



*Combined Solar Power and Desalination Plants:
Techno-economic potential in Mediterranean Partner Countries*

The Role of CSP Technology in Water Desalination

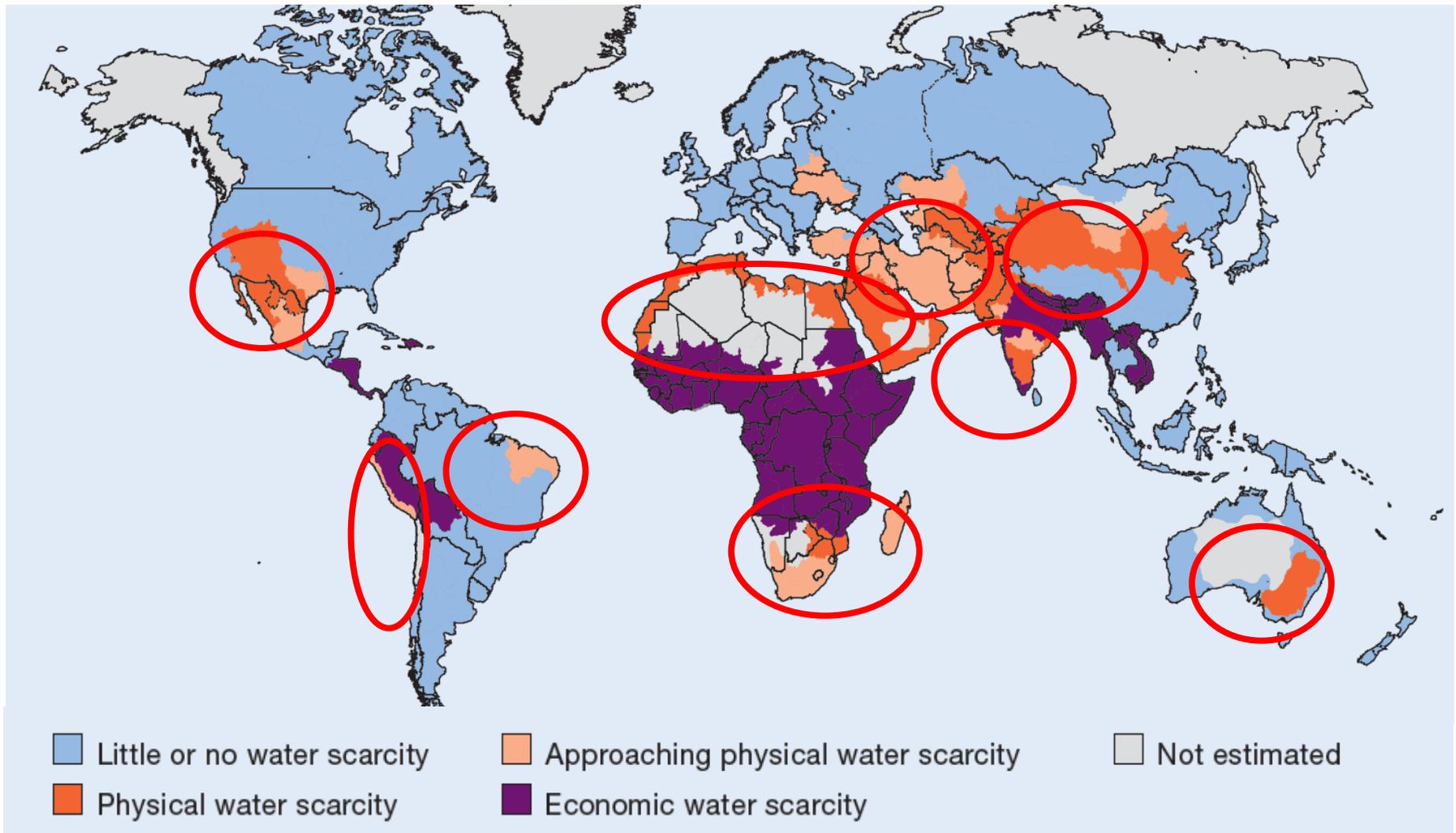
Dr. Franz Trieb



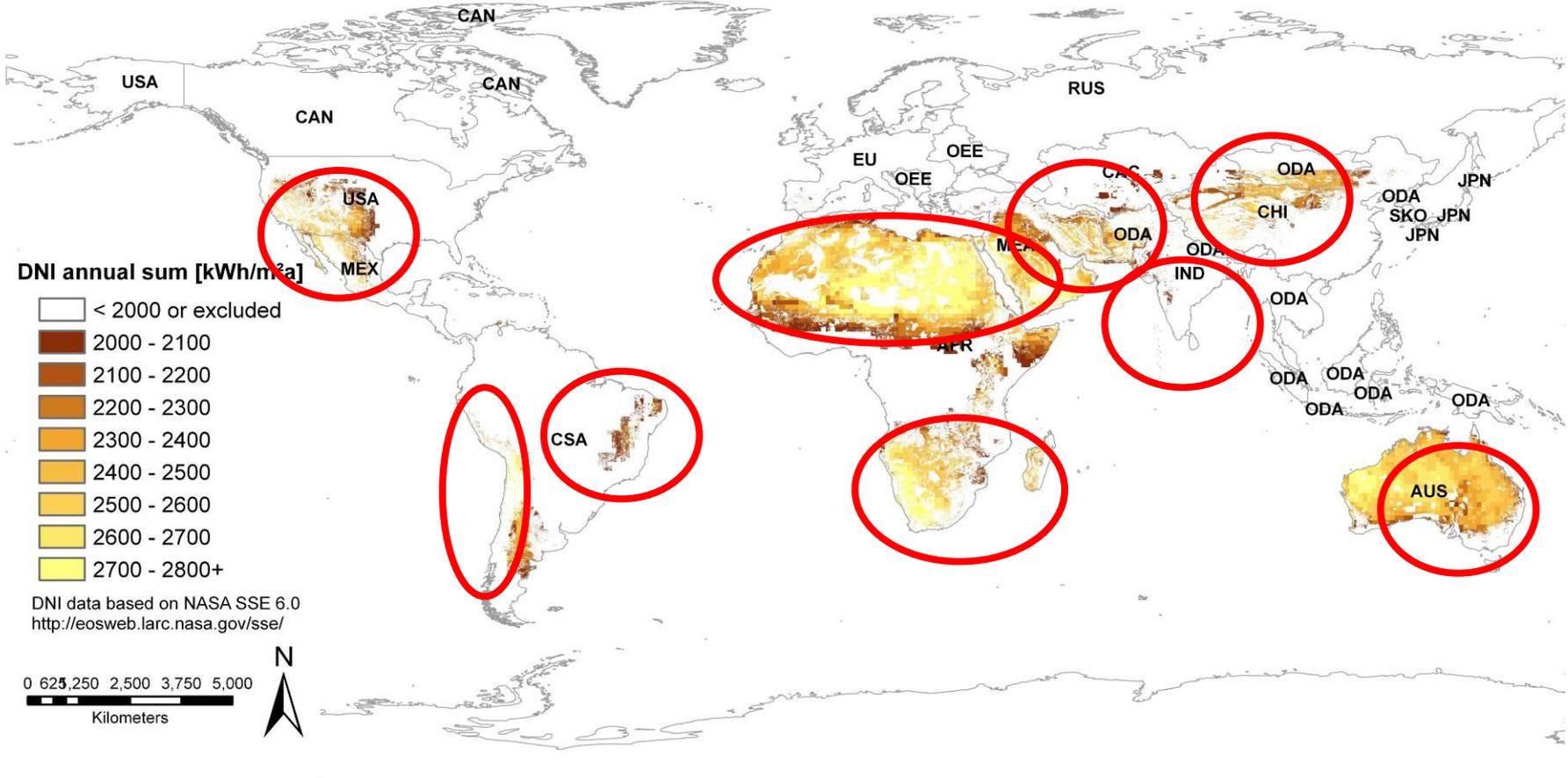
Deutsches Zentrum
für Luft- und Raumfahrt e.V.
in der Helmholtz-Gemeinschaft

FINAL CONFERENCE
RABAT, 18-19 MAY 2010

Global Water Scarcity

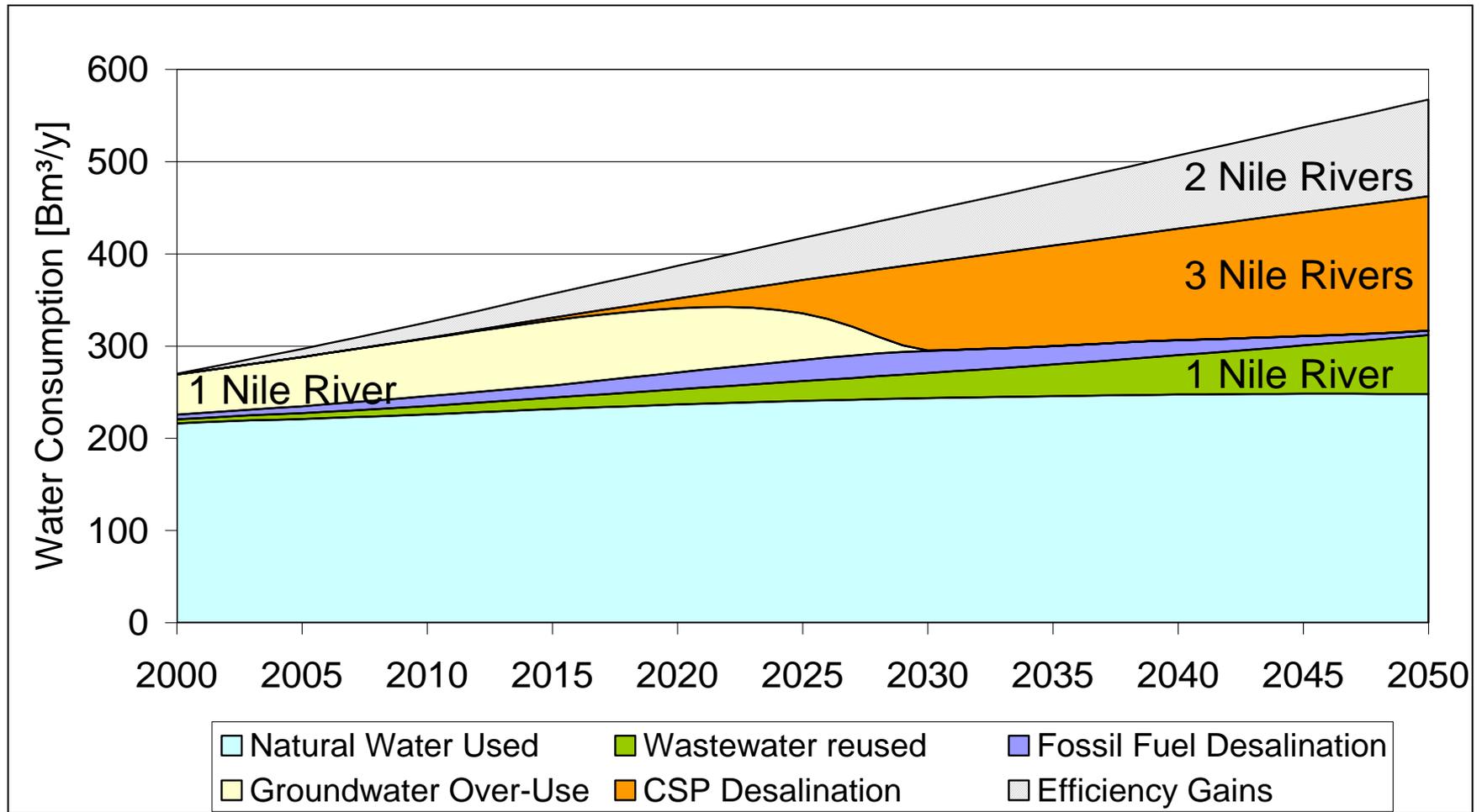


Global Potential for Concentrating Solar Power



Data provided by  (2008) for EU-project REACCESS

AQUA-CSP Scenario for Middle East & North Africa



Solar Power & Desalination Plants



Energy,
Water,
Food,
Labor and
Income

for further
300 Million
People
in MENA ?

Steam Production above and Biomass Production below a Linear Fresnel Collector Field in a CSP Multipurpose Plant

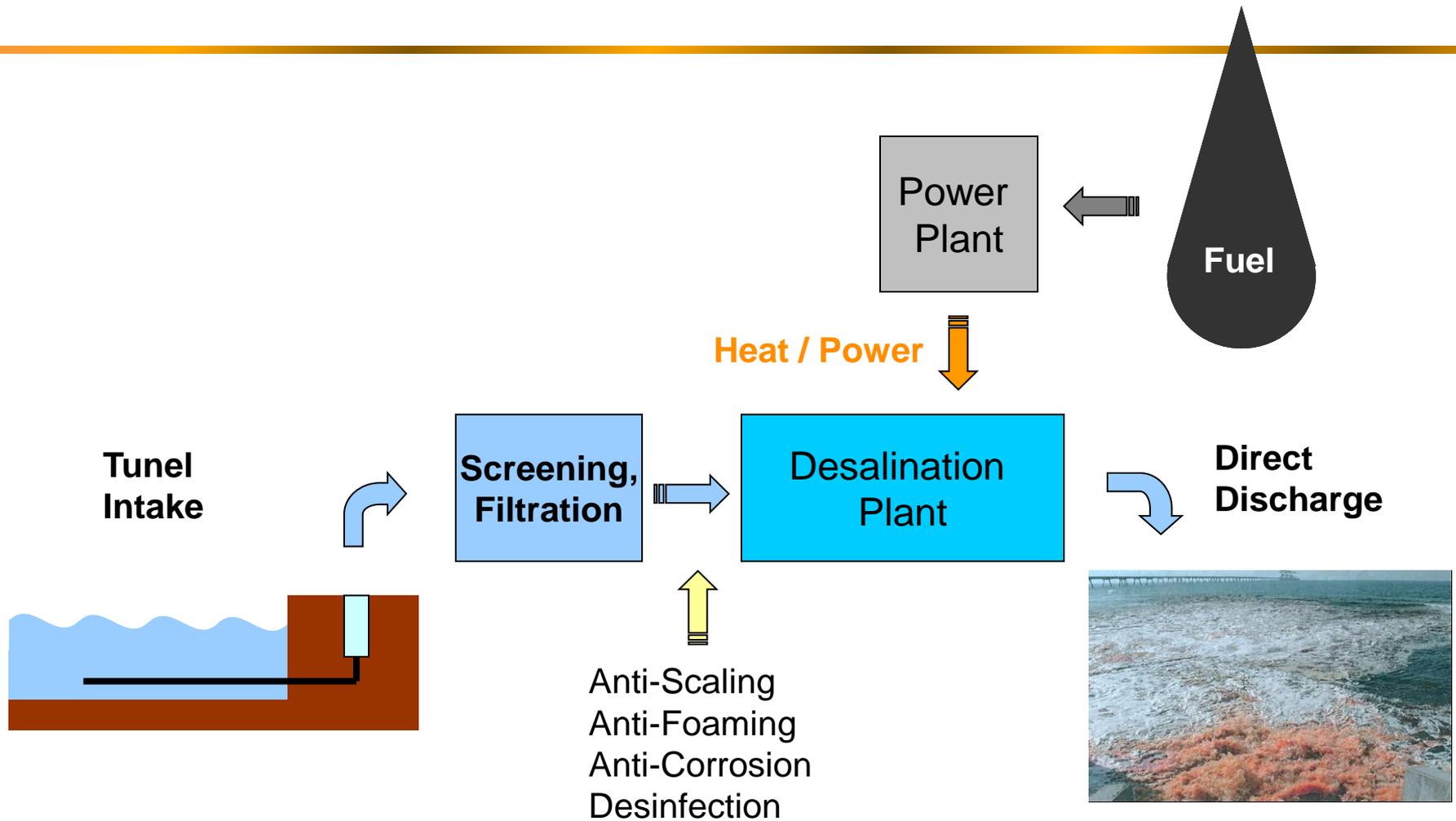


Photos: Solarmundo

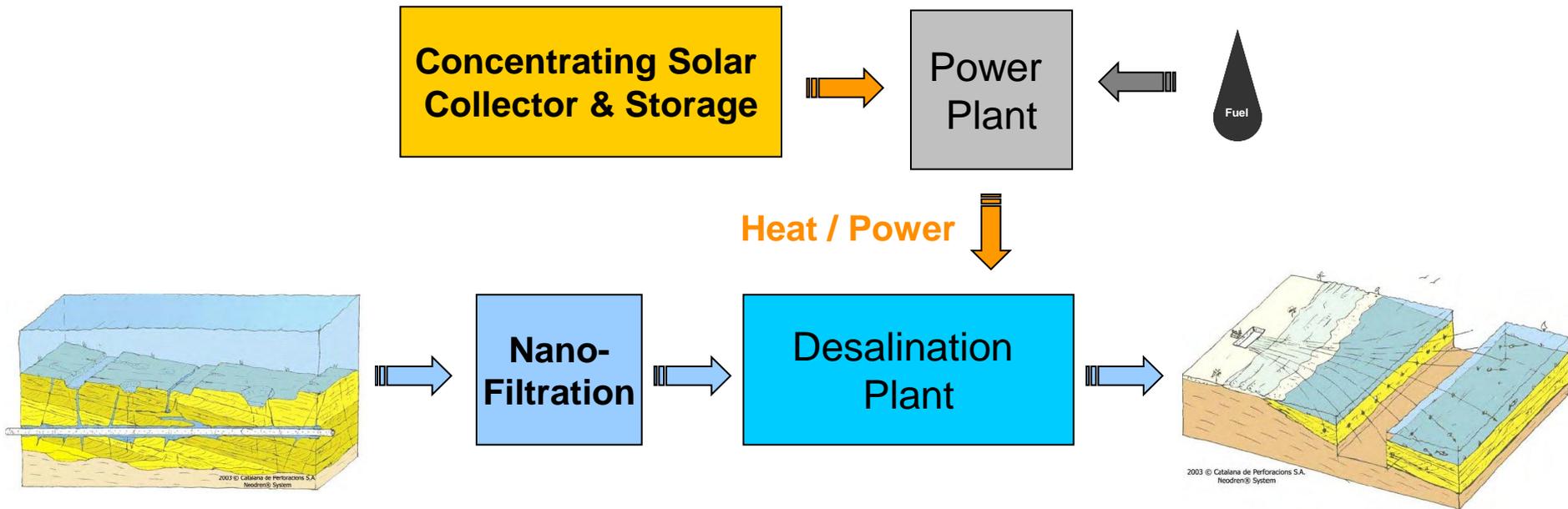


Greenhouse Visualization: DLR

Conventional Desalination Plant



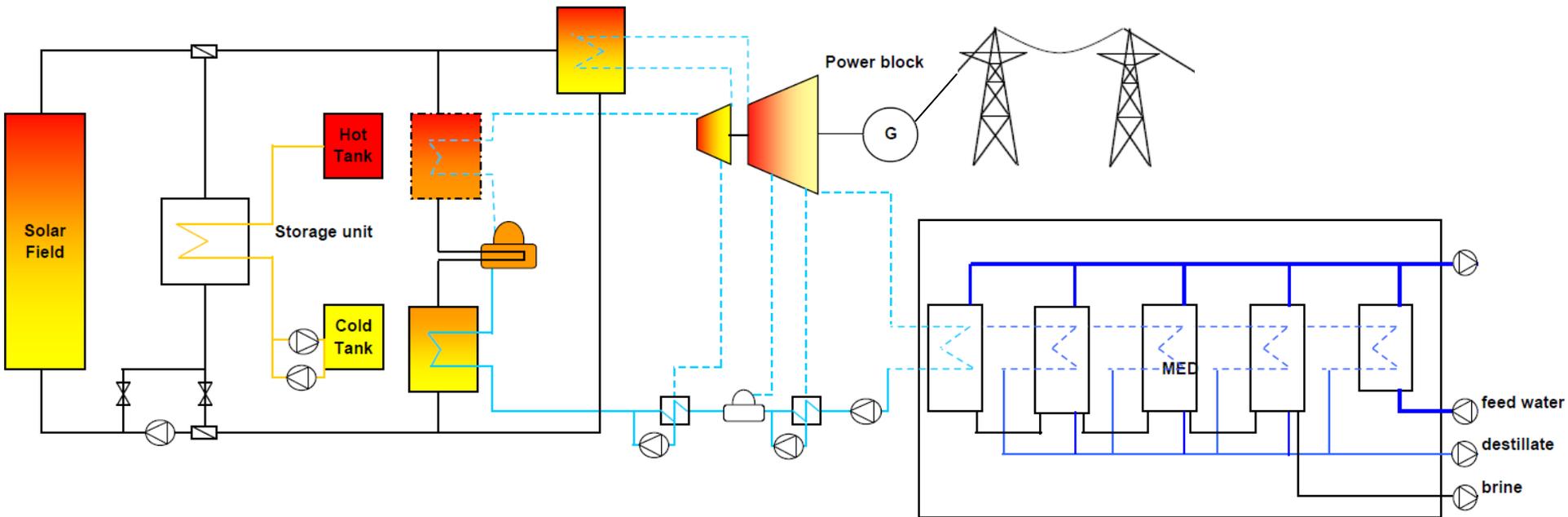
Advanced CSP-Desalination Plant



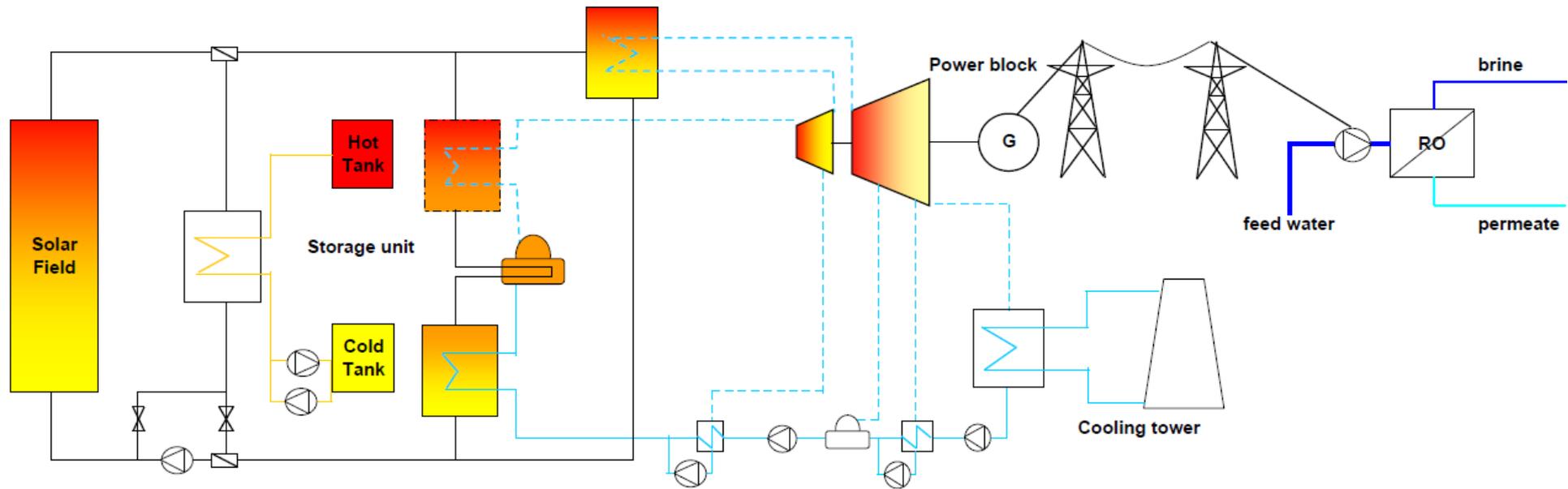
Horizontal Drain Intake or
Micro- & Ultrafiltration

Horizontal Drain Discharge

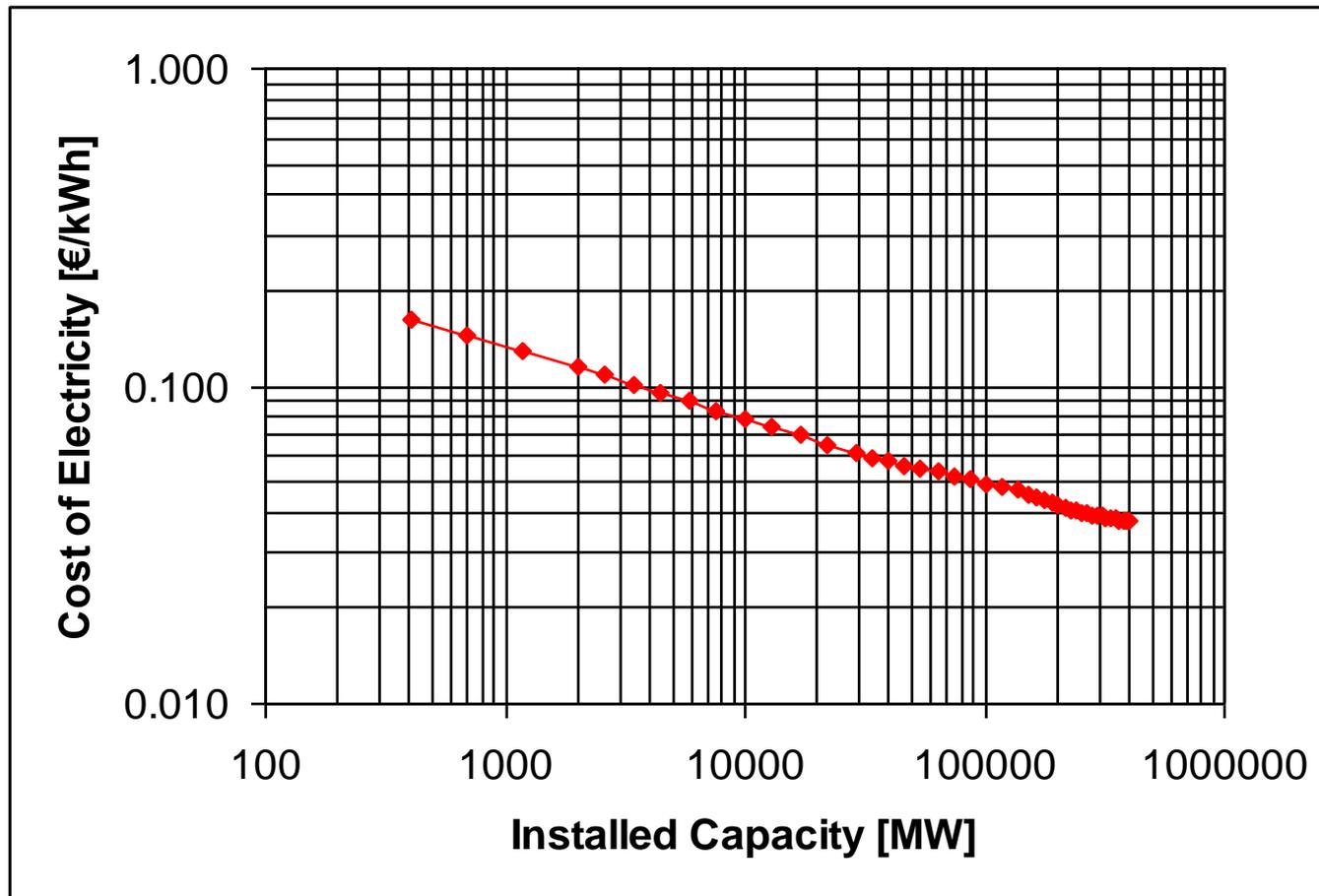
CSP Plant provides Combined Heat & Power for Thermal Desalination



CSP Plant provides Power for Reverse Osmosis



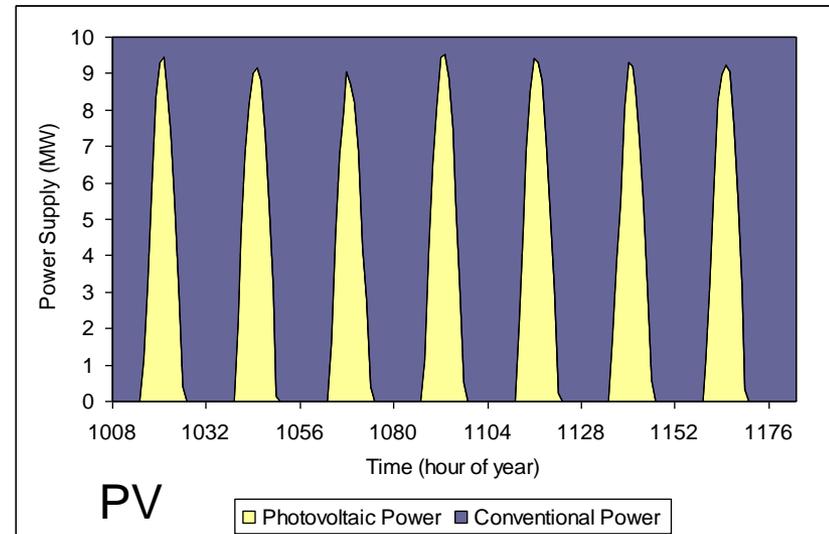
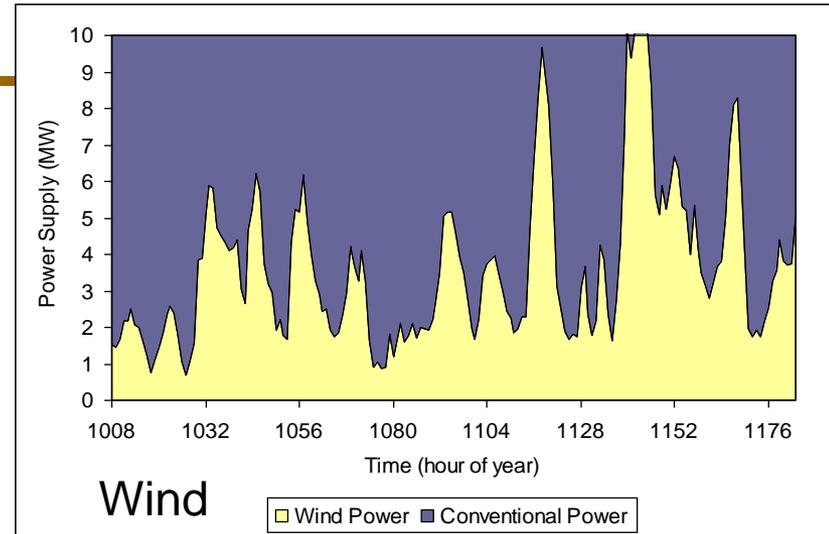
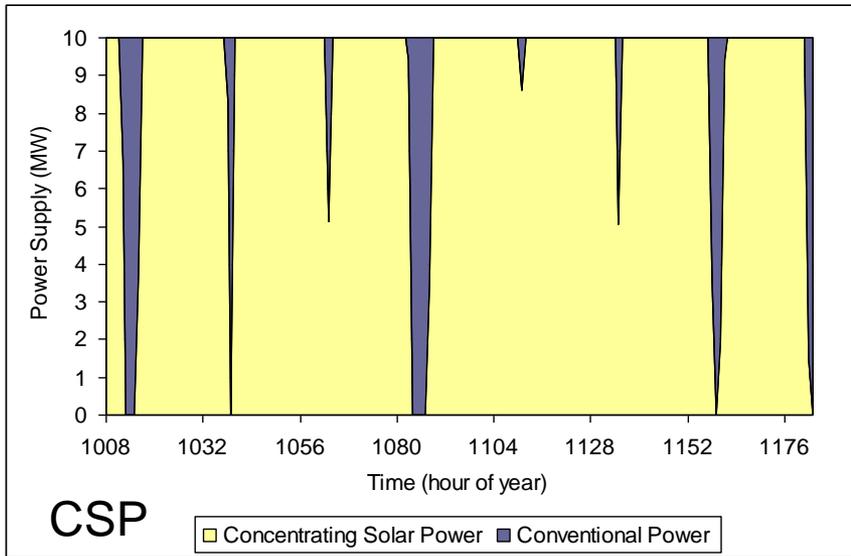
CSP Learning Curve



5 % real interest rate, 25 years life, 2400 kWh/m²/y annual irradiance

Task: 10 MW Firm Power Capacity for Desalination

CSP: 10 MW installed, 10 % Fuel
 PV+Backup: 20 MW installed, 75 % Fuel
 Wind+Backup: 20 MW installed, 60 % Fuel



The Role of CSP in Desalination

- Energy Source is large enough to cope with Demand
- CSP mitigates Energy Cost Escalation Risk
- Solar Energy avoids Chemical Additives
- CSP enables Solar Base Load Operation
- CSP can fight Desertification
- Multi-Purpose Plants for New Desert Communities

Thank you

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