Co-ordination Action for Autonomous Desalination Units based on Renewable Energy Systems – ADU-RES

Dr. Christian Epp and Michael Papapetrou
WIP - Renewable Energies, Sylvensteinstr.2, 81369 München, Germany,
Tel.: +49-89-720 12 735, Fax.: +49-89-720 12 791
emails: christian.epp@wip-munich.de, michael.papapetrou@wip-munich.de

1. Introduction

Many arid regions in Mediterranean countries have a great potential to cover part of their pressing water needs by renewable energy based desalination. However, the wide-scale implementation of this technology faces numerous technological, economic and policy barriers.

These barriers are studied and analysed by the ADU-RES co-ordination action. The consortium involves partners from 8 Mediterranean Partner Countries (MPC) as well as institutes and SMEs from 5 EU countries specialised in desalination and renewable energy systems. Here, the main objectives, activities and expected results of ADU-RES are summarised.

2. Main Objectives And Activities

2.1 Further Development of R&D

In recent years, the research community worked intensively on coupling desalination systems with renewable energy technologies in robust and cost effective desalination units. While both components of these set-ups are mature technologies in themselves, few commercial products in combination of those are available. ADU-RES strives to develop further integrated plant designs for mature and cost efficient renewable energy based desalination. The action will bring together the existing R&D work and the results of own technical, economic, social and policy research to design and present specific guidelines for ADU-RES plant construction.

2.2 Cost analysis

The high capital costs involved make investors and decision makers reluctant to accept renewable energy powered desalination. However, the comparison to alternative solutions for fresh water supply should take into account the life-cycle costs, including external costs such as the depletion of non-renewable water resources, or the air pollution caused by diesel units powering large-scale desalination plants. ADU-RES will analyse these factors in an effort to provide transparent data of the real costs as well as suggestions for lowering the capital cost of renewable energy based desalination.

2.3 Formulation of policy initiatives

The implementation of renewable energy based desalination is partly hindered by unfavourable socio-economic framework conditions. For example, in many regions conventional and environmentally harmful water supply is heavily subsidised while no public support can be found for desalination units. As a first step, representative Mediterranean regions with high demand for decentralised desalination units will be selected and their socio-economic and political framework conditions will be analysed. Based on this analysis, a political strategy to boost decentralised renewable energy based desalination units will be developed. At the same time, the relevant EU legislation will be scrutinised, resulting in clear recommendations for improving the framework conditions in favour of enhanced implementation of desalination units.
2.4 Political dialogue and dissemination

The Co-ordination Action intends to reach policy makers and think tanks, providing them with an invaluable source of expert analysis and recommendations for the promotion of desalination units. At the same time widespread circulation of reports, methodology and guidelines amongst the research and industry communities will initiate and maintain a fruitful interdisciplinary dialogue on the issue. These dissemination actions in combination with the technical and policy work mentioned above will lead to the creation of international consortia for the exploitation of design concepts and plans developed within ADU-RES.

3. Expected Outcomes

1) Knowledge on relevant R&D actions is shattered between institutes and companies in EU and the Mediterranean.

→ ADU-RES will compile relevant data in comprehensive documents and Internet portals.

2) Basic technical requirements, like drastic cost reduction and improved reliability, have to be fulfilled before the commercial implementation of the technique is possible.

→ ADU-RES will design guidelines with recommendations that will contribute in the progress towards those objectives.

3) Issues related with the environmental and social impacts of any activity are usually neglected causing harm to the environment and opposition of local populations

→ ADU-RES will focus its research on any potential environmental, gender, health and social aspects of decentralised desalination.

4) The awareness for the technical options and the socio-economic barriers of RES based desalination units is rather limited between stakeholders in utilities, industry and policy

→ ADU-RES will enhance the awareness for the desalination based on renewable energy sources, for example with the organisation of the following events:
  - A seminar that will take place in Tunisia in April 2005 and will be dedicated to the presentation of ADU-RES related research results
  - An event in Jordan in March 2006 that will be dedicated to political decision makers

5) Practical implementation is hindered by the lack of adequate financial resources

→ ADU-RES will research and define appropriate financial options and will raise awareness among investors and financial institutions

6) There are not many commercially operated plants that would raise the trust in the maturity and efficiency of decentralised desalination units.

→ ADU-RES strives to stimulate the in detail planning of commercial size desalination units based on renewable energies in the Mediterranean.

4. Acknowledgment

ADU-RES is supported by the European Commission under contract number INCO-CT-2004-509093. However, the views expressed herein are those of the authors and can therefore in no way be taken to reflect the official opinion of the EC.

ADU-RES started on the 1st of April 2004 and will be completed by October 2006. All relevant stakeholders are invited to take part in the wide dialogue and contribute in the preparation of concrete implementation plans of pilot units.

Special acknowledgments should be given to all the consortium members for their commitment to produce high quality results. A list with the consortium members as well as further information can be found under: www.adu-res.org