

Desalination Technologies using RES

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**ΚΑΠΕ
CRES**

CENTRE FOR RENEWABLE
ENERGY SOURCES AND SAVING

Hybrid Desalination Technologies using RES

Membrane Desalination mainly with Wind, Photovoltaic

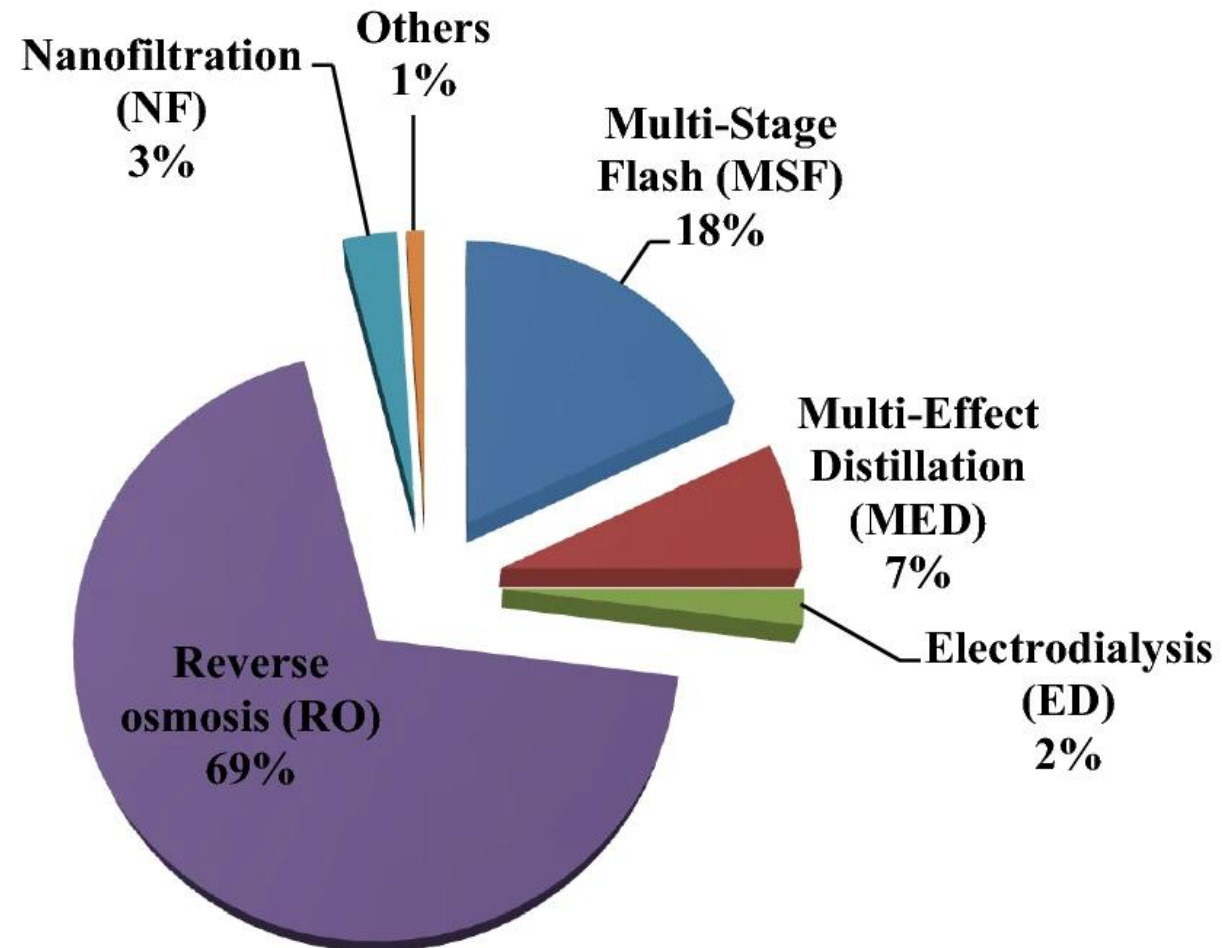
- ↗ Reverse Osmosis (RO)
- ↗ Forward Osmosis (FO)
- ↗ Electrodialysis (ED)
- ↗ Electrodialysis Reverse (EDR)

Thermal Desalination mainly Solar, Geothermal

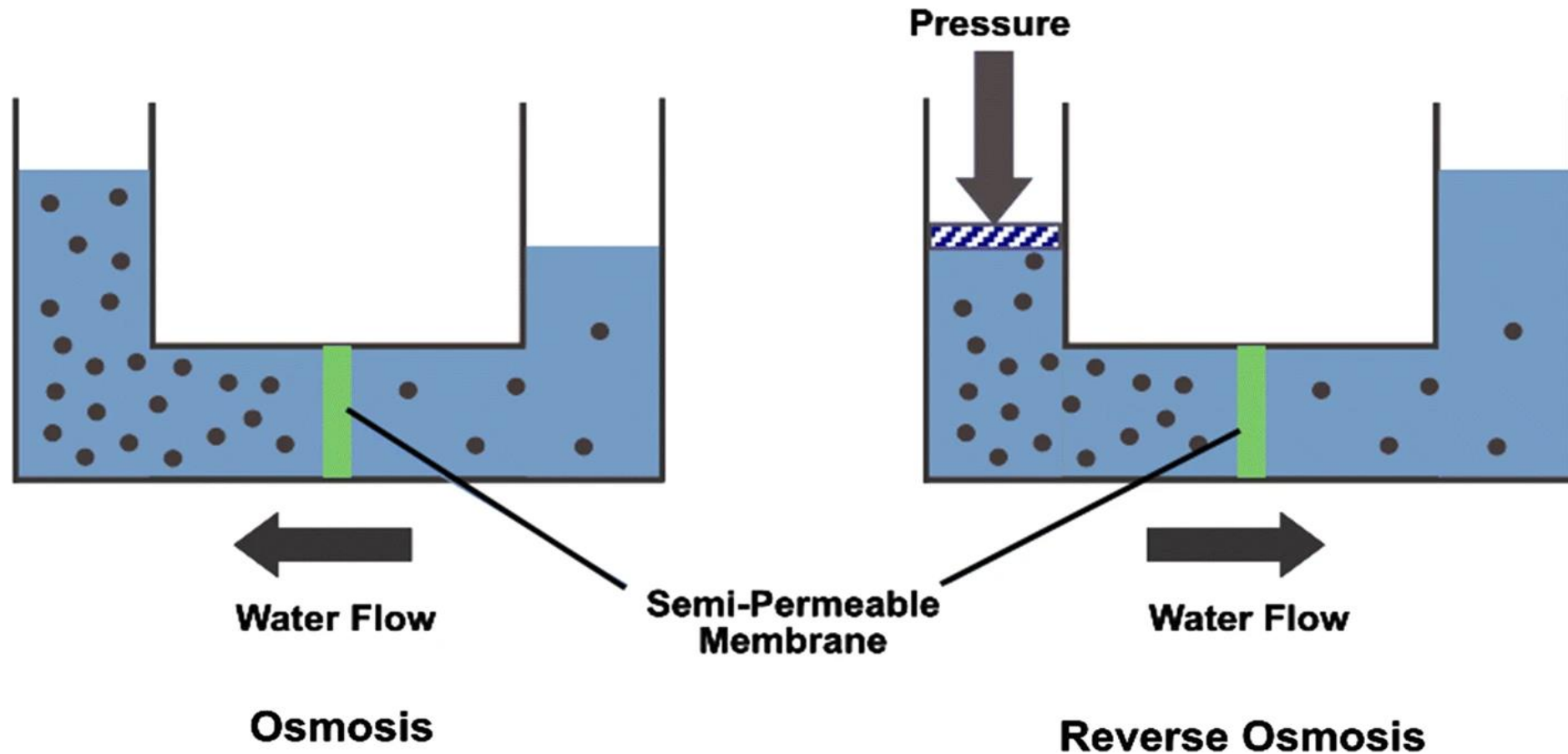
- ↗ Multi Effect Distillation (MED)
- ↗ Multi Stage Flash (MSF)
- ↗ Vapor Compression (VC)
- ↗ MED-VC



The contributions of desalination methods all over the world

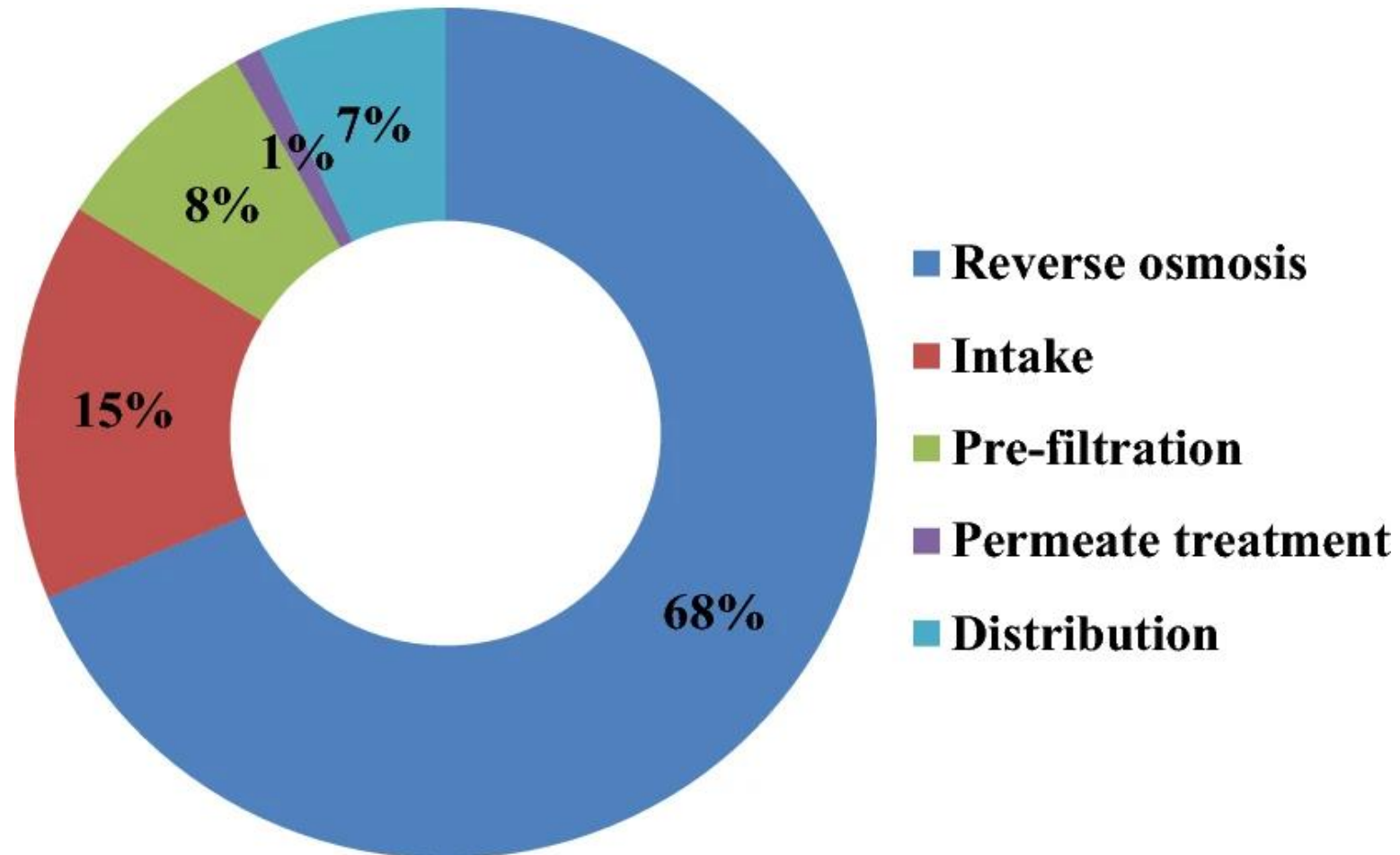


Schematics of osmosis and reverse osmosis process

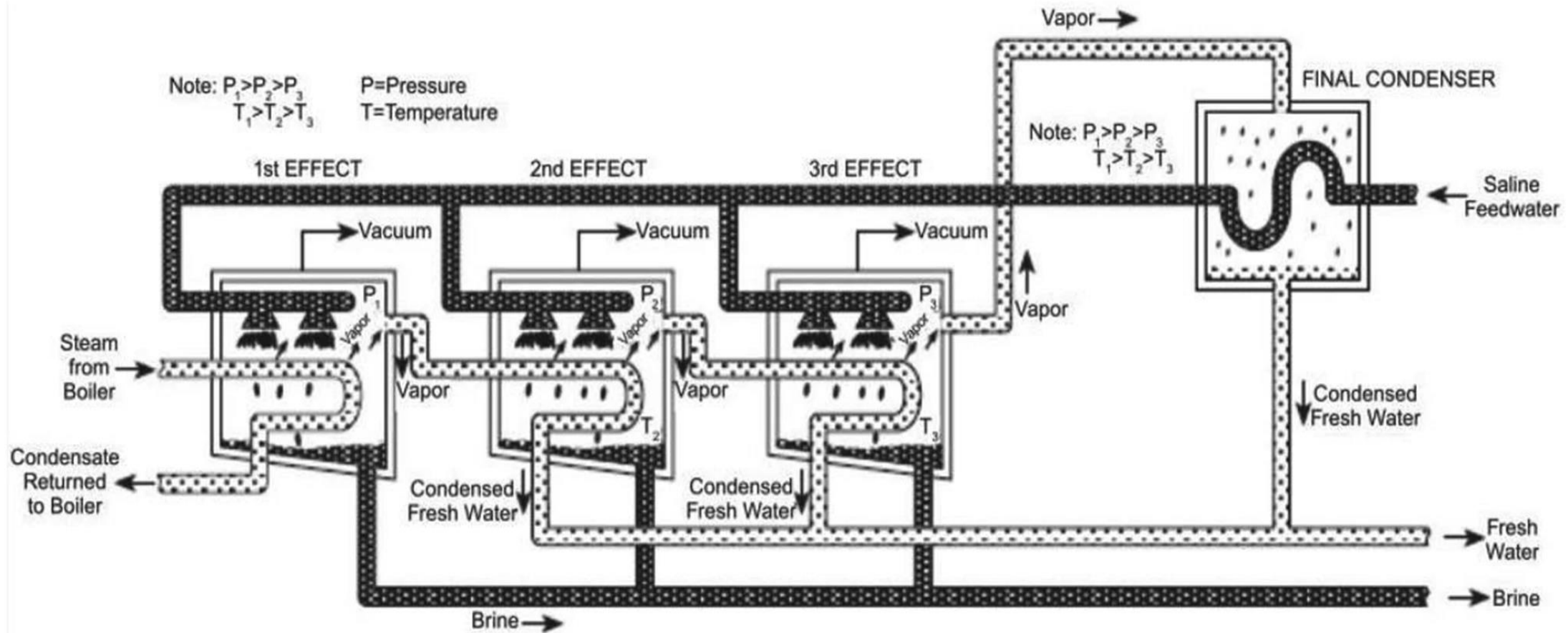


Widiasa et al. 2009

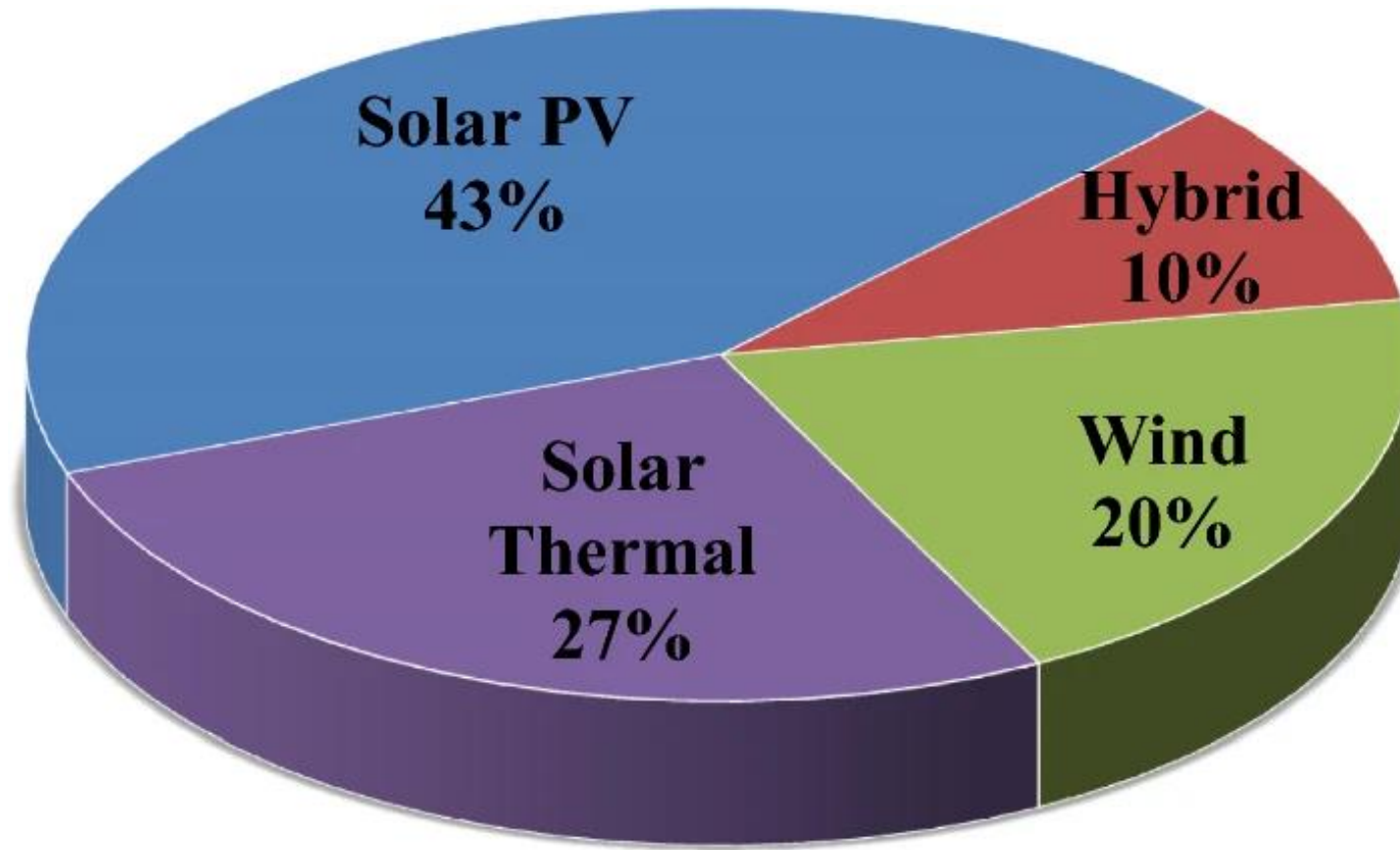
The power consumption across applications or across different stages of SWRO



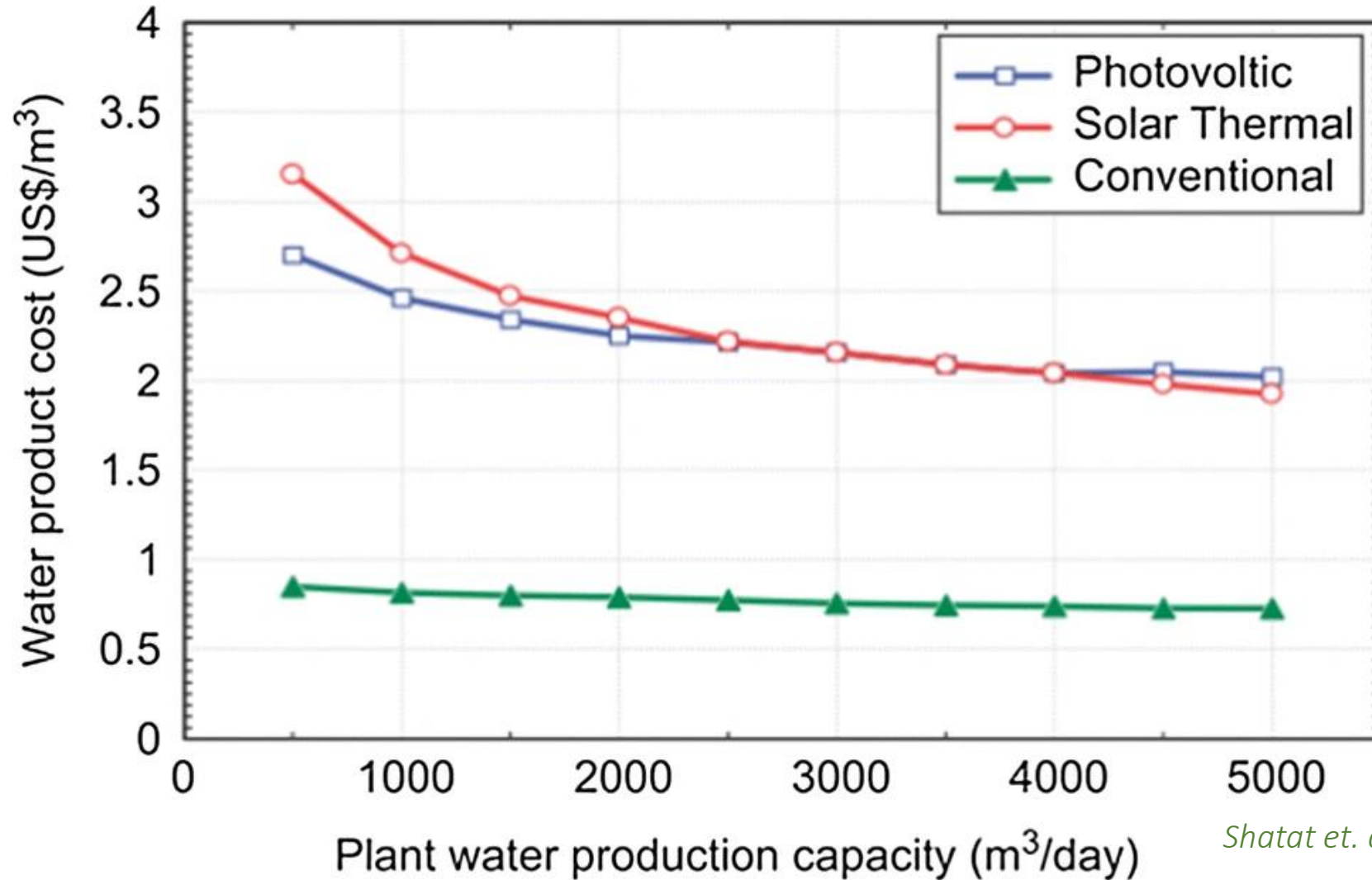
The multi-effect distillation process for recovering saline feedwater



The contribution of renewable energy resources in desalination

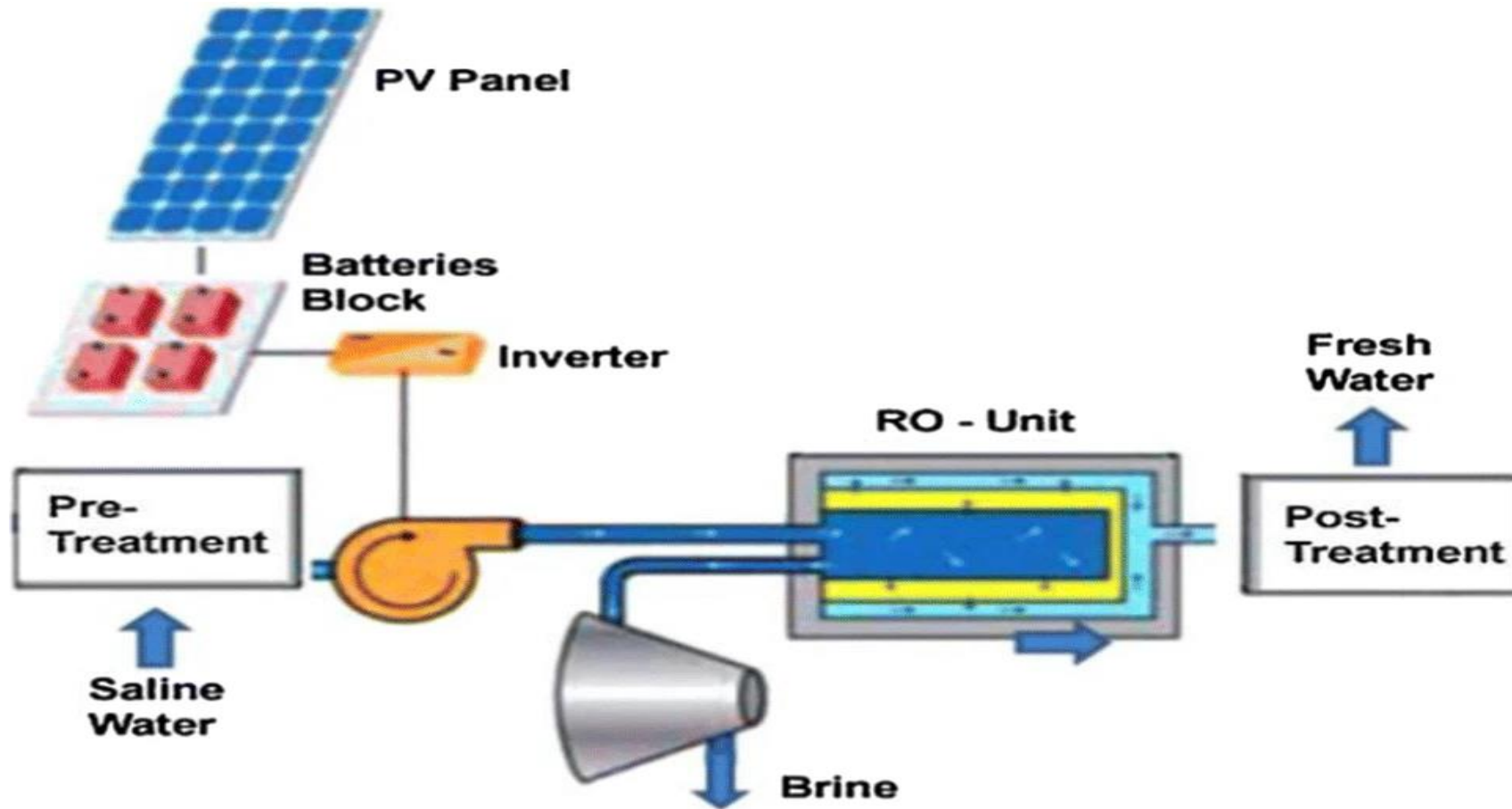


Water product cost per water production capacity for considered methods

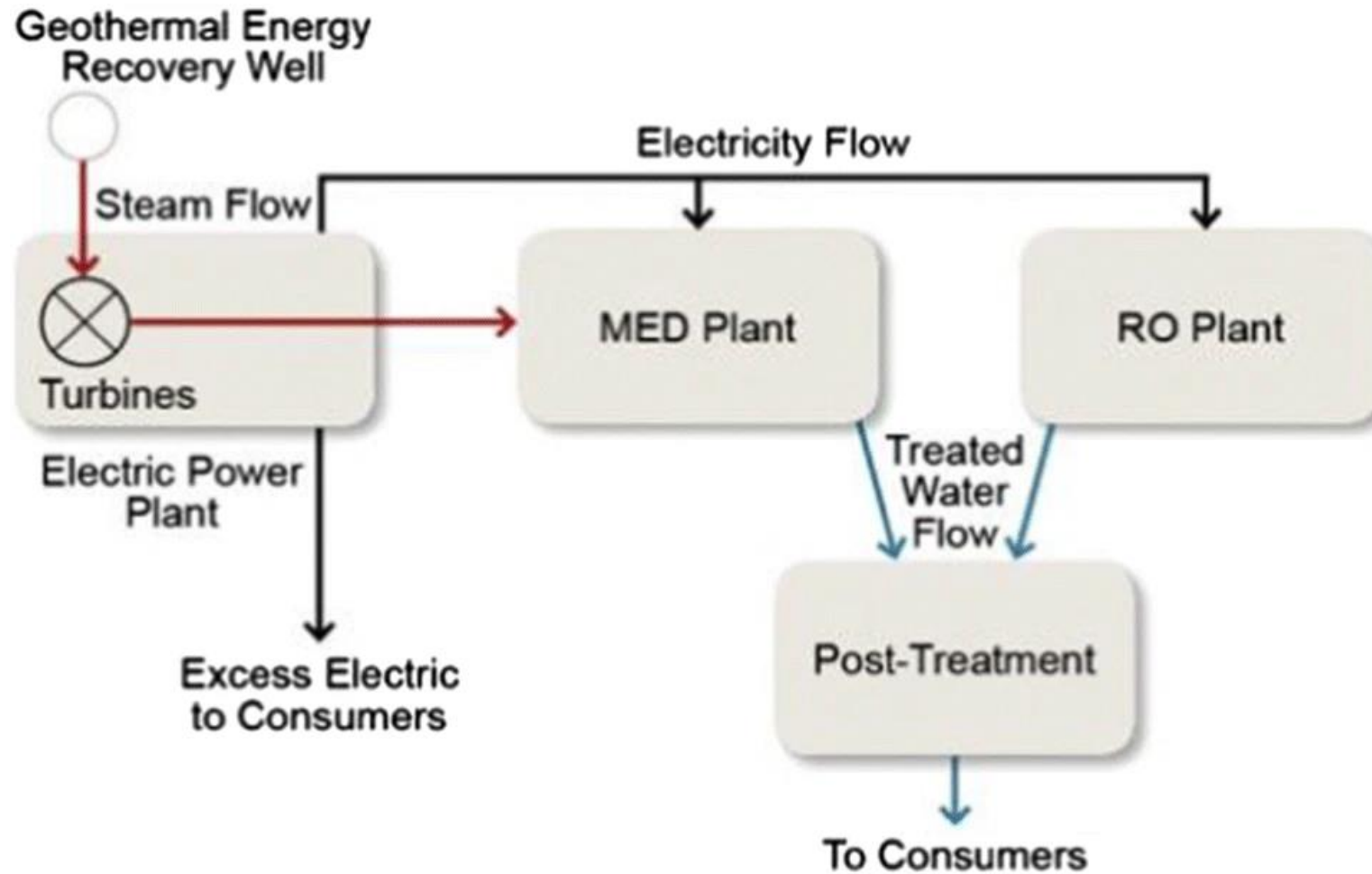


Shatat et. al 2013

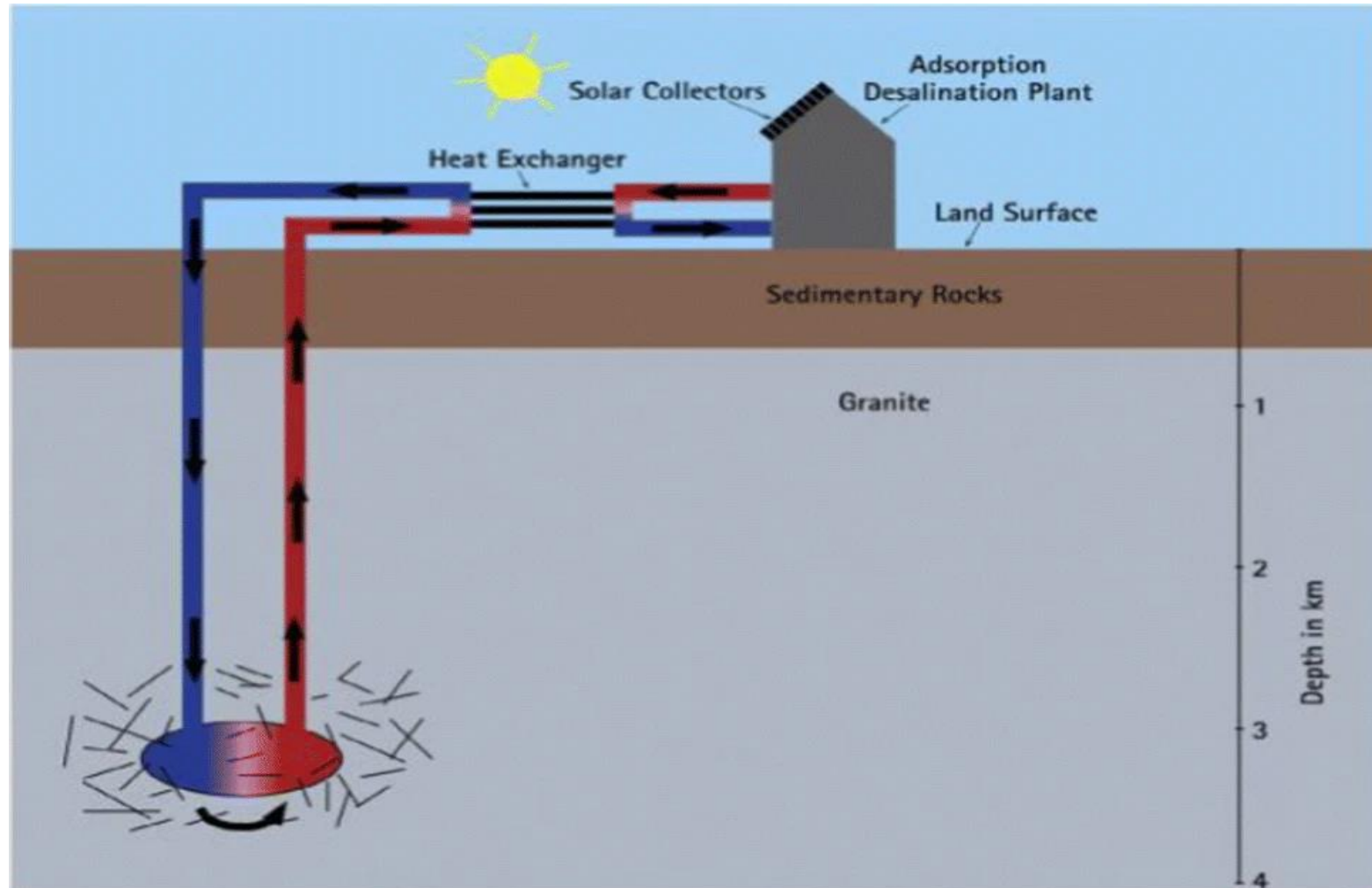
The combination of a reverse osmosis system with photovoltaic



The combined cycle consisted of RO, MED and geothermal plant for treating water



The combined system consisted of solar and geothermal energies for freshwater production



תודה
Dankie Gracias
Спасибо شكري
Merci Takk
Köszönjük Terima kasih
Grazie Dziękujemy Děkojame
Ďakujeme Vielen Dank Paldies
Kiitos Täname teid 谢谢
Thank You Tak
感謝您 Obrigado Teşekkür Ederiz
Σας ευχαριστούμε 감사합니다
Бодхон
Bedankt Děkuje vám
ありがとうございます
Tack