CLOSING THE WATER CYCLE:

A COMPARISON OF THE INSTITUTIONAL SETTINGS FOR WASTEWATER REUSE IN 4 COUNTRIES WITH A FOCUS ON THE AGRICULTURAL SECTOR

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BACKGROUND

- Water scarcity
- Increased demand and competition
- Urbanization → generation of waste water
- Water pollution
TWO REALITIES

– Developing countries: use of untreated (diluted waste water) often in an informal setting
  – Health risks for farmers, consumers…
  – Environmental risks

– Developed countries: planned controlled use of waste water
  – Reduction of the risks
OBJECTIVE

– Obtain insight in process of formalization by identifying key drivers, constraints and institutional arrangements
METHODOLOGY

- Comparative analysis
  - 4 countries along a formalization trajectory
    - India, Bolivia, South Africa and Israel
- Institutional Decomposition Analysis (IDA):
  - water law, water policy and water administration/organization
- Data: peer-reviewed articles, official reports and websites, books + complemented with semi-structured interviews with key informants
RESULTS: DEGREE OF FORMALIZATION

- Israel: driven by water scarcity highly organized water sector embracing reuse
- South Africa: reuse seen as strategy to reduce pressure on resources
- Bolivia and India: reuse is result of pollution and lack of adequate water management, only recent policy attention
RESULTS: CURRENT INSTITUTIONAL SETTINGS

- Israel:
  - water public property
  - one water authority for management
  - waste water treated specifically for agricultural use

- South Africa
  - Public property
  - Decentralized management: CMA
  - Reuse formally introduced in policy
  - Paper vs practice
RESULTS : CURRENT INSTITUTIONAL SETTINGS

– Bolivia:
  – communal based irrigation water management
  – lack of formal legal framework for water management
  – attempt to introduce reuse policy framework: practical implementation unclear

– India:
  – integrated water resources management framework
  – pollution
  – reuse: no focus on agricultural sector
DISCUSSION: NEED FOR INSTITUTIONAL CHANGES

- institutional arrangements too complex
- conflicts exist among concerned agencies ranging from overlap of responsibilities to the absence of well-defined mandates
- political will is essential
- budgetary constraints
DISCUSSION : WATER RIGHTS

- For informal wastewater reuse systems, water rights might exist or not, depending on the local practices for water management
- What happens under formalization
- Value of water will increase (more competition?)
DISCUSSION: PROFITABILITY OF AGRICULTURAL MARKETS

– implementation of treated wastewater irrigation systems might be justifiable when agricultural production is linked to profitable markets

– for subsistence agriculture, planned wastewater reuse systems might be too expensive for the users, if they are to share the costs
CONCLUSION

- agricultural wastewater reuse is rather complex
- key element for the formalization of wastewater reuse is clarity in the institutional arrangements
- water scarcity is a powerful driver
- public awareness with respect to water pollution is necessary to trigger policy makers
Thank you for your attention !!!

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