Blending Scientific Knowledge and Water Policy in Transboundary Water Management: Its Successes and Challenges in the Komati River Basin

International Conference on Fresh Water Governance for Sustainable Development
5th to 7th November 2012 : Drakensberg Sports Resort, South Africa

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On behalf of

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Presentation Outline

- Introduction
- Background
- Conception of Policy in relation to WRM Science
- Drought Situation under Study
- Dealing with Drought: Blend of Science & Policy
- Confidence and Consensus Building
- Successes
- Challenges
- Conclusion

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Introduction

- The paper's main thesis is that **water governance in the transboundary Komati River Basin** is largely about **balancing various spheres of influence in decision-making**. This balance may be realised ***through the appropriate blend of science and policy***.

- It is therefore a presentation of experiences of the Komati basin on how "blending" of science and policy happens in the basin.
  - A c*ase of dealing with a drought situation*

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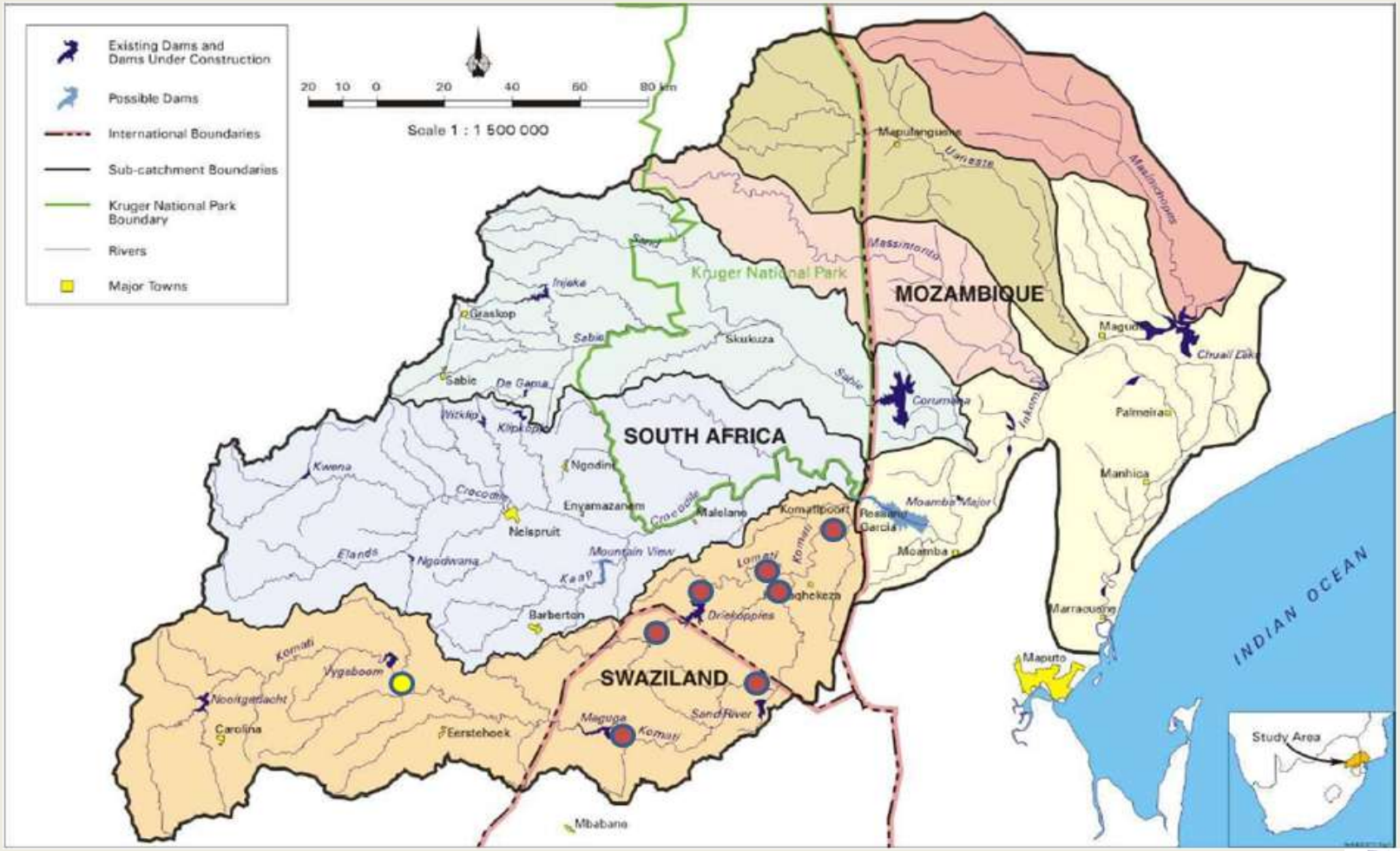
Background

Komati is a catchment of Incomati



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Some of Komati catchment Characteristics

- Area = 11,200 km^2
- MAR = 1,430 Mm^3 (40% of Incomati)
  - SA = 66%
  - SD = 34%
- MAP = 780 mm/a

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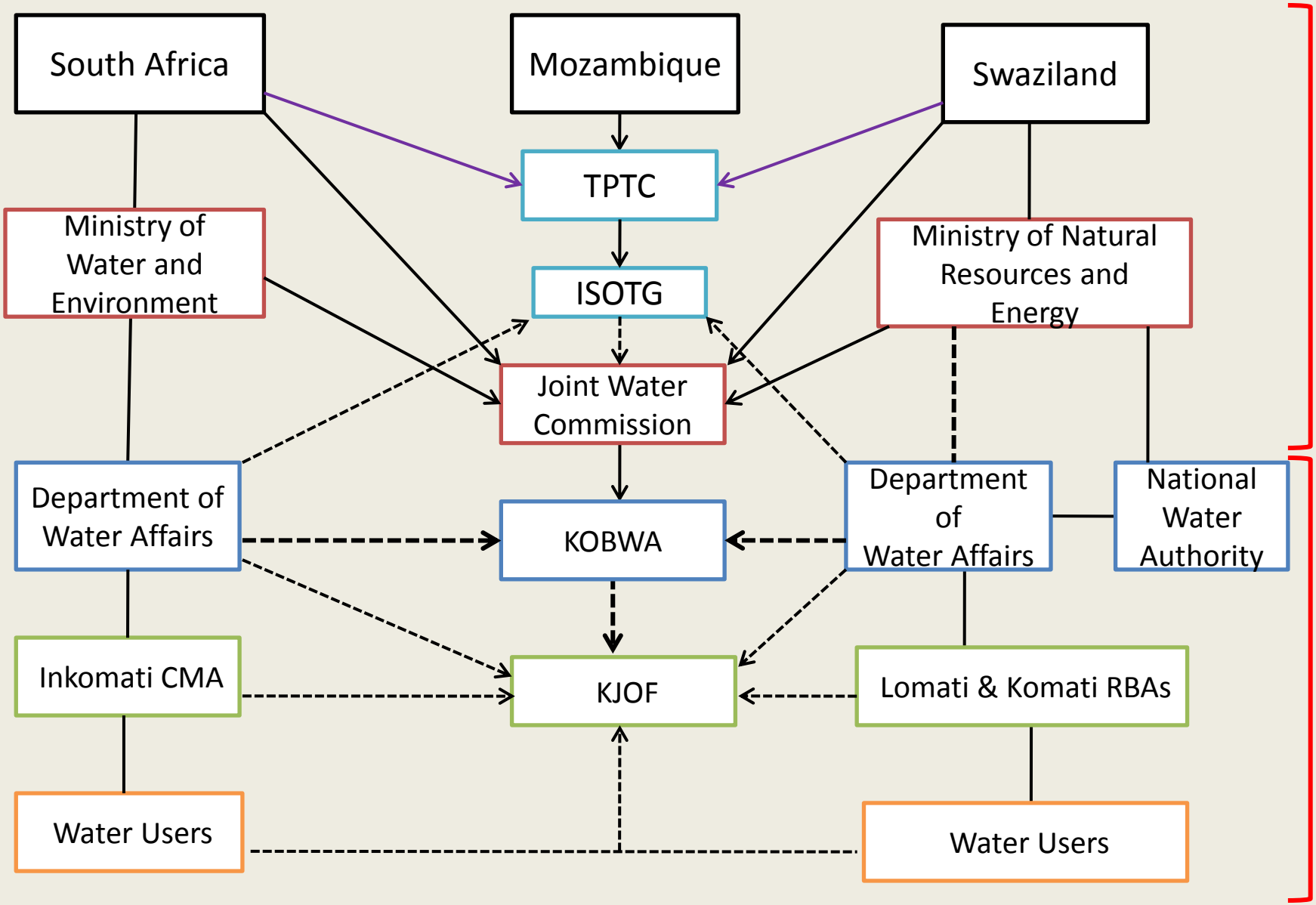
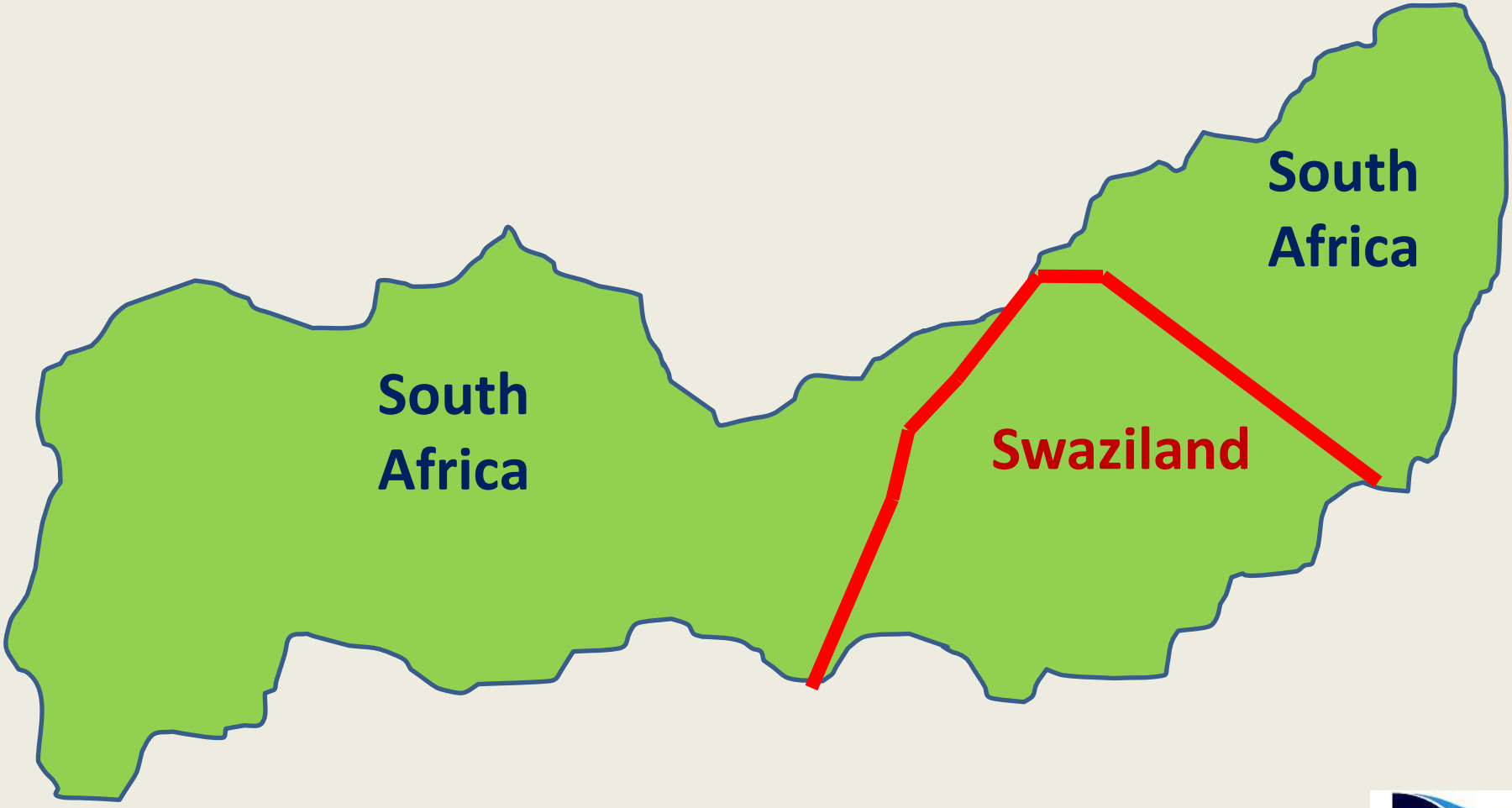
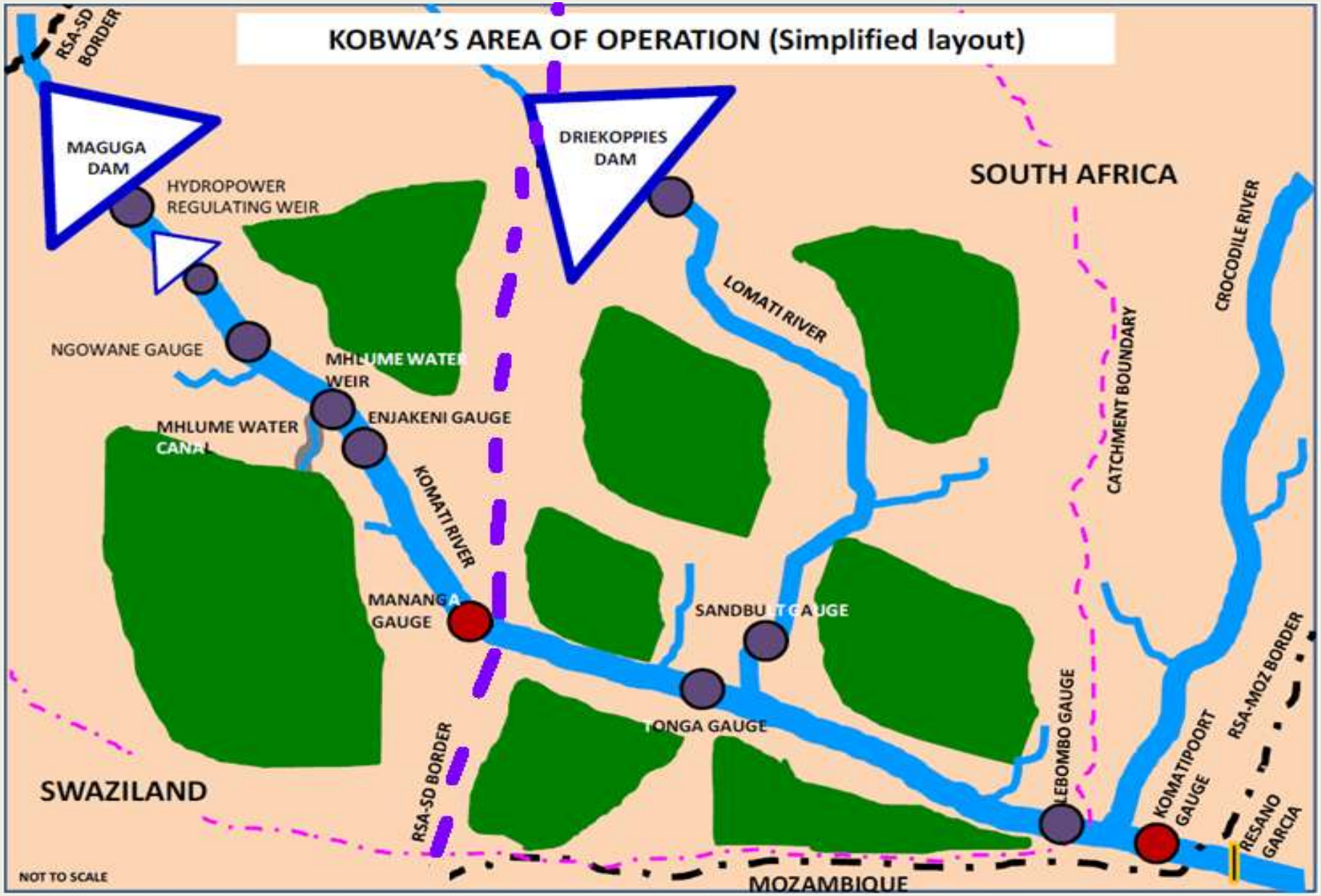
Institutional Arrangements



Everybody Lives Downstream ...Hence need for active cooperation!




KOBWA'S AREA OF OPERATION (Simplified layout)
RSA-SD BORDER
MAGUGA DAM
HYDROPOWER REGULATING WEIR
DRIEKOPPIES DAM
SOUTH AFRICA
LOMATI RIVER
CROCODILE RIVER
CATCHMENT BOUNDARY
NGOWANE GAUGE
MHLUME WATER WEIR
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RSA-MOZ BORDER
RESANO GARCIA
RSA-SD BORDER
SWAZILAND
NOT TO SCALE
MOZAMBIQUE

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Conception of Policy

- **Definition of Policy:**
  - "Set of **basic principles** and associated **guideline**s, formulated and enforced by the governing body of an organization, to direct and limit its actions in pursuit of long-term goals." *(BusinessDictionary.com)*
  - Policy also described as a "principle or rule to guide decisions to achieve a rational outcome" ....used by *Anderson (2005), Nabutola (2012),*
- **Good Policy:**
  - According to *James & Jorgensen (2009):* Policy Formulation = f(Analysis , Authorization)
  - In WRM this means **"Scientifically Objective"** & **"Politically Feasible"** (Meltsner,1972)
- **Long-run** vs **Short-run** policy formulation in the Komati
  - **Long-run** policy is preserved in Treaties and Agreements, ISOTG rule: Cannot change easily
  - **Short-run** policy imply adaptive decisions by JWC (consult JWC minutes for their reference), but within perimeters of long-run policy: Much easier to review

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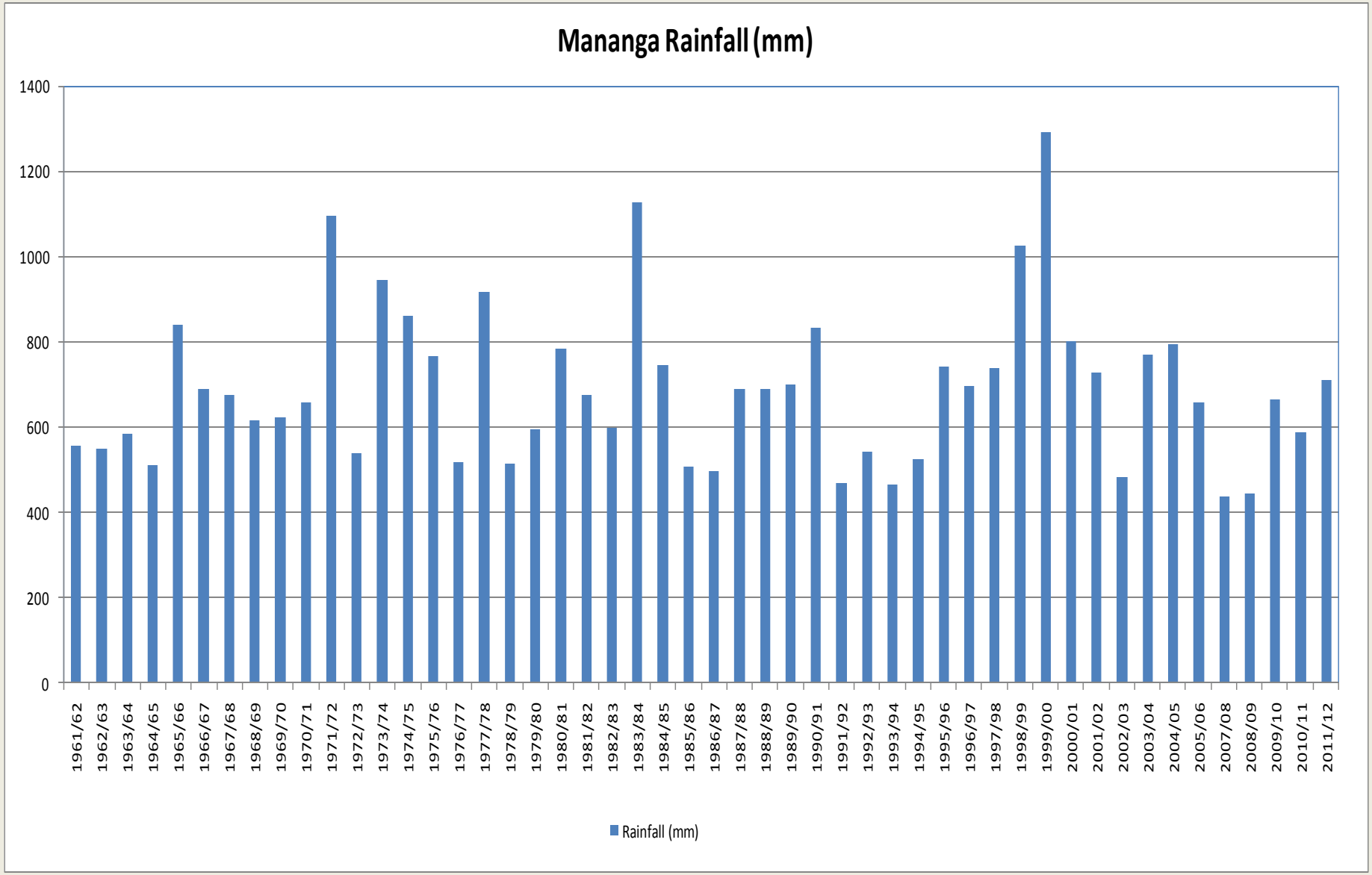
The Drought Situation under Study


Mananga Rainfall (mm)
1400
1200
1000
800
600
400
200
0
1961/62
1962/63
1963/64
1964/65
1965/66
1966/67
1967/68
1968/69
1969/70
1970/71
1971/72
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2005/06
2007/08
2008/09
2009/10
2010/11
2011/12
Rainfall (mm)

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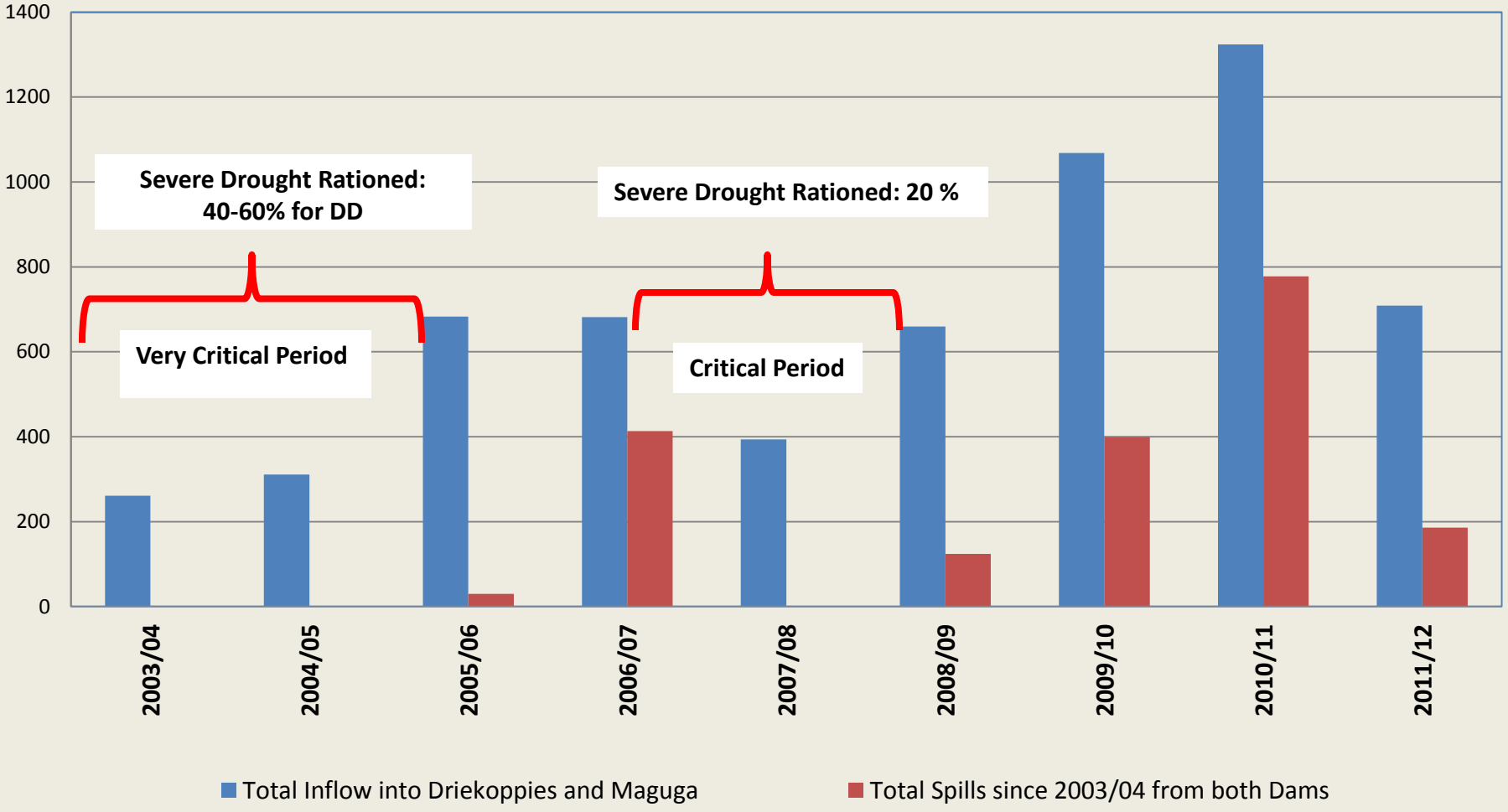
Total Inflow & Spills at Maguga and Driekoppies Dams (Mm^3)



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User Response: Can these tensions be managed?

- **Reported impacts:**
  - Planned **replanting was suspended** in SA: over *3000 ha*
  - Planned for Swaziland **new planting frozen** till drought was over: over *200ha*
  - **Lost crop** & some fields abandoned: not quantified
  - Reduced cane crushing capacity

- **Potential Tensions:**
  - Questioned **Accuracy of flows** measurement ?
  - Unmeasured **abstractions: Estimates** acceptable ?
  - Some users feeling they are **poorly represented at JWC ?**
  - **KOBWA's DSS - Allocation** is too conservative
  - Annual irrigation distribution curve: Why not front-load use?
  - Some media statements and technical papers: **Maguga is white elephant**?

- Users wanted to take all water remaining in WY 2004/05: JWC granted decision?

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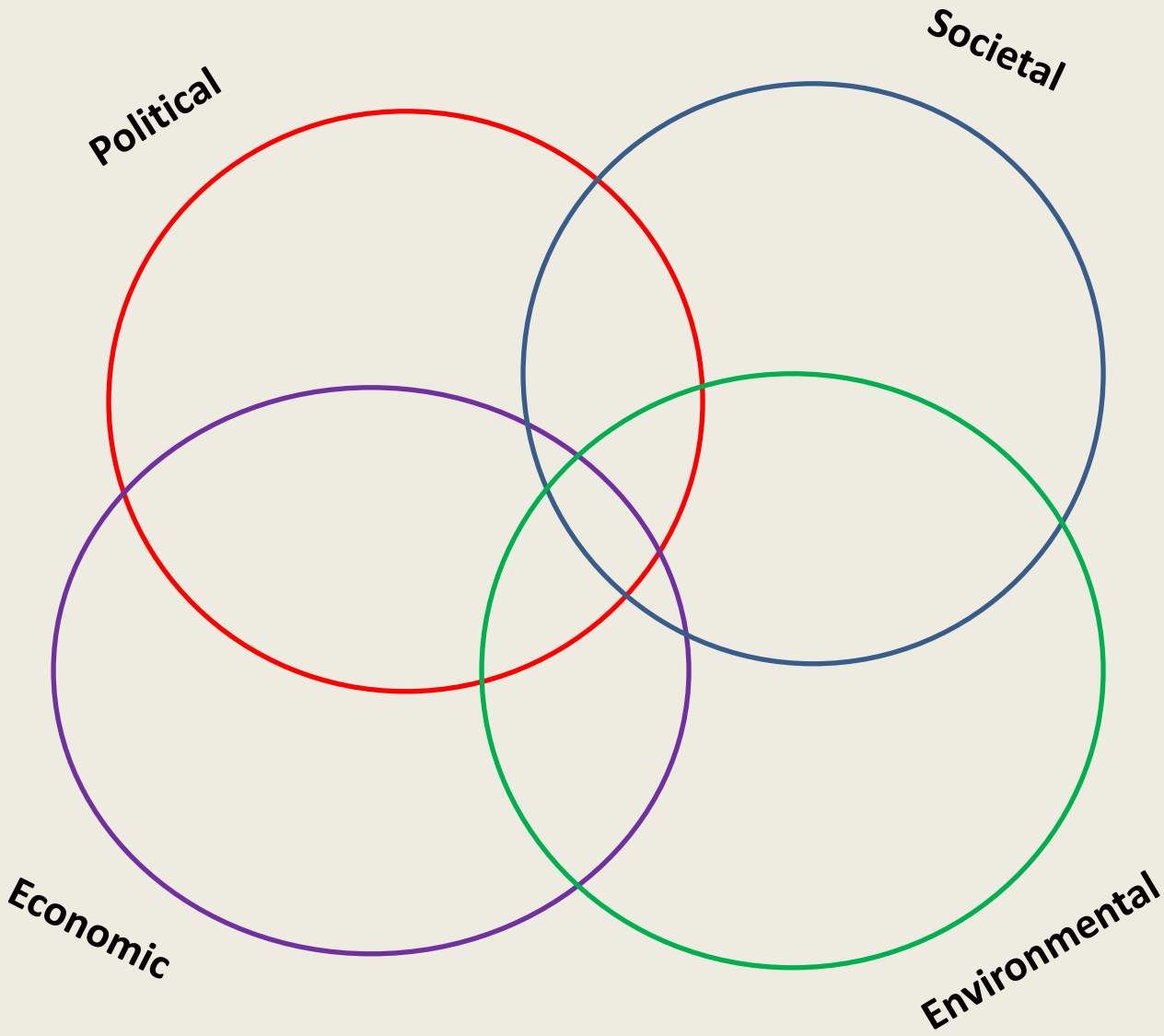
Dealing with Drought Situation:

The Blend of Science and Policy

The Competing Spheres to Balance



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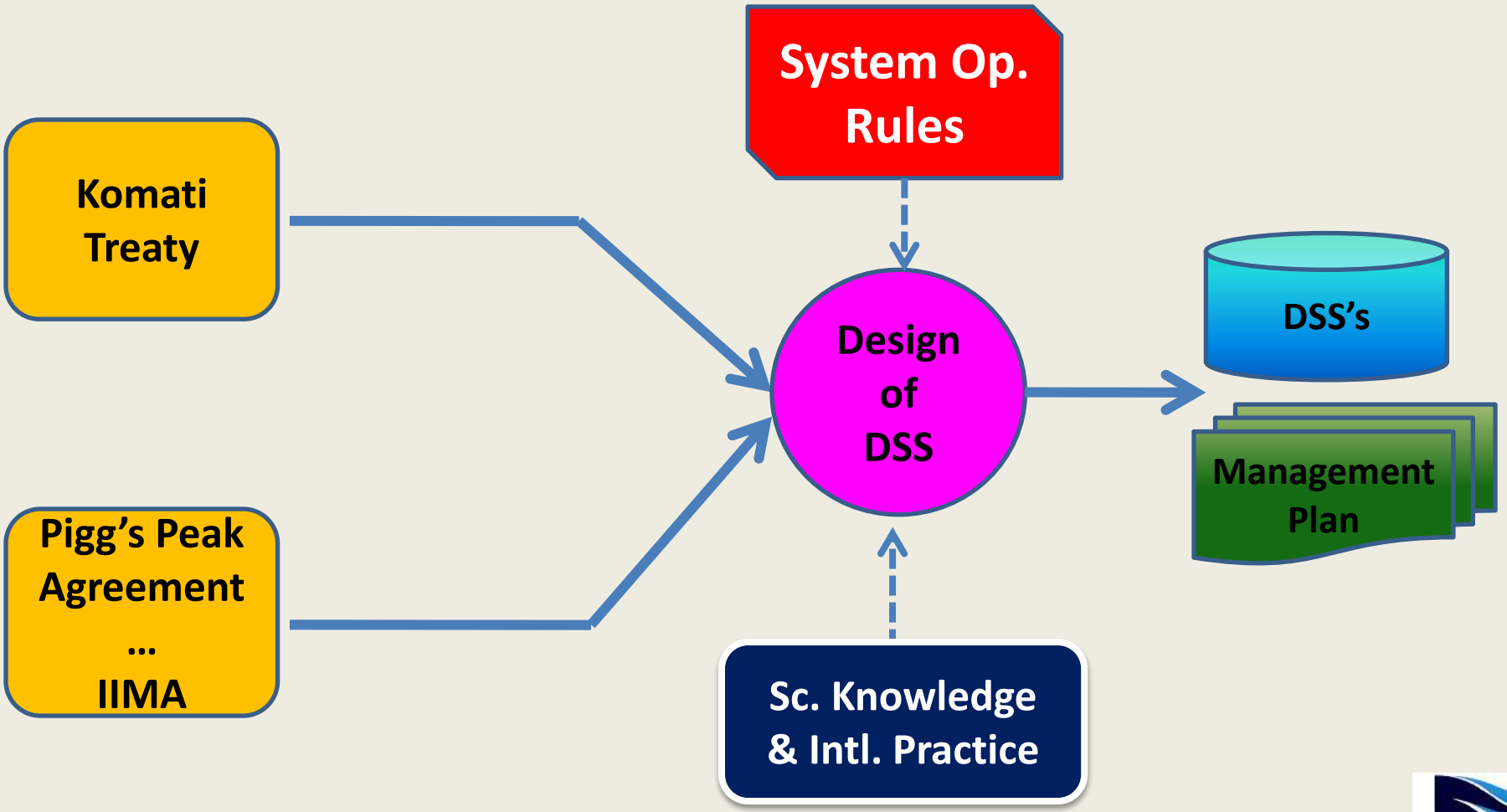
Preserving Long-run Policy and Science in DSS



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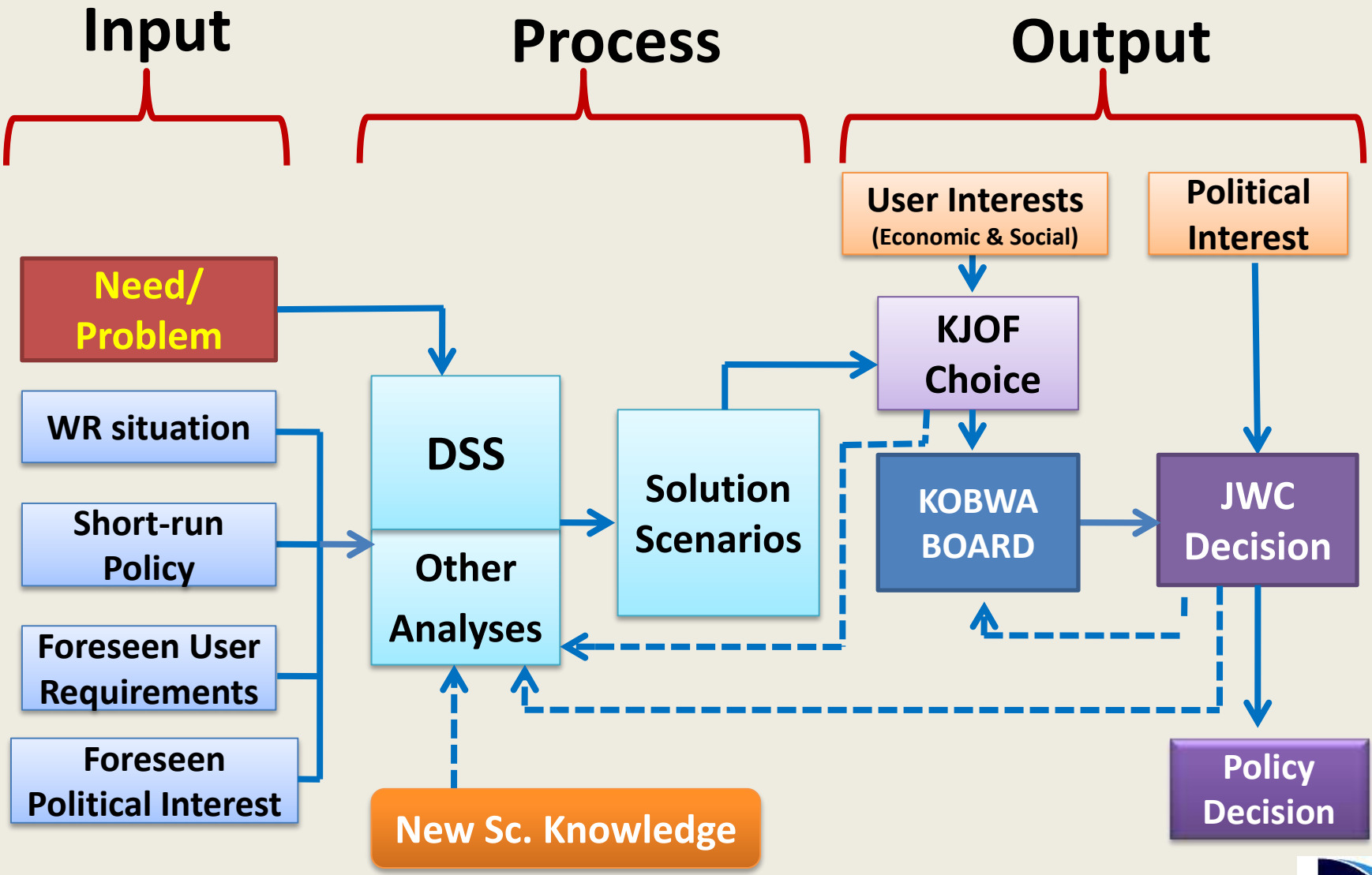
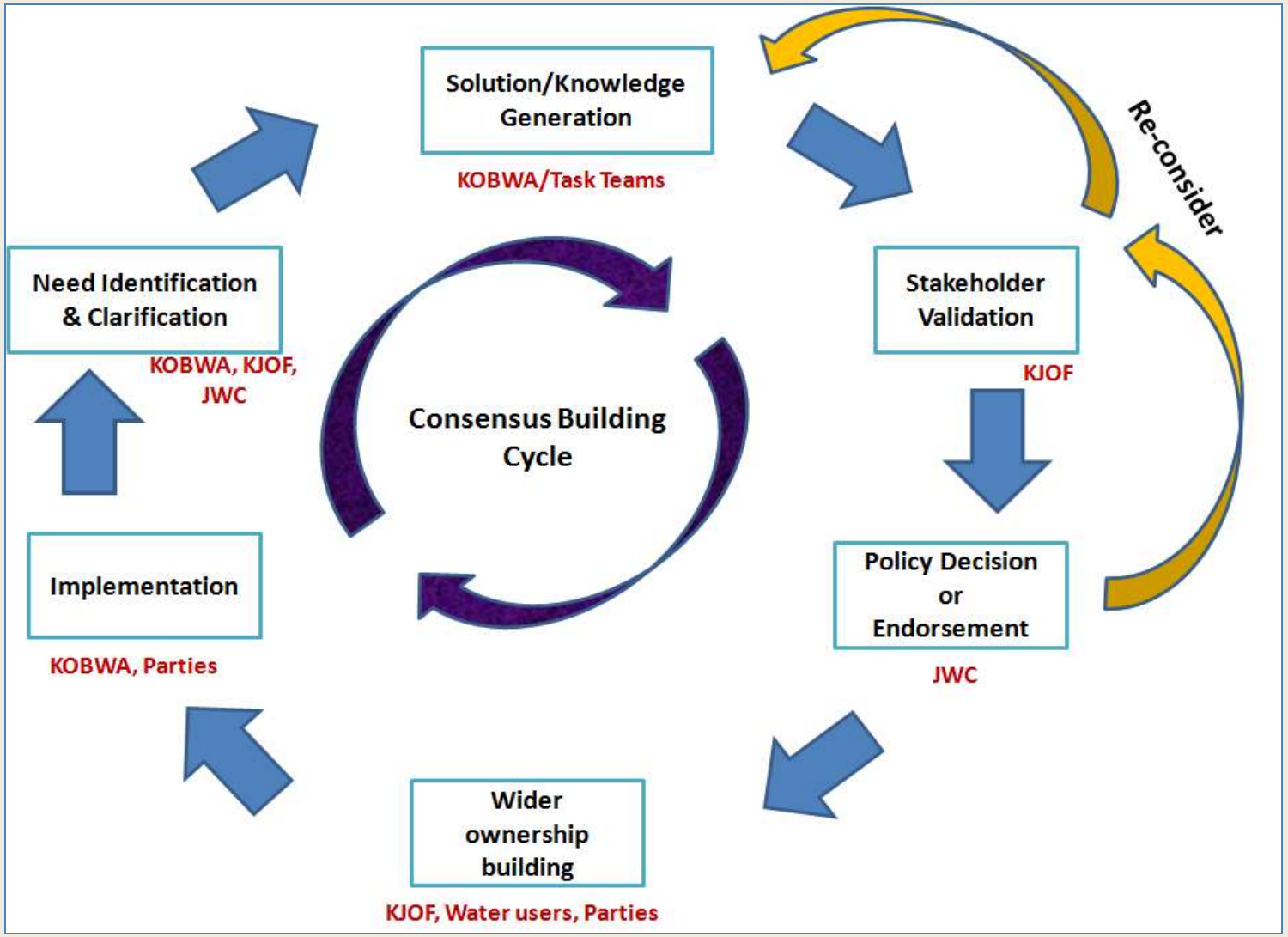
Blending Process: Science + Policy + other interests



Trust and confidence Building

Multi-Stage Decision-Making & Implementation Process



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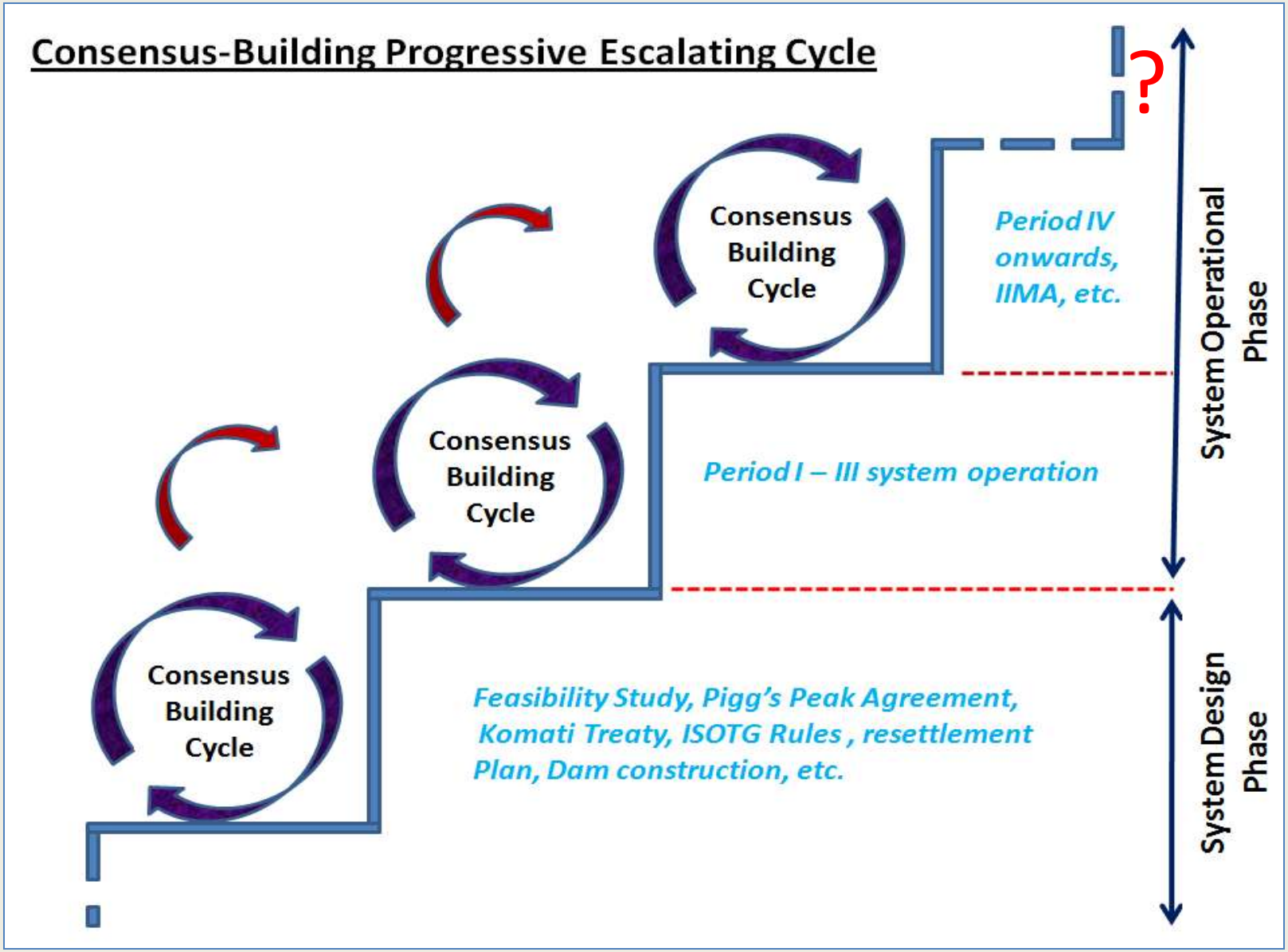
Consensus-Building Progressive Escalating Cycle
?
Consensus Building Cycle
Consensus Building Cycle
Consensus Building Cycle
Period IV onwards, IIMA, etc.
Period I – III system operation
Feasibility Study, Pigg's Peak Agreement, Komati Treaty, ISOTG Rules , resettlement Plan, Dam construction, etc.
System Operational Phase
System Design Phase

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“With-Borders” or “Without Borders” System Management?

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Which mode to adopt?

Balancing Sovereignty with System Op. Approach

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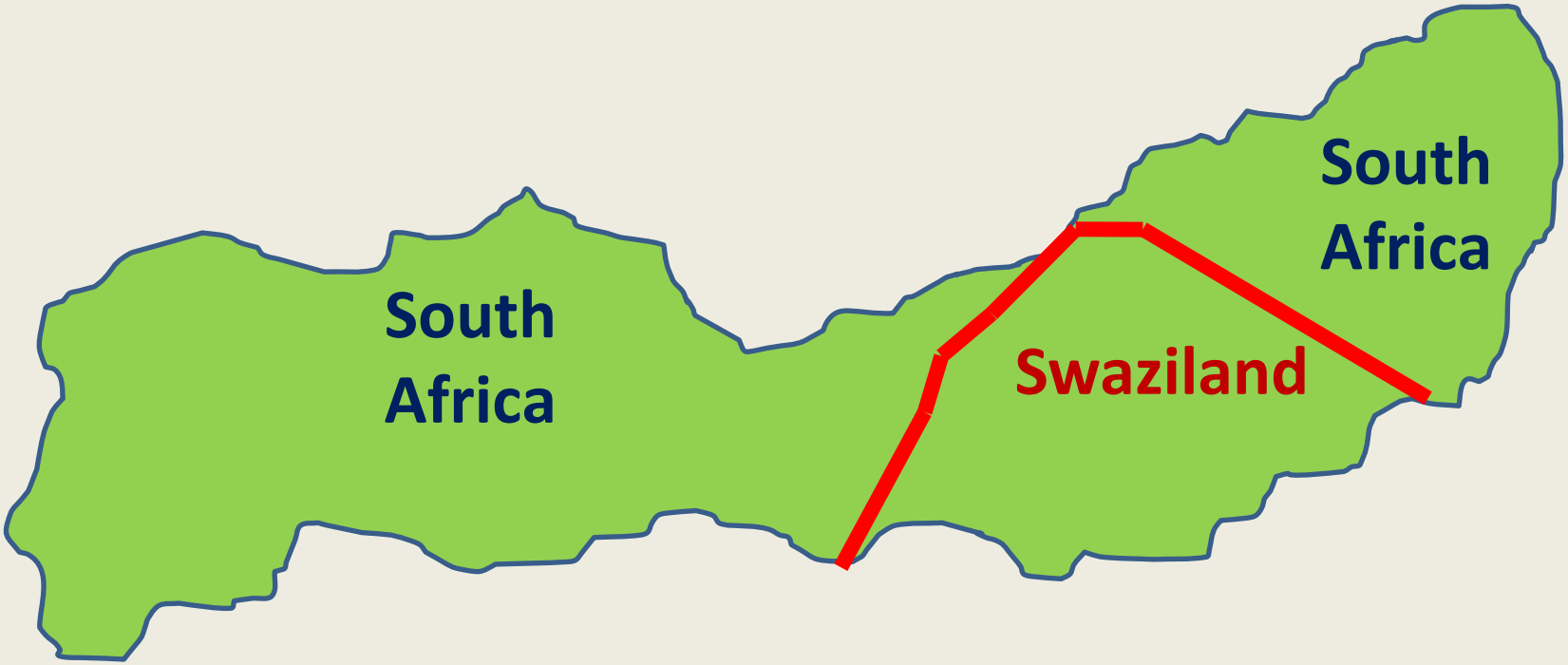
“With-Borders” System Op. Mode



When? : ***Water Allocation to Parties***
Water Use accounting
Interaction with Water Users

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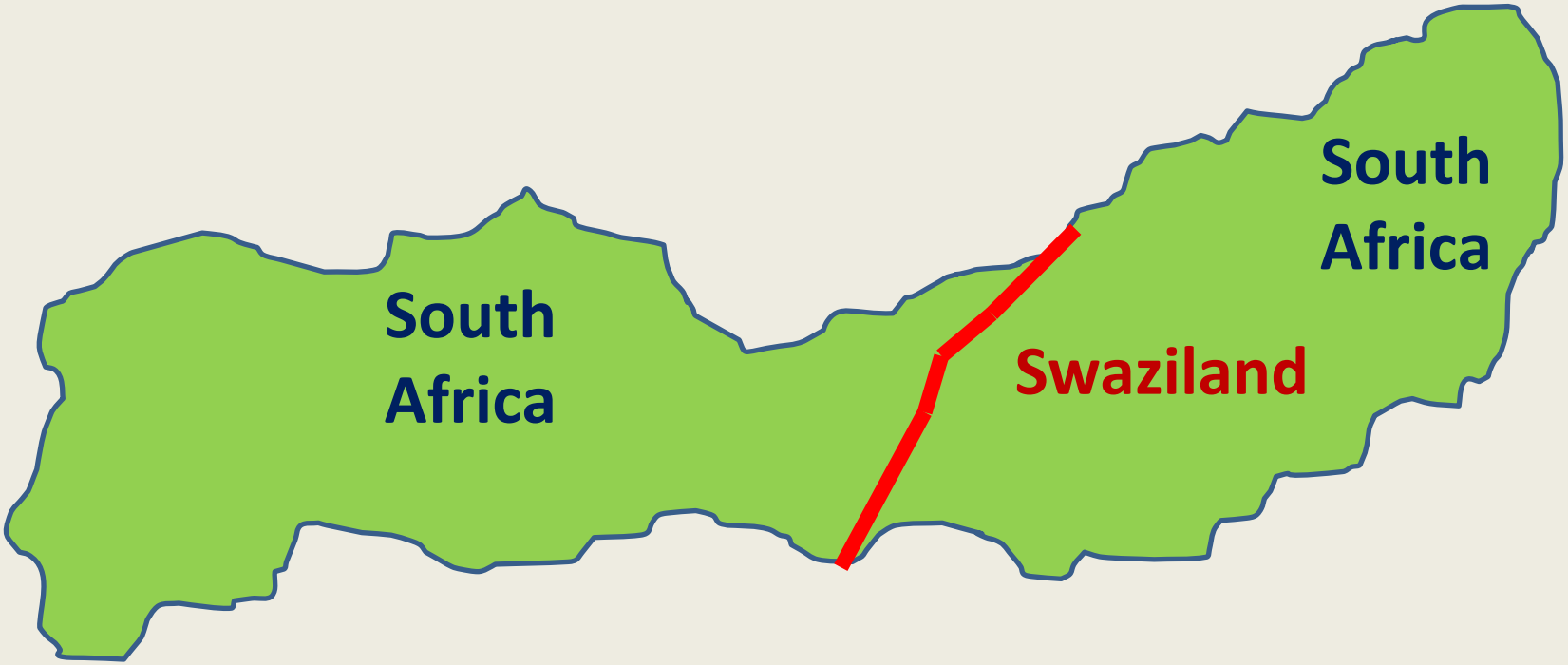
“Without-Borders” System Op. Mode



When? : *System Yield Computation – below dams*
Water Release Planning & supply
System storage reconciliation

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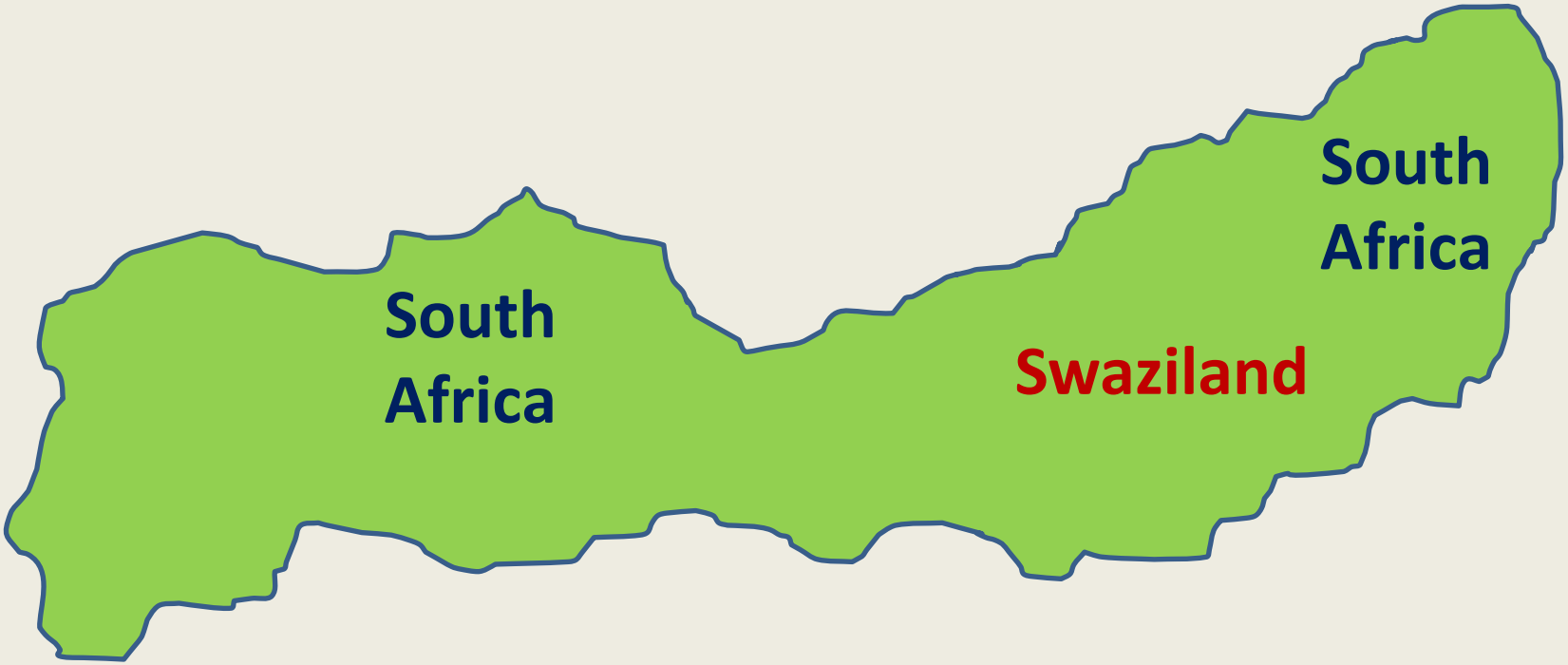
“Without-Borders” System Op. Mode



When? : ***Catchment-wide System Yield Computation***
Water Resources Assessment
Required system-wide monitoring - e.g. Flood Management

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Successes

- “Without-Borders” system operation mode has enabled conjunctive system operation & ***balance of sovereignty and system approach***
- It also enabled ***early commission of utilization of Maguga*** water…Active filling mode
- Model for blend of Policy and Scientific knowledge => ***speedy and systematic integration of knew knowledge*** DSS & Mgt Plan
- Consensus building systems => ***systematic introduction of new knowledge to stakeholders & info sharing*** : ***Trust & Confidence***
- ***Physical presence of KOBWA in both countries*** has promoted trust in KOBWA by the parties.

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Challenges

- Changed hydrological regime...reduced flows
  - Even more stress during drought
- Practicality of metering all abstractions
- Water abstractions during low flows
- IIMA full implementation impact

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Conclusion

- Drought period of the past decade revealed ***importance of balance of contrasting spheres*** of influence in Komati

- ***Systematic blend of Policy & Science generally does the trick: DSS***

- Progressive Escalating Cycle consensus model => ***continual knowledge impartation and exchange of information***

- ***Combination of "With-borders" and "Without-borders***" modes of system operation => ***Benefit maximization & enhanced cooperation***

- Managing this way comes with cost…but cost is nothing compared to the price of restoring broken relations

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End of Presentation

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Thanks for Your Attention!

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