

Fact Sheet on Seawater Desalination with Nuclear Power

What are the issues?

- Many regions of the world already face acute water shortages and many others are predicted to do so in the near future. It is estimated that by 2025, 30 % of the world population will be lacking access to clean water with increased dependency on alternate sources of water, including seawater desalination. The situation can only be made more difficult by continued population growth, uncertainties in fossil fuel supplies, escalating energy prices and the growing concern over carbon emissions.

What are the benefits of nuclear power in seawater desalination?

- Nuclear power helps reduce costs for energy-intensive processes such as seawater desalination. There is an added value of nuclear desalination in case small percentage, say 10% of power, of the currently large available power reactors being dedicated for water production i.e. having dual purpose plant for electricity generation and seawater desalination. On the long run, a new generation of innovative small and medium nuclear power plants could also co-generate electricity and potable water, both safely and at competitive prices in today's market.

What services does NPTDS provide?

- We provide technical support to Member States facing water shortage problems, on assessing the viability of nuclear power in seawater desalination. The support, usually channeled through national Technical Cooperation (TC) projects, can take several forms, ranging from educational training and technical advice on feasibility studies to design and safety review of demonstration projects.
- We offer a software tool (DEEP) that can be used to evaluate the economics of the different desalination and heat source configurations, including nuclear and fossil options.

What are recent NPTDS activities in nuclear desalination?

- We have been providing technical support to Pakistan on a demonstration project to design, construct and couple a Multi-Effect Distillation unit to the KANUPP nuclear power plant in Karachi.
- We have been providing technical support to, among others, Algeria, Jordan, United Arab Emirates on their nuclear desalination feasibility studies.
- We have assisted Egypt and Libya in the development of nuclear desalination plants simulation.
- We have distributed about 500 licenses of the DEEP spreadsheet program to international users, free of charge.
- We have started a new coordinating a research project (CRP) on Advanced Process Heat Applications with aim on, among other things, to evaluate the desalination aspects of HTGR, with the participation of currently 8 Member States.
- An International Nuclear Desalination Advisory Group (INDAG) composed of representatives from 15 Member States serves the role of an advisory group for our activities.

How to benefit from this activity?

Member States interested in starting their own nuclear desalination projects should contact the Technical Cooperation Department of the Agency.

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Further information is available on the Departmental website

<http://www.iaea.org/OurWork/ST/NE/index.html>