Strategies for rationalization and saving of sweet water and its exploitation in the generation of energy in the Arab desert environment in view of the industrial design innovations

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Abstract :

The large area of the Arab homeland from the Arabian Gulf to the Atlantic Ocean is the world's largest desert space. Consequently, Multiple environments appear in the Arab countries with differentiates resources and their living requirements. According to The desert environment suffers from the scarcity of sweet water and the scarcity of rain, For this puts scientific research on further research efforts to provide sweet water and rationalize its consumption at the same time, Where today the fears of the depletion of fresh water, even in the countries with rivers of the great problems confrontation by most countries of the world and not only Arab societies.

The problem of sweet water in Arab societies refer to many factors, including population growth, misuse of sweet water or lack of a culture of water conservation in these communities, this is in addition to the delay of the applied strategies for the rationing and rationalization of sweet water due to economic problems and not to put them on the priorities of attention since the previous decades.

And the emergence of water research to support and develop industrial technology for water desalination, groundwater extraction, wastewater treatment, and utilization of water flow in energy generation, as a research efforts to provide sweet water in the desert environment, it has become the responsibility of industrial innovations (industrial design) a key role in the design and development of innovations that meet the needs and requirements of the Arab desert environment by provide and rationalize the sweet water and rationing its uses in different purposes, including the following:

1. Innovations for the collection of rainwater and exploitation it in the irrigation of agricultural land and its use in human needs.
2. Innovations of irrigation techniques and drip irrigation in agriculture.
3. Innovations to rationalize water consumption in homes (water consumption by calculated rates).
4. Exploitation the heat of the Cooking stove in home to provide hot water.
5. Benefit of the flow of water to generate energy.

Keywords:

Rationing water use, sweet water, Renewable energy, Salinity of seawater.

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Problem of the study:

1. The scarcity of fresh water in the desert environment continues to affect the stability of Arab societies in the desert environment.
2. Lack of activation of rationalization culture for fresh water consumers in water scarcity environment.
3. Failure to activate industrial and technological innovations in providing and rationalizing fresh water.
4. not to exploit the flow of fresh water in power generation.

Significance of the study:

1. Preservation of fresh water in the desert communities, which leads to the growth and development of these communities, where fresh water is a major source of living in this environment with the dangers of water scarcity, which has been warned about by the global water institutions.
2. Activating industrial and technological innovations in the desert environment that meets the needs of saving and rationalization requirements for fresh water.
3. The emergence of innovations that exploit the flow of water to generate energy.

Objective of the study:

The research aims to activate industrial design innovations to meet the requirements of the Arab desert environment by providing fresh water and rationalizing its consumption and exploitation in power generation.

Methodology of the study:

The research uses the descriptive analytical approach to innovations that help to provide fresh water; contribute to the rationalization of its consumption in the desert environment, and innovative additions that work to exploit fresh water to save energy.

Research topic:

First: Innovative Applications for Saving and Rationalizing Fresh Water:

These are:

1. Use a guided tap for fresh water consumption.
2. The use of self - control valves.
3. Rainwater harvesting.
4. Exploitation of wastewater.

• The first trend: the exploitation of domestic wastewater.

• Trend 2: Wastewater treatment operations in treatment plants.

5. Sprinkler irrigation or drip.

Second: Generating energy from water flow:

and that is through:

1. Water dams for power generation.
2. Water flow in the pipes to generate energy.

Conclusions and Recommendations:

1. Activating the innovations of providing water to serve the Arab countries, especially the desert environment, through innovative means of saving or exploiting wastewater or rain water.
2. Benefit from the flow of water in the pipes to generate energy This leads to contribute to the lifting of electrical loads of power plants, which leads to the advancement of the desert communities, which are most in need of water and energy.
3. Directing educational institutions of an innovative academic nature to develop innovative and continuous solutions to rationalize water and benefit the water drop for different living purposes.
4. Presenting the innovations of water conservation and utilizing them in generating energy always on conferences held in the Arab world to push Arab institutions to activate these innovations to serve our Arab societies.

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