

Using different water qualities as a complementary resource to manage water scarcity – a wicked problem

IWRA Webinar: Wicked Problems of Water Quality Governance

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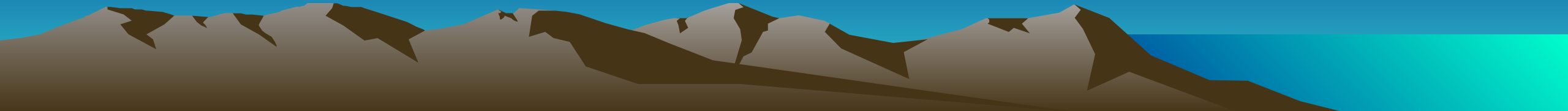
The Challenge

- Balancing water quantity with water quality,
- Population and economic growth as well as changing values, will increase demand for fresh water.
- Over-extraction of existing surface and groundwater resources will reduce water quality and quantity
- Hence in the future extraction for consumptive uses has to be reduced
- Future demand for consumptive uses can not be met by 'business as usual'.

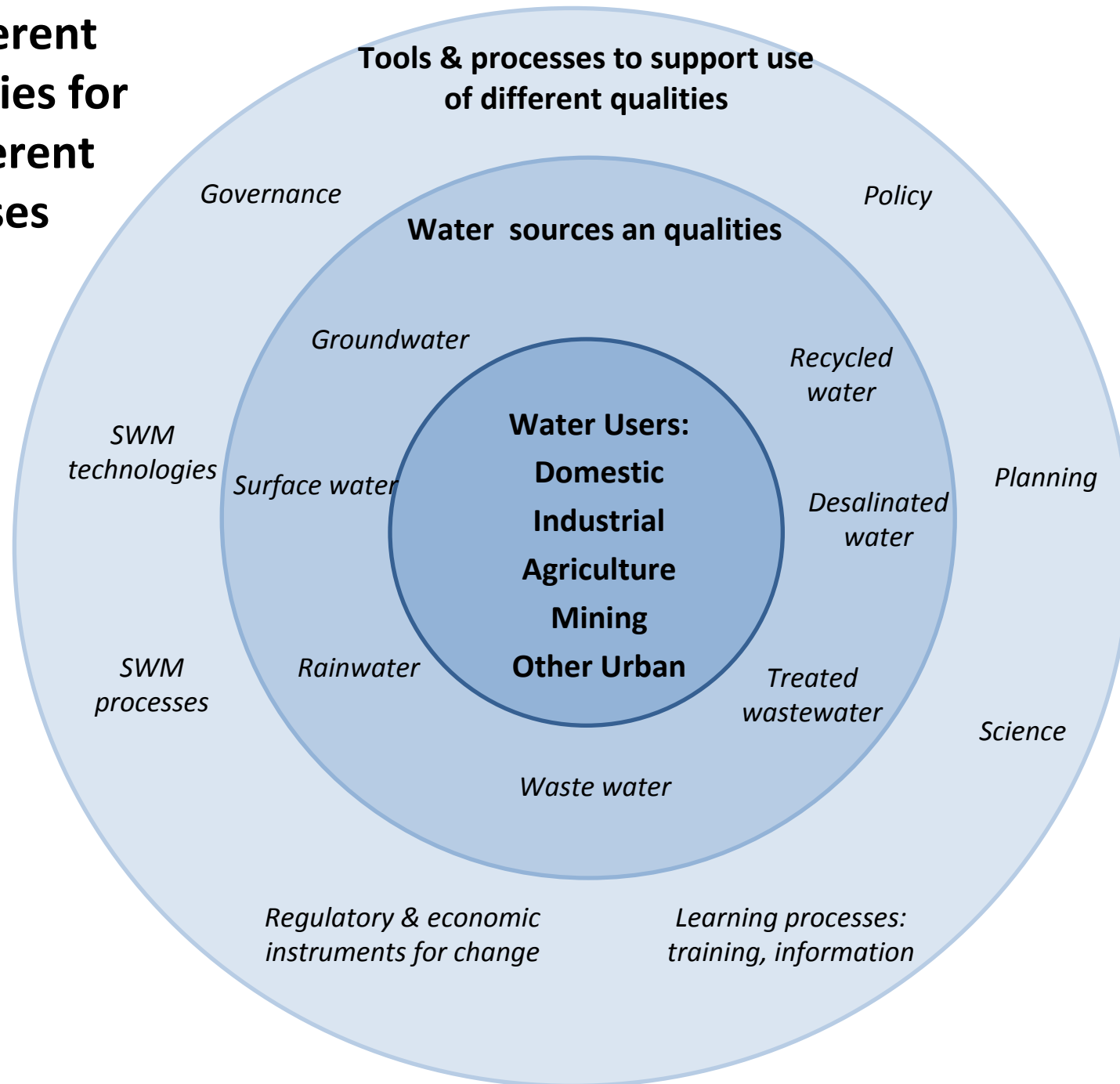


Potential solutions

- More efficient use all users
- Reducing waste and pollution
- Better land management and planning – integrated resources planning and management
- Using water of different qualities for their most beneficial use will reduce demand for new fresh water
- Also reduce capital and operating cost of water treatment
- Methods: regulation and economic incentives; carrot and stick



Different qualities for different uses



Different sectors different potential

- Agriculture accounts for 70% of water use:
- High potential for
 - water reuse potentially releasing new fresh water for reallocation to users needing better quality water or expansion. E.g. vineyards around Adelaide
 - reducing impact on the quality of influent water, reducing treatment cost
- Domestic users: E.g. in Hong Kong, 8 in 10 households supplied with seawater for toilet flushing. Also rainwater harvesting.
- Industrial users: Singapore 40% of water demand by recycled water, mainly industry
- Energy sector has significant potential to use water of different quality at different stages of production

Problems

- Risk and uncertainty:
 - Impact on human health
 - Social, economic and environmental risk
 - Cost, double or triple supply infrastructure, but treatment savings
 - Lack of guidelines for appropriate quality
 - E.g. only 4 of 15 countries in southern Europe has water reuse regulation
 - Perception of domestic, industrial and agricultural users
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Conclusions

- Significant potential to meet water demand from different end users by different qualities of water
- Political will
- Stakeholder engagement
- Smart water management technologies and processes
- Attention to Policy-Science-Policy interface
- Financial and human capital – different challenge in different parts of the world

