A PROPERTY RIGHTS APPROACH TO FRESHWATER GOVERNANCE: THE CASE OF THE PONGOLA RIVER FLOODPLAIN

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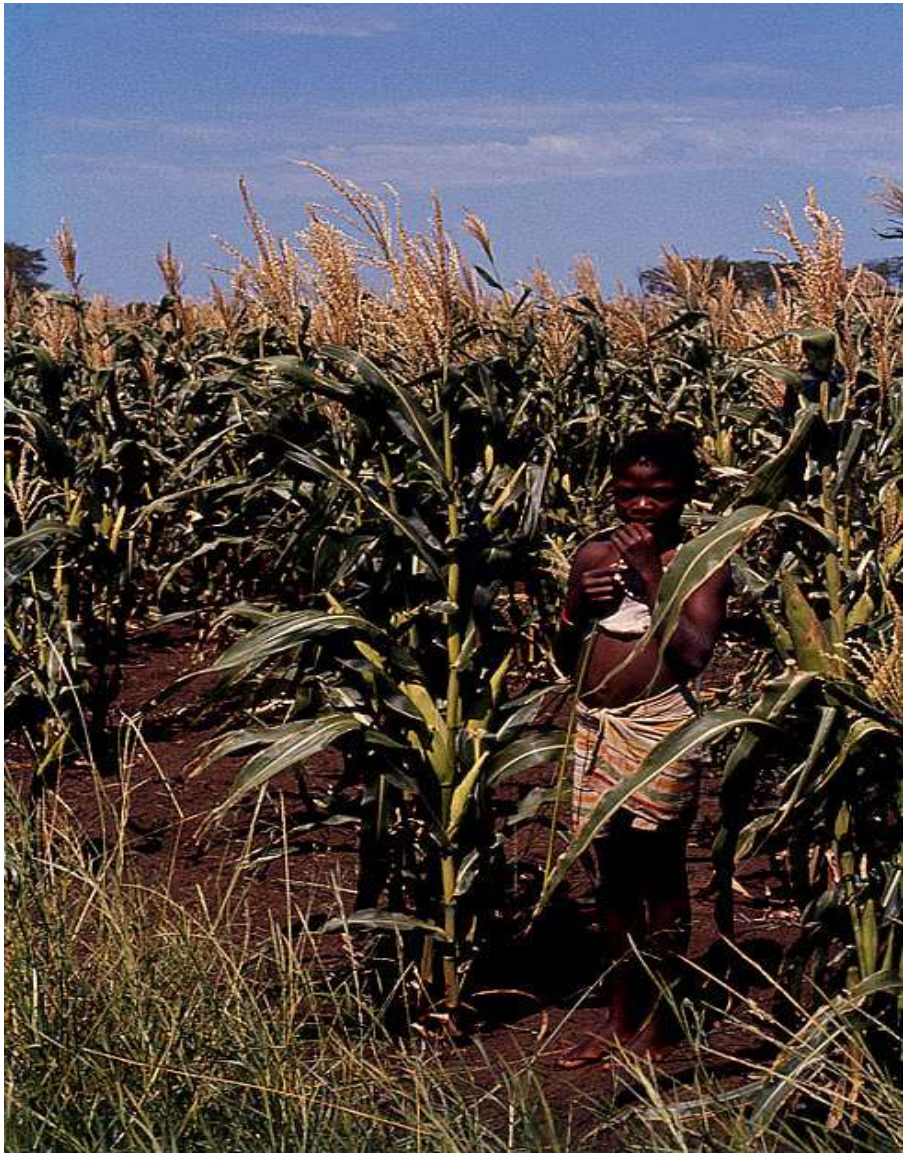
PURPOSE OF PRESENTATION

- Provide insights into a property rights approach to freshwater governance
- Central role of property rights in mediating the relationship between freshwater governance and sustainable development
- We draw on the Pongola River floodplain to illustrate the relationship between freshwater governance and sustainable development
- Presentation is based on a research project of Water Research Commission

OUTLINE OF PRESENTATION

- **Background**
  - Society and freshwater ecosystems
  - Defining property rights
  - Dynamics and bundles of property rights
  - Property rights and governance
- **Design principles for effective property rights regimes**
- **The Case of the Pongola floodplain**
  - Overview
  - Description of the study area
  - Pre-impoundment era
  - Post-impoundment phase 1 era
  - Post-impoundment phase 2 era
  - Current situation: Towards horizontal governance
- **Conclusion**



BACKGROUND: SOCIETY AND FRESHWATER ECOSYSTEMS

- There are many types of freshwater ecosystems, but all deliver multiple services in unique and varying proportions
- While some beneficiaries of the services are known, there are still many that go unrecognized
- Because every use has implications for the supply of the services, progress towards sustainability requires that we effectively govern relationships among users
- It is now generally acknowledged in South Africa that freshwater ecosystems need to be understood and governed as common pool resources
- This acknowledgement has seen a shift from the notion of pure ‘ownership’ to bundles of ‘property rights’

BACKGROUND: DEFINING PROPERTY RIGHTS

- Property rights embody the claims, entitlements and obligations people hold regarding the use and disposition of scare resources
- E.g. withdrawing water from a stream, fishing from a river, grazing cattle on a floodplain, using a river as a means of transport, enjoying the scenery of a water body, and dumping waste into a river are all expressions of the exercise of property rights to freshwater ecosystem services
- A property right is an enforceable authority that permits an actor to make specific decisions and carry out actions related to a resource
- The institutionalization of property rights results in what is called a regime; a body of fundamental rules and norms
- Rights cannot exist without recognition by others in the form of relationships involving the individual rights-holder

BACKGROUND: DYNAMICS AND BUNDLES OF PROPERTY RIGHTS

- Given the variability of freshwater ecosystem services, property rights can be flexible and fluid, changing by season and year
- Property rights change in tandem with societal expectations and the context in which they are applied
- Property rights exist as bundles of distinct rights including the rights of access, withdrawal, management, exclusion and alienation
- Property rights regimes can be one of the four types: private, public, common or open-access
- Defining property rights in terms of their dynamics and multiplicity allows for a better understanding of allocations systems for ecosystem services

Bundles of Rights Associated with Users' Positions

Bundle of Rights	Owner	Proprietor	Claimant	Authorised user	Authorised entrant
Access	X	X	X	X	X
Withdrawal	X	X	X	X	
Management	X	X	X		
Exclusion	X	X			
Alienation	X				

Types of property rights regimes

	RIGHTS HOLDER	EXAMPLE	ACCESS	MANAGEMENT
Private	Private entity	Freehold land	By owner	By owner
Common	Group or community	Communal land	By joint users	By joint users
Public	State	National Park	Public	State
Open Access	No-one	Open ocean fishery	Uncontrolled	None

BACKGROUND: PROPERTY RIGHTS AND GOVERNANCE

- Property rights are a key driver of ecosystem changes and a major determinant of human reactions to those changes
- They influence the choices available to users of ecosystem services and the extent to which the impacts of use on third parties have to be taken into account
- They govern who can do what, when and how with freshwater ecosystems
- Property rights can be viewed as an important governance mechanism for addressing problems of sustainability of freshwater ecosystems as common pool resources
- Property rights influence the nature of governance: vertical vs horizontal governance (or unstructured)
- Vertical governance relates to governance characterized by power differentials, whereas horizontal governance concerns governance among individuals and groups at the same level

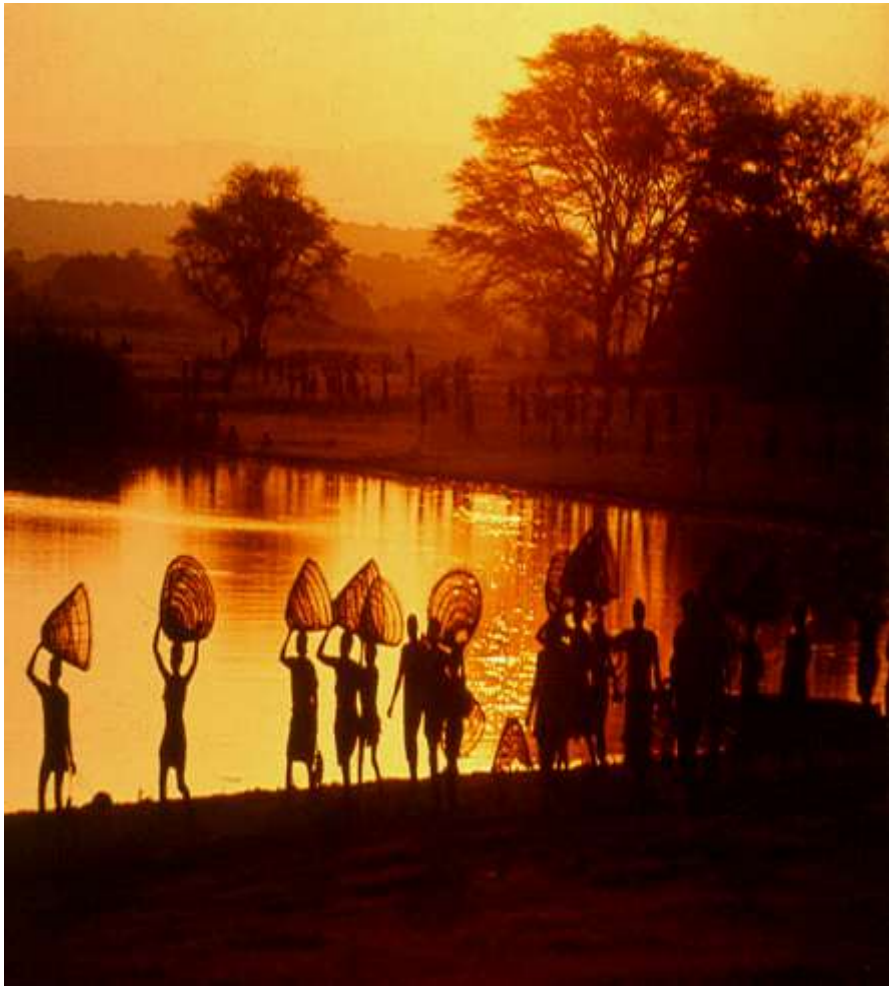
DESIGN PRINCIPLES FOR EFFECTIVE PROPERTY RIGHTS REGIMES

- We identified seven important principles for the establishment of effective property rights regimes for the governance of common pool freshwater ecosystems
- These relate to boundaries, rules for benefits and costs sharing (operational-choices), collective-choice arrangements, monitoring, sanctions, conflict resolution and self-organization
- The principles were initially developed by Ostrom as design principles for common-pool resource institutions
- The principles are based on extensive field work and extensive reviews of case-study literature
- We used the principles as part of our analytic framework to analyse the case study of the Pongola floodplain

KEY ATTRIBUTE	PRINCIPLE
1. Boundaries	Clearly define the boundaries of an aquatic ecosystem as well as the individuals or households who have rights to benefits
2. Benefits and costs	Ensure there is proportional equivalence between the benefits and costs associated with the generation of particular freshwater ecosystem services
3. Collective-choice arrangements	Ensure that most individuals affected by harvesting and protection rules are included in the group that makes changes to the rules (Collective-level rights: management, exclusion and alienation)
4. Monitoring	Make certain that the monitors who actively audit biophysical conditions and user behavior are accountable to the users or are the users themselves.
5. Graduated sanctions	Make sure that the users who disobey rules receive graduated sanctions.
6. Conflict-resolution mechanisms	Ensure access to low-cost, local arenas for users and managers to resolve conflict among users or between users and the managers.
7. Minimal recognition of rights to organize	External governmental authorities should not contest the rights of users to devise their own institutions and that users have secure tenure

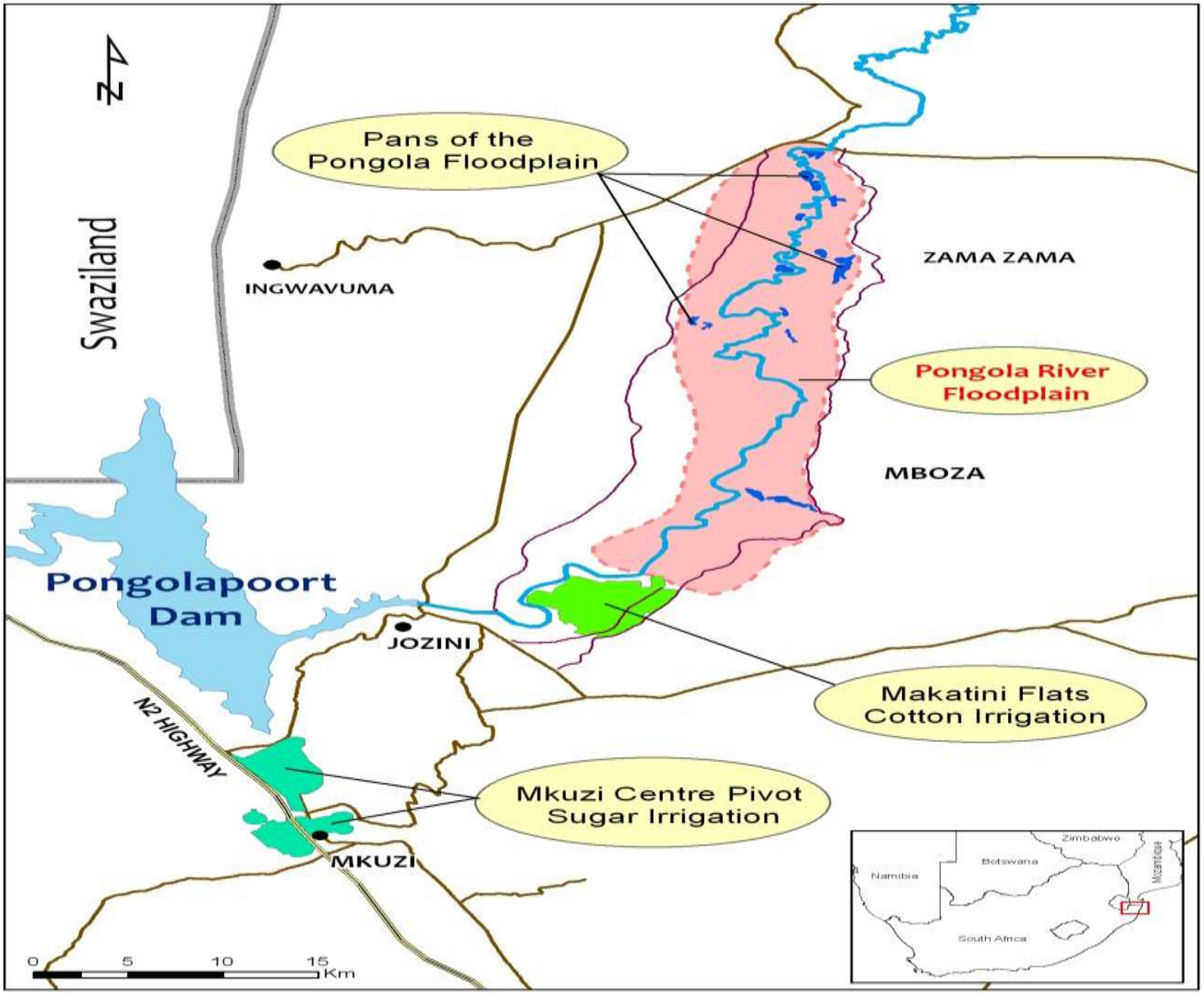
THE CASE OF THE PONGOLA FLOODPLAIN: OVERVIEW

- The major thrust of our case study is that the nature and context of property rights are important in determining the outcomes of governance and sustainability
- The case study illustrates that there are many combinations of rights over the control of the flow of freshwater ecosystem services such as flood releases
- By examining the institutions and actors that have governed the Pongola floodplain, we are able to illustrate the importance of explicitly defining and categorizing a range of rights
- The case study helps in understanding the main concepts, definitions and principles related to property rights



DESCRIPTION OF THE STUDY AREA

- The Pongola River is a catchment of 7000 km^2 at the eastern extent of South Africa
- The river descends steeply from its source at 2200 metres above mean sea level and passes through a narrow gorge between the Lebombo and Ubombo mountains, where the Poongolapoort Dam is now situated
- Below the dam the river meanders across a gently sloping floodplain with numerous pans which are dependent upon periodic flooding by the river
- The floodplain extends for approximately 50 km in length, varying in width between 0.8 and 4.8 km to the confluence of the Pongola and Usutu Rivers, on the border with Mozambique
- For thousands of years, the Thonga people, who have made the floodplain their home, have had rights to benefit from the flooding regime (to cultivate the enriched soils that were exposed once flood waters had receded, to harvest fish, to gather reeds and to use other floodplain resources)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Swaziland
Pans of the Pongola Floodplain
INGWAVUMA
ZAMA ZAMA
Pongola River Floodplain
MBOZA
Pongolapoort Dam
JOZINI
N2 HIGHWAY
Makatini Flats Cotton Irrigation
Mkuzi Centre Pivot Sugar Irrigation
MKUZI
0 5 10 15 Km
Zimbabwe
Botswana
Namibia
South Africa
Mozambique

PRE-IMPOUNDMENT ERA: FINDINGS

- The pre-impoundment era dates from the pre-colonial period (1650's) to impoundment period (1963), when construction of the dam started
- The primary purpose of the dam was to provide an assured supply of water for a single use (irrigation to approximately 40,000 ha of land adjacent to the floodplain) through a floods control mechanism
- Prior to the building of the Dam, the natural flooding regime governed many of the characteristics of the floodplain (floodplain pans, diverse ecosystems and the patterns of land use of the communities living adjacent to the floodplain) as well as the property rights regime
- Local communities were highly dependent on the flooding and subsistence agriculture remained an important use of the floodplain
- The right to exploit the flood benefits was controlled on behalf of the traditional authorities by the local Izinduna (Headmen)
- The Pongola region formed part of the former KwaZulu homeland and the land surrounding the floodplain area was governed through communal tenure
- The communal tenure areas fell under five traditional authorities: Mashabane (Inkosi Gumede), Tembe (Inkosi Tembe), Nyawo (Inkosi Nyawo), Mathenjwa (Inkosi Mathenjwa), and Siqakatha (Inkosi Nxumalo)

PRE-IMPOUNDMENT ERA: ANALYSIS

- The floodplain had clearly defined boundaries under traditional authorities and the individuals or households who had rights to the flood benefits were clearly identifiable through the same local authorities
- There was a relatively proportional equivalence between the benefits and costs (inputs/risks) associated with the flooding; access to the flood benefits was determined by the communal tenure system (operational-level rights)
- The local users groups who were affected by communal tenure rules were included in the decision processes of the traditional authorities (collective-level rights)
- The users of ecosystem services were also involved in monitoring the biophysical conditions of the floodplain as well as user behaviour and were accountable to themselves as users (operational-level)
- Appropriate sanctions were effected by traditional authorities
- The traditional authorities ensured access to local low-cost conflict resolution mechanisms
- The communal tenure system recognized the rights of users to devise their own rules to secure tenure
- We concluded that the pre-impoundment era was strongly associated with strong horizontal governance and sustainable outcomes that were underpinned by a common property rights regimes

POST-IMPOUNDMENT PHASE 1 ERA: FINDINGS

- The post-impoundment phase 1 era dates from 1973, when the construction was completed, to around 1986 when the first local management committees were established
- During this era, the Department of Water Affairs (DWA) (formerly the Department of Water Affairs and Forestry) operated the dam without any consultation of stakeholders
- Governance was based on an unstructured process of flood releases whose timing proved to be fairly sporadic and entirely unpredictable
- With this lack of certainty about flood releases, conflicts developed between agriculturists, grazers and fishermen who no longer knew how to protect their access to respective resources
- There was no clear regime of flood releases, and the imperfect system that did exist did not take on board the emerging interests of those who used the floodplain to support their livelihoods

POST-IMPOUNDMENT PHASE 1 ERA: ANALYSIS

- The introduction of government control saw the breakdown of traditional boundaries and the de facto system of rights to flood benefits transformed into a de jure system
- The relationship between the benefits and costs associated with the flood releases become entirely distorted; the amount of benefits allocated were largely disproportional to the inputs/risks (among agriculturists, grazers and fishermen; on-floodplains vs off-floodplains users)
- The local users groups who were affected by flood release rules were no longer included in the decision processes, which were largely dominated by government
- The local users of ecosystem services were never involved in monitoring the biophysical conditions of the floodplain as well as user behaviour as government was largely accountable to itself
- There was no explicit system for effecting appropriate sanctions to law breakers
- The governance system in place did not provide for effective access to local low-cost conflict resolution mechanisms
- The government of the day never recognized the rights of users to devise their own rules to secure tenure, a situation which encourage an open access regime
- We concluded that the post-impoundment phase 1 era was strongly associated with weak unstructured governance and unsustainable outcomes that were underpinned by a public property rights regime, which was in essence a de facto open-access property rights regime

POST-IMPOUNDMENT PHASE 2 ERA: FINDINGS

- With growing discontent amongst the local community, a small number of articulate persons of some standing tried to mobilize popular support in order to establish some local bodies that would take a more proactive approach in improving matters
- This begun the establishment of a number of water committees on the floodplain with representation from a range of water users such as stock owners, women and traditional healers
- These committees were supported by local development initiatives and NGOs who championed the process; and in some cases money was raised from overseas aid organizations to support the committees
- However, these committees were active only from 1986 to 1996.
- The late 1990's saw the emergence of a power group of cotton farmers on the floodplain, resulting in unproductive power struggles within the community and the water committees
- At the same time, funding to the NGOs dried up as international donors channelled their funding to the new government

POST-IMPOUNDMENT PHASE 2 ERA: ANALYSIS

- The introduction of water committees began the process of reconstructing some form of boundaries, but this was not enough; still the individuals or households who had rights to flood benefits were not clearly identifiable
- The relationship between the benefits and costs associated with access to flood releases continued to be distorted; the amount of benefits allocated were still largely disproportional, with certain groupings getting unfair shares
- The local water committees did not ensure that the local users groups who were affected by flood release rules were included in the decision processes, still largely dominated by government
- While local monitoring had improved to some extent, the monitoring of biophysical conditions of the floodplain as well as user behaviour continued to be largely government driven
- The local water committees were weak to facilitate a system for effecting appropriate sanctions to law breakers
- The local water committees did not provide for effective access to local low-cost conflict resolution mechanisms
- The local water committees never provided for the recognition of the rights of users to devise their own rules to secure tenure
- We concluded that the post-impoundment phase 2 era was strongly associated with weak vertical governance and unsustainable outcomes that were still underpinned by a public property rights regime

CURRENT SITUATION: TOWARDS HORIZONTAL GOVERNANCE

- Currently, the property rights arrangements for the coordination of flood releases from the Pongola Dam are centred around a Water Users' Association (WUA) called the Imfunda Yopongola WUA
- The WUA was established through the National Water Act of 1998 with the intention of decentralizing powers and responsibility for stakeholder coordination pertaining to the Pongola Dam.
- There is a strong expectation of democratic representation through the WUA as the intention is to have various stakeholder groups to democratically nominate their representatives
- But there remains serious challenges to realising the full potential of the WUA
- The most immediate challenge relates to the need to harmonize the expectations of the WUA and the Department of Water Affairs (DWA) concerning the new formalised status of the WUA and its responsibility to raise fees from its constituents
- Continuing hopes on the part of the WUA to receive funds from the state for operations have constrained its working and prevented it from assuming a broader role in floodplain governance

CONCLUSION

- I have attempted to make a case for a property rights approach to freshwater governance
- The presentation illustrates the central role of property rights in mediating the relationship between freshwater governance and sustainable development
- Making property rights more explicit can help direct freshwater governance towards enhanced sustainability
- More especially in contexts in which collective use of freshwater ecosystem services is susceptible to externalities which make governing difficult
- Clearly, a property rights approach to freshwater governance provides a useful ways of understanding how societies organize is vitally essential manner

CONCLUSION: TAKE HOME MESSAGES

1. Property rights, as an instrument of governance, regulate and facilitate access to and use of freshwater ecosystems. They can be conceived as a key governance mechanism for achieving vital societal goals such as environmental justice, peace and economic development
2. Clearly defined and secure property rights are a vital means of building up society for the common good and by which people can cooperate to achieve that common good
3. Clearly defined property rights provide the means for social coordination and ordered rule in the delivery of freshwater ecosystem services. They are needed to provide direction and to guide the energies of society members towards the common good
4. Secure property rights provide incentives to invest in the sustainability of the freshwater ecosystem. They are needed to encourage users to invest in the maintenance of the ecosystem services in the long term


THANKS!