

Securing water quality and quantity: Research and development perspective

4th Biennial Conference



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10 October 2012

Presentation outline



- Introduction and background to water in South Africa
- Transboundary water resource aspects
- Water related challenges impacting on economic growth
- The physical water value chain - research and development aspects
- CSIR-NRE capabilities and relevant research projects
- Concluding remarks

Introduction

- SA's progressive water legislation prescribes that:
 - water is well managed
 - water resources are protected, effectively and efficiently allocated for the benefit of all people and future generations
 - drinking water is safe, accessible and affordable
- This requires planning for:
 - economic growth & development
 - human & environmental needs
 - meeting international obligations
 - energy needs (strategic water users)
 - ensuring availability and allocation (all other users)

Background

- SA 30th driest country – limited water resources
- Water is central to any development (social, economic and environmental)
- Serious constraints exist on the availability of water resources and meeting competing (increasing) demands
- Water has a critical role to play in all sectors

- Agriculture
- Mining
- Power generation
- Afforestation
- Other Industries
- Domestic (urban & rural)
- Environment



Transboundary water resource aspects

Guiding mechanisms

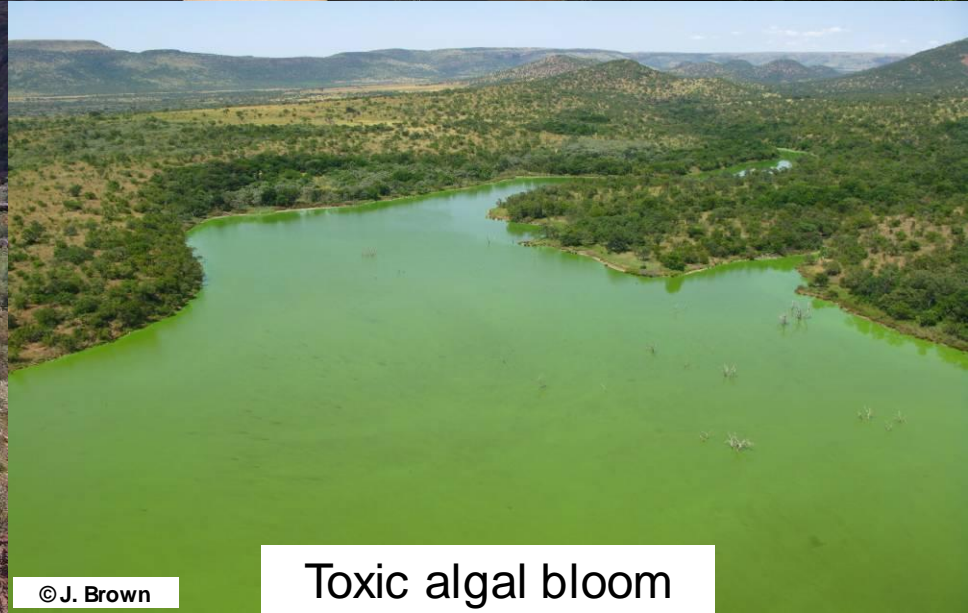
- SADC protocol on shared watercourses
- SA's water legislation
- Transboundary river basin commissions
- Shared watercourse institutions

Important dynamics

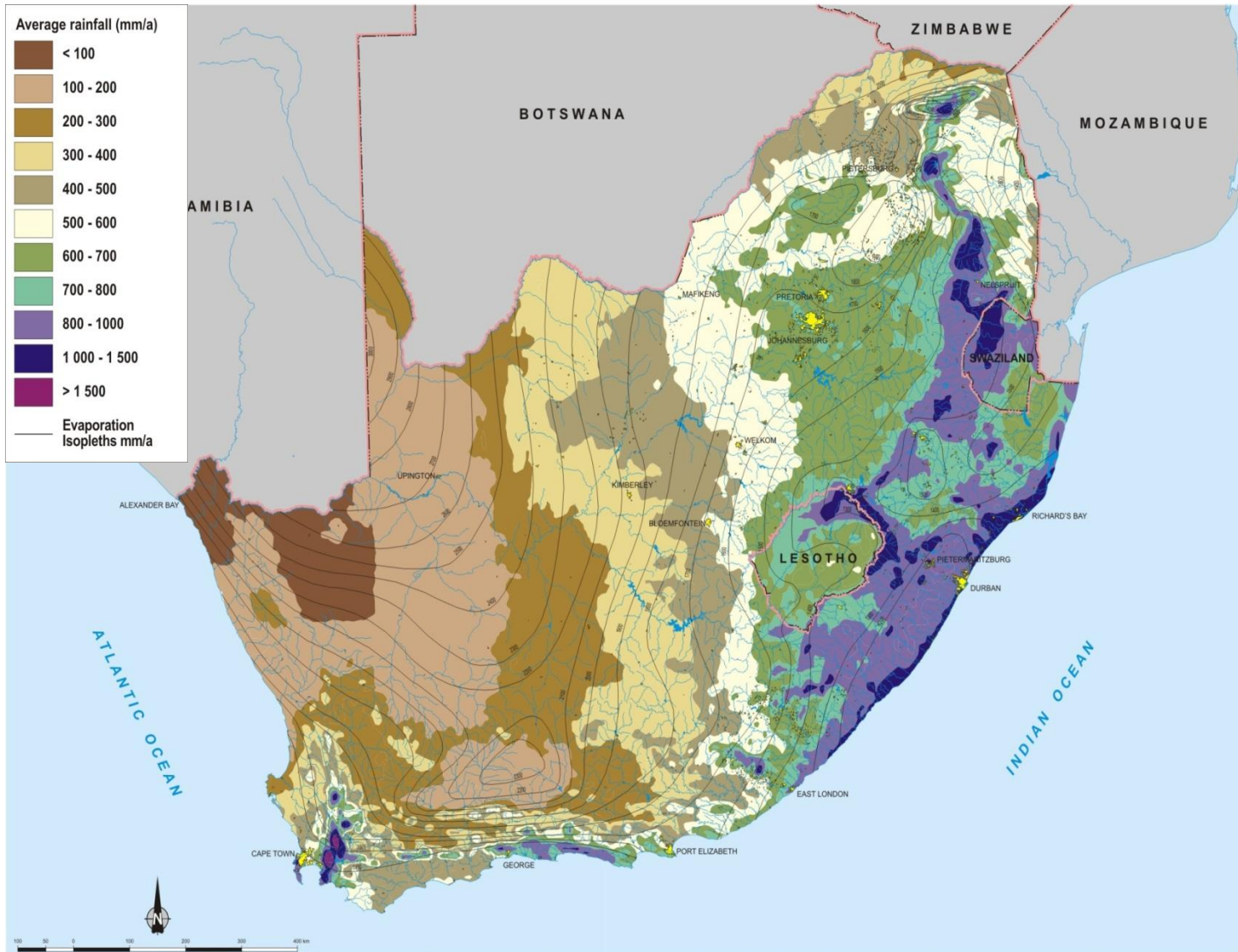
- Four international river basins cover 60% of SA land area
- Contribute 45% of total river flow
- Support 70% of GDP



Water related challenges – water resource quality



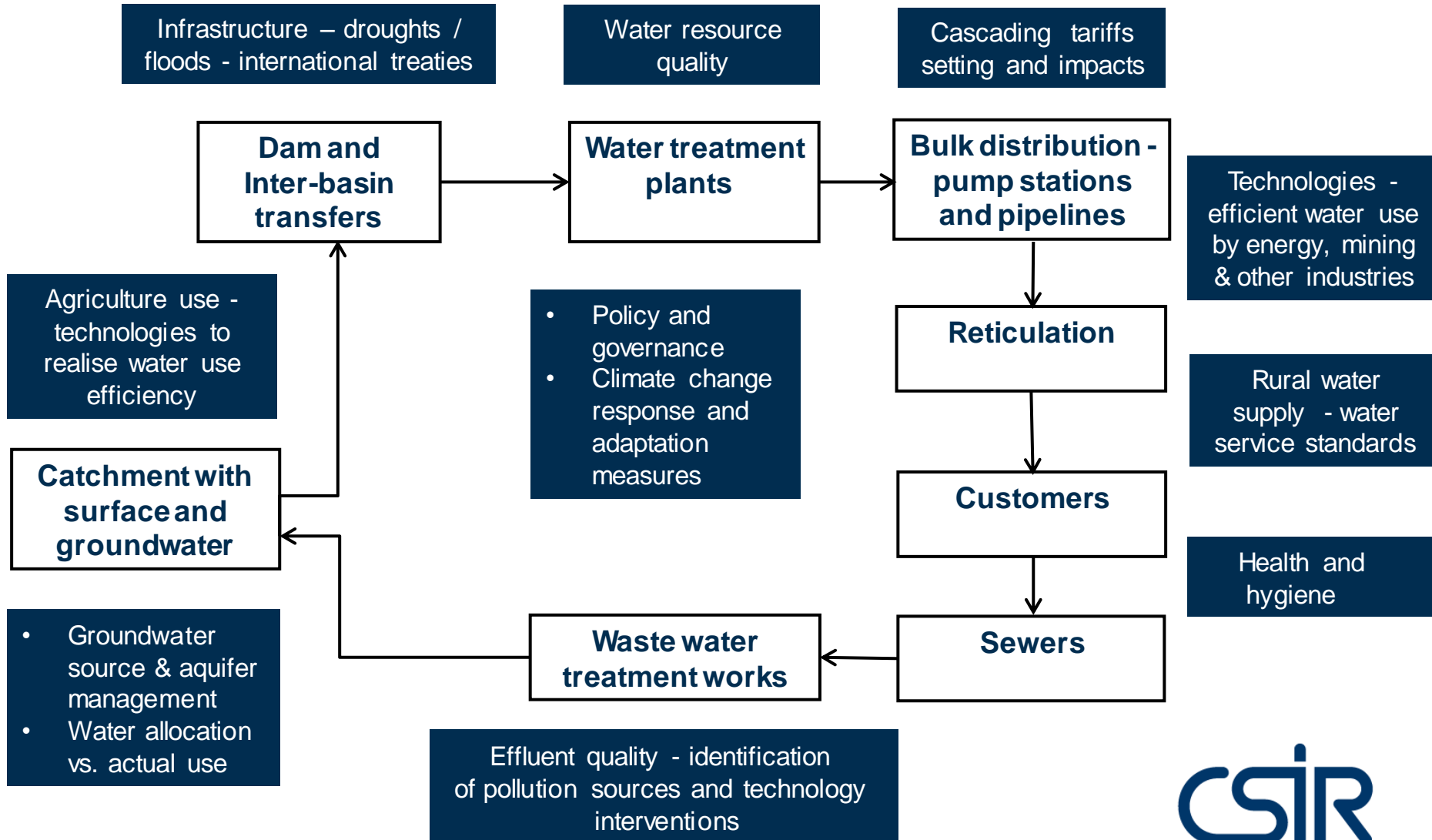
Water availability and demand



Policy and governance



Physical water value chain – water R&D aspects



CSIR-NRE water research capabilities

- CSIR- NRE has a wide range of skills and trans-disciplinary research skills in:
 - Water science and catchment management
 - Systems modelling and economic and social sciences
 - Development of decision-support tools to inform integrated water planning frameworks, strategies and policies



Research offerings and relevant projects

Ecosystem health

- Understanding key drivers that link land, water, estuary & coastal ecosystems
- Use of different data sets to effectively model hydrological cycle
- Quantifying trade-offs between catchment development scenarios
- Understanding needs of aquatic ecosystems
- Rehabilitation and management of the Upper Olifants River catchment
- Reducing salt loads in the Berg River
- Research on nano materials & environment



Research offerings and relevant projects (cont..)

Water use efficiency

- Understanding needs & benefits of competing water uses
- Inclusive assessments of economic benefits – needs of all users
- Measuring and modelling water use
- Sector-specific research to improve water use efficiency (agriculture)
- Investigate water use efficiency in agriculture
- Improving water use efficiency within the fruit tree industry
- Water footprinting – tool for water assessments



Research offerings and relevant projects (cont..)

Policy and governance

- Planning & governance decision support
- Understanding of relevant policy processes
- Understanding socio-economic consequences of interventions
- Water resource assessments (quality & quantity).
- Understanding the role of freshwater biodiversity - ecosystem services for human well-being
- Provision of clean water to deep rural communities
- Environmental drivers of cholera epidemics
- Assessing impacts of water & air pollution



Concluding remarks

- South Africa's water situation presents us with range of research and development opportunities, most of which are cunningly disguised as insurmountable problems
- CSR-NRE ensures alignment of its water R&D focus area with relevant strategic initiatives:
 - National development plan – section on water
 - National water resource strategy (draft 02nd edition)
 - Water for growth and development framework
 - Presidential strategic outcomes irt. water (Outcome 10 - Environment)
- Strategic engagements with stakeholders important as it informs CSIR-NRE's water focus area
- CSIR's Water Sustainability Flagship (WSF) serves as good platform to direct water R&D - main focus is large-scale impact

Thank you

