



afrialliance socialinnovation

Seawater desalination in Egypt

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DESCRIPTION AND BACKGROUND

Scarcity of water is rising all over the world. The main source of water in Egypt is the River Nile whether for drinking and irrigation water. The rise of population leads to extend in cultivated land and water resources.

Egypt has more than 2000 km of sea coasts on the red and Mediterranean Sea.

The problem of sea water desalination process is the great need for power and the high cost of desalination plants. Egyptian government plans to invest about 57 billion dollars in seawater desalination projects till the year 2037. current total production capacity amounts to 170,000m³/day. They started building plants to cover many territories like Galala, Elarish, Dabaa, New Mansoura, and south Sinai. Currently seawater contributes with 0.06 billion cubic meter of total water resources and it is not commensurate with the length of Egyptian coasts.

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Final
Assignment

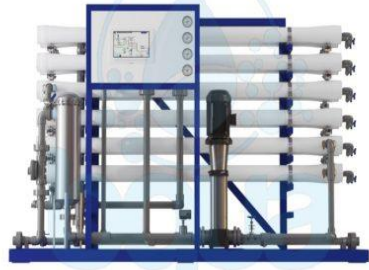
Abstract

Scarcity of water in Egypt is rising. Egypt has long coasts on both Mediterranean and red sea but could not obtain benefits of water desalination because of the high energy requirements and costs. Currently there are many technologies of desalination plants and they should be converted to Reverse Osmosis. The four dimensions of social innovation should be covered to assure the sustainable use of such untraditional resource.



TECHNOLOGICAL SOLUTIONS

Sea water is untraditional water resource and can be a very effective solution for increasing the availability of drinking water and irrigation water. The current prevailing desalination systems in Egypt could be concluded Ion Exchange (IE), Thermal Systems, Electro dialysis Reversal (EDR) and Reverse Osmosis (RO). Because of the high energy consumption of IE, and EDR, they can be place with RO. Reverse osmosis technology is characterized by high capacity and low energy consumption. Technological solutions will also include water quality monitoring equipment. There is a need for studying best locations of proposed plants and making required economic studies. Data base should be created to provide real indices about the current and possible future water needs and the possibility of water provides.



SOCIAL INNOVATION

CAPACITY DEVELOPMENT

Capacity development aims to ensure the sustainable use of desalinated sea water to cover a part of the total needs of water.

- Technical capacity is needed to adapt to and successfully implement (new) technologies. This can be achieved by means of training, the creation and implementation of knowledge management systems and networks, and data storage and sharing mechanisms to generate climate and hydrogeological data, monitor produced sea water and increase the knowledge base on sea-water quality and quantity, which is needed to support policy and decision-making.
- Institutional capacity development involves helping institutions from local to international and transboundary levels to create and effectively implement formal and informal mechanisms to collaborate and share sea- water data and information to support policy and management decisions on the use and distribution of produced desalinated sea-water. This needs to be based on equitable rights and allocation regimes to help prevent conflicts among users, with a focus on shared use and management.
- Strengthening the capacity of water users involves the dissemination of knowledge on how human activities influence sea-water quality and quantity, and how individuals and organizations can contribute to the sustainable use of groundwater. This also involves training of all water users on the collection and use of data and on technologies to use sea-water more efficiently.

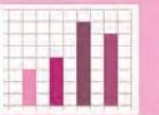
GOVERNANCE STRUCTURES



Use of sea water is a part of the strategies to adapt climate change. Strong governance will ensure the good and sustainable use of such resources for the benefits of human being. The governance should create and keep interaction between all stakeholders.

- Awareness of the need of such resource is highly demanded.
- All stake holders should understand the reflection of using such resource on the agricultural activities, people life and population map, national security, and economic situation of the country.
- Knowledge and experiences should be shared and have all the required support to achieve this.

BUSINESS ROAD MAP



Solution providers and possible users need to interact during the different stages of the innovation process to create a common ground for the co-production of the required knowledge from the comprehension of the need to the design, implementation and use of innovative solutions.

Sea-water desalination can share an important part of total Egyptian water resources. Four dimensions of social innovation can be applied.

Technological solutions will be by using reverse osmosis technology and applying the necessary equipment for water quality and quantity monitoring besides sharing data. •

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Afrialliance social innovation factsheet 1.4 English.

<https://afrialliance.org/files/downloads/2019-04/AfriAlliance%20Social%20Innovation%20Factsheet%20%231.4%20English.pdf>

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