



NESOI
EU ISLANDS FACILITY

**Boosting Energy Sustainability
in Transport for Catania**

BEST-CT



 **SICILY**



“Using full electric bus is a challenge, both from technical and operational points of view. The project could be replicated by the main transport companies in Sicily and in other islands”



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The European Islands Facility NESOI aims to unlock the potential of EU islands to become the locomotives of European Energy Transition. To do so, NESOI aims to mobilize more than €100 million of investment in sustainable energy projects to give EU islands the opportunity to implement energy technologies and innovative approaches, in a cost-competitive way. NESOI has selected 56 such projects across the European Union and provide them with financial resources and technical support.



Boosting Energy Sustainability in Transport for Catania

ABOUT THE PROJECT

Project Promoter Azienda Metropolitana Trasporti e Sosta Catania S.P.A (AMTS CATANIA)



Stakeholders Municipal Administration of Catania



Country Italy



Sector Mobility



PROJECT VALUE 26,000,000 €

DESCRIPTION

- The project consists of several actions aiming at increasing the energy performance in operating urban bus transport in the city of Catania.

AIM OF THE PROJECT

The renovation of the main bus depot will include rooftop PV, PV shelters for buses and service cars, empowering electrical cabins and stations and re-lamping.

The bus fleet will be enhanced with electric engine and batteries, together with 23 slow charging stations (80 kW each) and 3 fast charging stations (250 kW each).

FUTURE STEPS

The project implementation would be considered as one of the best practices in Sicily island, especially for the use of zero-emission buses for urban transport, to be adopted also in main bus routes (high-capacity vehicles) and not only in short shuttle services in the historical center.

HOW THE EU ISLANDS FACILITY NESOI SUPPORTS THE PROJECT

- 1 Assessment of the key project sizing drivers
- 2 Identification of suitable technological options given existing project sizing requirements
- 3 Definition of the required environmental permitting procedures
- 4 Cost Benefit analysis and socio economic and environmental impact evaluation
- 5 Definition of the technical, economic and financial, fiscal project inputs
- 6 Risk analysis and identification of available mitigation strategies
- 7 Assessment of existing procurement options (e.g. tender, PPP, etc.)
- 8 Financial modelling and identification of target scenario and Identification of financing/funding options
- 9 Action plan and identification of project monitoring procedures





INTERVIEW WITH

Salvatore Capri, in charge of ICT and network plans at Azienda Metropolitana Trasporti E Sosta Catania

Q: How was the project initially designed? Why choosing this specific technology / sector?

A: Making public transport in Catania more modern and sustainable is at the heart of our activities. The renovation of the bus depot and the electrification of the bus fleet are parts of our strategic plan. We also consider CNG (compressed natural gas) vehicles; and hydrogen vehicles, with hydrogen coming from renewable energy sources, will be evaluated in the future.

Q: What are the challenges of the project?

A: The difficulty is to manage the electric vehicle fleet as it has less autonomy than the fleet with a combustion engine. It is therefore expected that the vehicle will have to be replaced during the journey in order to recharge it. We will therefore have to provide more vehicles in the fleet than are needed at present. Catania's uneven orography is another difficulty. We expect more challenges with the future hydrogen project, especially for the availability of funding from the national recovery plan (PNRR).

Q: What are your next steps towards clean energy transition?

A: We plan to continue the energy transition and increase the size of the electric fleet. We plan to purchase 100 electric buses in the next three to four years, so we also plan to extend the photovoltaic capacity and electric infrastructure (15 MW plant, three times the infrastructure supported by NESOI, 30 times today's infrastructure). Later we would like to extend the bus fleet to include hydrogen vehicles with refueling and storage facilities, but also probably production facilities. Not only for them but also for other sectors such as the airport, local rail transport, etc. The planned hydrogen production will have to come from renewable energy with an associated photovoltaic field.

Q: Within your views, where could this project be replicated?

A: Especially at the Italian level in metropolitan cities. For example, Palermo and Messina are possible recipients of fleet funds but are not yet that far ahead in setting up the structure. On the mainland, Milan and Turin are further ahead but the other metropolitan cities are not yet.

THE IMPACT

ON LOCAL COMMUNITY



- 1 Local Environmental Conditions**
 Local environment conditions will certainly benefit from zero pollutants' emissions by the new electric buses and, generally, from the significant energy savings due to the energy production from renewable sources.
- 2 Social Acceptance and Impact**
 Citizens will directly benefit from the effects of this activity. They will have better transport means in terms of pollution, noise comfort, and urban environment with less environmental impact.

Boosting Energy Sustainability in Transport for Catania – Technical Data

**FOCUS ON
SUSTAINABLE PUBLIC TRANSPORTATION SYSTEM**

In alignment with the climate change mitigation action plan part of the Paris Agreement (2015), the Italian green mobility sector is growing.

The city of Catania is leading a project aiming at increasing energy sustainability levels and decreasing energy consumption in operating urban bus transport. The whole public transportation system is going to be modernised by the mean of joint measures leading to a more sustainable public transportation service.

Among the measures put in place are: the renovation of the main bus depot will include rooftop PV, PV shelters for buses and service cars, the empowering of electrical cabins and stations and a global re-lamping. These improvements will be completed by a bus fleet enhancement with electric engine and batteries, together with 23 slow charging stations (80 kW each) and 3 fast charging stations (250 kW each).

The design of the charging facility was the main focus of NESOI technical assistance. The fleet of electric vehicles has less autonomy than the fleet of combustion engine vehicles. As a consequence, the vehicles will have to be replaced during the journey in order to recharge their batteries, therefore a larger fleet will be required.

The benefits for the local population are very important in terms of air pollution, noise comfort, improved urban environment with less environmental impact related to the public transportation. The extension of the project leading to a larger bus fleet and stations is already planned.

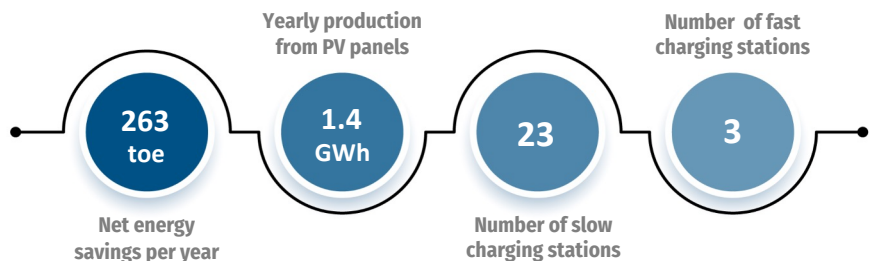


Sicily electric bus from Solaris
(Source: Solaris press release, 18.03.2022, See <https://www.solarisbus.com/en/press/e-buses-in-sicily-1735>)

**EXPECTED
ENERGY SAVINGS**

The expected yearly production of the photovoltaic plant is 1.4 Million kWh, equal to 467.5 toe of saved energy (coefficient 0.187 toe/MWh). Electric renovation and will imply a 250.000 kWh saving, equal to 46.8 toe. These savings are going to compensate the increase due to electric buses (with reference to diesel ones), which is expected to be 54.7 toe. The total net energy savings is equal to 263 toe per year.

**KEY NUMBERS
OF THE PROJECT**



**REPLICABILITY
IN OTHER ISLANDS**

The project could be replicated for the main transport companies in Sicily and in other islands, especially at the Italian level in metropolitan cities. For example, Palermo and Messina are possible recipients of fleet funds but are not yet that far ahead in setting up the structure. On mainland, Milan and Turin are further ahead but the other metropolitan cities are not yet.