



# **KENYA WATER RESOURCES SECTOR MEMORANDUM**

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# **PRESENTATION OUTLINE**

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**I BACKGROUND**

**II KEY ISSUES**

**III FINDINGS**

**IV ECONOMIC, SOCIAL & POLITICAL  
IMPACTS & RISKS**

**V SECTOR REFORMS**

**VI RECOMMENDATIONS**



# I BACKGROUND

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- **Bank's support for water related investments**
- **Approach**
- **Process**



# World Bank water related investments

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- 3 hydropower projects (Gitaru, Kamburu & Kiambere)
- 1 irrigation project (Bura)
- 5 urban water supply projects (Mombasa I & II, Nairobi I, II & III)
- 3 projects with rural water supply elements (Rural water supply, El Nino emergency, Arid Lands)
- 1 environment projects (Tana River Primate Reserve)
- Regional program (LVEMP & Nile Basin Initiative)



# Approach

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- **Team guided by CT- recommended an economic argument.**
- **Collaborative effort - GOK, Sida, GTZ, WWF, BNWPP, WBI, BB, & MFE.**



# Process ...

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- Based on extensive fieldwork and consultations with various sectors (agriculture, energy, environment, finance, industries, planning, transport and water), professional community, civil society, & academic institution.
- Major presentations by Kenya CD to the President & 15 Cabinet ministers.
- Joint WR mission workshop.
- Draft reviewed extensively.
- Final Memorandum – Feb 2004.



## **II KEY ISSUES**

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**The Memorandum highlights the extent to which Kenya's:**

- Economy is vulnerable to climate and hydrological variability & WRD,**
- Economic performance & poverty reduction are dependent on good management of WR.**



# The memorandum argues

- **Goals of the Economic Recovery Strategy & PRSP are unlikely to be achieved if WRM is not addressed as a national priority.**
- **Proper management of, & investment in the development of WR are essential AND necessary conditions for economic recovery & poverty alleviation.**



## III FINDINGS

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### **Complex water resource crisis**

- **Natural legacy** – limited endowment & high climate variability, and physical geography.
- **Management legacy** – rapid pop & demand for most sectoral uses & increasing degradation of natural storage & minimal investment in man made storage.
- **Colonial legacy** – Kenya shares over half of its rivers, lakes & aquifers with its neighbors.



## Limited endowment of water

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- Kenya's current annual fresh water supply of about 647 m<sup>3</sup>/cap/yr.
- Uganda & Tanzania have 2,940 & 2,696 m<sup>3</sup>/cap/yr respectively.
- By 2025, it is projected that Kenya will have about 235 m<sup>3</sup>/cap/yr of freshwater.



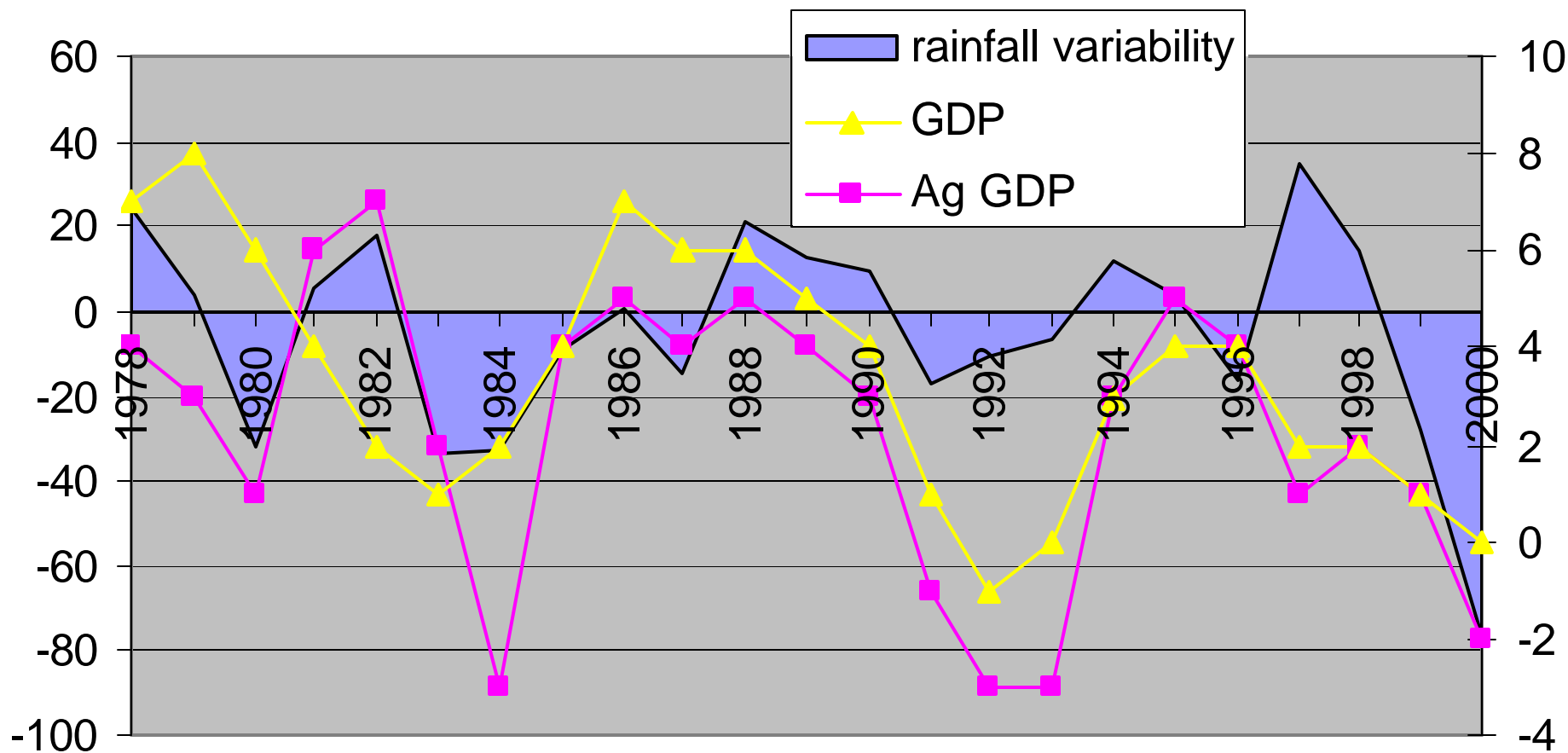
# Large unmet demand...

**Present demand in most sectors  
outstrips developed supplies**

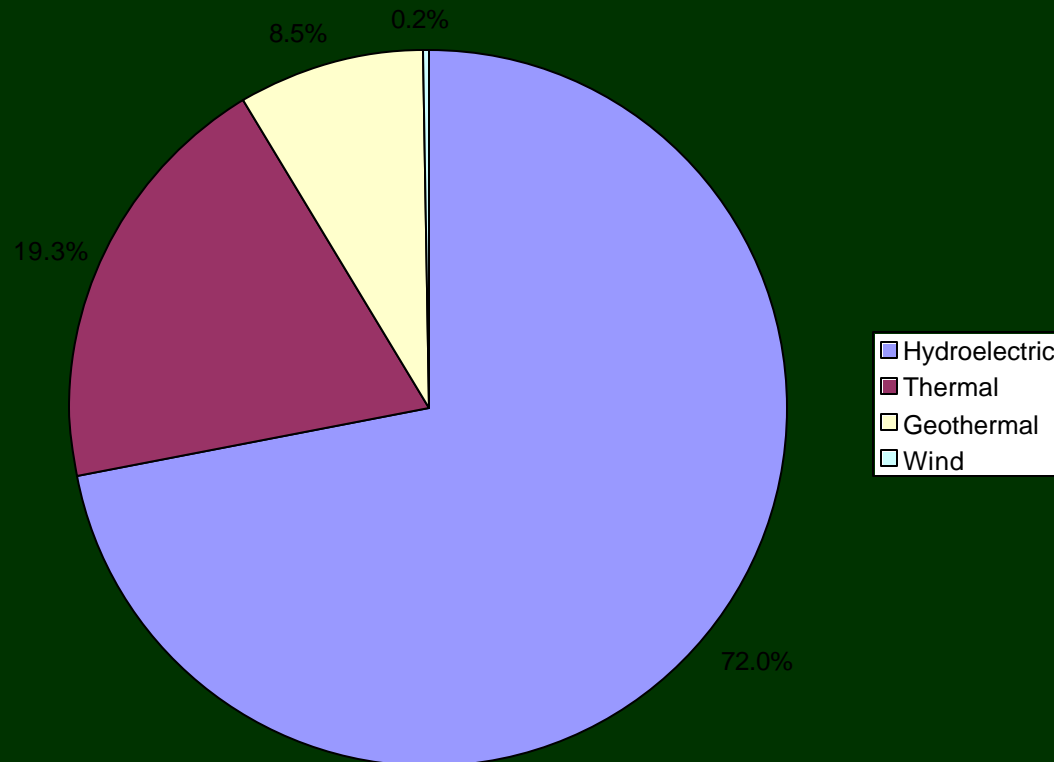
- **Urban & rural supply coverage is 70 % & 46 %.**
- **Irrigation coverage is 14 % of potential.**
- **Demand for power is growing at 6 %; development of energy supply is lagging**
- **Industrialization policy will need to consider water as a limiting resource.**

# Kenya: variability and growth

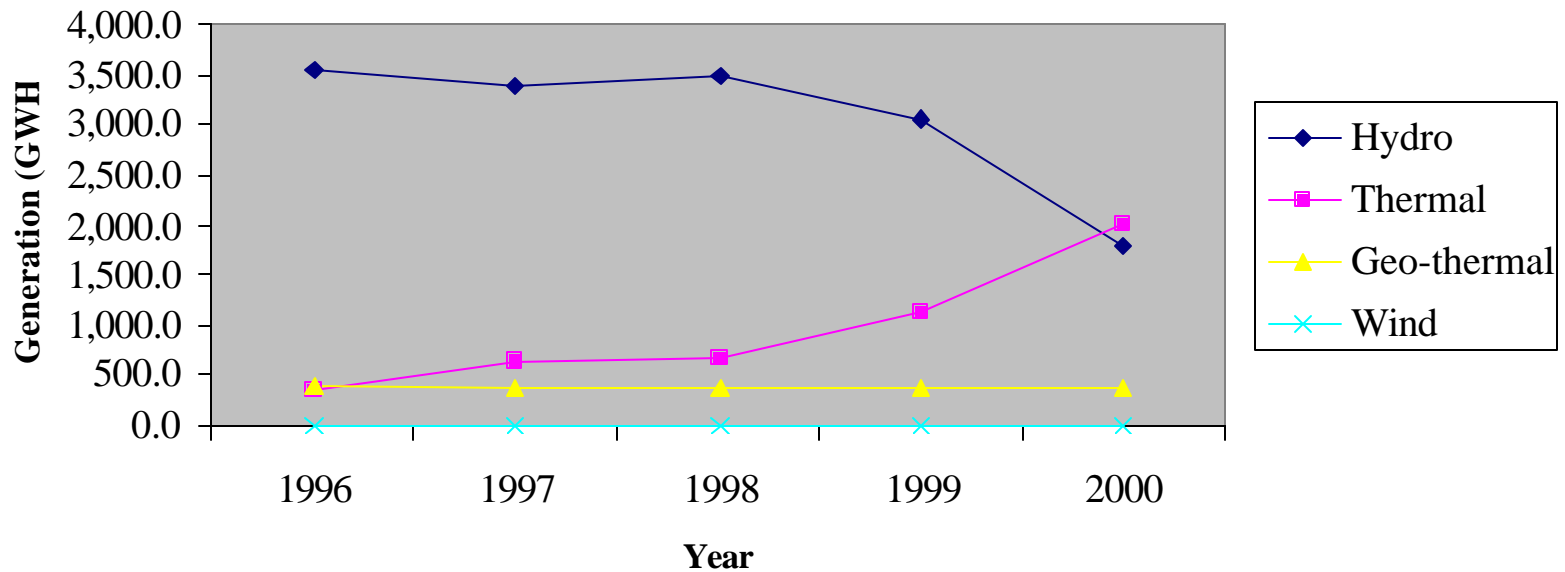
rainfall variability, Ag GDP and GDP



# Source of electric power generated in Kenya



# Heavy dependence on hydro increases vulnerability to climate variability





## **Rapidly depleting natural storage**

### **Catchment & wetlands degradation:**

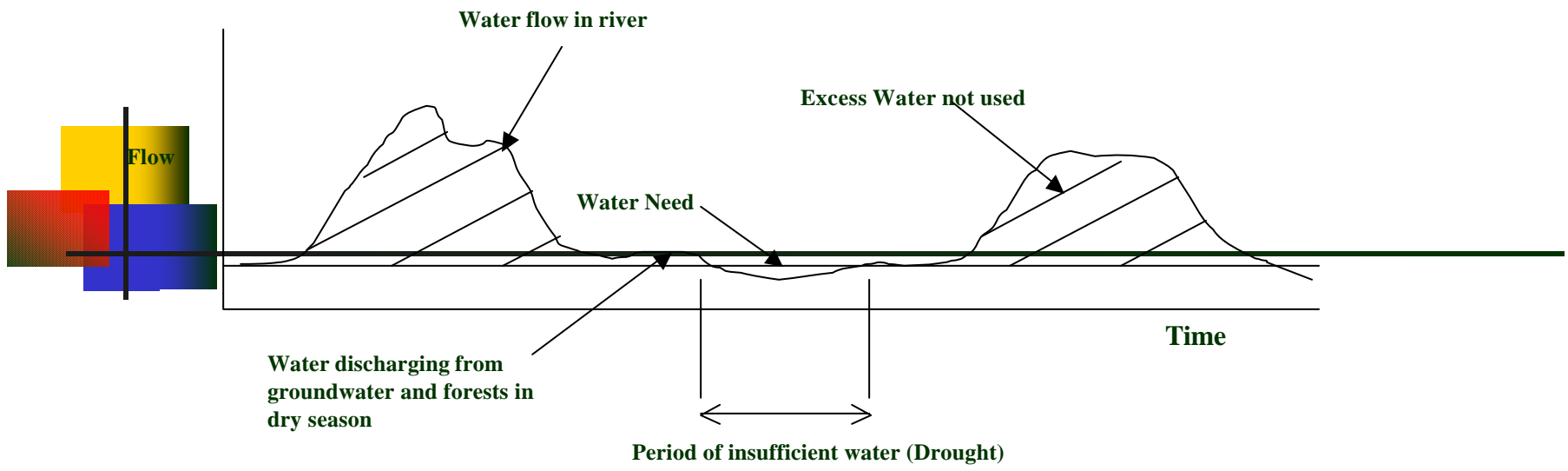
- **Costly damage to infrastructure**
- **Premature siltation of reservoirs**
- **Reduces economic life**
- **Reduces hydraulic capacity of pipes & canals**
- **Disrupts water supply operations**



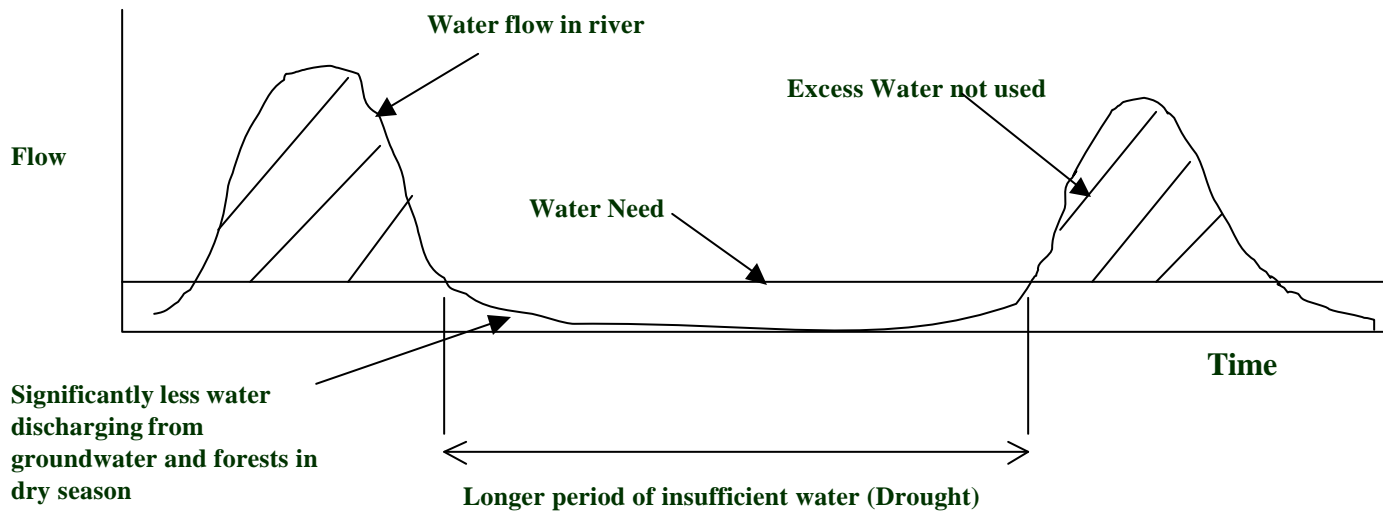
## **High silt loads destroyed existing water supply intake for Mombasa**

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- **Rate of sediment deposition from the Athi-Galana-Sabaki River into the Indian Ocean increased from about 50,000 t/yr in the 1950s to 8.4 million t/yr by 1992.**
- **High sediment loads in the Sabaki River caused serious problems to Baricho intake.**



**NATURAL NON DEGRADED CATCHMENT**



**DEGRADED CATCHMENT**



# Limited manmade storage

- Kenya's water supply storage only declined from 11 m<sup>3</sup>/cap in 1969 to 4 m<sup>3</sup>/cap in 2002
- Kenya's total storage capacity is about 60 m<sup>3</sup>/cap.
- Reduces buffering capacity to deal with excess water and limited water.

# El Nino floods & La Nina droughts

- **Economic shock: 97/98 El Nino flood (11% GDP); 99 drought (16% of GDP), 2000 drought (16% of GDP);**
- **Economic impacts on transport & water supply infrastructure, health sector. Energy, livestock, manufacturing and agricultural sectors.**
- **Indirect costs of perceived risk of variability??**



# Daily Nation...

## November 19, 2002...

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- Floods cause dam failure...10 people killed, with huge damage to village and farm property and resources
- Floods wash away town water supply pipeline causing severe water supply shortages



# Daily Nation...

## January 20, 2003...

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- **Floods disrupt learning...7 schools fail to open in Tana River District**
- **Floods impact many people...3000 families affected, 6 people killed, property worth millions of shillings washed away.**

# East African Standard

May 2, 2003

- MP Drowns



**Daily Nation**

**May 5, 2003**

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- **City taps run dry as floods destroy dam**

# East African Standard

May 7, 2003

- **Floods declared national disaster**

# Daily Nation

May 12, 2003

- **Woman and her baby drown in rain tragedy**
- **City water shortages to continue**
- **Silent cries of marooned residents**
- **At mercy of raging currents**



# Major allocation challenges

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- **Poor hydrometric infrastructure**
- **Weak regulation**
- **Inadequate storage**
- **Severe water use conflicts**
- **Disproportionate impact on the poor**

# Percent of Unauthorized Abstractions for River Basins in the Northern Ewaso N'giro Catchment 1994/95

River Basins	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
Naro Moru	69.6	32.1	59.0	36.8
Buruget	70.9	56.4	60.3	47.6
Nanyuki	62.4	45.3	56.5	38.3
Likii	58.3	38.1	57.2	43.8
Ontulii	72.5	52.8	70.4	49.9
Sirimon	78.2	47.7	59.5	48.6
Timau	65.8	55.4	61.6	51.6

*Source: Laikipia Research Programme (1996)*

# Water resources degradation...



- **Pollution (Athi, Thika Rivers, Lake Victoria basin rivers, Lake Nakuru)**
- **Groundwater over-pumping (Nairobi area)**
- **Wetlands degradation (Tana River, Naivasha, Nakuru)**
- **Invasive weeds (Lake Victoria)**
- **Direct recurring annual cost: catchment degradation/deteriorating water quality \$50-120m/a**



# Over half of Kenya's waters are shared with neighbors...

- Degradation of IWs is a growing challenge
- Management of IWs is a complex process & can provides opportunities for sharing benefits
- Limited national capacity to address this important area



# IV ECONOMIC, SOCIAL & POLITICAL IMPACTS

- Hydrological variability causes significant economic losses.
- Diversity of sectors affected demonstrates the pervasive dependence of the economy on WRM.
- Deterioration of & an under investment in water storage capacity.
- Poorly planned infrastructure results in problematic development.
- Poor governance of water resources is undermining livelihoods.



# Risks

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- Growing demand over a limited resource generates competition & conflict over water use, posing social risk to the poor & communities not represented in decision making.
- Hydrological variability creates uncertainty and constant economic risk to farmers, energy producers, manufacturers and pastoral groups. Catastrophic floods & droughts amplify this risk.
- Being party to numerous international waters can cause political risks of regional tensions & economic fragmentation.



# V SECTOR REFORMS

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- 1999 water policy, 2002 Water Act and draft water resources strategy, action plans and investment programs – solid foundation for addressing these issues.
- WRMA just established.



# Cross sectoral WRM

- Reforms and investments in agriculture, livestock, manufacturing, transport, energy, environment and communications sector must be simultaneously be supported by purposeful management of underlying water resources bases.
- Develop and implement effective multi-purpose infrastructure investment plans, catchment plans, and build institutional capacity.



# VI RECOMMENDATIONS

- **Widen support for water resources reforms & development of water resources infrastructure investment program:**
  - **Develop consensus about WRM reforms**
  - **Obtain cabinet support to elevate the reforms to a national priority that is adequately funded.**
  - **Develop a communications strategy.**
  - **Broaden donor coordination for WRM&D.**



# Short term (1-2 yr) steps

- Establish functional WRMA, CAAC, WUAs.
- Form a WR Infrastructure Task Force.
- Develop phased investment strategy.
- Institute water user charges.
- Gazette priority catchments & recharge areas.
- Build linkages with sector ministries.
- Pursue investment strategy.
- Develop international waters strategy.



# Medium & long term steps

## Medium term

- Continue short term steps.
- Commence infrastructure investments to increase storage.

## Long term

- Coordinated infrastructure program.
- Well trained WR professionals.
- Develop joint investment programs on IWS.