

Contribution to Session III

»Closing the Water Supply versus Demand Gap«

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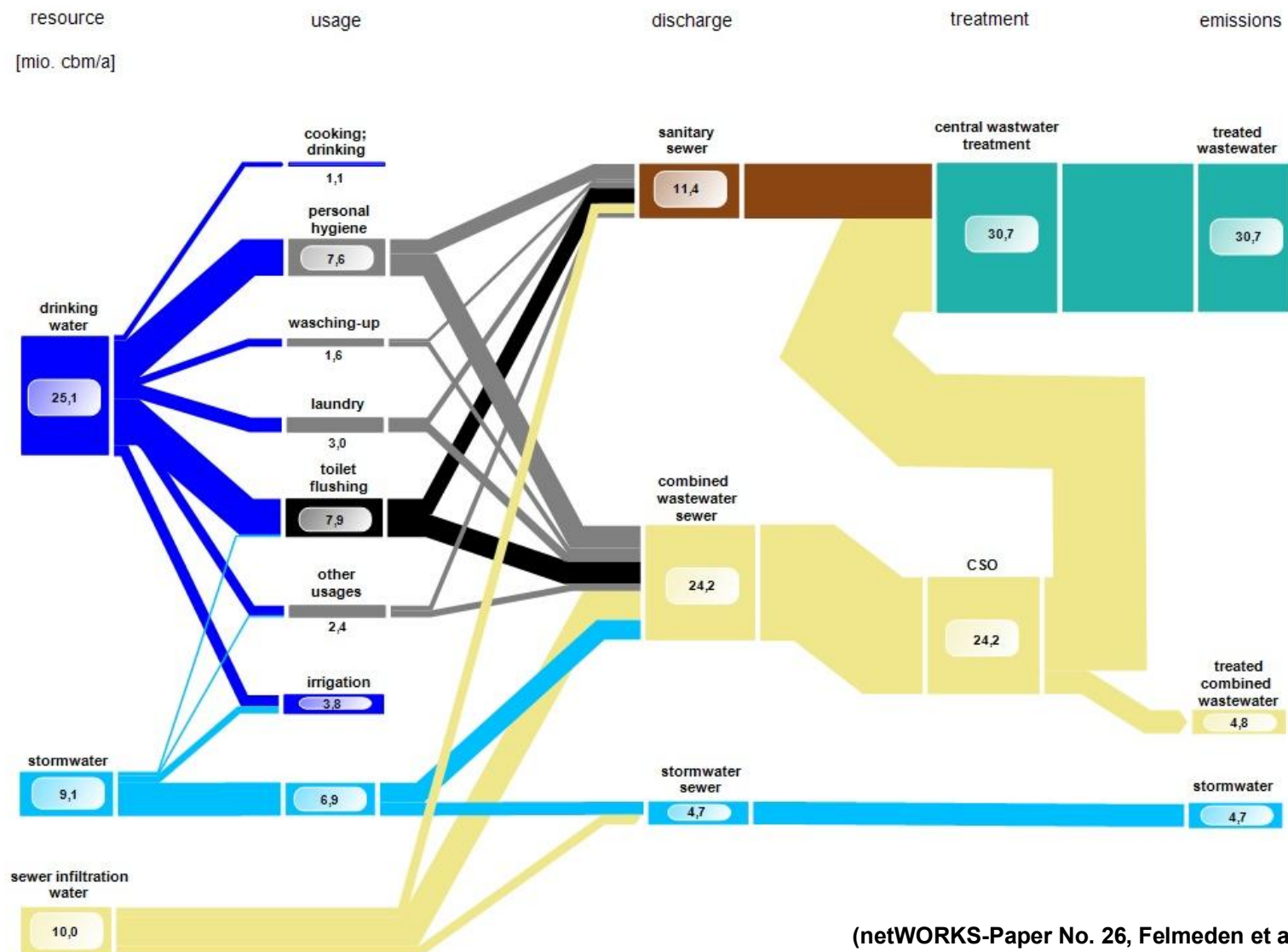
Institute for Social-Ecological Research (ISOE)

20 May 2010, Frankfurt am Main

Global H₂O – Global Energy



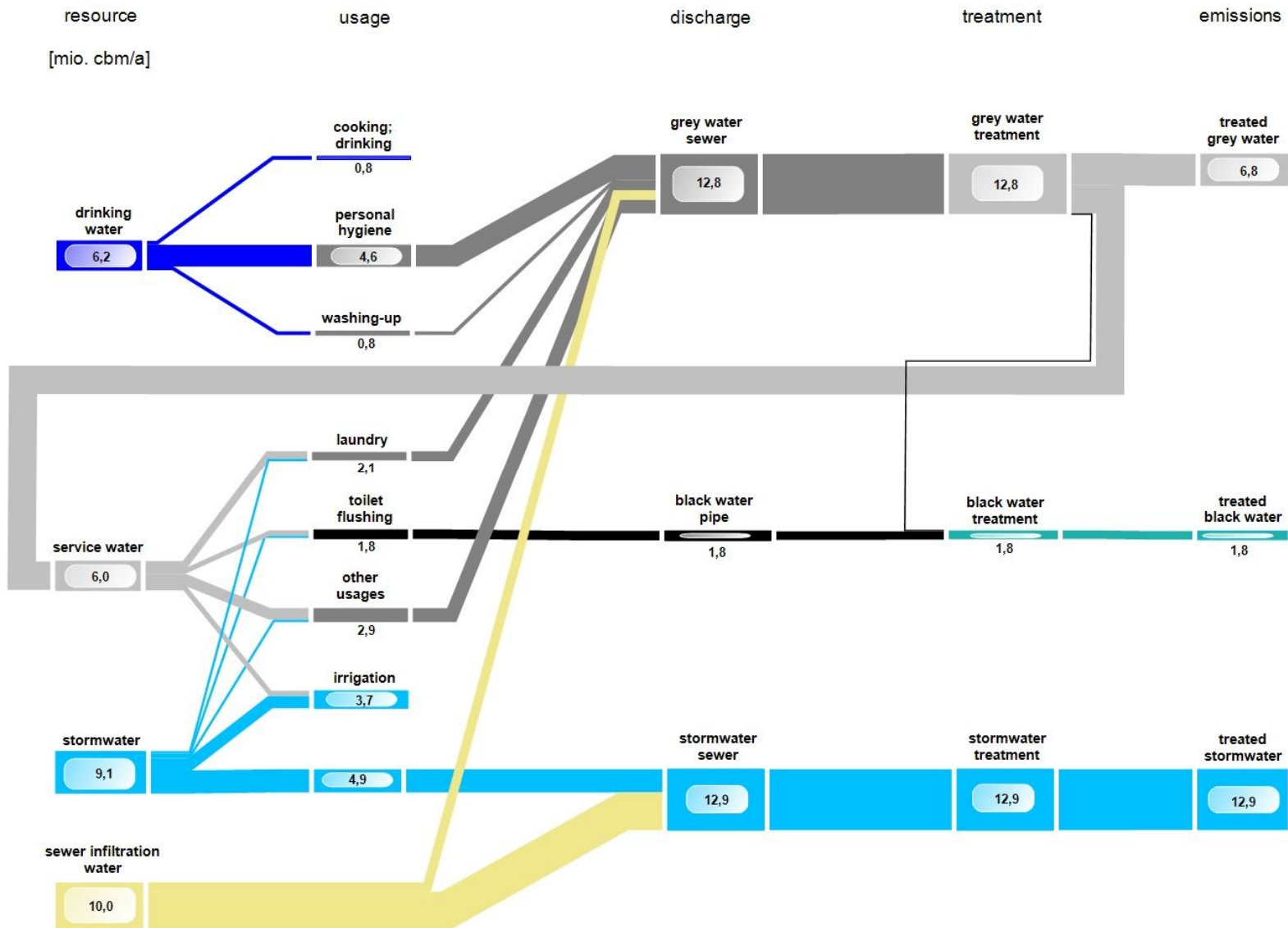
Water-flow Status Quo 2010



(netWORKS-Paper No. 26, Felmeden et al. 2010)



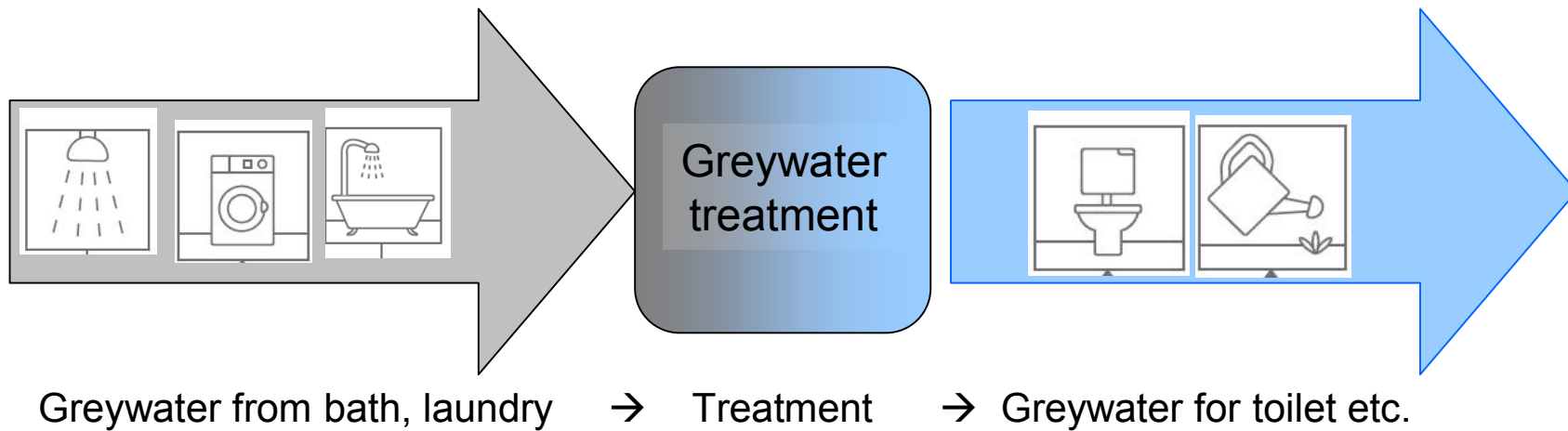
Water-flow Transition Option



(netWORKS-Paper No. 26, Felmeden et al. 2010)

Greywater Cycle

Greywater cycle: 1/3 less freshwater consumption



Savings by Greywater Cycle

- Freshwater: extraction, purification, distribution, wastewater treatment
 - 1,4 kWh/m³ → 5 kWh/m³
 - (groundwater, rivers, lakes, distances)

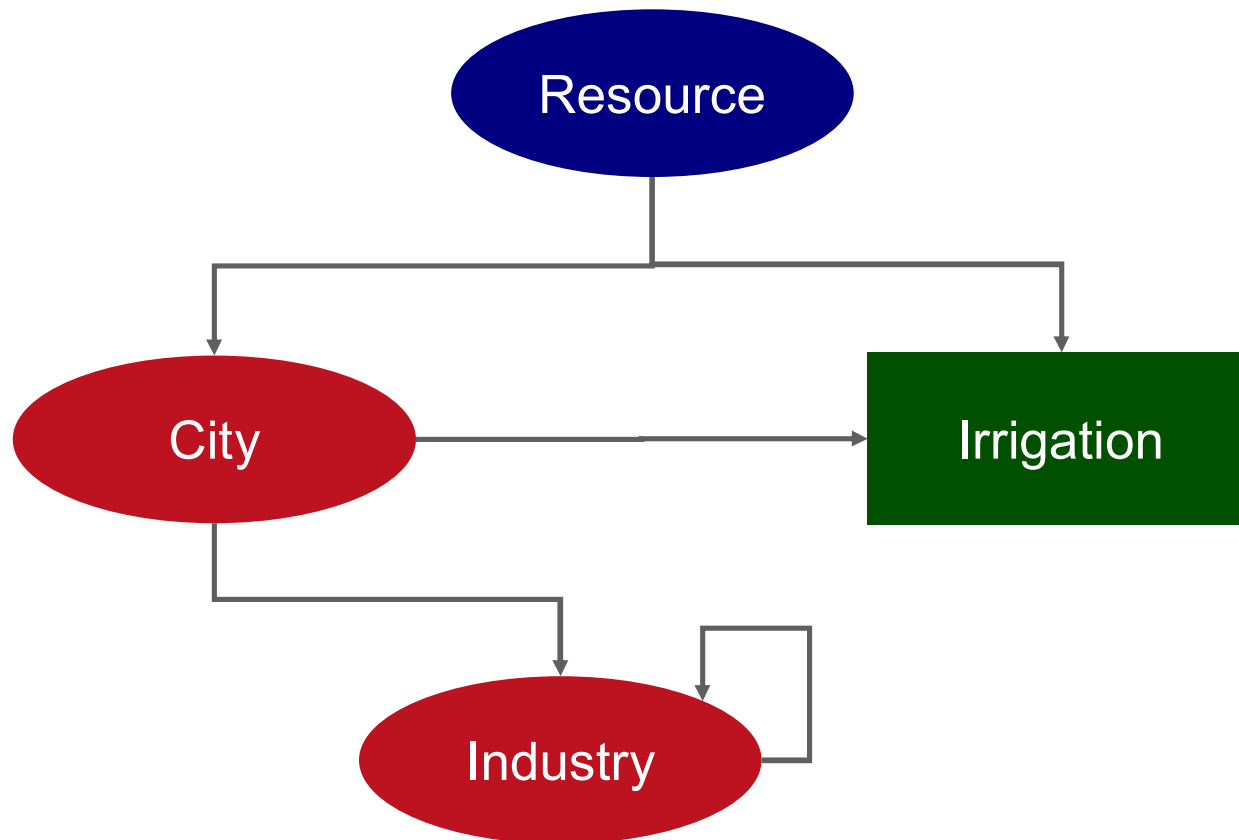
- Greywater recycling: 0,4 – 0,8 kWh/m³

- Heat recovery from wastewater
 - Recovery potential of 50%

Balances

balances	dimension	status quo	reference	transition
		2010	2080	2080
drinking water	mio. m ³ /a	25	14	6
wastewater (black water)	mio. m ³ /a	31	22	(2)
grey water	mio. m ³ /a	-	-	13
energy	MWh/a	- 34.978	+ 11.487	+ 107.601
revenues (energy, products)	mio. €/a	-	3	13
total costs	mio. €/a	151	140	141

Systemic Innovation: Cascade Uses (e.g. Urban-rural Synergies, North China)



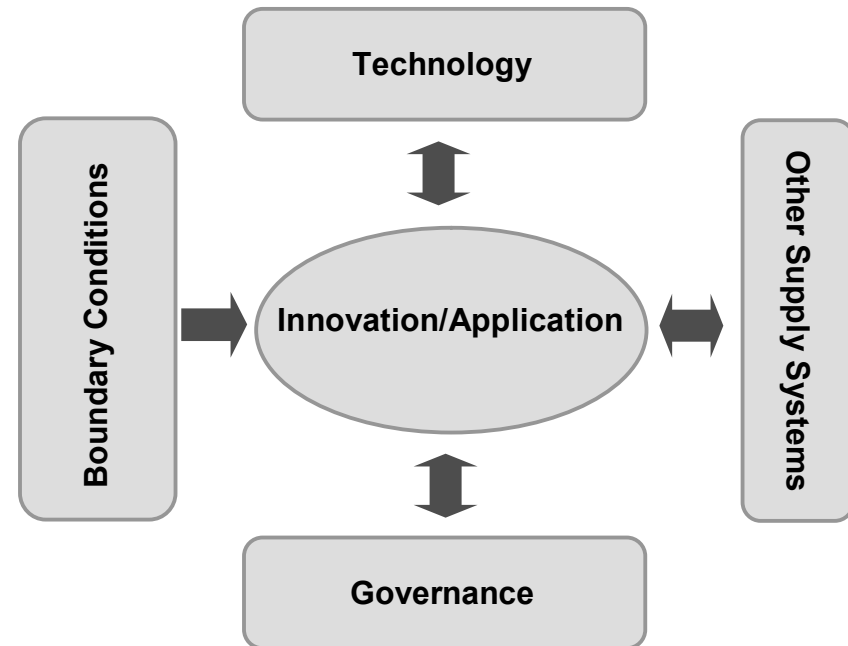
Seeking Systemic Solutions

■ Changing basic conditions

- Demography
- Climate Change
- Social Ecology

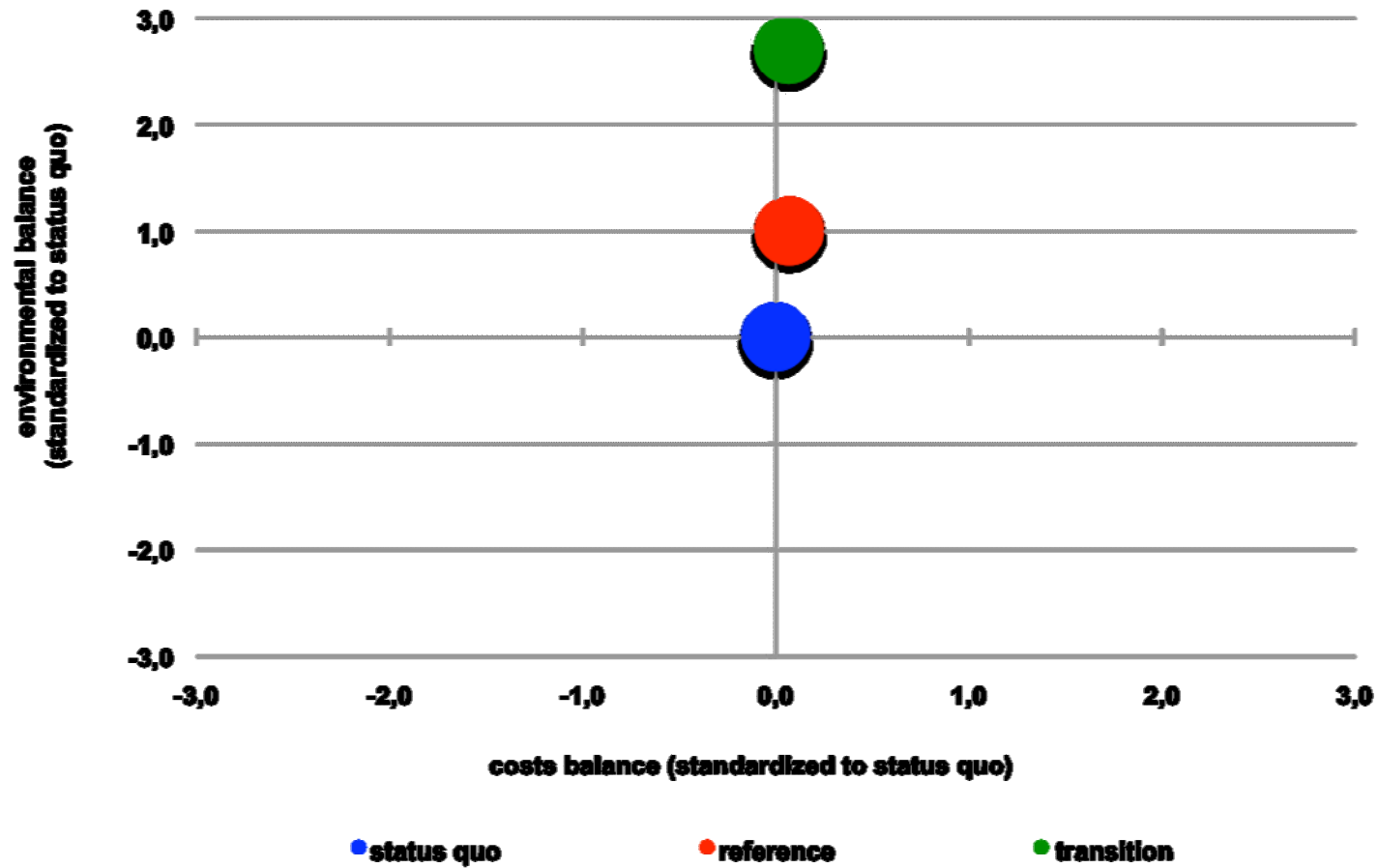
■ Considering the Context

- Technology
- Application
- Governance





Eco-Efficiency



(netWORKS-Paper No. 26, Felmeden et al. 2010)