The Dilemma of the Dead Sea -

A Reassessment of Solutions from an IWRM-Perspective

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INTEGRATED WATER RESOURCES MANAGEMENT
MASTER OF SCIENCE FOR ARAB AND GERMAN YOUNG PROFESSIONALS

ITT
Institute for Technology and Resources Management in the Tropics and Subtropics

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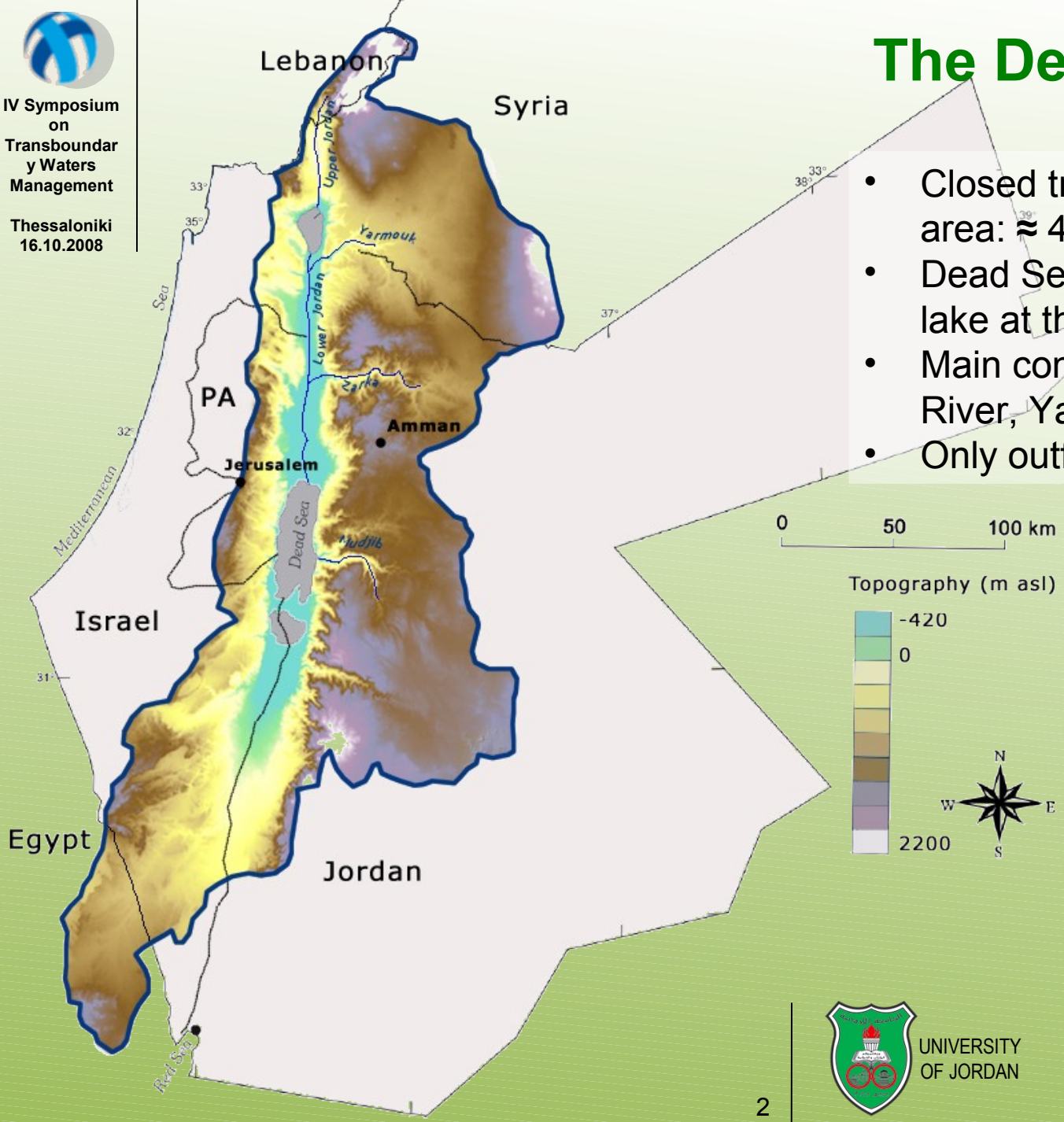
The Dead Sea Basin



- Closed transboundary basin area: ≈ 40.000 km²
- Dead Sea: Saline terminal lake at the lowest point
- Main contributaries: Jordan River, Yarmouk, Zarka River
- Only outflow: (Israel-NWC)

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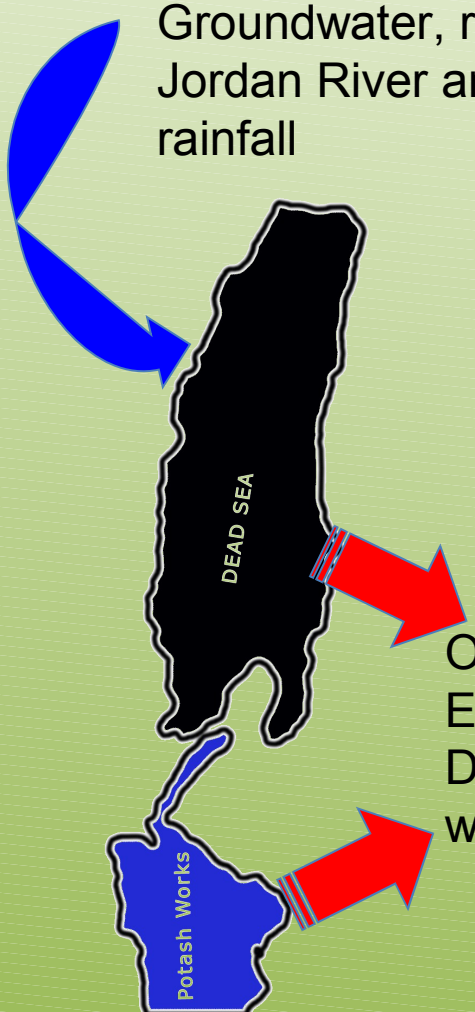
The Dead Sea Water Balance

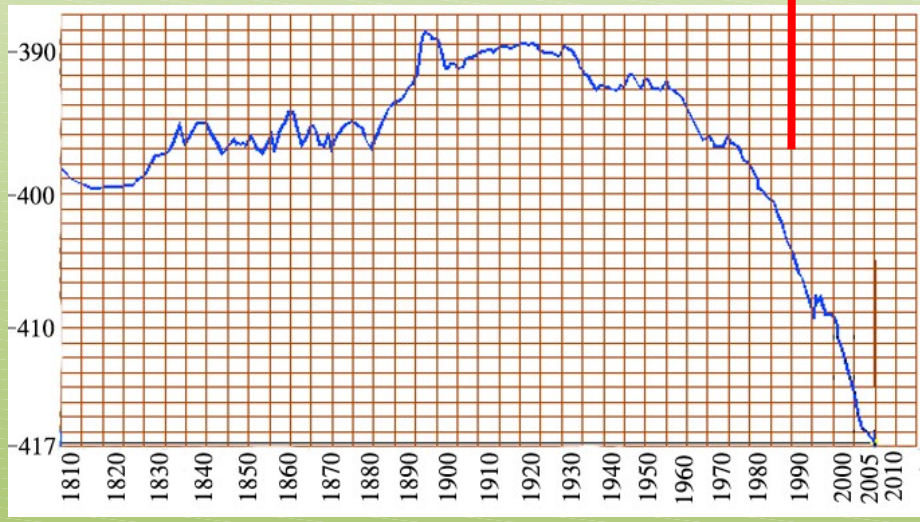
Decline as indicator for the water Stress In the region.

Inflow: 687 MCM
Groundwater, runoff from Jordan River and side wadis, rainfall



+ 687 MCM
- 1285 MCM
= -598 MCM

Outflow: 1285 MCM
Evaporation, Diversion for potash works



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Root Causes and Impacts of the Decline

- Major resettlements of refugees in the 50s and 60s from outside into the basin (1950: 450.000; 2008: > 4.5 Mio pop)
- Vast population growth (Jordan: 2,7%. DOS 2007)

- Vast expansion of agriculture
- Municipal water demands

- Surface water diversions
- Groundwater depletion

Political setting

Impacts on:

Environment
Pollution, Salinisation, Microclimate

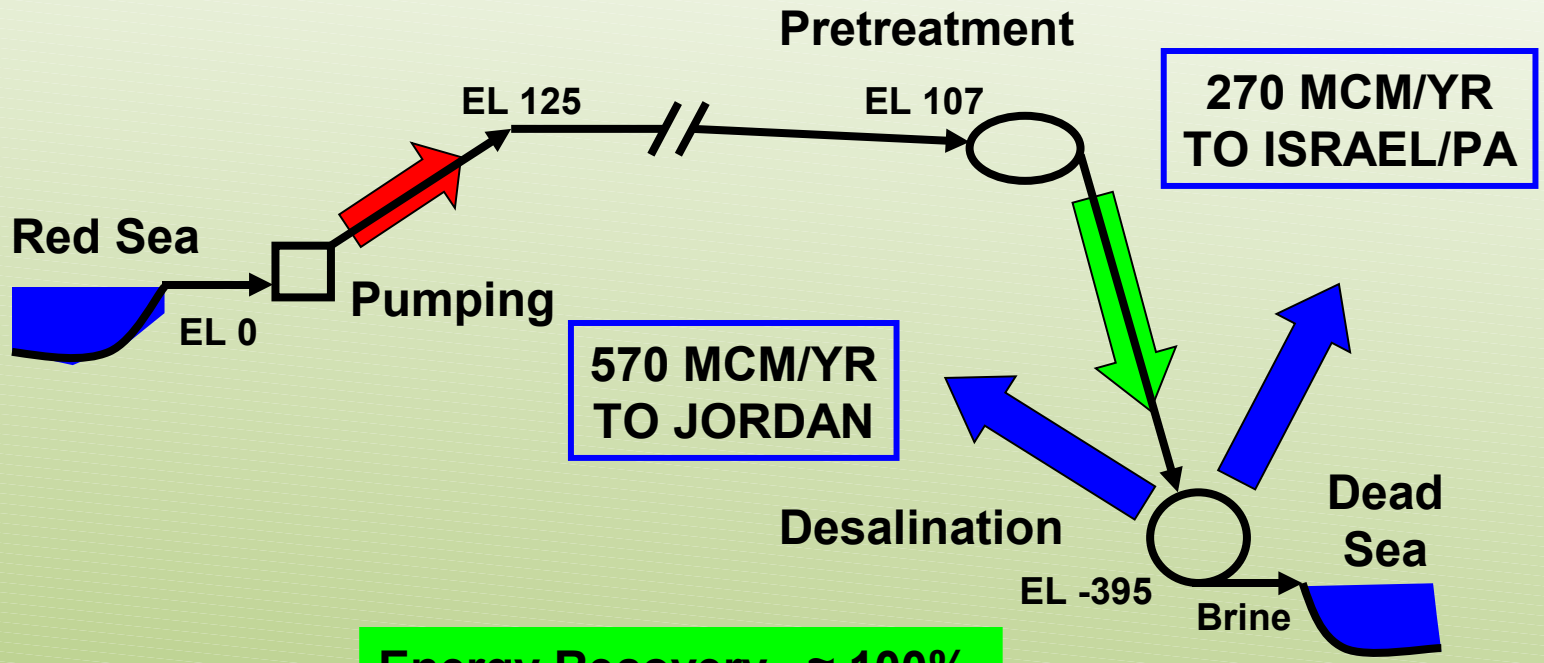
Economy
Infrastr. damages Loss of industry & agriculture

Tourism
Health, Pilgramage, Recreation

Society
Income losses in affected sectors

Canal Projects – Solution to the Problem?

Total Water Transfer: 2 BCM/a



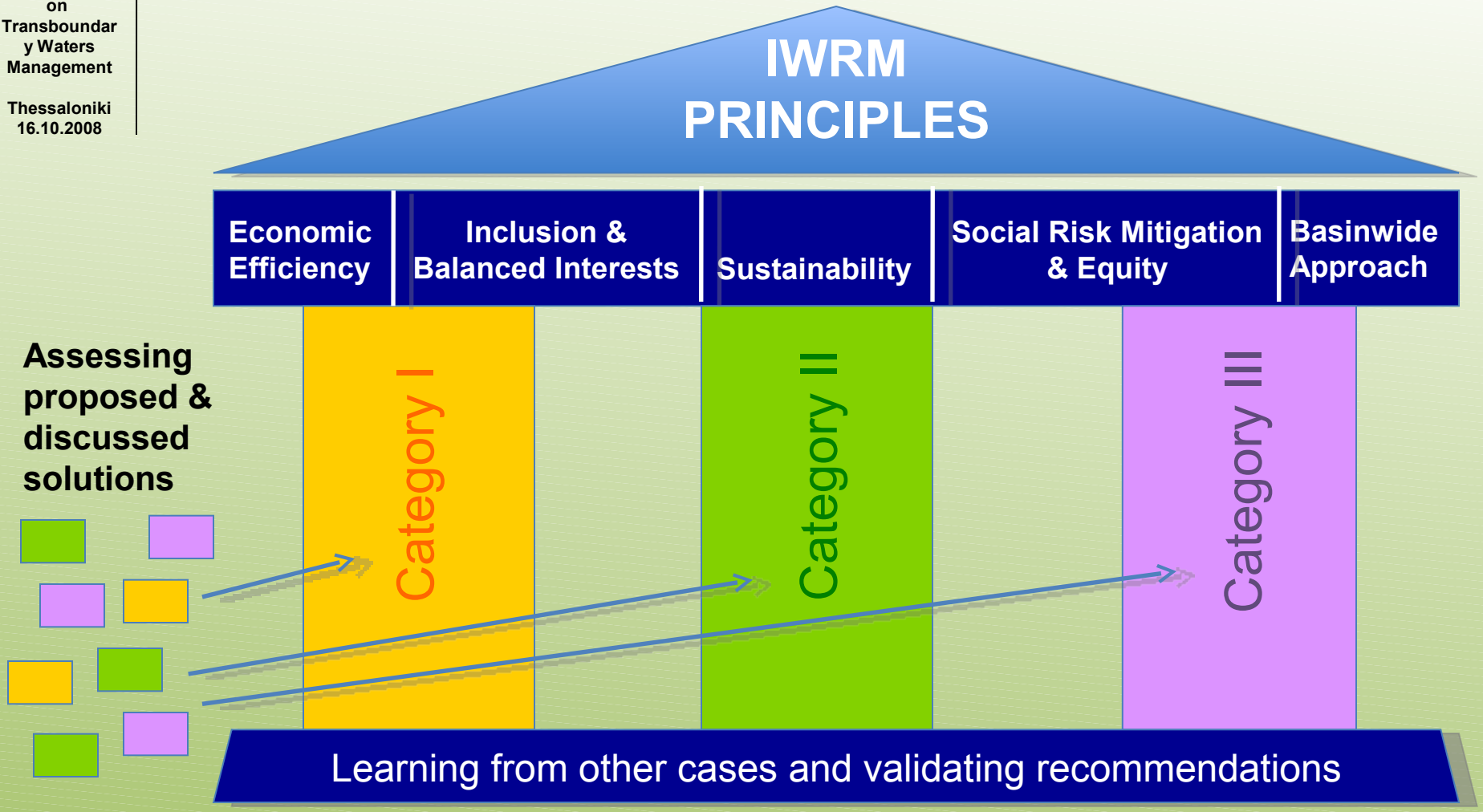
Energy Recovery ≈ 100%

Energy Consumtion ≈ 70%

Scheme of the currently proposed RedSea-DeadSea Coveyance System

(Source: HKJ MWI 2008)

Reassessment of Solutions



Categorising Solutions

Infrastructural

„Connecting the basin to an external water resource“

Red-Dead Canal
Med-Dead Canal
Peace Pipeline

Institutional

„Registration with an international body“

Labelling
Protection Regime
Basin Organisation

Demand Management

„Highlighting Saving potentials“

Substitution
Pricing
Recycling

Results

I1

+ DM offers instruments for improving water efficiency.
o Institutional approaches can provide efficiency if DM is applied.
– Infrastructural approaches are less likely to improve efficiency.

I2

+ DM is most likely achieving a balance of interests on a sectoral level.
o Institutional approaches can support and enforce on a regional level.
– Infrastructure addresses only the regional balance of interests.

I3

– DM in a water scarce basin tends to be used for optimization.
+ High environmental water needs require a basin wide organisation.
o Infrastructure can support, if close to the natural system.

I4

o DM bears social risks through neglecting affected stakeholders.
+ Basin Organisation is likely to prevent social risk and provide equity.
– Infrastructure triggers high water prices and endangers sectors.

I5

o DM approaches have a rather local focus than a basin-wide one.
+ Basin Organisation can act beyond the scope of suffering ecosystem.
o Infrastructure only supports Dead Sea and closely related ecosystem.

Final Remarks

- The manifold problems and severe situation of water scarcity in the Dead Sea Basin call for a combined solution.

- None of the reassessed approaches is in the position to address all root causes of the dead sea decline and hence to ameliorate the water situation.

- **DM** is needed in order to make water use more efficient and to balance interest, enforced through **Institutional Frameworks** that ensure sustainability and mitigate social risks. Regarding the huge amount of water that is urgently needed for the ecosystem, a **Downscaled Canal Project** seems inevitable to secure the Dead Sea.

- In light of the deadlock situation, a 1st best solution (IWRM conform) might currently not be feasible. Hence, 2nd and 3rd best solutions aiming at IWRM principles might have to be taken into account.


Thank You