

“Opportunities for performance improvement, efficiency increase to supplement increasing demand in the Middle East”



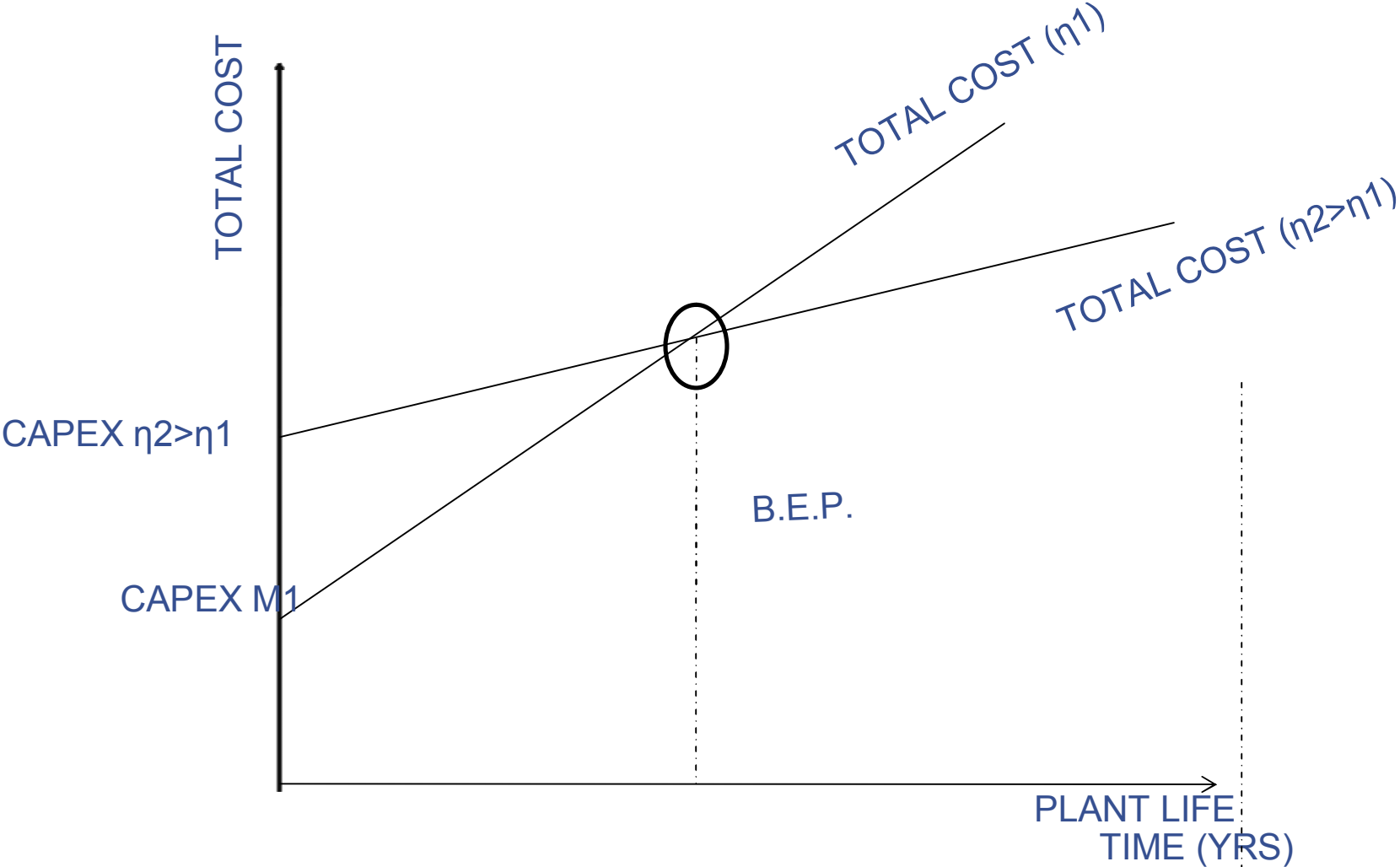
ENGINEERING
EXCELLENCE



ANY RELATIVELY MINOR IMPROVEMENT IN OPERATING AND ENERGY EFFICIENCY DIRECTLY TRANSLATE IN A CORRESPONDING INCREASE IN DEMAND SUPPLY AND IMPROVEMENTS IN CORRESPONDING ENVIRONMENTAL IMPACT



IMPROVING EFFICIENCY DOES NOT BRING ABOUT ADDITIONAL COSTS TO THE END USER



PROVIDED THAT ADDITIONAL CAPEX ARE TRADED OFF BY LOWER OPEX DURING PLANT LIFE TIME
 η = EFFICIENCY

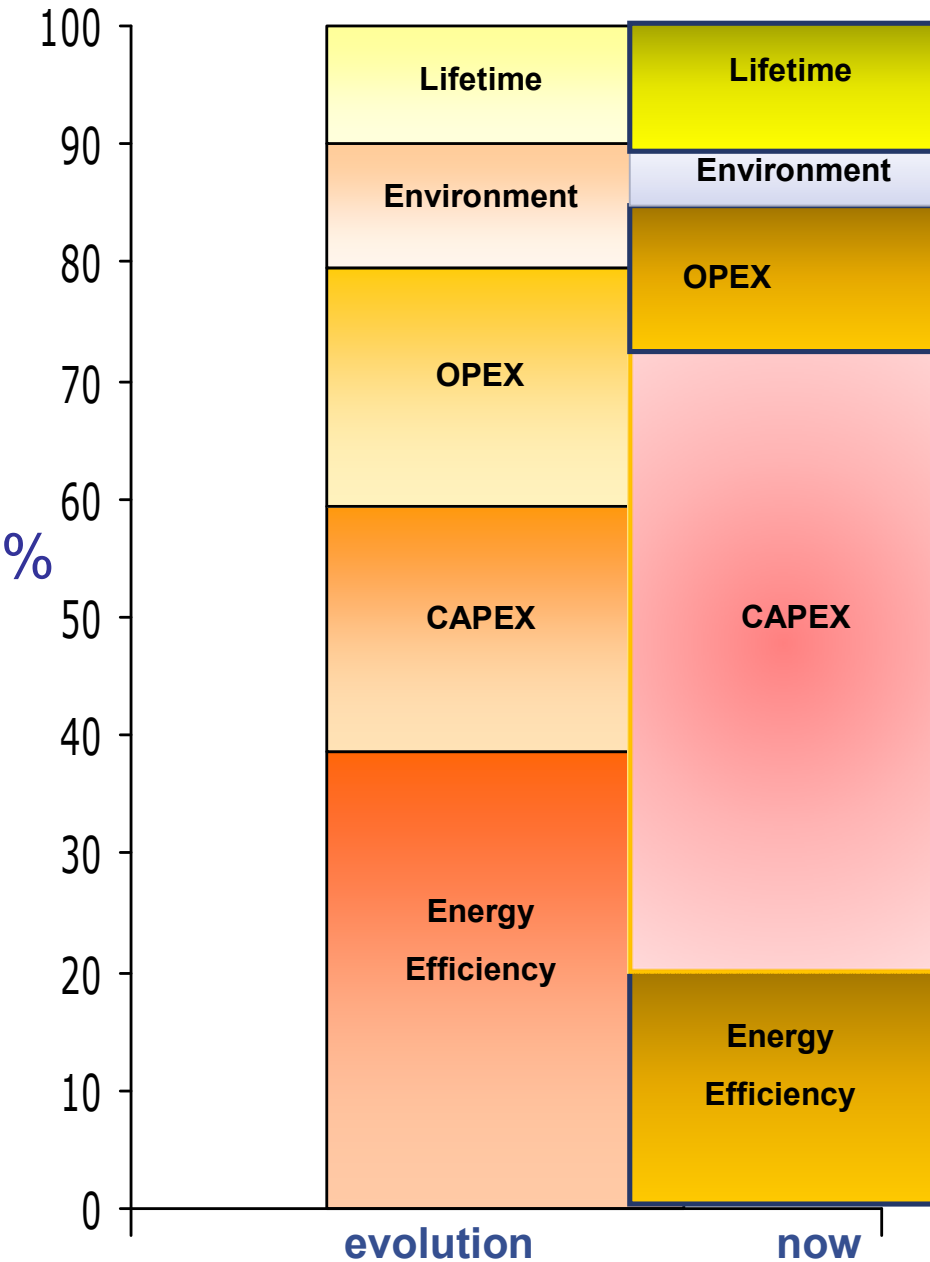


Low fuel costs dissuade investments in higher efficiencies and more efficient plants which could reduce environmental impacts associated with thermal discharge.

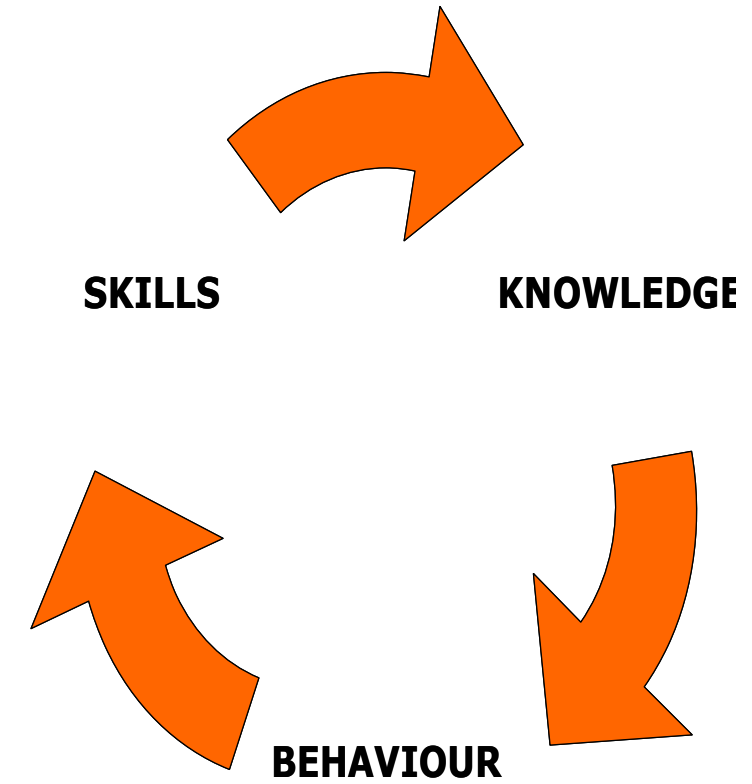
THIS WILL MAKE WATER COST FROM DESALINATION PLANT UNAFFORDABLE IF ENERGY IS PAID ON REALISTIC PRICE



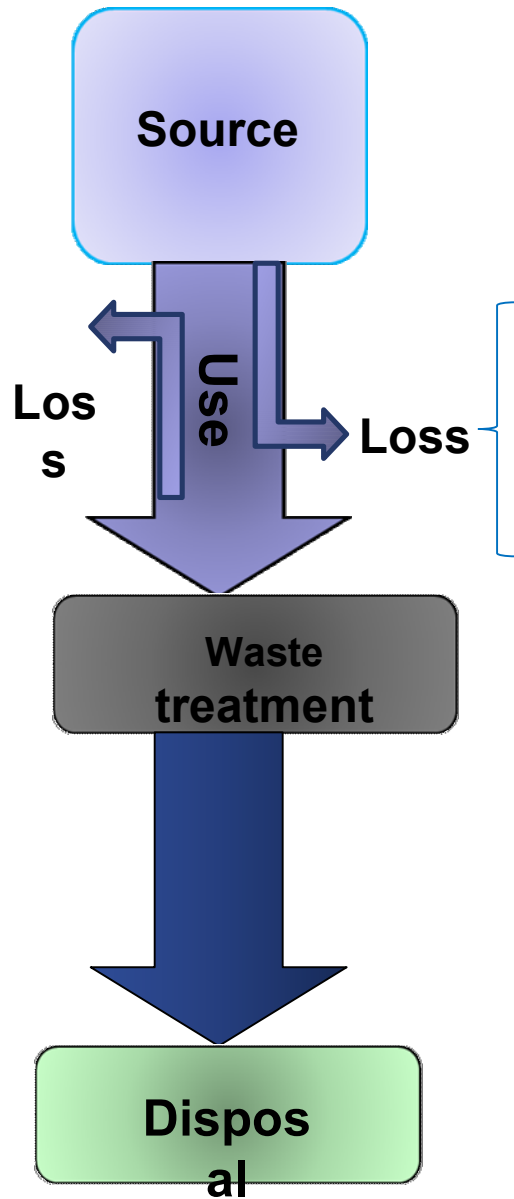
Where should the focus be and where it is



**FOCUS ON
COMPETENCIES**



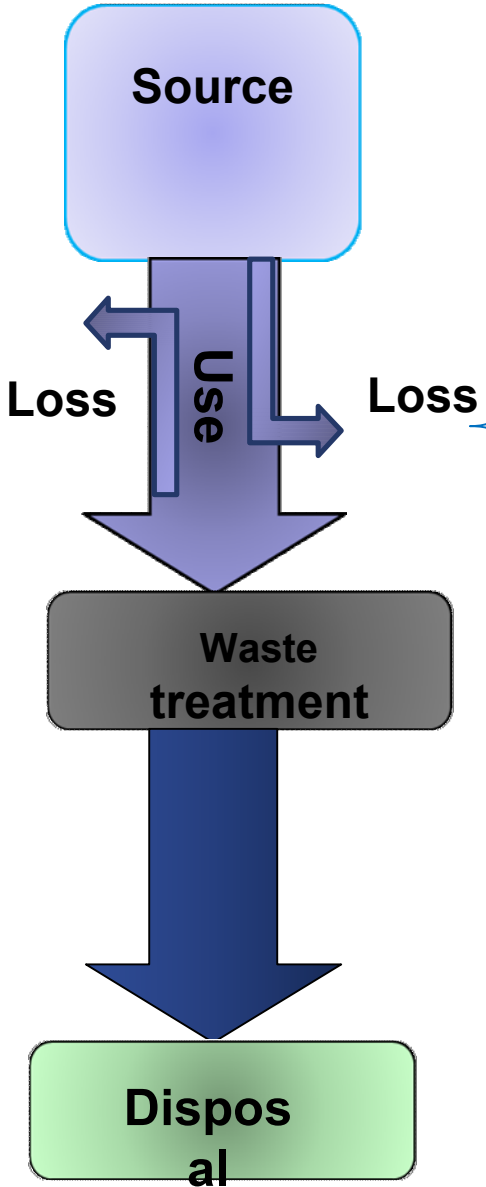
Evolution : Water hunting



1. Inefficiency
2. Disposability
3. Homogenous supply

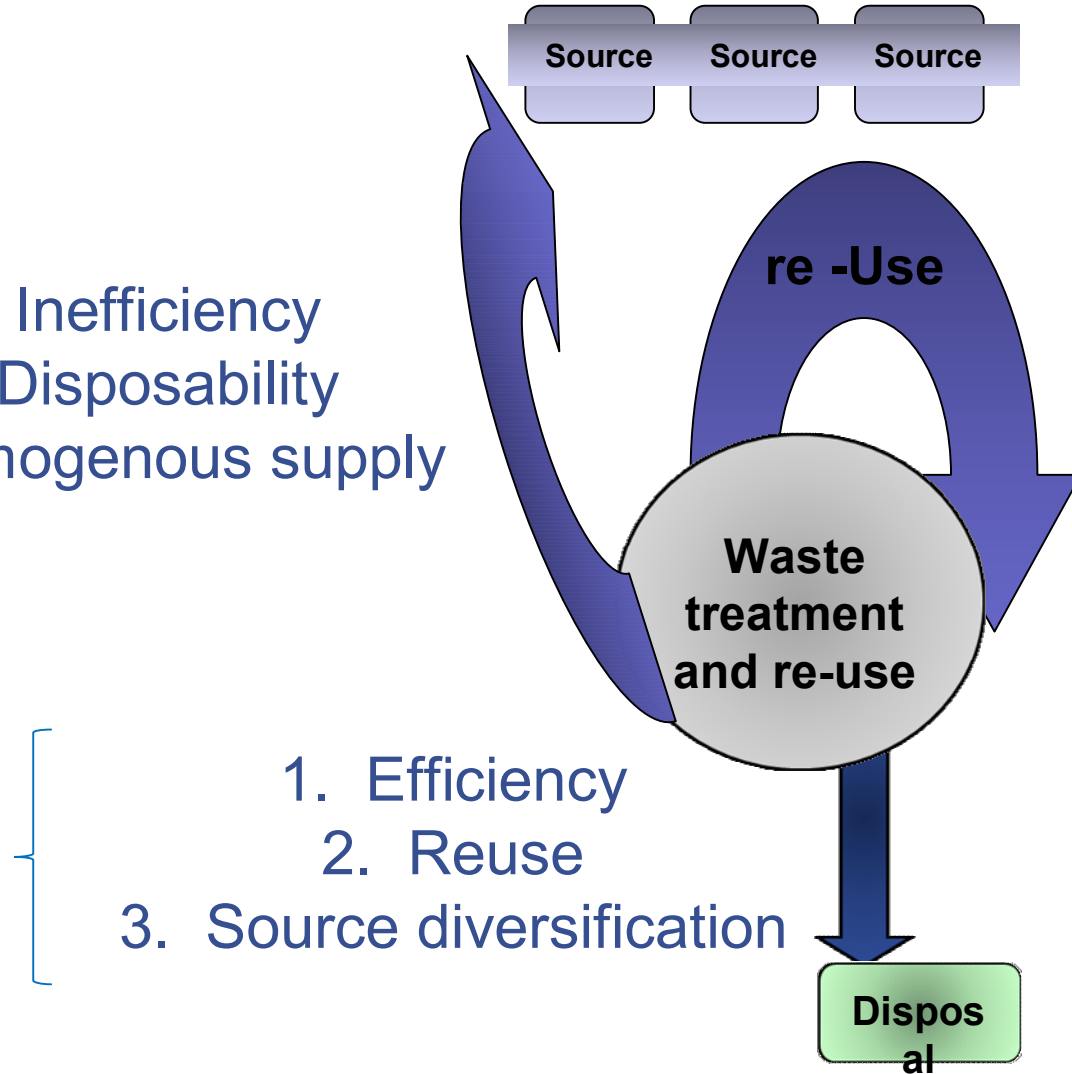


Today: Water hunting



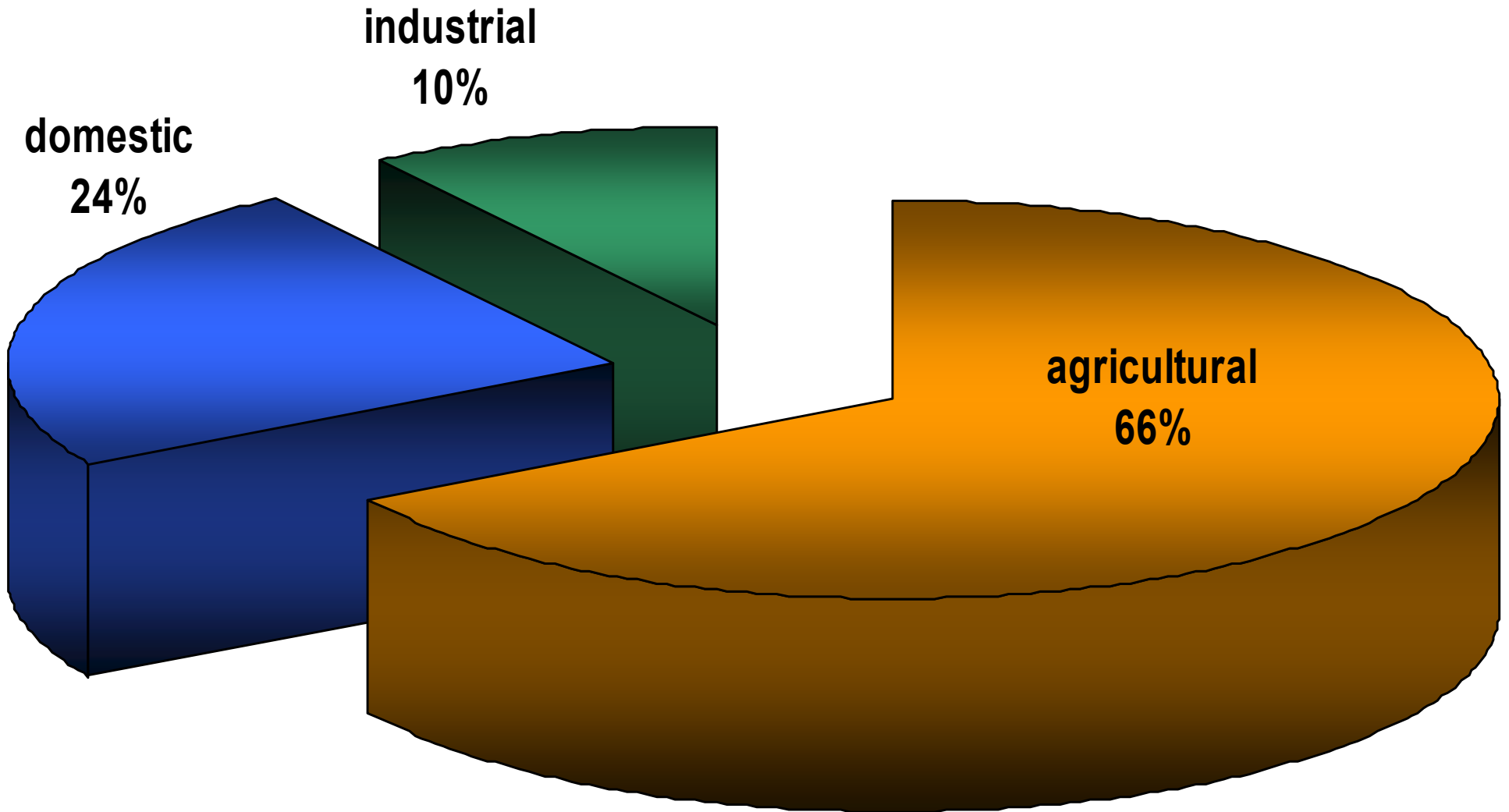
- 1. Inefficiency
- 2. Disposability
- 3. Homogenous supply

The future: Water cultivation



- 1. Efficiency
- 2. Reuse
- 3. Source diversification





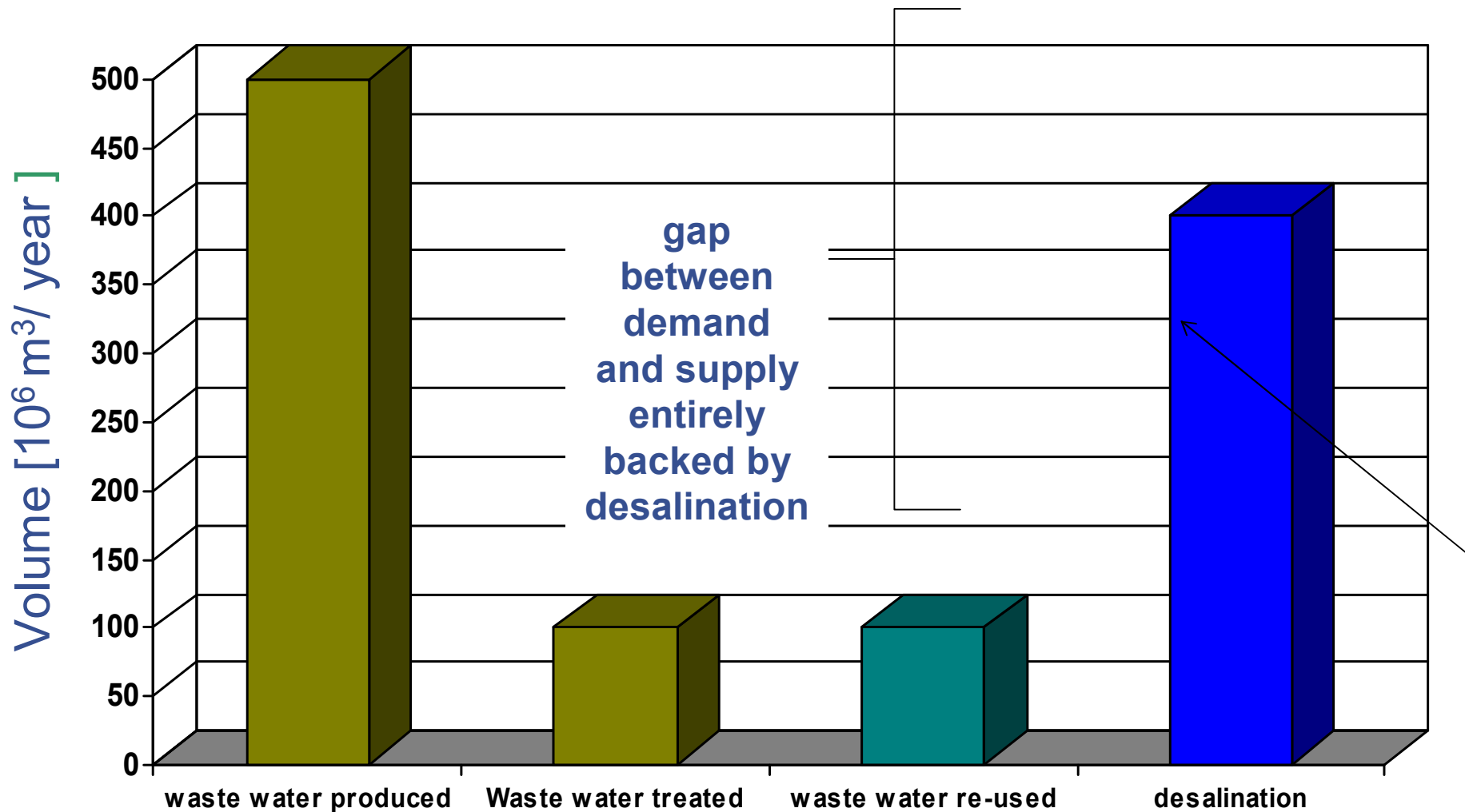
Differentiate water quality and re-use



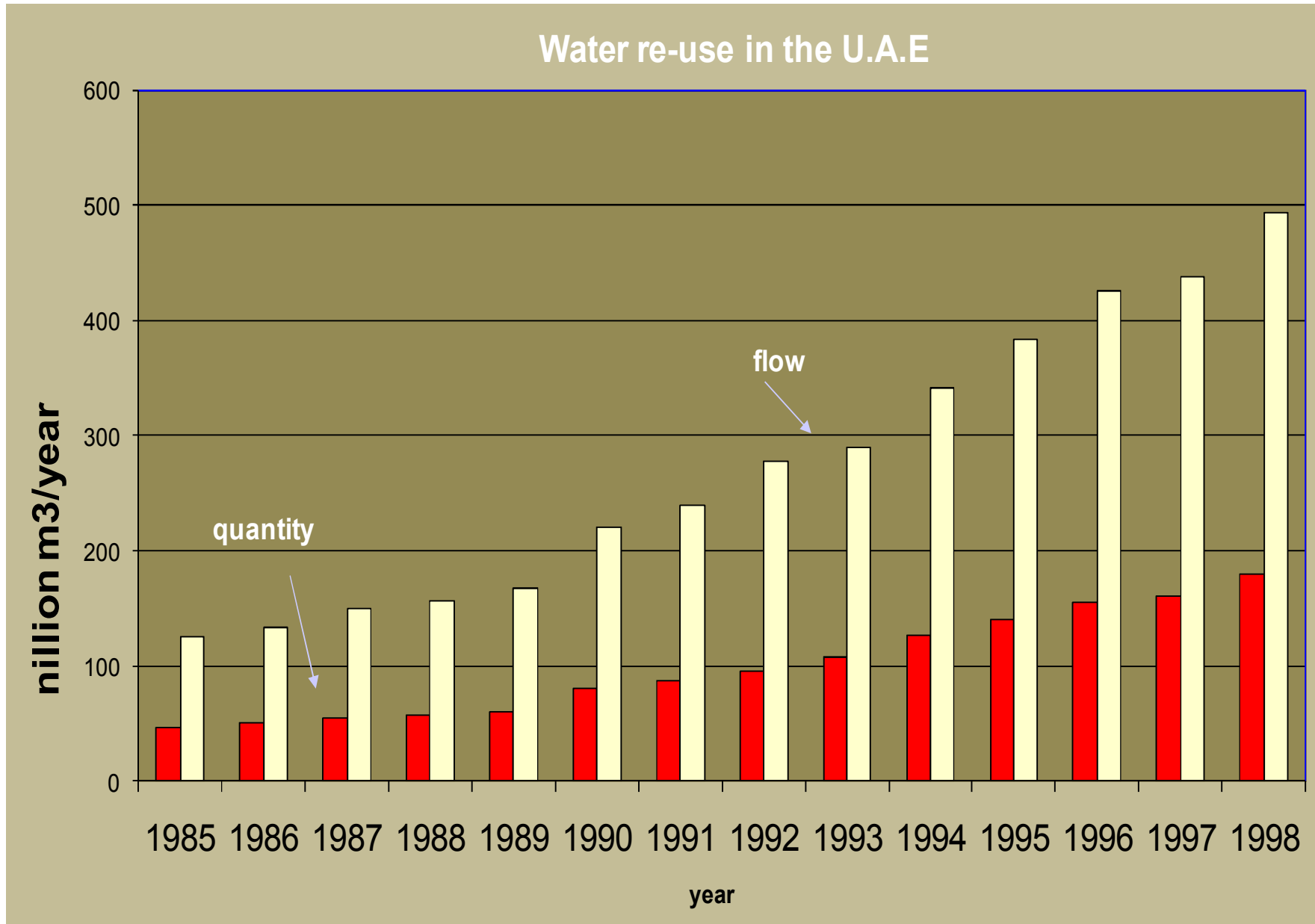
CONSULTING
ENGINEERS

■ Implement the right strategies for water reuse and reclamation

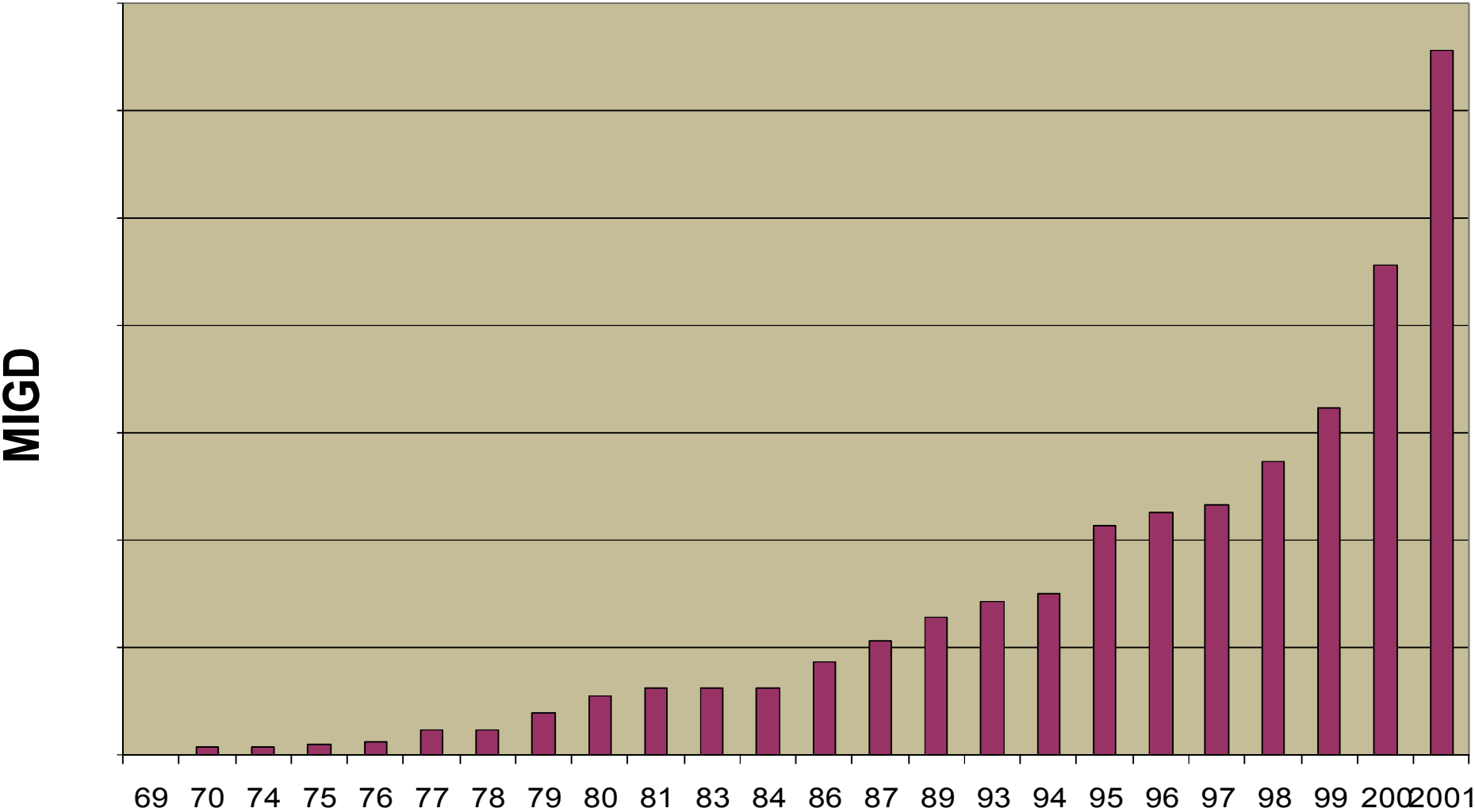
■ Data FAO UAE – Abu Dhabi 1998



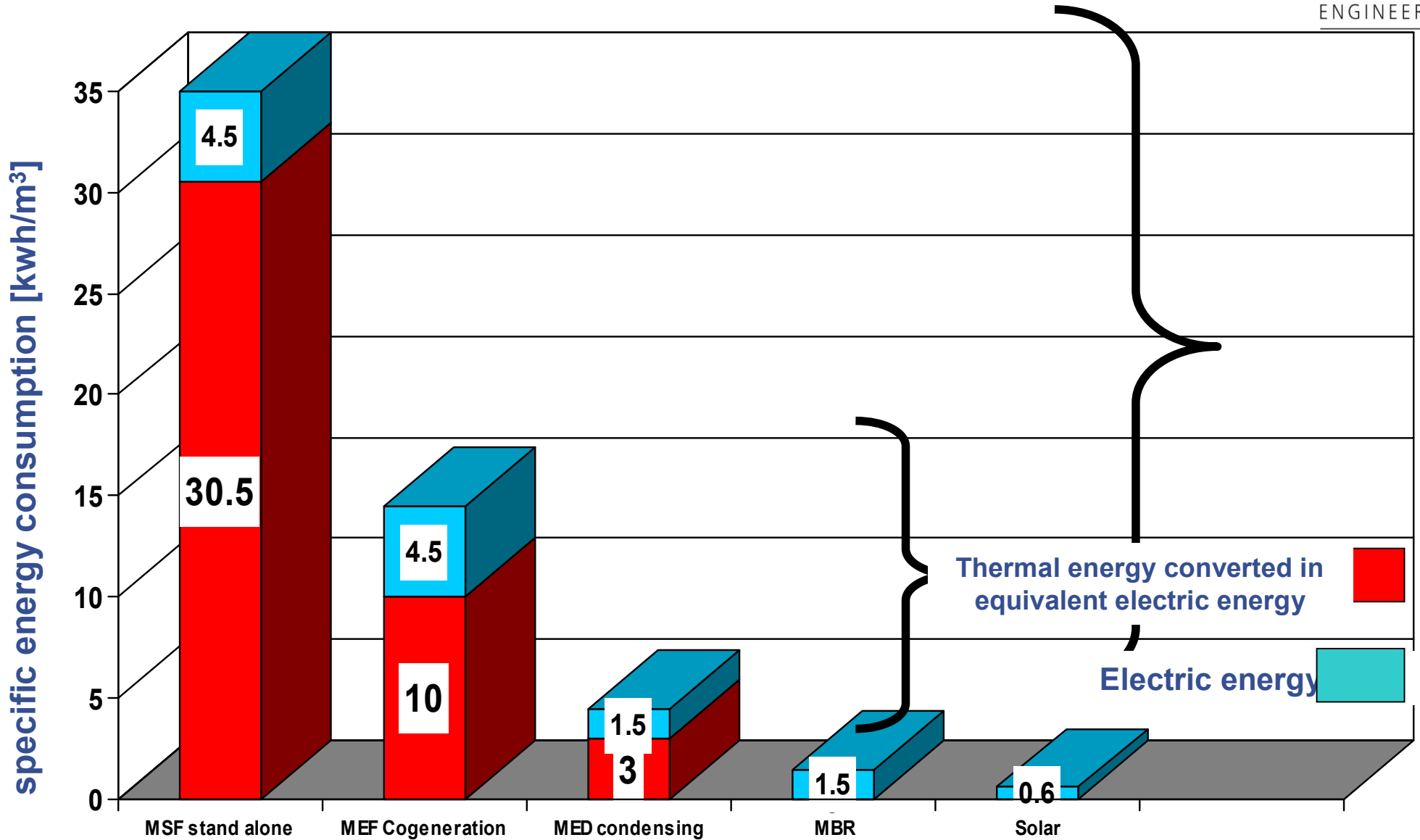
Recycled Wastewater



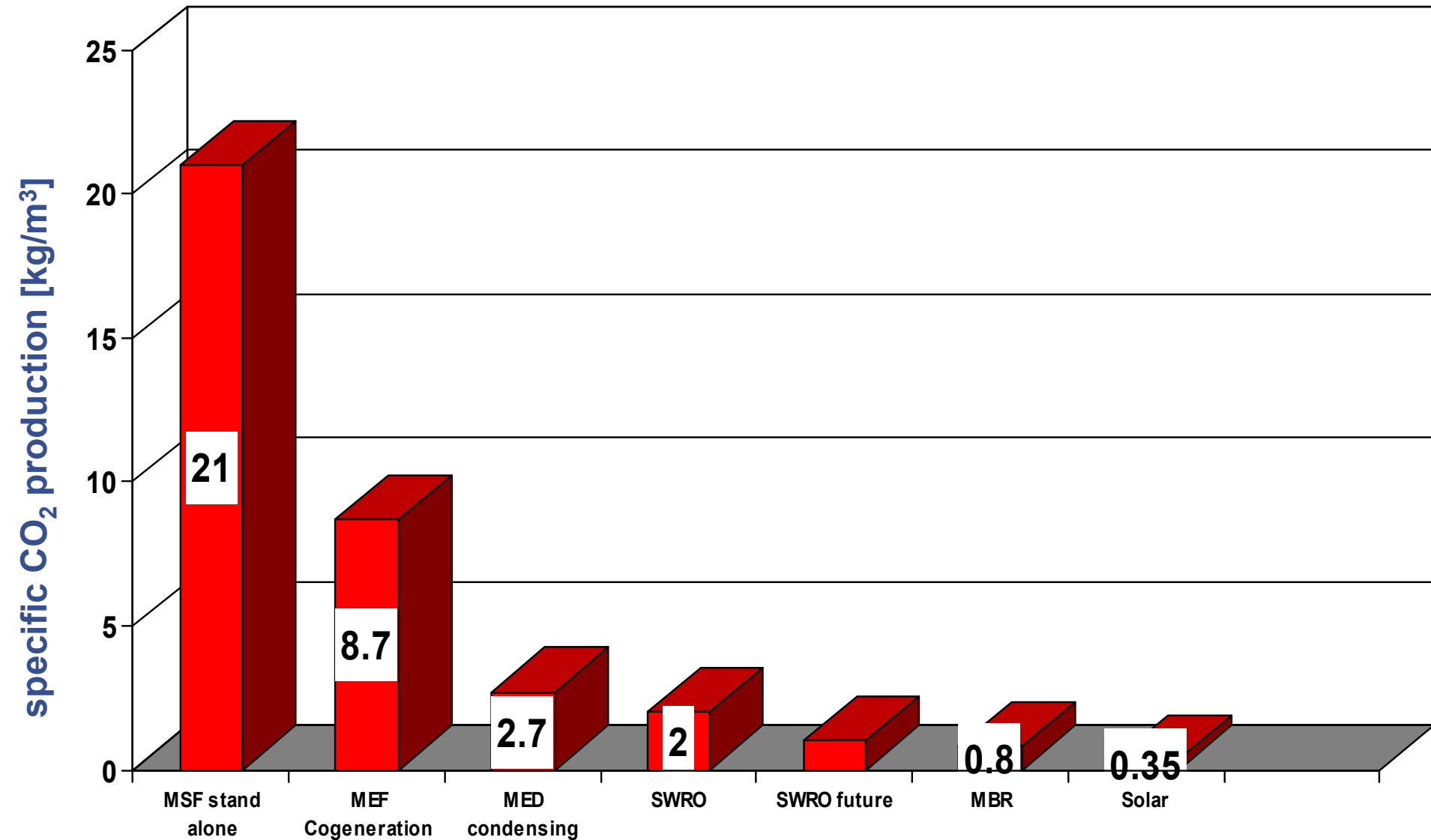
Desalinated Water



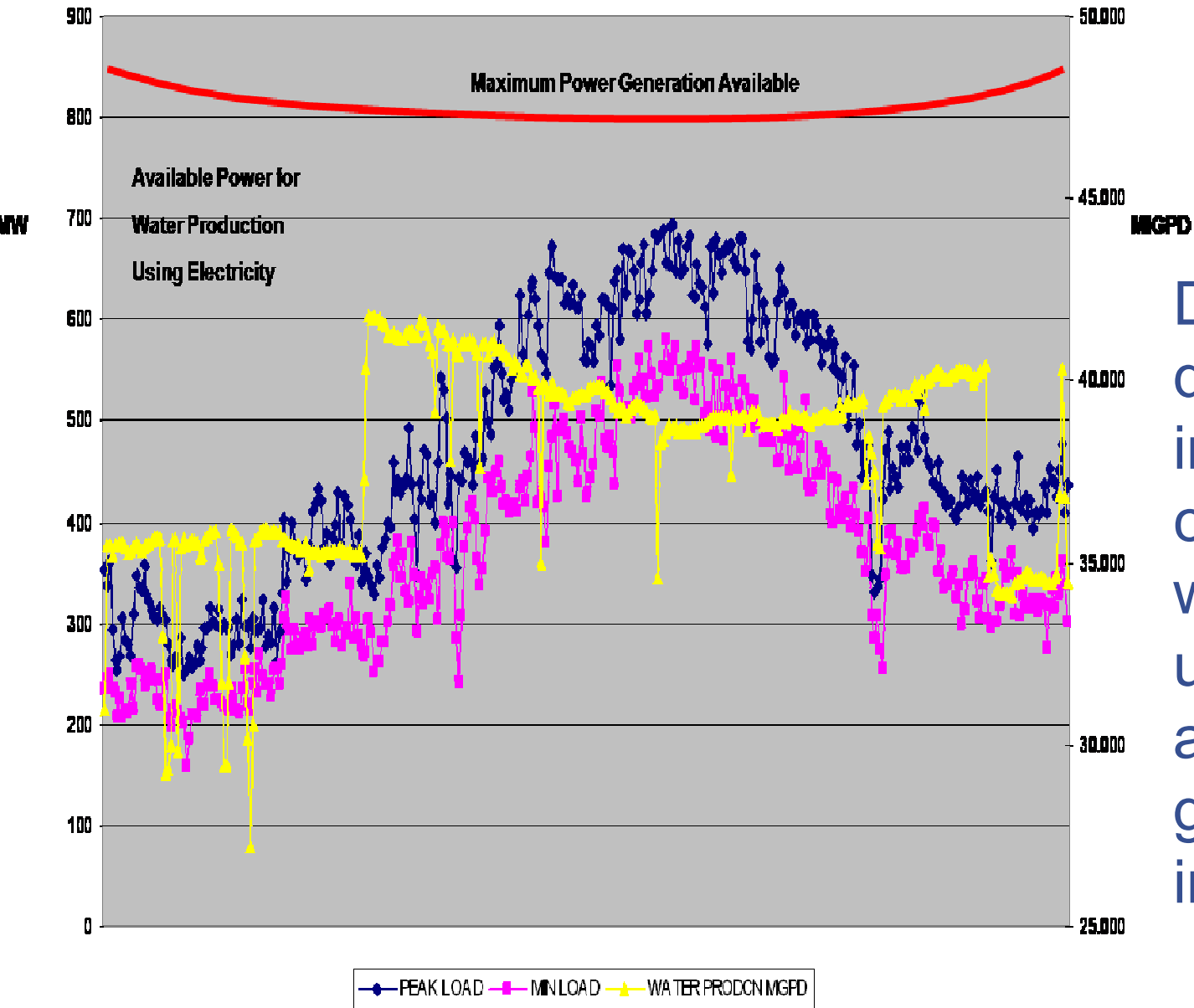
The Energy Situation



The CO₂ related emission



The Energy Situation



Despite all thermal desalination plant are installed as cogeneration the winter summer unbalance of water and power demand generate tremendous inefficiencies



WATER DEMAND

POWER DEMAND

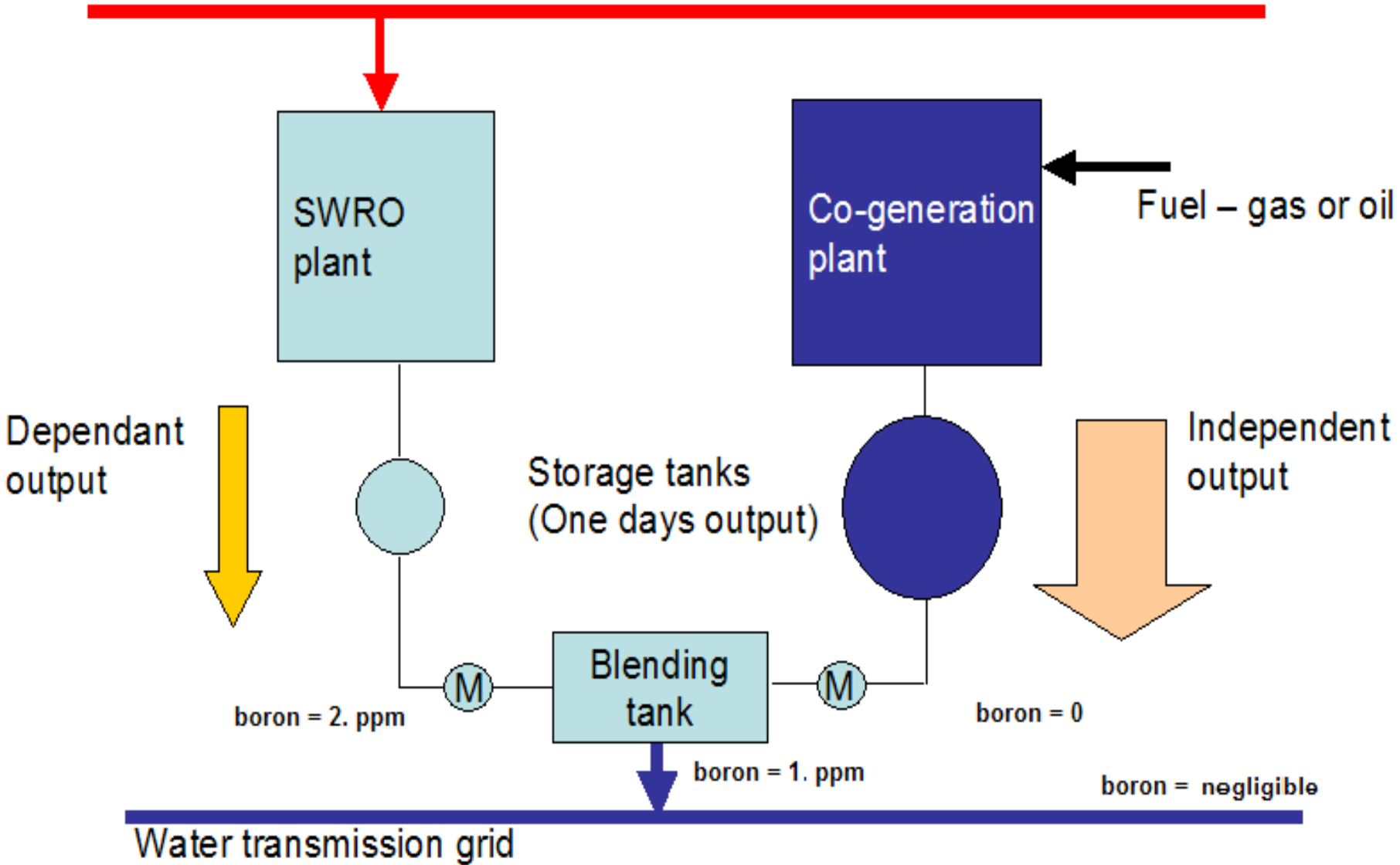


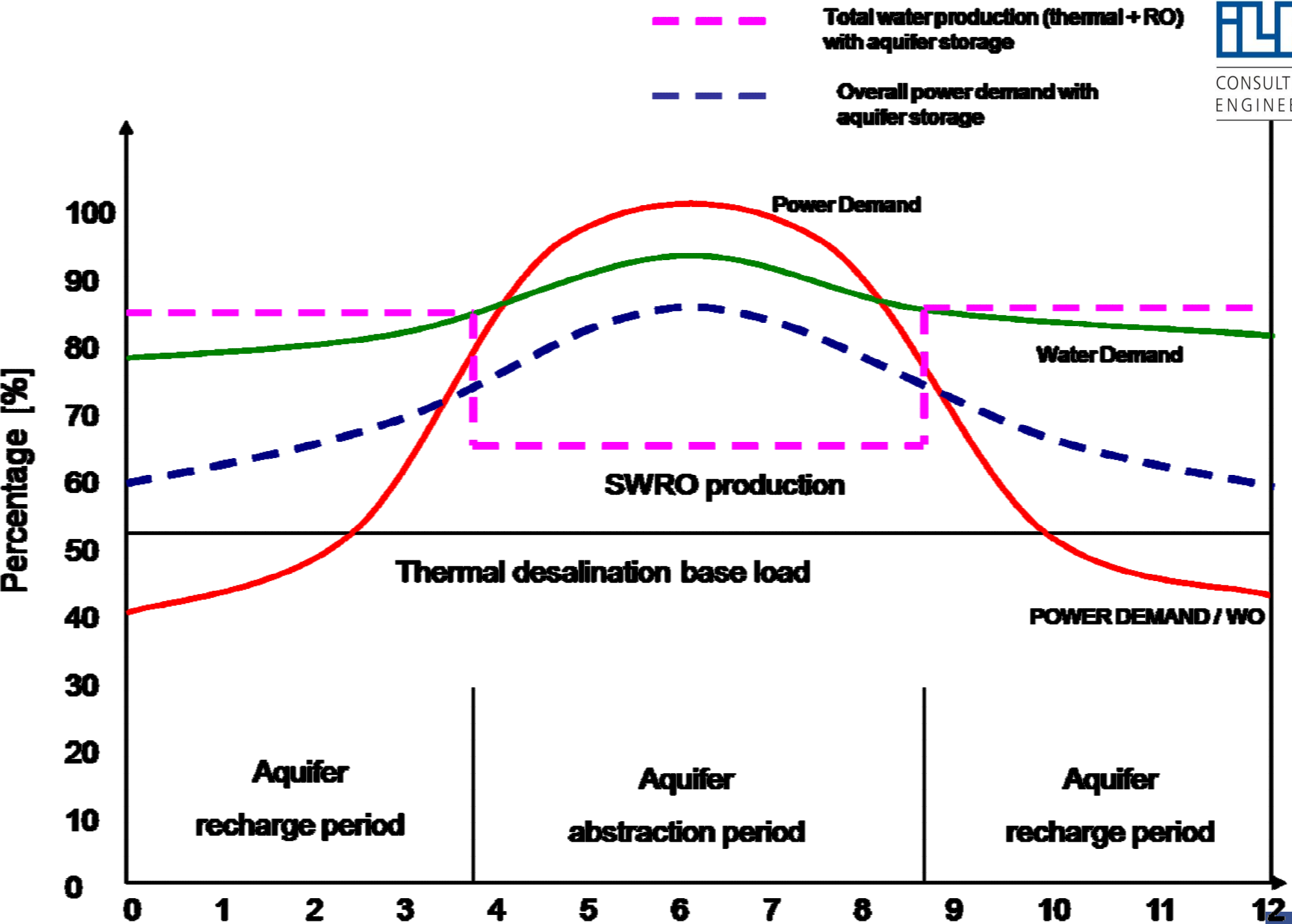
Water availability satisfied
by steam by BPST

Water which can be generated by
CHP steam at max efficiency

GAP

Electricity transmission grid



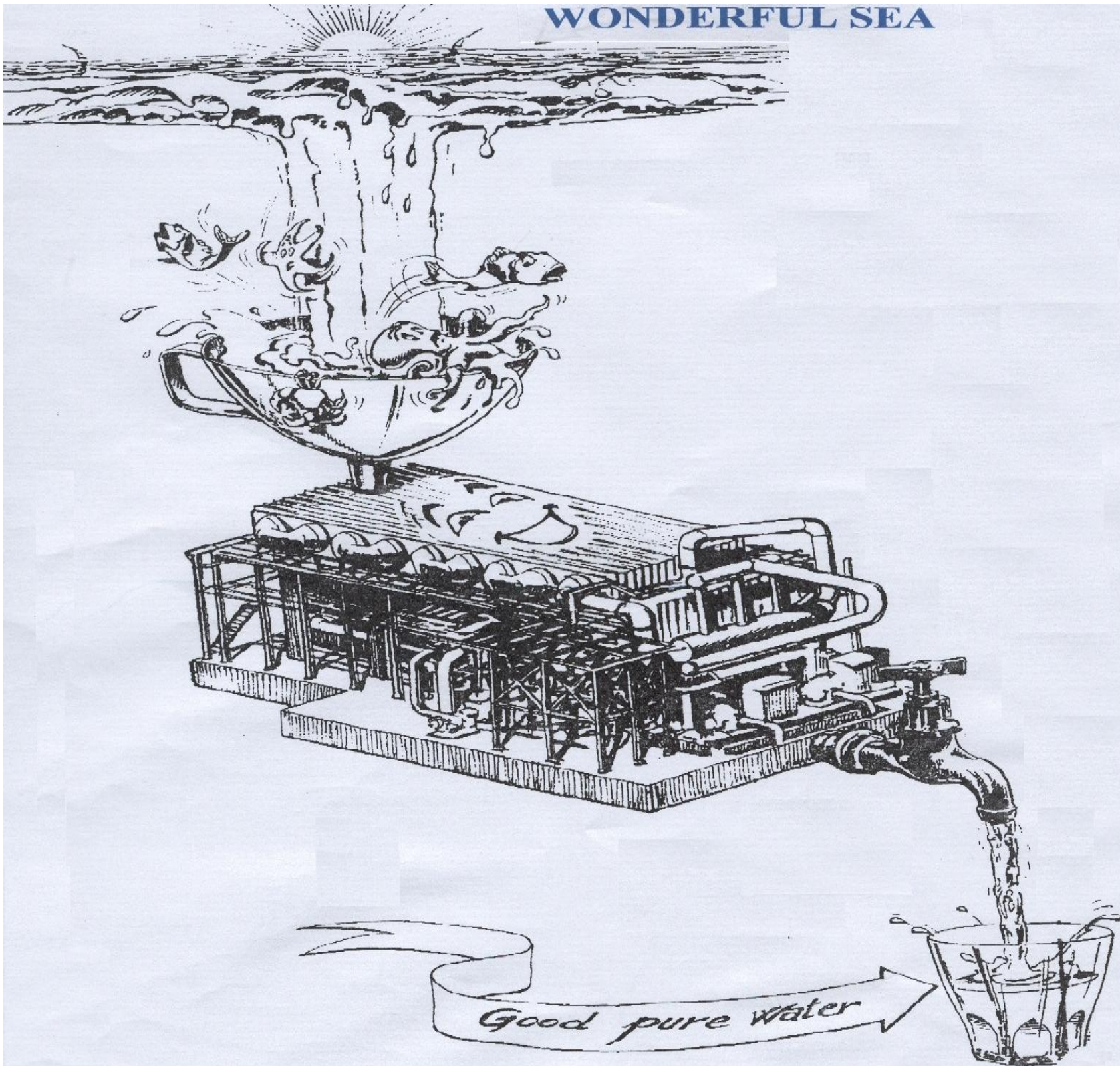


Conclusions

- There are enormous potentials to supplement increasing demand in the Middle East with more efficiency and lower costs.
- Several steps have been undertaken already at policies level but financial incentives need to be provided to Industry to ensure this policies are successful



WONDERFUL SEA



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