POLICY AND LEGAL ISSUES IN IWRM, ROLE OF ZINWA

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THE GLEN

17 SEPTEMBER 2015

CONTENTS

- INTRODUCTION
- INTEGRATED WATER RESOURCES MANAGEMENT
- CATCHMENT BOUNDARIES
- ZINWA
- WATER ALLOCATION
- OVERVIEW OF WATER RESOURCES OF ZIMBABWE
- WATER USE AND PRICING
- CURRENT WATER AVAILABILITY
- RECOMMENDATIONS
- CONCLUSIONS

INTRODUCTION

The presentation will take you through the policy and legal issues in Integrated Water Resources Management , the current status of irrigation water in Zimbabwe and role of ZINWA.

Integrated Water Resources Management…

- 1970s-Emergence of environmental sustainability movement
- 1992- Earth Summit in Rio Janeiro, Brazil
- Attaining sustainability in water resources management became a priority objective for global water community and national governance

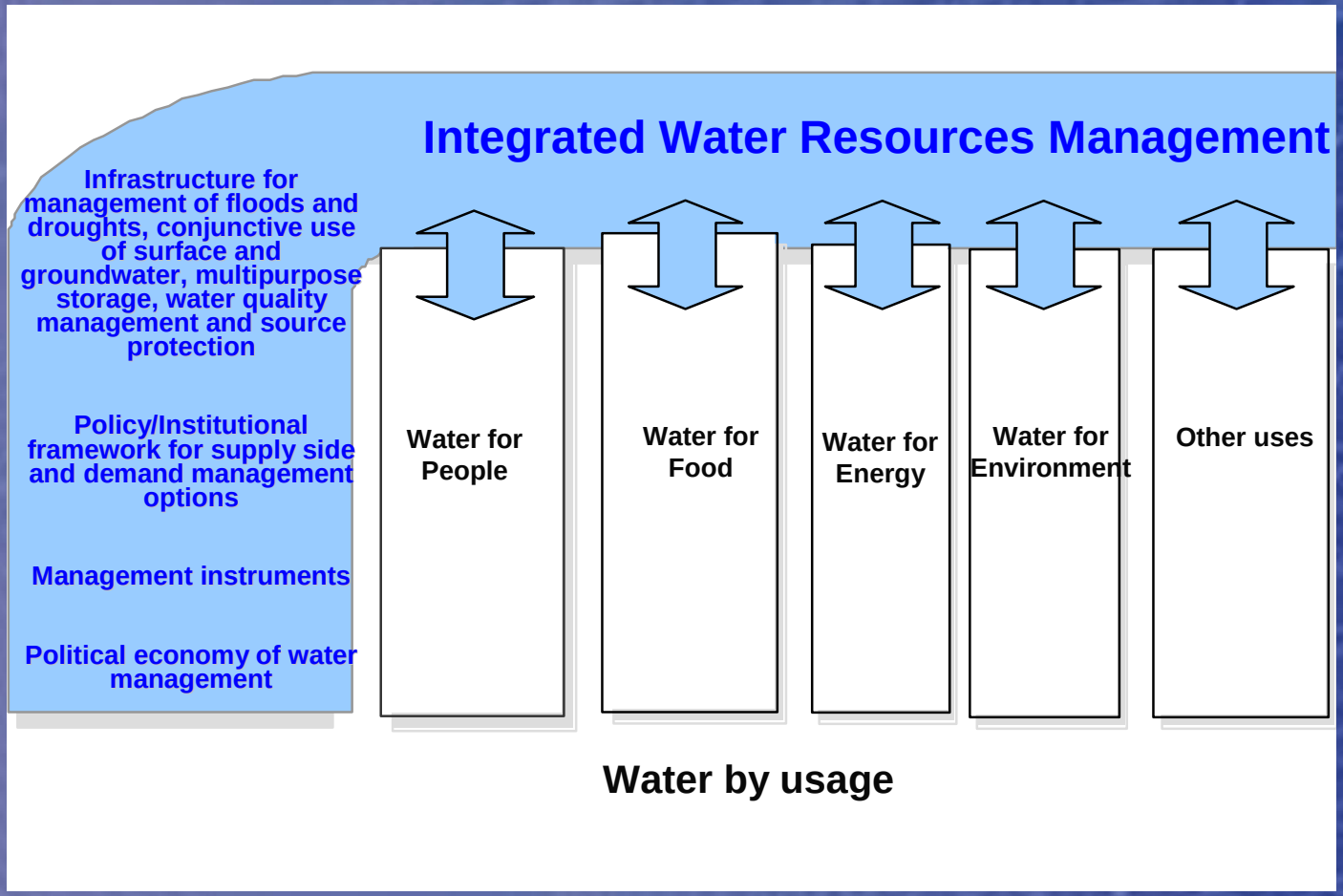
…Integrated Water Resources Management.

- IWRM preferred as the most appropriate model for attaining sustainability
- GWP (2003) recognise that the IWRM framework
  - Is not to be seen as a universal blueprint or perspective model
  - Is evolutionary and always changing
  - Is not to be taken as a panacea for poverty reduction
  - Facilitates management of water resources and water services in ways that will help to reduce poverty

Model IWRM

- Improve efficiency in water use
- Promote equity in access
- Achieve sustainability

Key Concepts in IWRM



Central Principles of IWRM

- Integrating the management of the whole water cycle
- Decentralizing responsibility for water management to river catchment level
- Promoting participation and stakeholder involvement in decision making
- Treating water as a social and an economic good

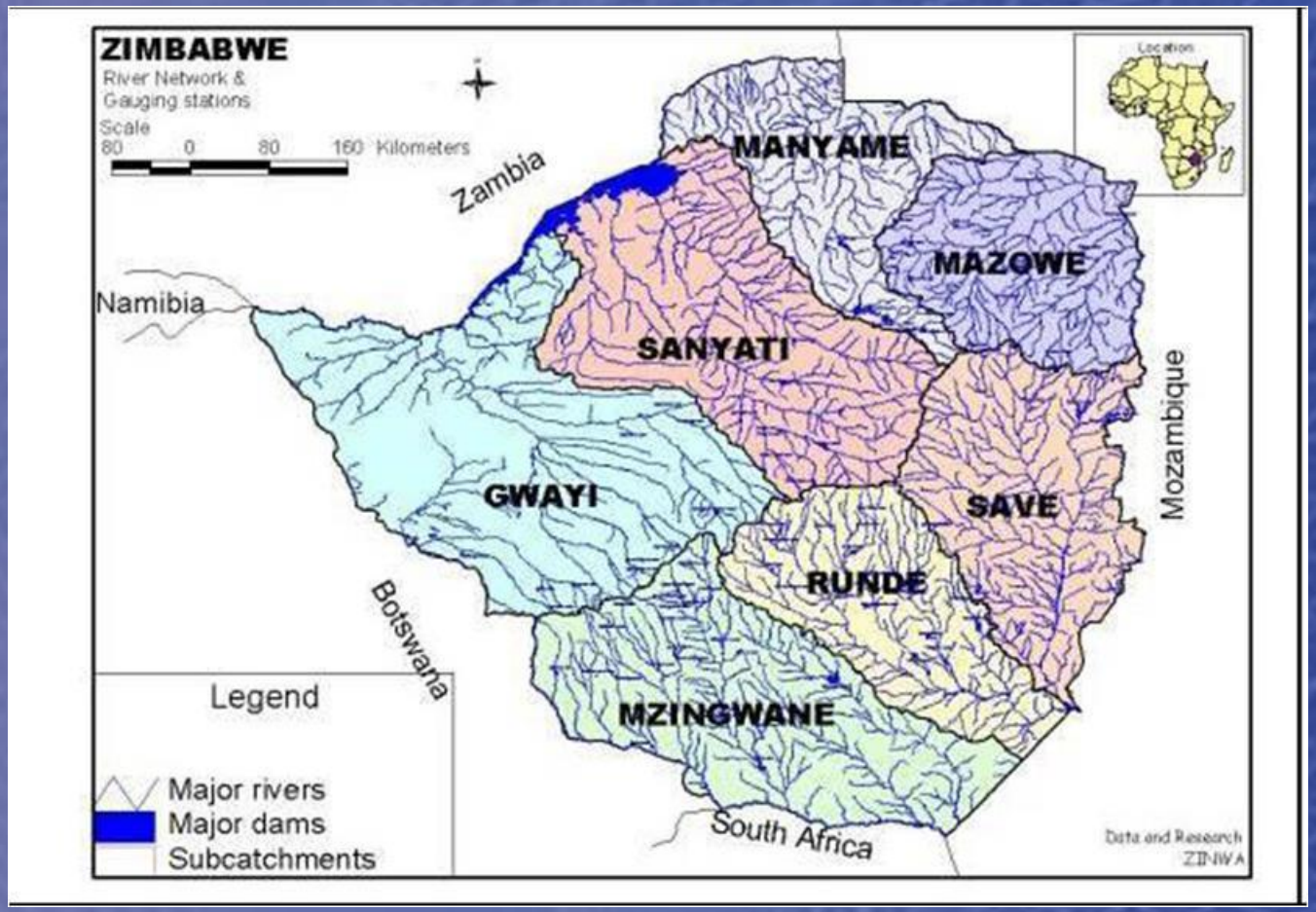
Integration…

- Planning and managing freshwater for all multi-sectoral uses.
- Entails that both water quantity and water quality are managed jointly.
- Surface water and groundwater managed conjunctively.
- Recognising the environment as a water user.
- Using river basins or catchments as units for planning and management of water resources.

…Integration.

- Institutions that have responsibility for different parts of the water cycle need to work together because decisions made about one part of the cycle affect other parts of the water cycle.

CATCHMENT BOUNDARIES



ZINWA

- The ZINWA Act CAP 20:25 created the Zimbabwe National Water Authority (ZINWA) with the responsibility of
  - Providing a coordinated framework for planning, development and management of water resources.
  - Advising the Minister on national water policy, pricing and water resources development and management.
  - Providing technical support to Catchment Councils through its Catchment Managers,
  - Ensuring that Catchment and Subcatchment Councils carry out their functions under the Water Act.
  - Managing and selling agreement water up to field edge
  - Supplying potable water to local councils and government institutions.

WATER ALLOCATION

- Water allocation decisions are now decentralised to Catchment level providing greater opportunity for local involvement in planning and managing resources and enhancing equity in access.

WATER ALLOCATION

- The guidelines for allocating water, developed in 2000/01, established a priority order for water:
  - 1. primary needs
  - 2. environment
  - 3.UIM,
  - 4. plantations such as fruit and forestry
  - 5. plantation- crops such as sugar cane and
  - 6. seasonal crops

Accessing Agreement/ZINWA Water

- Irrigator gets help from Agritex in quantifying their water requirements
- Irrigator enters into an agreement with catchment manager and gets an allocation at the end of March.
- Irrigator accesses their allocation.

Private ownership

- Water vested in the President
- No private ownership of water
- Act allows use in accordance with a permit

Use of Water…

- Primary Use-Reasonable use for
  - Basic domestic human needs in and about the home.
  - Support of animal life-exceptions fish in fish farms, animals/ poultry in feedlots
  - Making of bricks for use by owner, occupier of lessee
  - Dip tanks

…Use of Water…

- Any person may abstract water for primary purposes.
- Construction of storage works less than 5000 cubic metres for primary purposes requires notification of catchment council and other riparian occupiers of land or it is regarded as tempering with the river and this requires a permit.
- Construction of works more than 5000 cubic metres requires a permit

Boreholes and Commercial wells

- Application for Authority to drill submitted to catchment council when one requires to alter, deepen well or borehole for any purpose other than primary purposes. Requirements:
  - Evidence of ownership of land or consent of owner of land
  - 1:50 000 map showing boundaries of property
  - Inventory of surrounding boreholes

Boreholes and Commercial Wells

- Permit issued when applicant submits required documentation within 30 days of sinking, altering well or borehole

Permit System

- All purposes outside of primary require a permit
- Permit tied to the land.
- Records of water abstracted have to be maintained
  - Meters or other measuring devices to be installed by water user
  - Records to be submitted as required by catchment council
  - Any officer authorised by catchment council may inspect and seal the meter
  - Contravention is an offence attracting a fine or 6 months imprisonment or both.

Ministerial Consent

- Required for
  - Storage in excess of five million cubic metres of water
  - Abstraction of more than 100 litres per second
  - Application in a Development Restricted Area
  - Any person who contravenes this section is guilty of an offence and liable to a fine or not more than 6 months in prison or both

Application for permit to conduct operations in public streams

- A permit is required of a person who wishes to carry out any operations that affect
  - Banks, bed or course of a public stream
  - Any marshes, springs, swamps or vleis

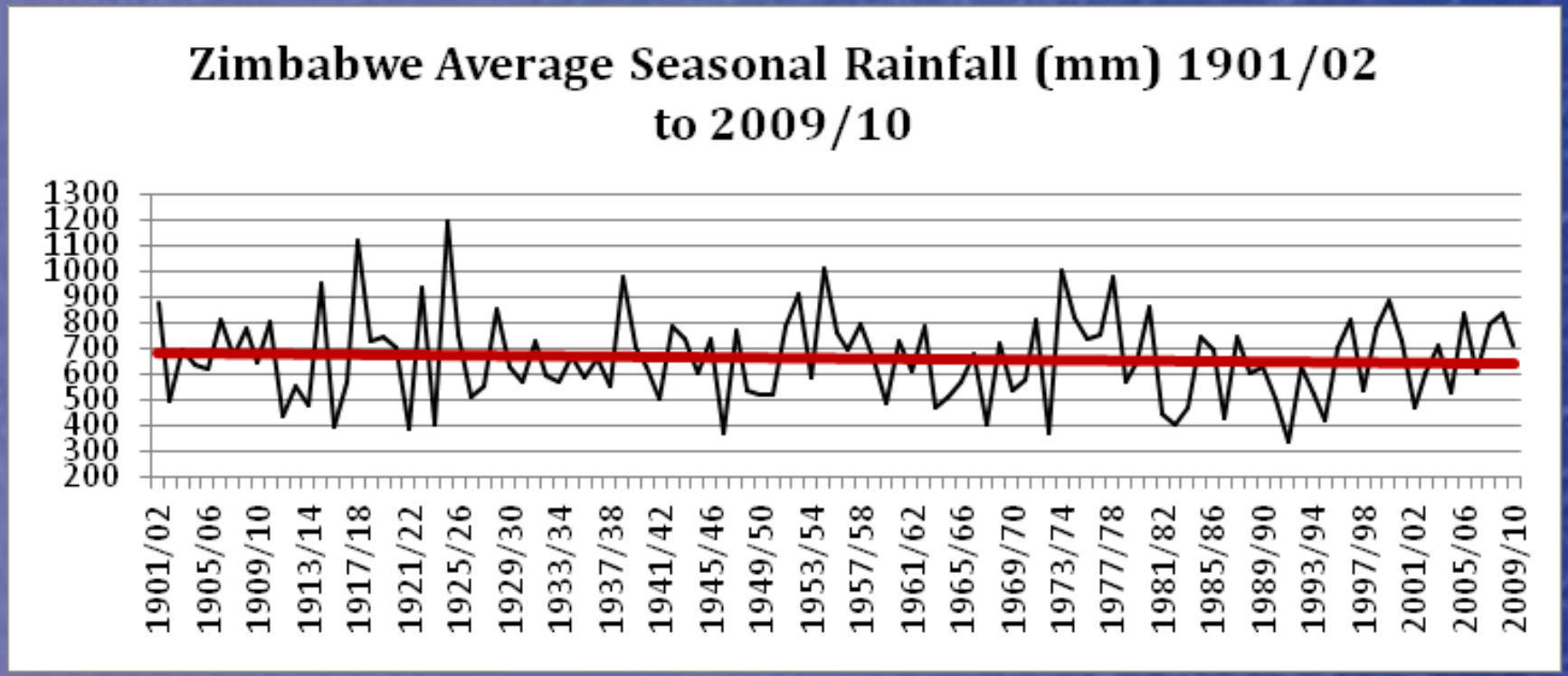
Validity of Permit

- 20 years or as determined by Catchment Council
- Permit amended if holder fails to make use of water for 3 consecutive years
- Permit transferred to new owner of land

Overview of Water Resources of Zimbabwe

- Mean annual precipitation varies from 337mm/ year in the south of the country to 1100mm/year in the Eastern Highlands.
- Long term average surface runoff is 23.7 million ML/ year
- Renewable resources 1 547 cubic metres/ capita/ year
- Developed Storage capacity 6,12 million ML
  - 10% annual yield 3,67 million ML

Trend in Rainfall over time



SURFACE WATER RESOURCES OF ZIMBABWE

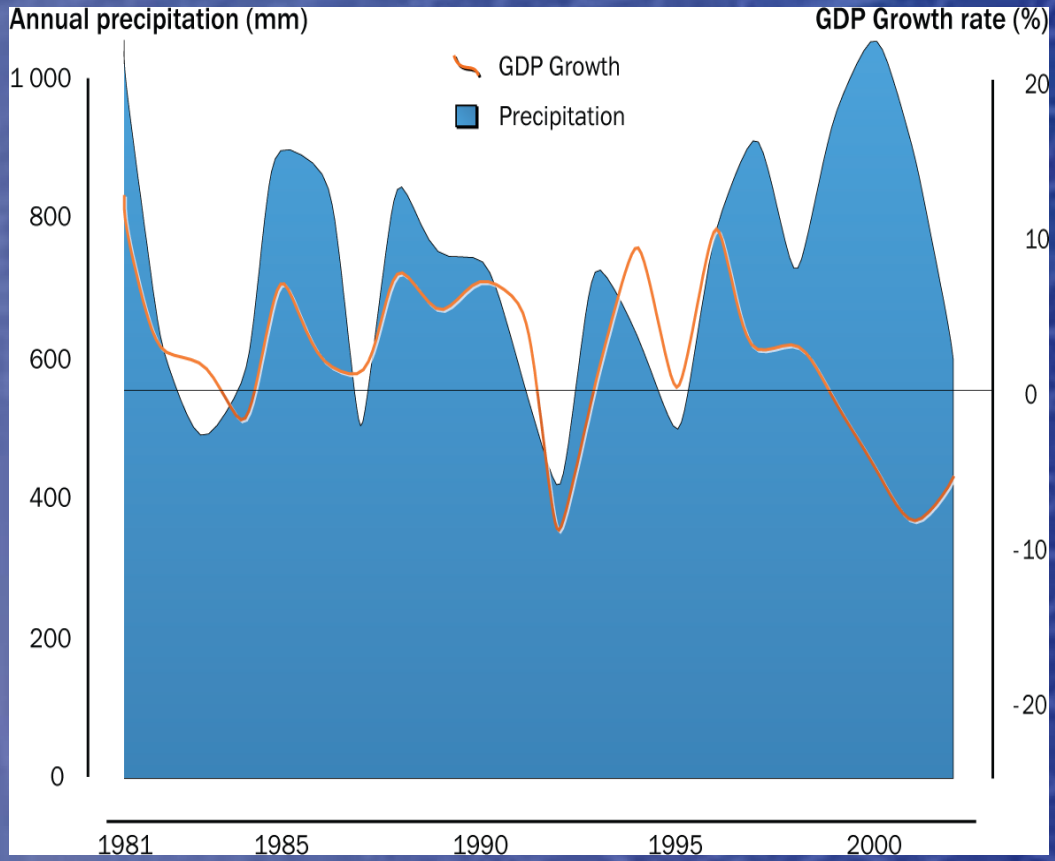
Catchment	Area	MAR	Potential Storage	Potential Yield 10%	Present Commitment		Use
	km²	mm	ML	ML	Storage (ML)	10% Yield	%
Gwayi	87,960	21	3,711,912	876,132	203,743	98,144	11.2
Manyame	40,497	82	6,611,120	2,025,237	2,593,786	942,849	46.6
Mazowe	34,944	131	9,163,486	2,770,971	310,978	488,348	17.6
Mzingwane	62,451	28	3,448,650	1,217,454	1,296,940	330,329	27.1
Runde	41,056	52	4,295,242	1,173,284	2,485,259	481,259	41.0
Sanyati	74,534	52	7,809,908	2,094,537	594,223	430,179	20.5
Save	48,448	126	12,188,046	4,389,550	1,176,368	804,368	18.3
TOTAL	**389,890**	**61**	**47,228,364**	**14,547,165**	**8,661,297**	**3,575,476**	**24.6**

MAJOR GROUNDWATER SOURCES

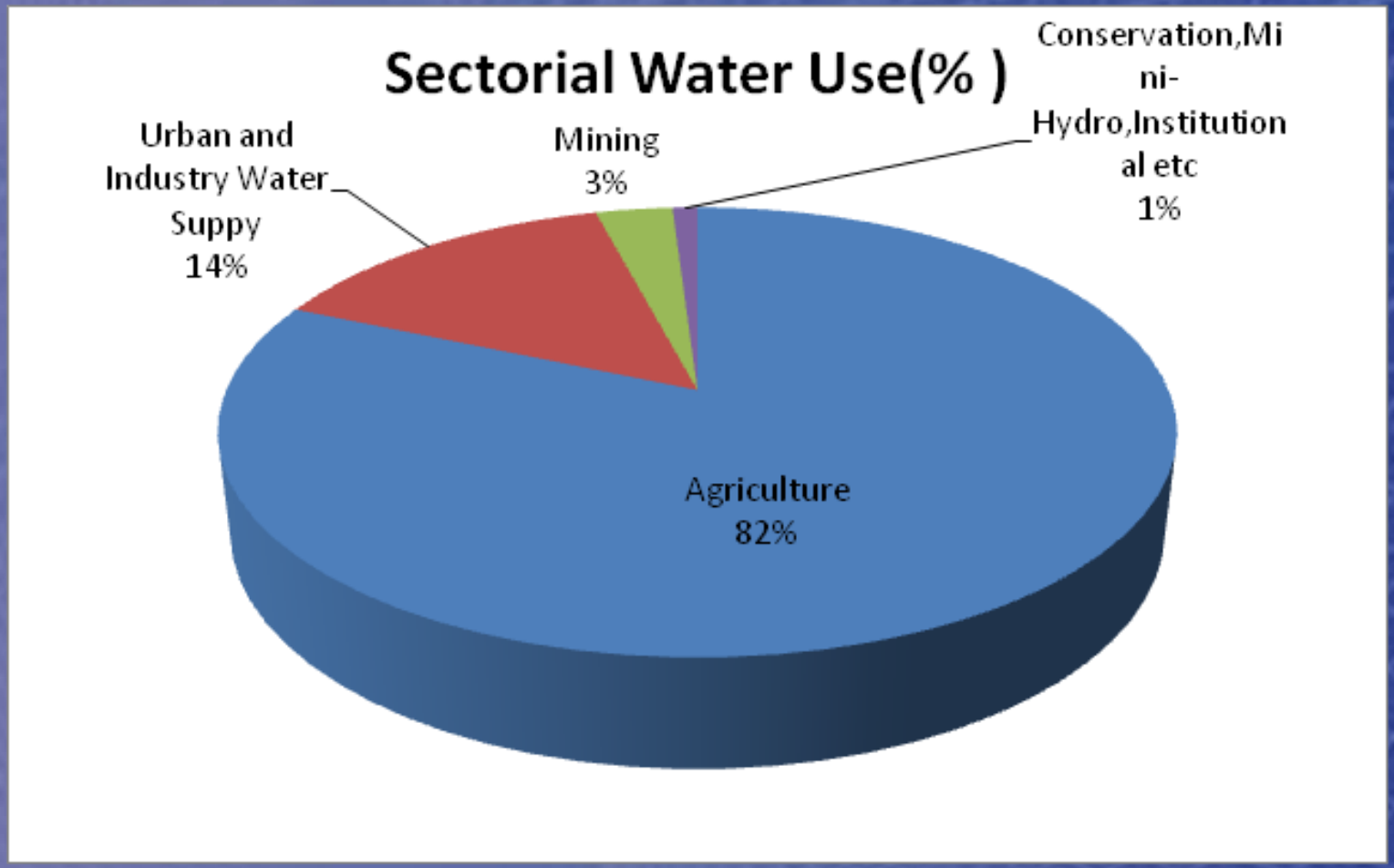
Catchment	Sub-catchment	Geology	Yield and Comments
Gwayi	Upper Gwayi	Kalahari sands	100-1000m³/d
		Nyamandlovu aquifer	100-1000 m³/d to augment Bulawayo water supply
	Shangani	Varied	50-300 m³/d
	Nata	Forest Sandstone Kalahari Sands	50-300 m³/d 100-1000 m³/d
Manyame	Angwa	Varied	30-200 m³/d
		Alluvium	2550 m³/d
		Lomagundiarenaceous	1250 m³/d
	Musengezi& Upper Manyame	Varied	63-200 m³/d
	Lower & Middle Manyame	Varied	18-200 m³/d
		Lomagundiarenaceous	1250 m³/d
Mazowe		Granitic rocks	60 m³/d
		Greenstone	130 m³/d
		Dolerites	150 m³/d
Mzingwane	Shashe&Tuli	Alluvial deposits	100-5000 m³/d
	Lower Mzingwane	Alluvial deposits	100-5000 m³/d
	Mwenezi	Forest sandstone	50-300 m³/d
Runde			Agric& Mining main consumers. 8000 b/holes of which 2500 have data. Est. that 20% g/water utilized
Sanyati			A few points for g/water monitoring
	Sengwa		Possibility using fossil g/water as few dam sites
Save	Lower Save	Alluvial deposits	Huge groundwater potential. Up to 5000 m³/d. Est. storage of 1,350,000 Ml. There are some monitoring boreholes

Economy and Water

- The nation's economy is closely linked to hydrology as evident from the close relationship between rainfall and GDP.
- This challenge will be magnified as global warming changes rainfall pattern, evapo-transpiration and runoff



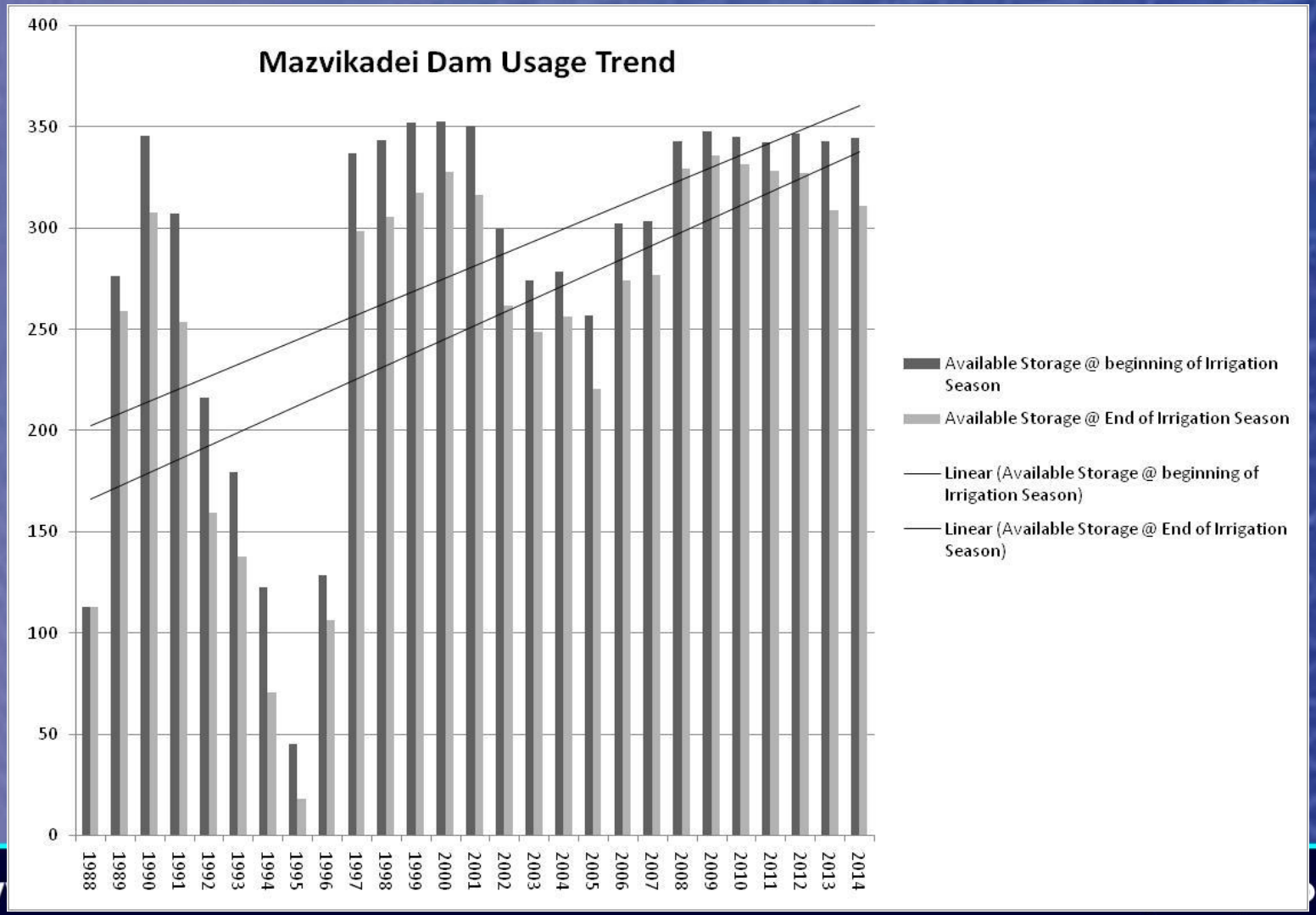
WATER USE


Sectorial Water Use(%)
Conservation,Mi ni-Hydro,Institution al etc 1%
Urban and Industry Water Suppy 14%
Mining 3%
Agriculture 82%

Irrigation Water Use

- Apart from the meaningful water use for irrigation in the south-eastern lowveld, the irrigation dams in other parts of the country are largely underutilised.
- Using Mazvikadei Dam, which is exclusively an irrigation dam, it can be seen that the level of water at the end of each rain season is hardly lowered by usage since 2002 but by evaporation at the end of the winter irrigation period in November (beginning of the next rainy season)

Mazvikadei Dam Usage



Status of Raw Water Supply for Irrigation by province as @ 11/09/15

SUMMARY BY PROVINCE

PROVINCE	Net Full Supply Capacity (ML)	Present Full Supply Capacity (ML)	Estimated Land Under Irrigation from ZINWA Dams (ha)	Estimated Additional Land that can be Developed from ZINWA	Total Irrigable Land (ha)
Manicaland	657,913	402,557	17,201.00	5,710	22,911
Mash Central	236,394	195,647	2,315.00	5,290	7,605
Mash East	66,449	57,946	411.00	249	660
Mash West	1,379,929	1,261,441	3,182.00	12,844	16,026
Masvingo	2,515,148	1,257,393	48,909.00	14,393	63,302
Mat North	52,698	28,956	1,056.00	214	1,270
Mat South	728,226	432,063	2,429.00	3,315	5,744
Midlands	519,844	406,145	2,701.00	6,613	9,314
TOTAL	**6,156,601**	**4,042,148**	**78,204**	**48,629**	**126,833**

Status of Irrigation Water Supply by catchment as @ 11/09/15

SUMMARY BY CATCHMENT

CATCHMENT	Net Full Supply Capacity (ML)	Present Full Supply Capacity (ML)	Estimated Land Under Irrigation from ZINWA Dams (ha)	Estimated Additional Land that can be Developed from ZINWA	Total Irrigable Land (ha)
Gwayi	80,729	45,216	1,348.00	243	1,591
Manyame	1,281,430	1,178,621	2,173.00	10,387	12,560
Mazowe	248,480	204,728	2,638.00	5,127	7,765
Mzingwane	1,073,495	694,433	5,167.00	6,784	11,951
Runde	2,247,276	1,051,635	46,095.00	9,650	55,745
Sanyati	440,362	349,266	2,904.00	6,722	9,626
Save	784,829	518,249	17,879.00	9,716	27,595
TOTAL	**6,156,601**	**4,042,148**	**78,204**	**48,629**	**126,833**

Raw Water Pricing

CATEGORY	Old tariff/5000 drums w.e.f 2/1/09 US$	Old tariff/ 5000 drums w.e.f July 2009 US$	Current tariff/ 5000 drums w.e.f Oct. 2012 US$
Industry	6.50	13.17	9.45
Commercial Agriculture-Estates	5.00	12.68	9.45
Commercial Agriculture-A2 Farmers	5.00	12.15	6.82
Local Authorities	6.00	11.71	6.00
A1 Farmers	5.00	7.50	5.00
Communal- Pumped	5.00	5.00	4.50
Communal -Gravity	5.00	5.00	4.50

Why irrigators pay

- Operation and maintenance of water infrastructure.
- Dam safety compliance requirements.
- Development of water infrastructure in areas that have not been served.

Cost of Irrigating

- The cost of water is only a small percentage of total irrigation costs - typically 5% and in few cases up to 10%.
- Even accounting for other irrigation-related costs, total irrigation costs do not exceed 30% for most crops.

Recommendations

- Farmers take an active part in sub-catchment and catchment business.
- There is a need to adopt more water efficient technologies in agriculture as competition for water increases.
- There is need take into account costs related to water provision so as to ensure the sustainability of the service

Conclusions

- Water is available for irrigation
- Agriculture is the major user of water
- Irrigation farmers have a role to play in water management.
- Irrigation farmers need to budget for water and pay for the volumes they utilise to ensure the water supply service can be sustained.

References

- Water Policy Background Paper
- Water Act
- ZINWA Act
- Water Policy

Zimbabwe National Water Authority

THANK YOU