IRRIGATION PRACTICES AND CHALLENGES.

Abbay Basin Authority.

NSF-PIRE KICKOFF CONFERENCE.

July 11-14/2016

Delano Hotel

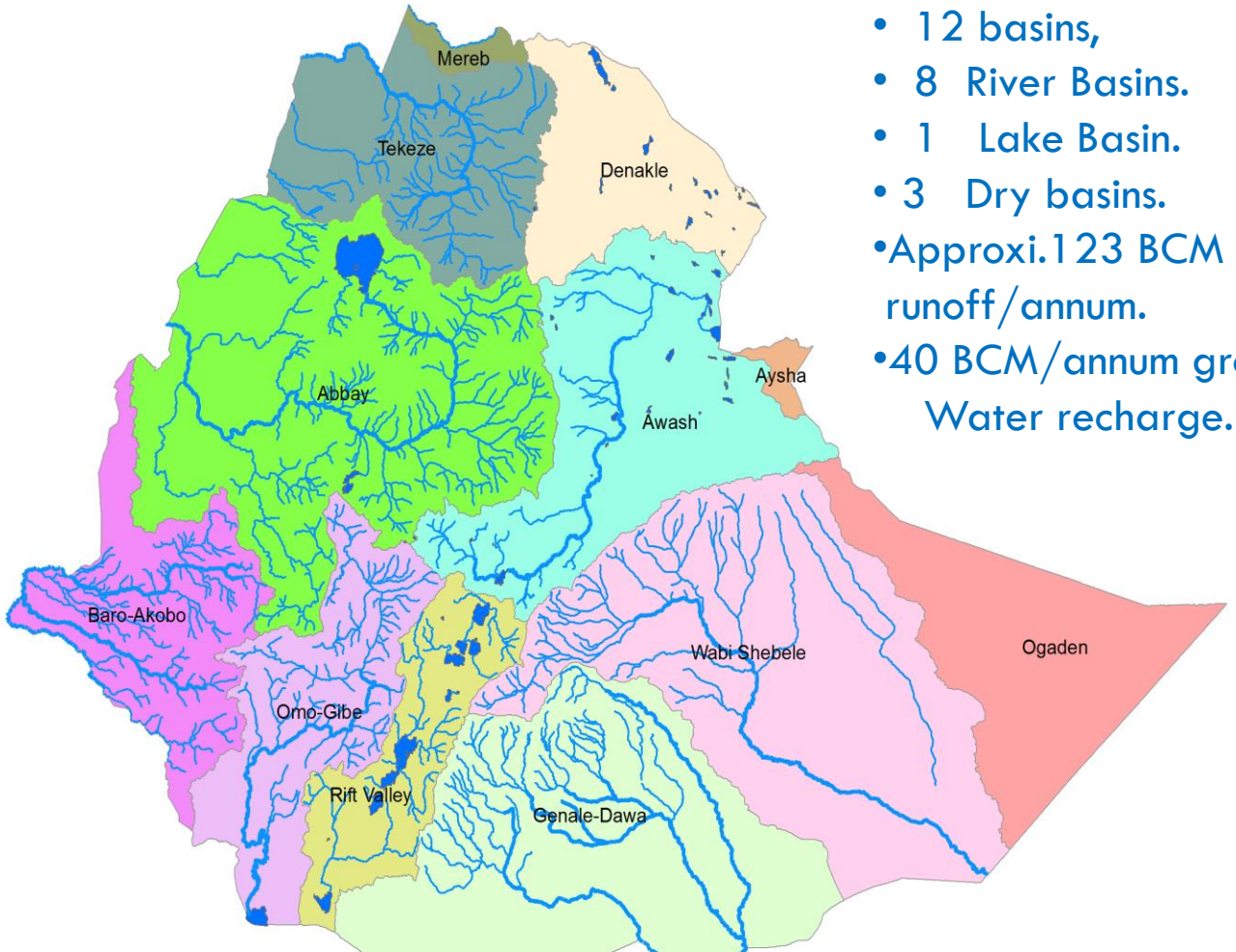
Bahir Dar

Outlines

- Introduction and background.
- Irrigation potential of Abbay River Basin.
- Irrigation Practices.
- Challenges to irrigation development.

Introduction and background

Water Resources Potential of Ethiopia



- Area 1.104 m km^2
- 12 basins,
- 8 River Basins.
- 1 Lake Basin.
- 3 Dry basins.
- Approxi.123 BCM runoff/annum.
- 40 BCM/annum ground Water recharge.

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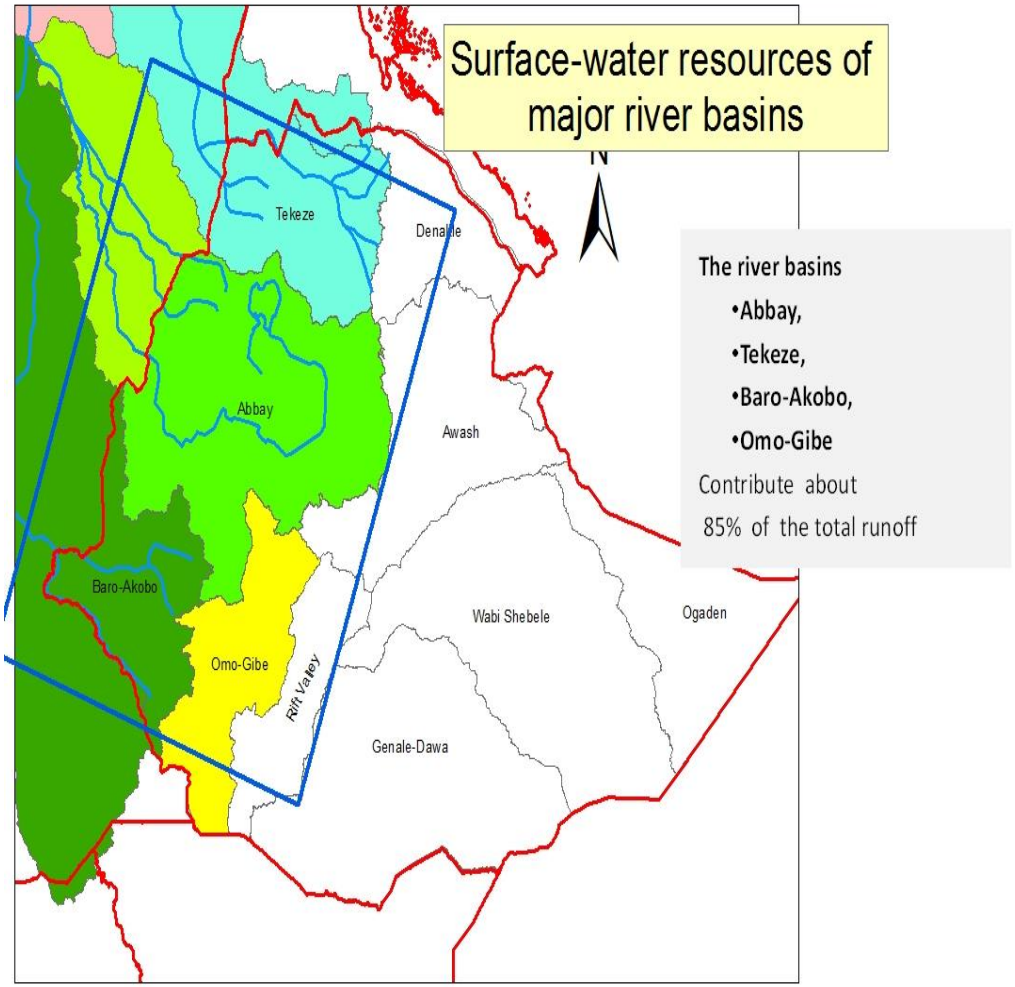

- More than 85% of flow in to the main Nile in Egypt.
- Estmat. 5.3 M ha of potentially irrigable land.
- 45,000 MW hydropower potential.

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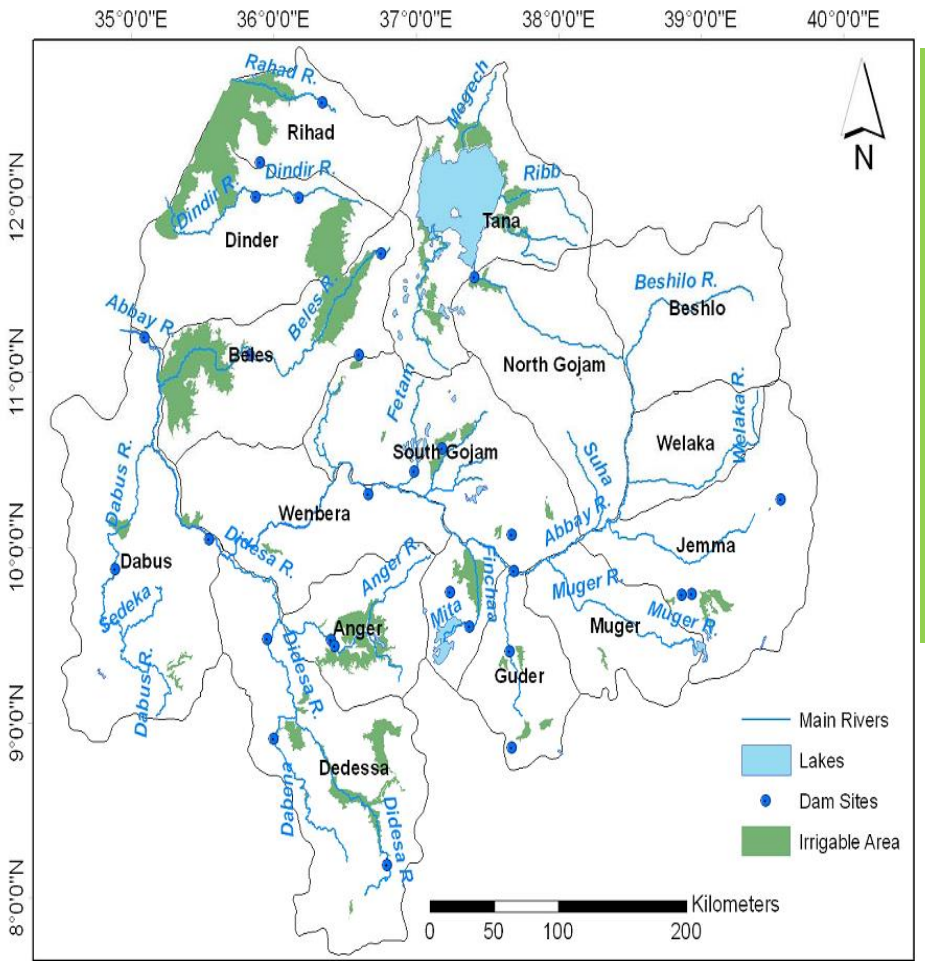
Abbay River Basin Water Resources Potential

- Area 199,812Km2
- 16 sub basins.
- Runoff 54.5 BCM
- 17,000 MW hydroelectric potential it accounts 38% of the countrywide.
  - 20% of the landmass,
  - 40 % of the nations agricultural product.

- 2.5 M ha irrigation potential.

Identified irrigation potential



Large scale irrigation in the Basin

- In the Abbay basin, the Master Plan identified a potential of about 2.5 millions ha of large and medium- scale irrigation schemes,
- 526,000 ha was then found economically feasible.
- The potential is spread into 93 different irrigation schemes identified in more than 10 sub-basins.

Irrigation practices and challenges.

- Behind-schedule scheme delivery(delay).

For example, the 2010 irrigation target from the PASDEP(Plan for Accelerated and Sustained Development to End Poverty) I plan was 820,000 hectares of irrigated land (75 percent by SSI or RWH and the remaining with M&LSI). But by mid-2010, only 640,000 hectares were at the study year equipped, which was 180,000 ha short of the target(IWIM 2010 national assessment report)

e.g Ribb and Megech construction delays.

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Low-performance of schemes.

Performance

The research estimates of IWMI team 2010 on average < 30 % below designed.

e.g. kogga irrigation scheme.

Year	Storage(Mm^3)	Command Area(ha)
Design	83.1	7004
2011/12	83.1	5123
2012/13	83.1	5144.36
2015/16	83.1	6300
2016/17	62	3620

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Sustainability challenges

- Sustainability is threatened by unregulated surface and groundwater development, lack of watershed and environmental management.
- Sedimentation
- Salinity of ground water(pollution).
- Rising up of water table.
- Failure of schemes.

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Lack of water shed and environmental management.

Flooding in Tana Sub basin

Runoff not managed well

Results erosion/degradation upstream

And

Sedimentation/flooding downstream

Mebrej Diversion Weir at Gumara River.

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Seepage, sedimentation and slide
Gomit Earth dam
failed, out let closed,Estie/N/Gondar


Zana no.1 irrigation, not functional earth dam/East Belesa

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To learn from it

Selamko earth dam, functional but sedimentation risk.
Located near to Debre Tabor /N/Gondar

Needs further research and study.

Shina Hamusit Earth dam
Functional, shortage of Water from year to year…no buffer zone, sedimentation.

Causes to challenges(general).

1. Technical knowledge and skill gaps.

- Planning and design.

  Planning is about the future. The future is fundamentally uncertain. Planning has to address this uncertainty. This is addressed using **scenarios.**

- construction.
- Monitoring and management.
- Research and study.

Inadequate knowledge(Monitoring)

- Irrigation scheduling techniques.
- Optimal water allocation techniques.
- water saving technologies.
- water measurement techniques.
- operation and maintenance.
- Improved and diversified Irrigation agronomic practices.
- Scheme based approach rather than area/catchments based approach for the development of SSI Schemes

2.Lack of Data and Information

- Inadequate baseline data and information, information system on the development of water resources.
- Comprehensive research, analysis ,hydrological modeling and stakeholder consultation requires well organized data and information.

3. Socio-Economics

- Inadequate community involvement.
- Inadequate funding for irrigation infrastructure development, to access irrigation technologies and agricultural inputs, where the price increment is not affordable to farmers.
- Lack of market linkage(kogga).
- Increasing demand.

4. Institutional

- Lack of integration and coordination.

5.Environmental

- Climate change.
- Extreme events/flooding.
- Draught.
- Shortage of rainfall.

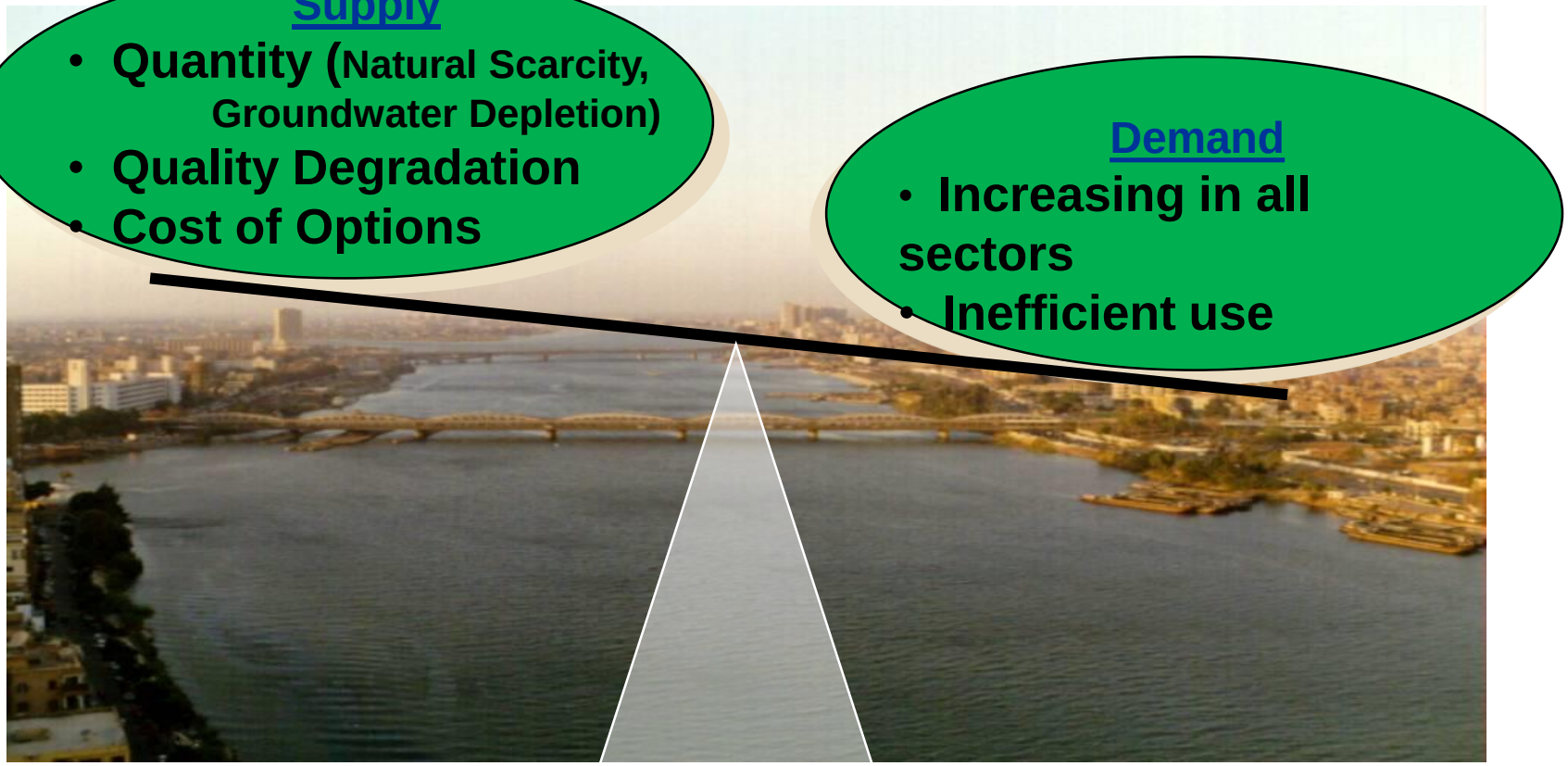
What is better

IWRM

IWRM is a process which promotes the co-ordinated development and management of water, land and related resources, in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

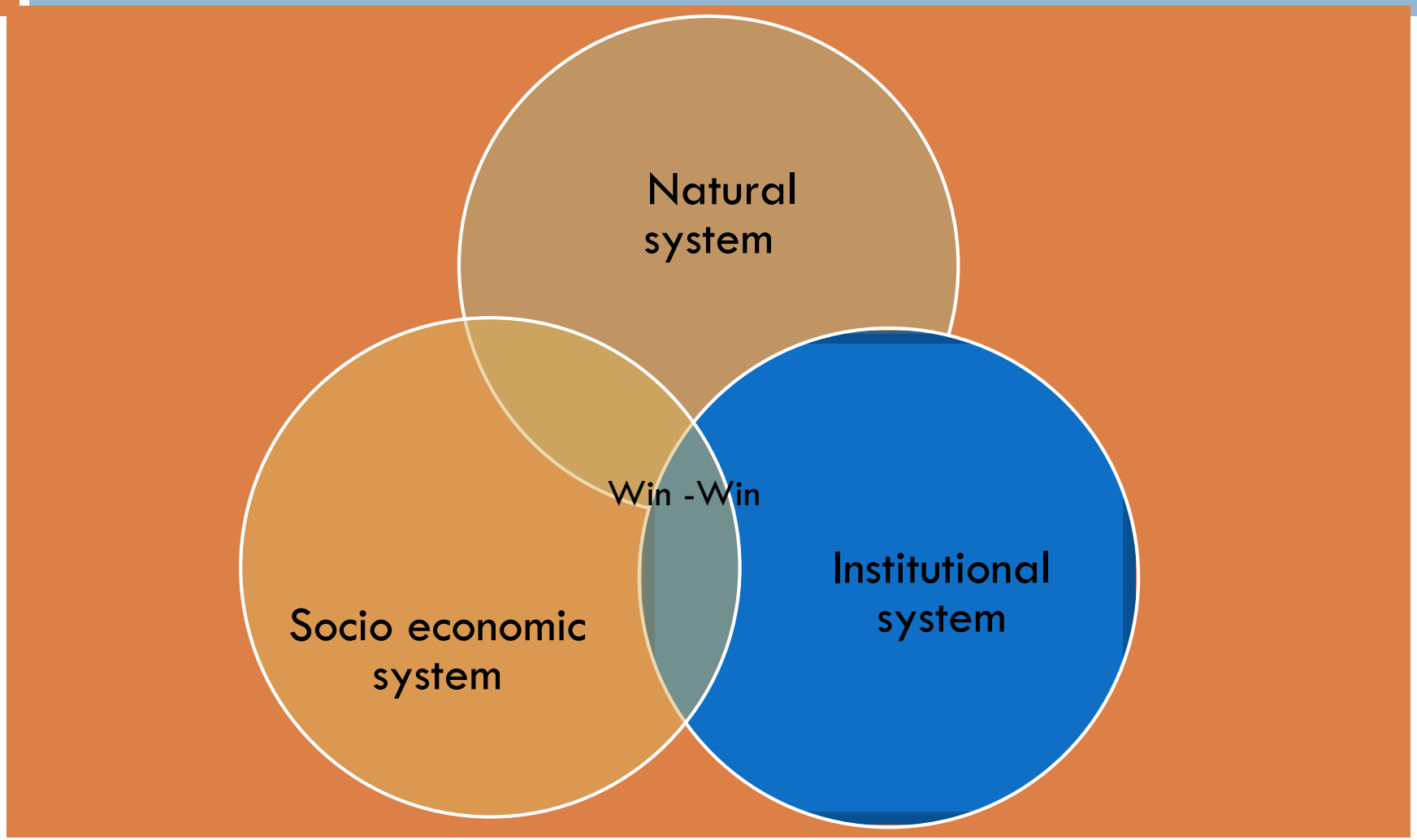
(GWP, 2000)

The Water Balancing Act



Stakeholders Integration

system interactions



Start early, save dams.

Kogga watershed management.

Kogga dam

Storage capacity 83.1 M m³.
Catchment area 22,000 ha
Command area 7000 ha


Thank you!