European Commission

Clean energy for EU islands

Summary of DESALINAID project

Technical assistance for Tilos, Greece

Published	31/01/2022
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The project DESALINAID envisaged a reverse osmosis desalination plant of an estimated capacity around 500 m3/day to cover the needs of the area of Livadia, on the non-interconnected island of Tilos. Renewable energy sources (RES) were considered for powering the desalination plant, namely a wind turbine, solar photovoltaic (PV) plant, or a combination of them. Both a stand-alone version and grid-connected version were considered. The goal of the technical assistance was to provide an overview of the regulatory framework and financial opportunities for the development of this project, consulting information from existing related projects to identify possible barriers and opportunities.

Examination of existing desalination plants on Greek islands revealed that only few examples exist in the country that combined desalination with RES. These include few pilot projects and commercial applications, some of which, however, faced technical issues and were either not completed, stopped after a short time, or abandoned at the end of the projects. Also, several of these made use of one specific national funding program, while others took advantage of European programs.

The regulatory assessment showed that national policy promotes RES on non-interconnected islands and highlights their role in supporting desalination. However, not many specific measures are yet in place for RES-based desalination, especially the stand-alone version. Some provisions were found, nevertheless, that give RES installations for desalination priority in the examination of the production licence requirement (or exemption thereof). Furthermore, an increased maximum capacity for PV with virtual net-metering applies to legal entities pursuing public benefit, which could also apply to desalination plants. Concerning permitting procedures, the analysis showed there is no dedicated framework for desalination plants, rendering the process complex and time-consuming. For RES, however, recent revisions of the regulations attempt to simplify and accelerate the long permitting procedures, with more changes still expected. Small-scale installations below 100 kW, such as those allowed on non-interconnected Tilos, generally have fewer permitting requirements.

Based on the regulatory analysis and interviews with experts on desalination in Greece, the current barriers for RES-based desalination on non-interconnected islands were identified. These include:

- Complex permitting procedures and intricate, non-dedicated regulatory framework for desalination.
- Lack of regulation on storage systems, especially an issue when considering a stand-alone system. This problem is expected to be solved with upcoming regulation.
- Funding schemes for desalination plants with RES often require a mature project, which is in conflict with the long permitting procedures. Simplification of the procedures could help alleviate this issue.
- Siting of both RES technologies and desalination facilities, as well as of the combination of both for an autonomous system, is a constraint on islands, particularly on small ones.
- Technical constraints in particular for autonomous systems, such as the intermittency of RES and consequent requirement of large storage and special equipment.

The technical assistance further provided a list of funding and financing option at national and European level for projects with RES that could be leveraged for the DESALINAID project.

With a clearer picture of regulation, permitting procedures and common barriers and opportunities for desalination with RES, as well as an overview of possible funding and financing options, and a list of similar experiences on other Greek islands, the DESALINAID project team is better prepared to further the development of the project.