ASSESSMENT OF BEST AVAILABLE TECHNOLOGIES FOR DESALINATION IN RURAL/LOCAL AREAS

Less carbon and more water, renewable energy desalination technologies are a new hope for thirsty countries. Energy hungry desalination plants can now be supplied with renewable energy sources and thus tremendously reduce their carbon production or "carbon footprint". One problem, however, still needs to be resolved: brine and its negative environmental impact.

Conventional desalination consumes a lot of energy and produces waste (technically known as brine) that has negative environmental impacts on the receiving bodies (marine and freshwater ecosystems). Desalination of salt and brackish water might be the only source of highly needed supply in arid countries. Some of the SWIM Partner Countries (PCs) have already constructed or are planning to construct several desalination plants to provide water for their citizens. With the current concerns on climate change, desalination plants are being faced with opposition. Renewable energy desalinization is not a universal solution. Renewable energy sources (RES) will reduce the carbon footprint of desalination but will not affect the environmental impact of brine. They require possibly unavailable space for their deployment.

PCs have expressed strong interest in renewable energy desalination as a non-conventional source of water. Focus was also drawn on rural areas. It was agreed between the concerned stakeholders and SWIM-SM to explore the potentials and develop a framework for use. The agreement, however, was based on the premise that desalination, even with renewable energy sources, will only be used when other resources have been completely exhausted.

An assessment of Best Available Technologies for Desalination in Rural areas was commissioned by SWIM-SM. The report is a tool for decision makers for the selection of most suited technologies that fit their rural settings.

The report describes the latest technologies with an emphasis on small-scale innovation relevant to rural areas (Section 2.1). It moves further to describe renewable energy resources that are appropriate for use in the PCs in combination with desalination technologies (sections 2.2 and 2.3) and finally details technical and non-technical criteria for a successful project (chap 3). Understanding the characteristics of rural areas (chap 5) is crucial in the technology selection process. The assessment then cross-matches the characteristics of rural areas with the specifications of desalination plants and RES to select the best fit amalgam. There are two systems for desalination using RES. The first is made of a power farm (wind, solar, geothermal) that supplies energy to a conventional desalination plant. The second, such as solar stills uses RES directly. Several sources of renewable energy can be used to supply a selected desalination process. The characteristics of the rural areas to be supplied with desalinated water play an

important role in the choice of technology and its accompanying renewable energy supply system. Several combinations, identified in the report, are possible and accordingly different rural conditions can be catered for. Since there is no “one fits all solution” the assessment provides the decision makers with a technology screening and selection tool (chap 4). The report recommends, that after the final analysis, the technology that is cheapest and the easiest to operate be selected.

Policy and strategic frameworks are a requirement for proper expansion of desalination plants. The report, consequently, provides guidelines for integrating desalination with renewable energy into IWRM plans (chap 6).

For the full report ***click here***