-style-type: none"> <li>- New installations and plants</li> <li>- Replacement of old lighting system with installation of LED lighting</li> </ul>	<p>Consumption reduction equal to 40% compared to the current annual consumption (138.385 KWh / year) with a saving in terms of CO2 emissions equal to 37.000 kg / year.</p>
<p><b>b) Renewable energies</b></p>	
<p>1) Energy requalification of railway parks with installation of photovoltaic panels</p>	<p>Reduction of polluting emissions /energy efficiency is still under estimation according to the project level achieved.</p>
<p>2) Realisation of a photovoltaic system in passenger station buildings at the port of Venice</p>	<p>Reduction of polluting emissions /energy efficiency is still under estimation according to the project level achieved.</p>
<p>3) Realisation of a photovoltaic system on port terminal structures at the port of Venice for a total peak power of 518.1KWp</p>	<p>Reduction of polluting emissions /energy efficiency is still under estimation according to the project level achieved.</p>
<p>4) Realisation of a photovoltaic system in port terminal buildings at the port of Venice</p>	<p>Reduction of emissions estimated: approximately 82 TonCO2eq / year.</p>
<p>5) Realisation of a photovoltaic system on state-owned structures at the port of Chioggia for a total peak power of 200KWp</p>	<p>Reduction of polluting emissions /energy efficiency is still under estimation according to the project level achieved.</p>
<p><b>c) Electric/hybrid cars</b></p>	



<p>1) Car fleet replacement with n. 6 full electric and n. 3 hybrid cars (service cars for employees) for the port authority NASPA. n.8 recharge stations will be purchased.</p>	<p>CO2 emissions reduction of 15,52 ton/year, with respect to petrol and diesel cars.</p>
<p>2) In April 2021 already purchased n. 2 full electric cars for the port authority in Venice - service cars for the employees (WP4 Pilot Action SUSPORT Project).</p>	
<p><b>d) Electric machineries</b></p>	
<p>1) Replacement of n.2 Rubber tyre gantry cranes (RTG) with n.2 Electric Rubber tyre gantry cranes (E-RTG) in port terminal (port of Venice)</p>	<p>The environmental and energy benefits will be immediate, benefiting from a reduction of about 70% of CO2 emissions and a reduction in energy consumption. The combination of 2 endothermic RTGs with 2 powered by electricity will result in an annual reduction of approximately 120,400 kg of CO2e for each replaced RTG.</p>
<p>2) Purchase of n. 1 hybrid crane in port terminal (port of Venice)</p>	<p>Savings (around 15-18%) of energy for the same lifting capacity as well as a reduction in polluting emissions of CO2, CO, NOx etc</p>
<p>3) Purchase of electric and hybrid locomotives</p>	<p>Reduction of polluting emissions /energy efficiency is still under estimation according to the project level achieved.</p>

<p><b>e) OPS – Onshore power supply</b></p>	
<p>1) OPS infrastructure in port areas - Venice</p>	<p>Considered the interventions foreseen 1), 2) for the implementation of OPS, it will be possible to give estimations in terms of energy efficiency in the detailed design, when energy efficiency improvements are taken into consideration.</p> <p>Anyway, figures can be provided only after the actions will be carried out, as several variables influence the final results, e.g. end-users conditions, level of technology achieved until the realisation of the infrastructures, ect...</p> <p>Currently, the reduction of CO2 emissions with cold ironing, is estimated to be around 30%.</p>
<p>2) OPS infrastructure at Fusina (Ro-Ro Terminal)</p>	<p>Same as point 1)</p>
<p><b>f) Alternative fuels</b></p>	
<p>1) LNG AdSPMAS is committed, together with important port operators, in the development of a supply, refueling and distribution network of LNG. The port of Venice will be the first port in the Adriatic to complete the supply chain for supplying and refueling of LNG for ships. The first LNG deposit in Porto Marghera will be realised with a capacity of</p>	<p>The LNG Venice facility is expected to contribute to the reduction of particulate matters (PM) and NOx in the road sector, since LNG produces 98% less PM and 60% less NOx than conventional fuels. Effects will increase from 2022 to 2030 as long the facility's throughput rises. In the maritime sector, LNG produces 97% less PM, nearly 100% less SOx, and 91% less NOx than conventional marine fuels. This positive impact in the port area will also increase from 2022 to 2030 along with the development of LNG-fuelled ships.</p>

<p>32,000 m<sup>3</sup>, promoted by the Venice LNG company. The new LNG port storage facility in Venice aims to supply the road, maritime and inland waterways transport modes.</p>	<p>In addition, the substitution of diesel and fuel oil by LNG combustion will generate 12% less CO<sub>2</sub> than conventional fuels for the same period.</p>
<p>2) Construction of a barge for the transport of LNG by the Rimorchiatori Riuniti Panfido company, capable of transporting 4,000 m<sup>3</sup> of LNG between storage terminal and ships to be supplied.</p>	<p>Same as point 1)</p>
<p>3) Hydrogen Study to evaluate the possibility of using hydrogen as alternative fuel at the port of Venice (analysis within WP3 Territorial Needs Assessment – SUSPORT Project)</p>	<p>It is foreseen the development of a Master plan with milestones for 2030 and estimations of emissions reduction will be possible.</p>

## Consistency with environmental sustainability and energy efficiency policies

NASPA is pursuing actions aimed at promoting and implementing the energy transition to mitigate the environmental impact of the maritime and port sectors, that can be summarised as follows:

- Actions to support the energy transition in port areas and for port operations, such as new lighting systems, renewable energies, electric and hybrid vehicles.
- Actions for the implementation of the OPS – Onshore Power supply, in order to reduce polluting emissions from ships moored in port, during loading and unloading operations on the quay.
- Actions to consolidate the logistics chain connected to Liquid Natural Gas (LNG) as an alternative fuel of transition for sea and road transport, with coming into operation of the new LNG storage terminal planned at the end of 2023. NASPA is working to implement the infrastructure for the development of the LNG connected logistics chain, even if the LNG market is not yet mature.
- Actions to promote the supply chain connected to the use of hydrogen as an alternative fuel from renewable sources (so-called green hydrogen) with a reduced impact on the environment.

The listed actions are fully consistent with the policies for environmental sustainability and energy efficiency at local, regional, national, European levels and their goals:

- Directive 2014/94/EU on the deployment of alternative fuels infrastructure (“DAFI Directive”)
- National Strategy for LNG – 2016 - Italian Ministry for Economic Development (“Documento di consultazione per una Strategia Nazionale sul GNL”)
- The European Green Deal – European Commission 2019
- Document for Energy and Environmental Planning of port systems – 2019 - Italian Ministry for the Ecological Transition (DEASP – “Documenti di Pianificazione Energetico-Ambientale dei Sistemi Portuali”)
- Programme NEXT GENERATION EU - European Commission 2020
- National Strategy for Hydrogen – 2020 - Italian Ministry for Economic Development (“Strategia Nazionale idrogeno – Linee Guida”).

- Italian Recovery Plan – 2021 – (PNRR – “Piano Nazionale di Ripresa e Resilienza”)

The initiatives reported are part of the 2018-2020 Three-Year Operational Plan of NASPA and subsequent revisions. The actions are consistent with the strategic and planning acts adopted by the Ministry, in particular the National Strategic Plan for Ports and Logistics and the National Strategic Framework for the development of the alternative fuel market in the transport sector.

## Conclusions

The European Union's objective of significantly reducing greenhouse gas emissions by 2030 and achieving climate neutrality by 2050 will only be achieved by introducing more ambitious policies aimed at reducing dependence on fossil fuels and in synergy with the commitment to eliminate pollution.

In the “European Green Deal” (COM 2019/640) it is emphasized that in the transition towards zero-emission transport, the enhancement of ports as potential clusters that bring together energy, industry and circular economy is strategic; ports have great potential to become new clean energy hubs for integrated electrical systems, hydrogen and other low-carbon fuels.

NASPA, with its ports of Venice and Chioggia, plays a strategic role for the development and growth of the socio-economic context in which it is inserted.

The activities planned and included in this action plan will contribute to the fight against climate change through the implementation of green interventions allowing to guide the ports of Venice and Chioggia towards that ecological transition that will lead them to become a zero-emission system.

Recalling the SWOT Analysis reported in the Territorial Needs Assessment, weaknesses and threats can turn out in opportunities to make both ports more efficient and innovative:

In particular, the use of alternative fuels could reinforce the possibility to attract private investments. Concretely, this means the development of port traffics and thus new business opportunities. In fact the deployment of alternative fuels and innovation technologies for green&smart ports will have a double implication of "less pollution more efficiency" for ports.