



Mzimvubu Water Project

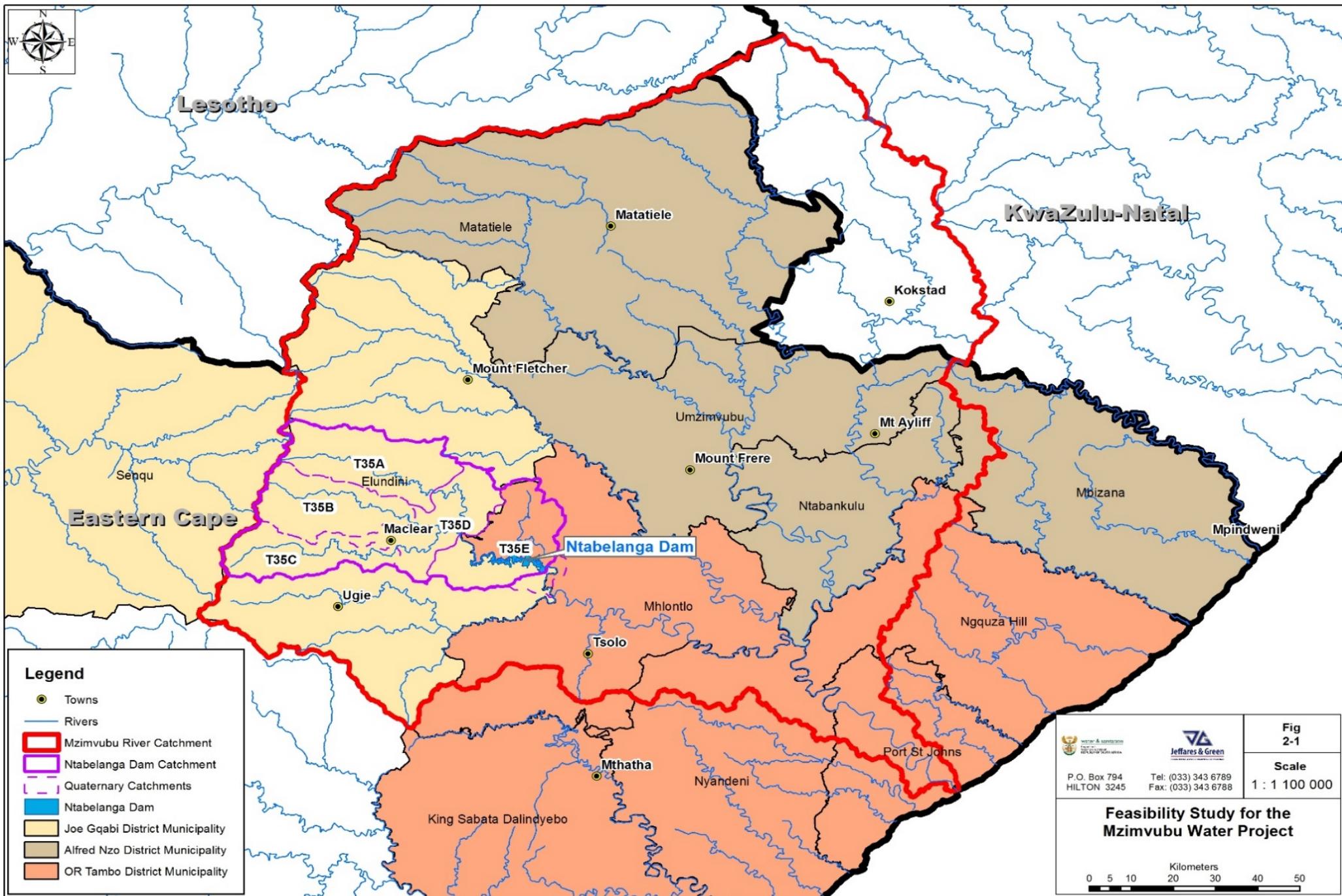
Providing water, and energy for households and agriculture in the E. Cape

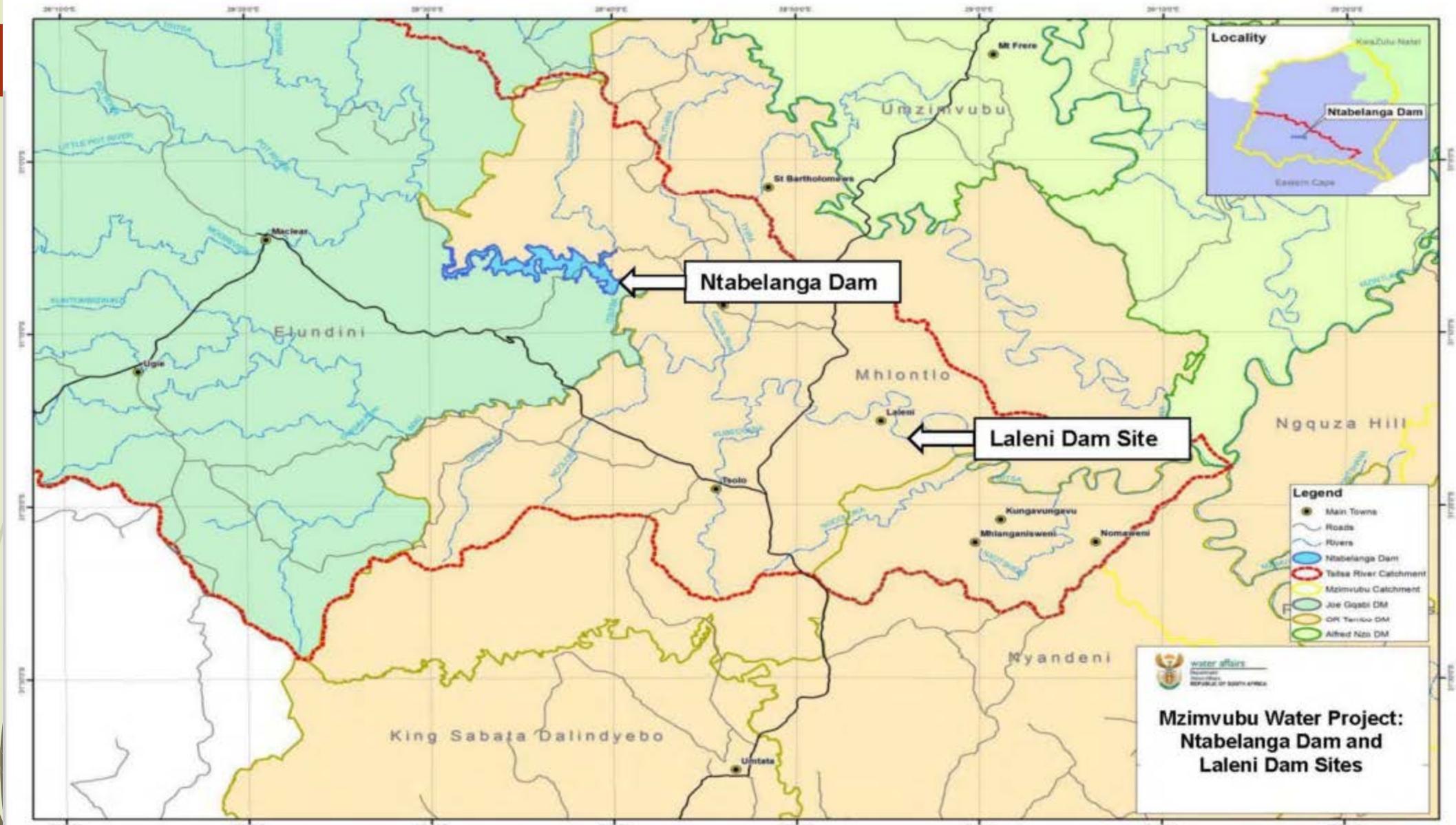


Motivation

- Mzimvubu catchment one of the poorest and least developed areas in the country
- Need to accelerate social and economic upliftment
- EC Provincial Govt viewed a dam on the Mzimvubu River the best way to attract/catalyse development to the area
- The five pillars on which the Eastern Cape Provincial Government and AsgiSA-EC proposed to model the Mzimvubu River Water Resources Development are:
 - Afforestation;
 - Irrigation;
 - Hydropower;
 - Water transfer; and
 - Tourism.








Water Affairs
 Department of Water and Sanitation
 REPUBLIC OF SOUTH AFRICA

**Mzimvubu Water Project:
 Ntabelanga Dam and
 Laleni Dam Sites**

Mzimvubu Bulk Water Scheme

Project in Preliminary Design Stage

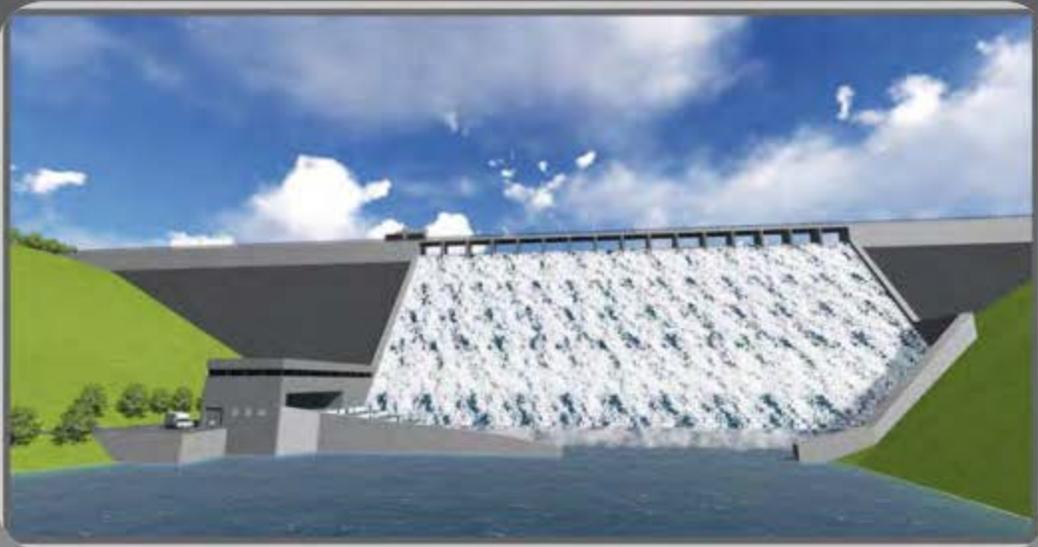
2 New Dams (Including 1 Hydro Electric)

100 MI/d Water Care Works

Water distribution System (1800km)

Pump stations & Reservoirs

Irrigation Bulk pipeline



Scope

The sizing and modus operandi of the Ntabelanga Dam and its associated works would take into account its multi-purpose role, namely:

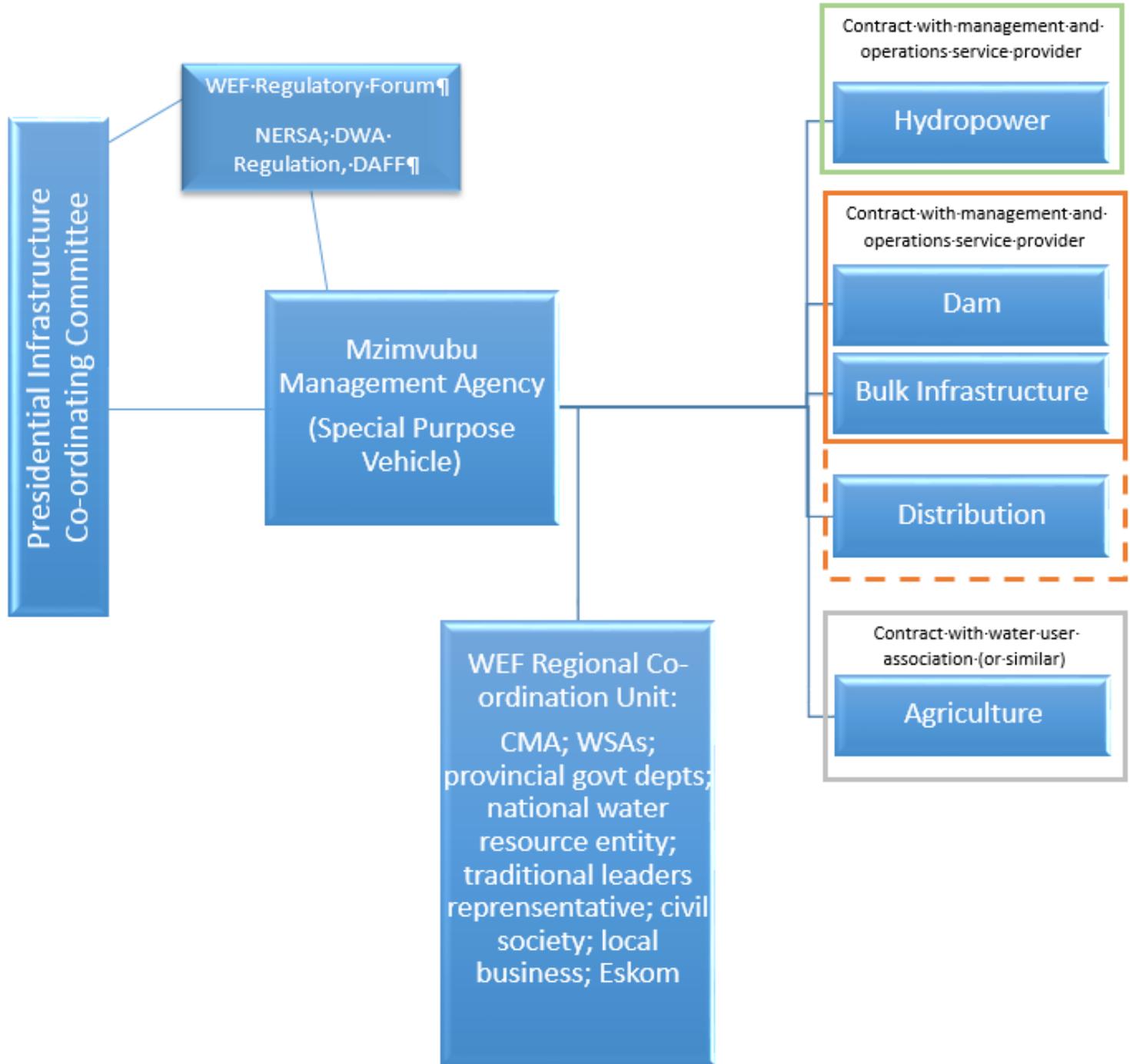
- ▶ to supply potable water to some 724,000 people and other water consumers in the region
- ▶ to supply raw water for irrigation of some 2 868 ha of high potential agricultural land
- ▶ to generate hydropower locally at the dam wall to reduce the environmental impact and cost of energy consumption when pumping water
- ▶ to provide sufficient flow of water downstream of the Ntabelanga Dam to meet environmental water requirements for an ecological Class C
- ▶ to provide additional balancing storage volume and consistent downstream flow releases to enable a second, smaller dam at Lalini (just above the Tsitsa Falls) to generate significant hydropower (37.5 MW of power) for supply into the national grid



Some challenges

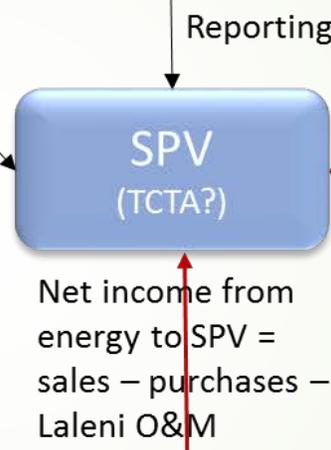
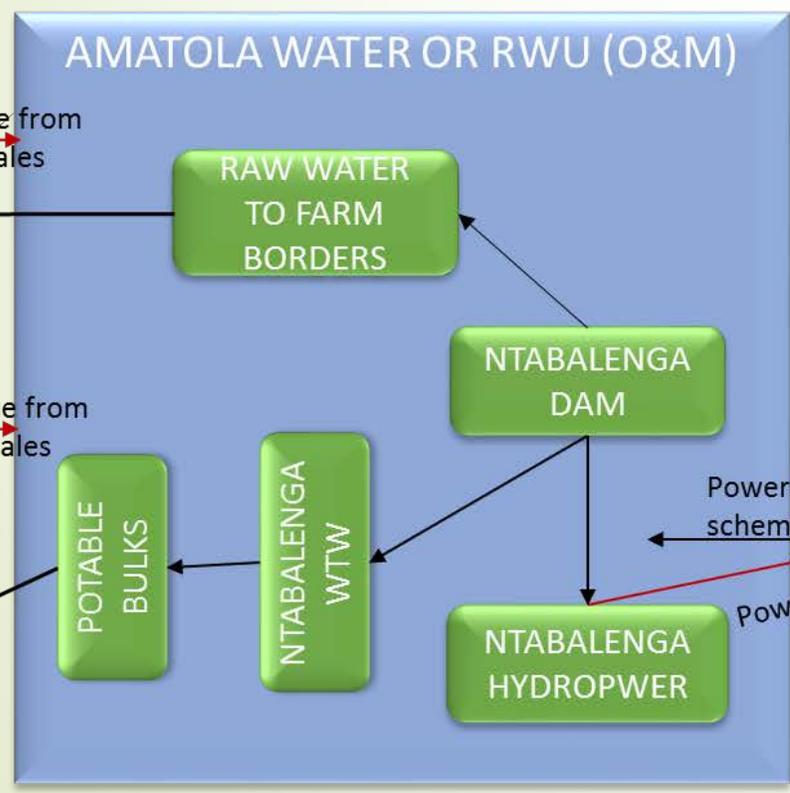
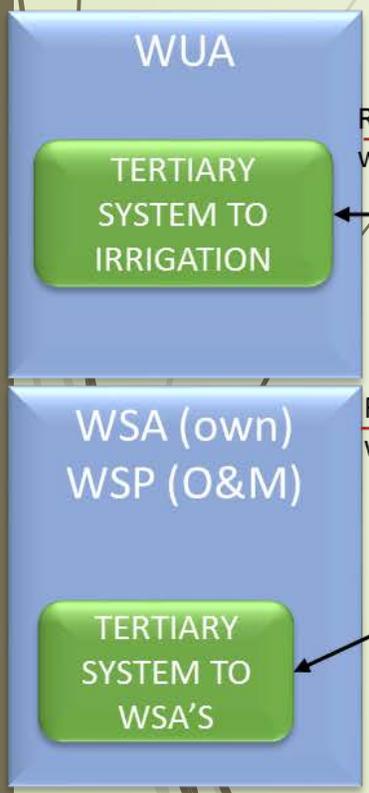
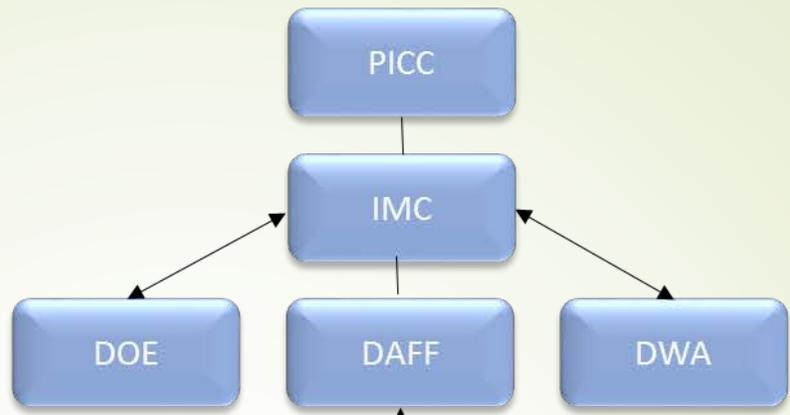
- ▶ Legislative context for water, energy, land, and agric.
- ▶ Institutional context for water, energy, land and agric
- ▶ Displacement of people, covering of agric land, roads, services
- ▶ Change from a culture of subsistence to one of commercial agric
- ▶ Free water to paying for services
- ▶ Environmental impact

Institutional Arrangements

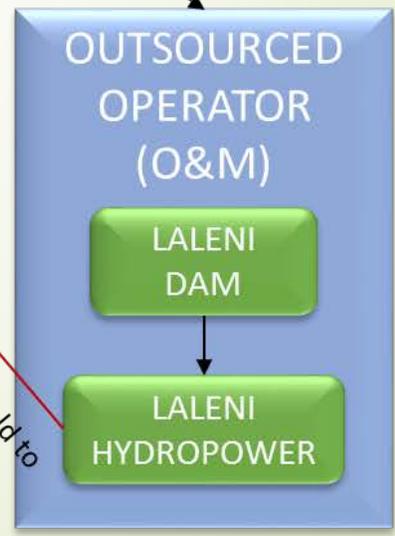


The Financials

- ▶ The cost of the raw water for agric is R2.95/m³ for full costs. R1.24/m³ just for O&M and energy costs. Financially viable is viewed at maximum R0.50/m³
- ▶ The cost of potable water:
 - ▶ Full cost R20.21/m³
 - ▶ with grant funding, O&M is R3,00/m³
- ▶ Fully integrated system with hydro
 - ▶ R15.08/m³ full cost
 - ▶ R0.83/m³ O&M
 - ▶ Agric reduced to R0.24/m³
- ▶ *The main purpose of the hydropower components of the scheme are therefore to generate sufficient surplus income to finance the SPV operation, to repay loans or even grant funding, and to subsidize the power cost for the production and delivery of bulk raw and potable water.*
- ▶ *the benefit from the surplus energy income will be passed down the value chain to these end users, as the water supply operator will have very low or no energy costs to incorporate into their bulk water charge, thus keeping the bulk water tariff significantly lower.*
- ▶ *If managed well, the hydropower could actually result in net profit for the project over the long term.*



Net income from energy to SPV = sales – purchases – Laleni O&M



Repayment

Possible Repayment

Note: Operator could also take equity in PPP to reduce financing needs, but net income to SPV would be reduced

Note: RWU could eventually include tertiary systems to customers