



WaterNet short course Financing of Water Infrastructure projects

Multicriteria analysis

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Structure

- Multicriteria analysis
- Case studies
- MCA versus CBA

Multi-criteria analysis (MCA)

- Broader scope and more flexible appraisal method than CBA
- Suitable for use with EIA/SEA
- Differences with CBA:
 - More criteria than efficiency; e.g. social & environmental
 - Handling of (semi-) quantitative/ qualitative data
 - Most suitable to select best project out of a range of projects
- Involves different stakeholders (e.g. for impact identification & weights)

Stages of MCA

- Formulate the project(s)
- Identify the positive and negative impacts
- Determine the appraisal criteria
- Determine the weights of each criterion
- Score the impacts against the criteria through quantification or ranking
- Aggregation of scores leading to project ranking

Impact assessment

- Impact matrix: similar to CBA but in different physical units and/or (semi-) quantitative (e.g ranked or ++, + etc.)
- Criteria cover usually the following areas:
 - Economic: e.g. jobs, income, compensation;
 - Social: impact on vulnerable groups, health concerns;
 - Environment: impact on resources, pollution, irreversible impacts?
- Weights for criteria: may differ among stakeholders
- Linking of impact matrix with weighed criteria
- Aggregation and standardization of scores;
- Sensitivity analysis;
- Project selection: usually project with highest score is selected.

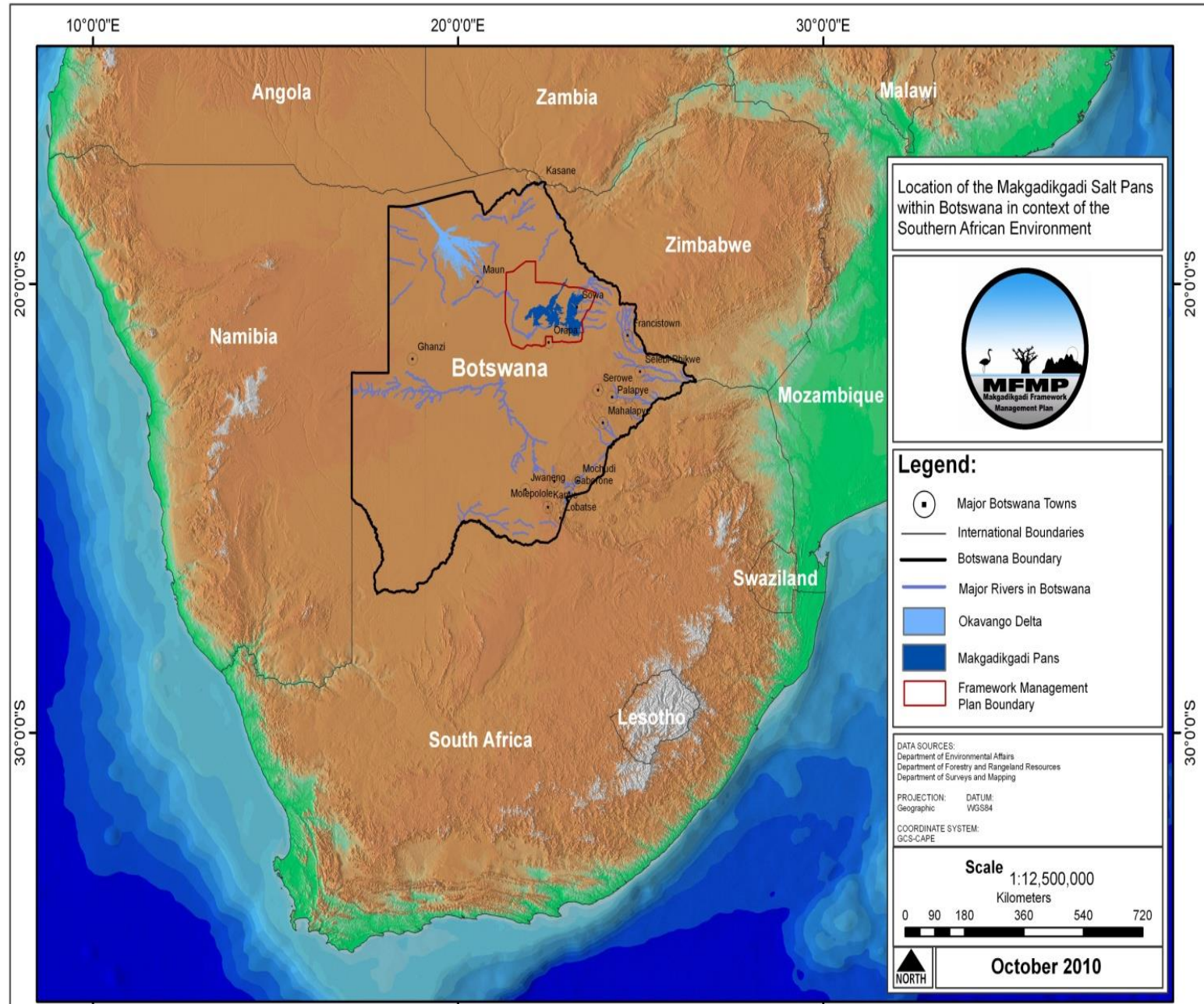
Preferred development of Makgadikgadi wetland

Issues:

Fragmented sectoral development (mining, livestock, crop production, tourism)

Growing resource conflicts (e.g. land, water, wildlife)

Sub optimal use of natural resources



Management scenarios

- Current trends (CT): a. Current trends and b. Current trends with all fences removed
- Resource protection and conservation: a. Conversion of all WMA into PAs and b. Conversion of all WMA plus biodiversity hotspots into PAs.
- Rapid economic growth: a. Mining, b. Commercial livestock ranching (CRL), c. Increase in tourism facilities (TF) and d. Expansion of traditional agriculture into WMAs
- Sustainable Use (SU): a. Sustainable use and b. Sustainable use with a wild corridor

- **Notes:**

- SU – Sustainable use, SU+Corridor – Sustainable plus wildlife corridor, Increase TF – increase in tourism facilities, CLR – Commercial livestock Ranching, WMA+TA – Traditional agriculture expansion into wildlife management areas, Mining – Expansion of mining activities, CT – Current trends and situation, CT + all FD – Current trends and situation with all fences removed in the FMP area. Scores and rankings represent the average of the groups.

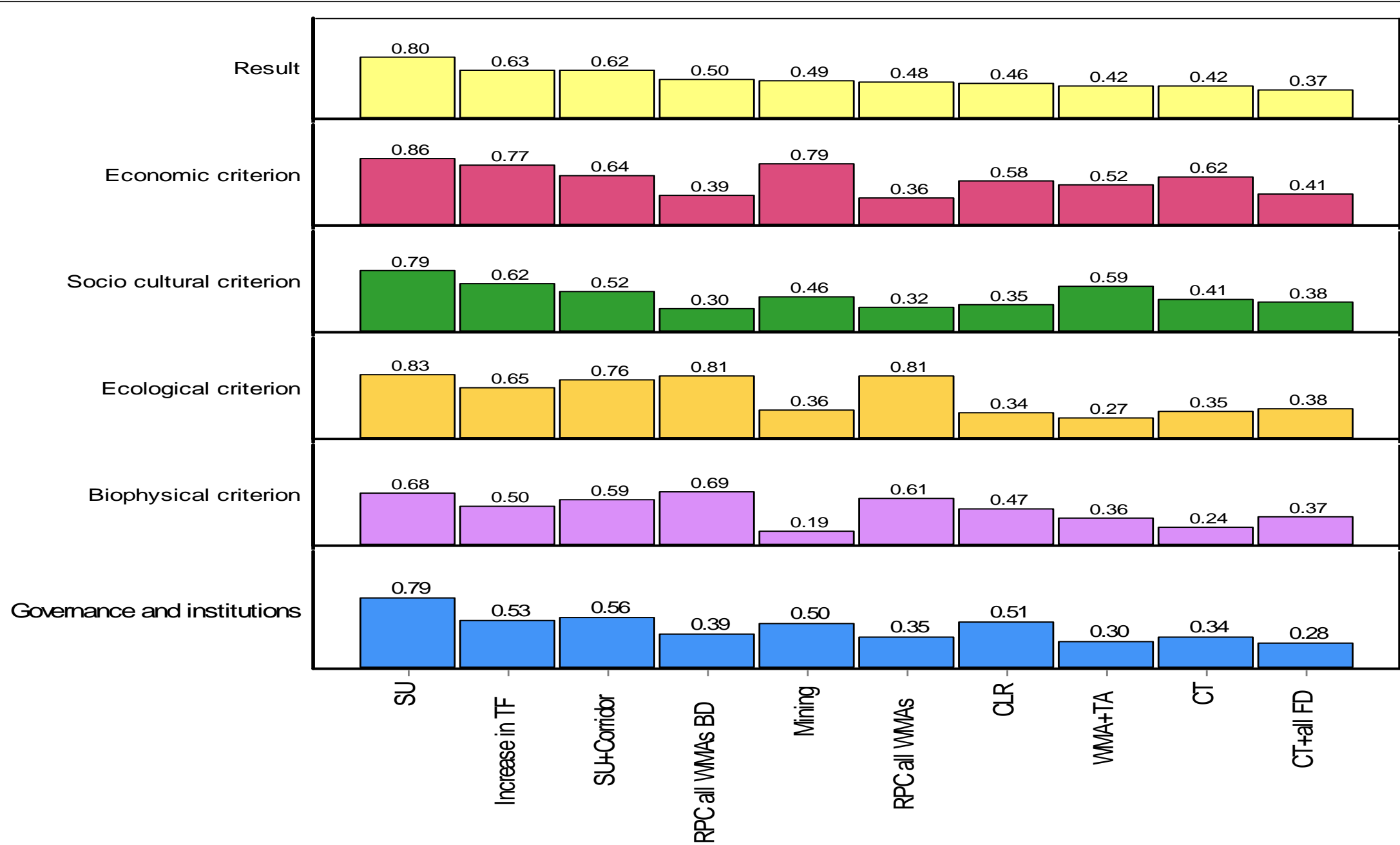
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Criteria

- Economic: Employment creation, Income generation, Spin-offs, Improved infrastructure & investments, Economic diversification and Sectoral impacts
- Socio-cultural: Poverty reduction, Livelihood impacts, Impacts on vulnerable groups, Impacts archaeological & heritage sites, Social capital (e.g. CBO), HR development & education
- Ecological impacts: wild animals, birds, veld products, range resources, Impact on migration routes
- Biophysical impacts: Land quality, Impact on water quality, impact on water quantity, soil degradation, Land resources productivity.
- Institutional governance: Reduction of conflicts, compliance with policies, strategies & commitments, decentralisation of government

Weights

- Economic: 27.75
- Sociocultural 20
- Ecological: 20
- Biophysical: 16.25
- Institutional: 16.25



Management implications

- Adoption of sustainable use path:
- There is need for a new form of management, i.e. moving away from the current management characterised by continued conflicts and sub-optimal utilisation of the wetlands resources and most importantly high poverty levels;
- The traditional protection management paradigm practiced in the MNPNP needs to be overhauled. More development investments are needed inside MNPNP and more local benefits need to be generated. Co-management with the private sector and communities would have major advantages.
- Tourism needs to be developed as long as it provides more local benefits and innovative partnerships models are introduced. This would enhance investments and local benefits. Joint venture partnership between CBOs and private companies is an alternative model that would assist and empower CBOs in managing their CBNRM projects;
- Heritage archaeological sites needs to be conserved and used to safeguard the country's cultural heritage and to create development opportunities; and
- Development opportunities of agriculture and natural resource use need to be pursued as long as they are sustainable. Suitability mapping and use of sustainable management practices are necessary.

Concluding remarks

- MCA addresses and balances key aspects of sustainable development (beyond economics)
- It can combine quantitative (e.g. 100) and qualitative data (++/--)
- It can be used with physical and hydrological modelling for data generation
- MCA involves stakeholders in decision making for IWRM options
- MCA can be used to integrate CBA, EIA and technical feasibility assessments
- MCA mostly used for SD analysis and less for financial assessments

Comparison of CBA and MCA

	Advantage	Disadvantage
CBA	<p>Presents single figure to decision-maker</p> <p>Easy to understand for economist and development planners</p>	<p>Rigid appraisal cadre with limited scope (efficiency)</p> <p>Only fully handles monetary impacts</p> <p>Cannot easily handle distributional aspects</p>
MCA	<p>Qualitative and quantitative data</p> <p>Flexible appraisal criteria</p> <p>Incorporates different views within society</p> <p>Suitable for conjunctive use with EIA/SEA</p> <p>Transparent & accountable</p>	<p>Standardization of results is complex and affects results</p> <p>Only works with more than 1 project</p> <p>Subjectivity</p> <p>No meaning of absolute figure</p>

THANK YOU

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