



National Center for WATER TECHNOLOGIES

KACST

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Mission

To create a multidisciplinary program that build know-how and capability in water technologies.

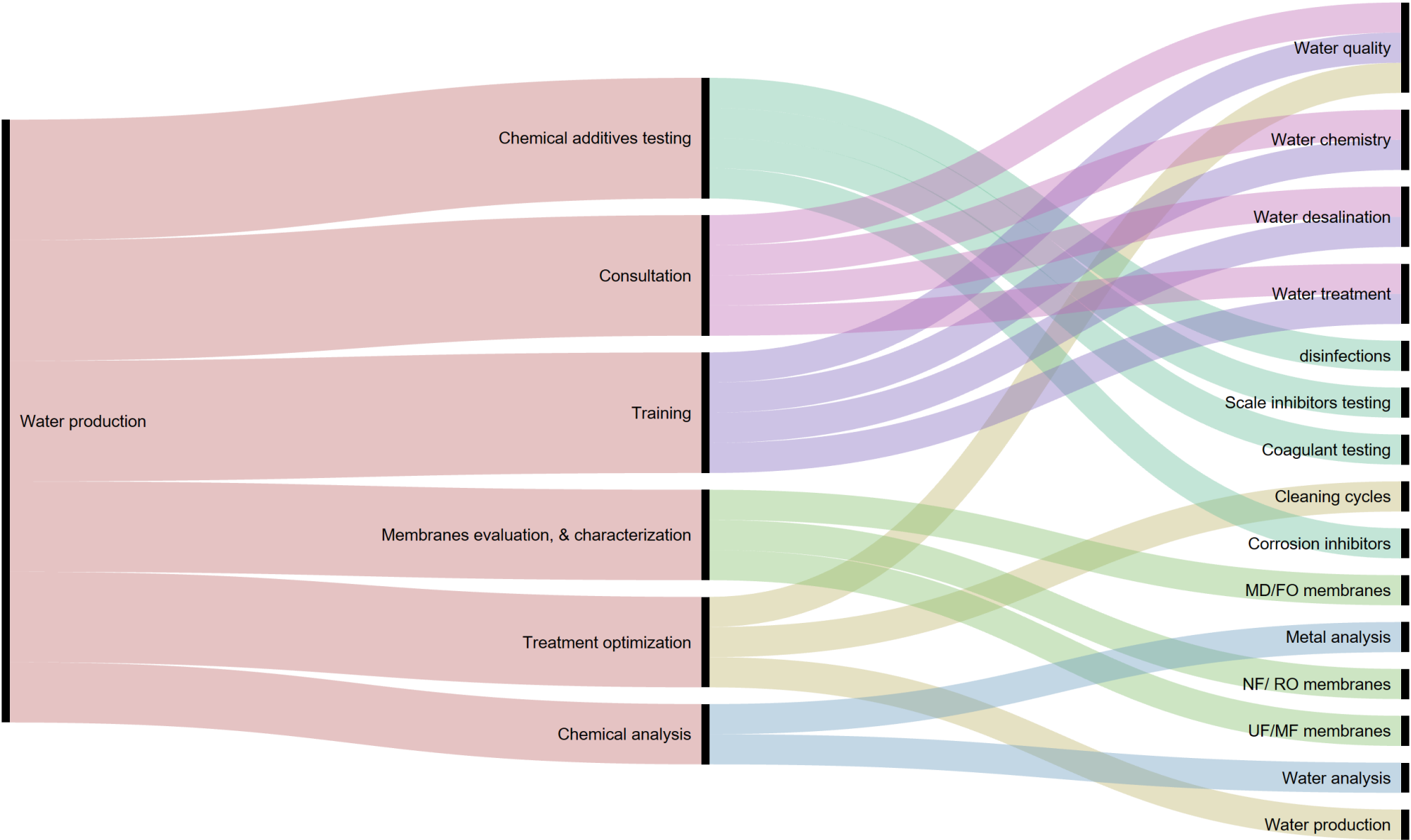
To develop and localize water technologies in the kingdom.

Vision







To ensure that the Kingdom will become a major player within the international community in the R&D of water technologies.

Sector	No.	Lab Name	Location
Water	1	Polymer membranes Lab	Main Campus
	2	Ceramic membranes Lab	Main Campus
	3	Characterization and evaluation for polymer/ceramic Membranes Lab	Main Campus
	4	Analytical Lab	Main Campus
	5	Desalination and Water treatment & reuse Lab	Main Campus
	6	Technologies Cluster for Water Reuse & Desalination (TECWARD)	Solar Village

Water Services Map



Partners

No.	Sector	Project	Partner	Country
1	Water	Joint R&D Center for Water		Saudi Arabia
2	Water	Membrane Technology for Desalination	SRI International®	USA
3	Water	Metals Recovery from Desalination		Germany
4	Water	Water Reuse Technology		Saudi Arabia
5	Water	CODECO Solar Village		Poland
6	Water	Ultra Low Temperature Adsorption Crystallization Technology		Poland
7	Water	Mobile Water Harvesting System		Poland



More than 30
scientific papers



More than 5 patents
(5 accepted)



Products 5
Services 41

A high-speed photograph of a water droplet suspended in mid-air above a pool of water. The droplet is perfectly spherical and transparent, reflecting light. Below it, a small indentation in the water surface is visible, with concentric ripples spreading outwards. The entire scene is bathed in a deep blue light, creating a serene and dynamic atmosphere.

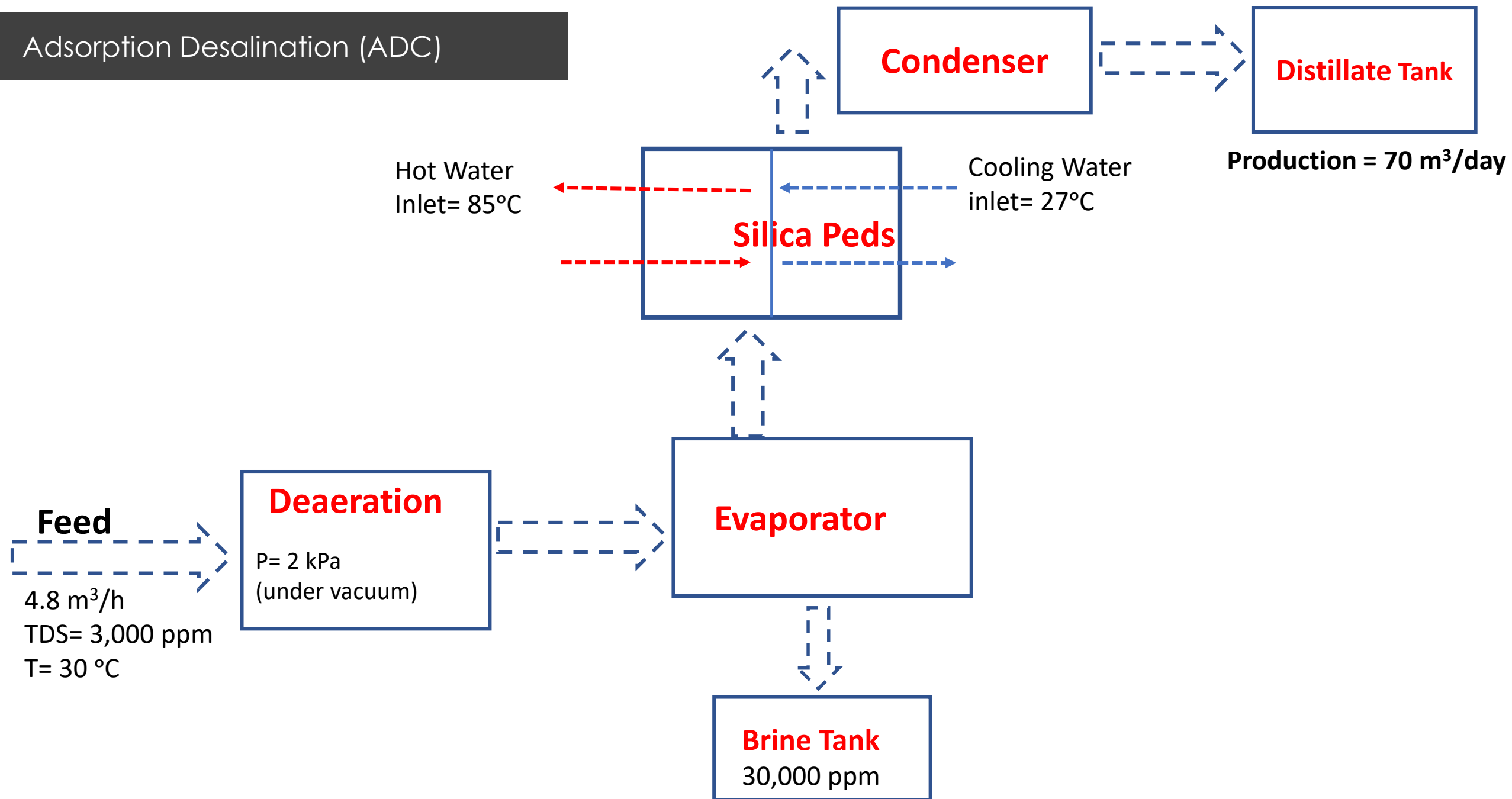
Major Projects

Adsorption Desalination and Cooling (ADC) Technology

The image shows a large-scale industrial facility, likely a desalination plant, under a clear sky. The central structure is a tall, multi-story metal frame with several levels of platforms and walkways. To the left, there's a tall, slender tower. To the right, there's a large, complex structure with many pipes and tanks. The entire facility is surrounded by a chain-link fence. The overall tone is industrial and technical.

- **Stakeholders and Partners:** SWCC, NWC
- **Expected Impact:** Its development will radically decrease electricity consumption for the desalination.

Adsorption Desalination (ADC)

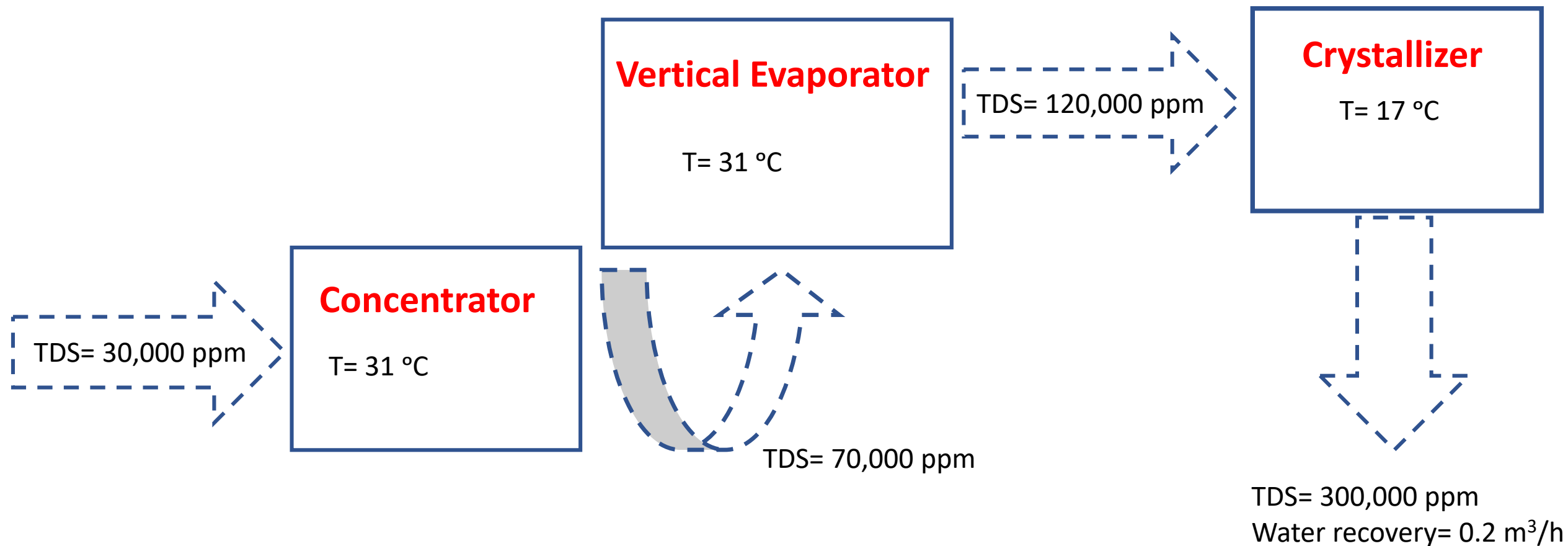


Zero Liquid Discharge (ZLD)



- Expected Impact: The System will solve the problem with the highly concentrated brine disposals while producing the salt crystals which can be further sold at the market
- Stakeholders and Partners: SWCC, NWC

Zero Liquid Discharge (ZLD)

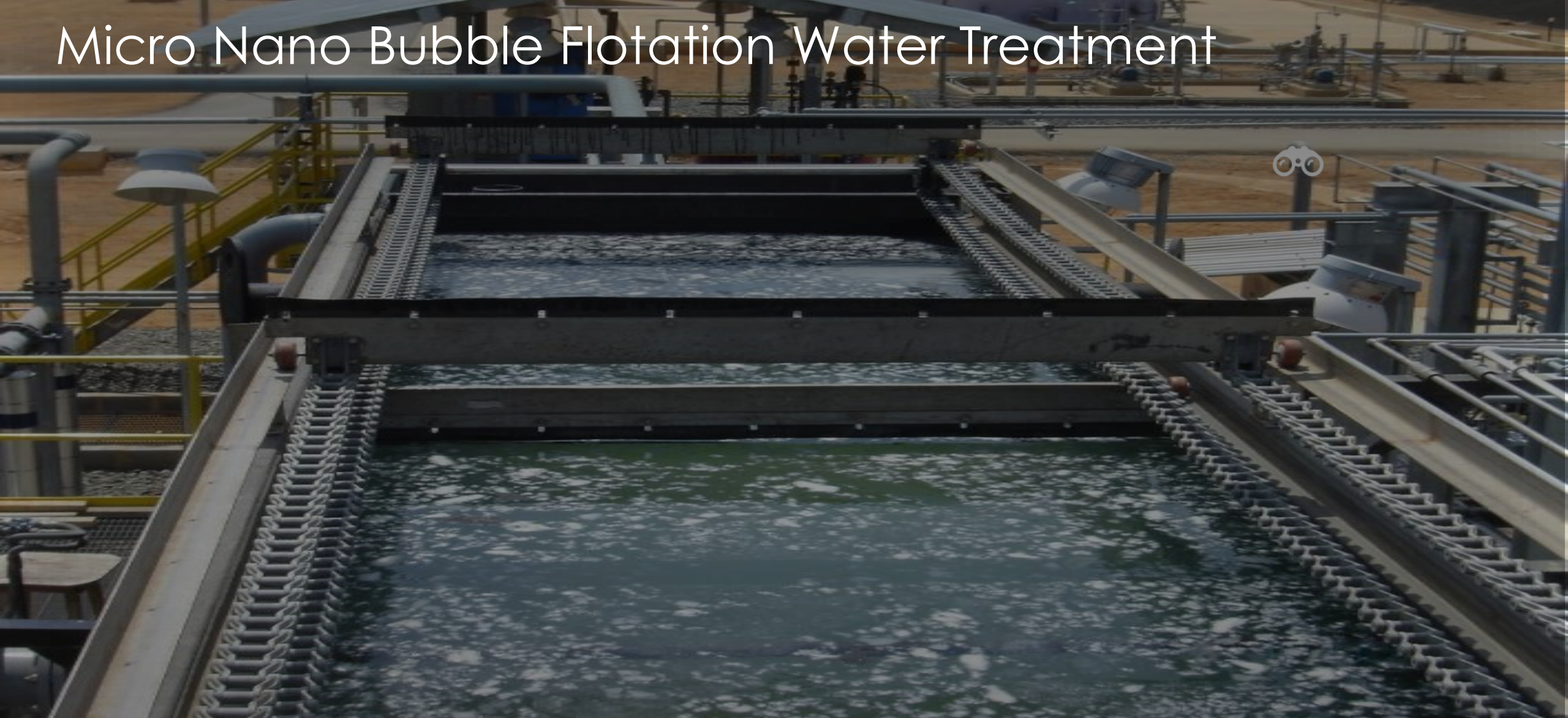


CODECO Solar Village



- **Description:** Designed process employs 8 evaporation/condensation Cells which works in the same rules as a Cells in MED TVC, but in much lower evaporation temperatures. The heat input is generated in the Absorption Heat Pump which produces hot water in very effective way. Simultaneously, Absorption Heat Pump recovers waste heat from Distillate, offering 5 °C distillate cooling. Vapor produced in last stage is transferred into the condenser which is cooled by chilled water produced in Absorption chiller.
- Stakeholders and Partners: SWCC, NWC.
- Expected Impact: increase Correction Factor, so system is able to reach high Recovery Ratio rate, by reducing feed amount and reducing feed/evaporation ratio.

Micro Nano Bubble Flotation Water Treatment



- **Description:** The MNB FLOTATION process is compact and highly efficient sewage treatment technology consisting of biological-chemical treatment integrated with mechanical separation - all in the one NWT Flotation Unit.
- **Stakeholder and Partner:** NWC
- **Expected Impact:** Use of the MNB aeration developed will increase the oxygen transfer to wastes up to 5 folds what cuts by half energy consumption of the NWT sewage treatment in comparison to the conventional aeration processes.

Capacitive Deionization (CDI)



Deionize water by applying an electrical potential difference over two electrodes.

- Lower cost of desalination system
- Fast to install and simple to operate
- Low maintenance cost

Mobile Water Harvesting System



- **Description:** The system presents the highest energy efficiency due to efficient thermal collectors integrated with humidifier. It has the following advantages: (i) **flexibility** in capacity (low, normal and high) and arrangement (ii) **zero grid input** if the 100% solar mode is operated, (iii) **low maintenance and operating cost** and (iv) high performance ratio. water production: 15 liter/day minimal acceptable humidity: 10%rh solar capacity: **0.5kwth** ,system overall lifespan: 15 years.
- **Stakeholders and Partners:** houses, Schools
- **Expected Impact:** Individual use, compact solar ambient air water recovery system for household, remote and emergency natural disaster applications.

Development of Novel Hollow-Fiber Membrane



- **Description:** Production of reverse osmosis hollow fiber membrane with salt rejection more than 95%.
- **Stakeholders and Partners:** SWCC, NWC.
- **Expected Impact:** support KSA plan for water technology development to provide safe water, ensure sustainability, keep water affordable, and encourage national growth.



Thank you for your attention ...

Questions & Comments are welcome