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Transboundary Water Governance for People and Nature: Challenges and Opportunities in the Olifants River Basin

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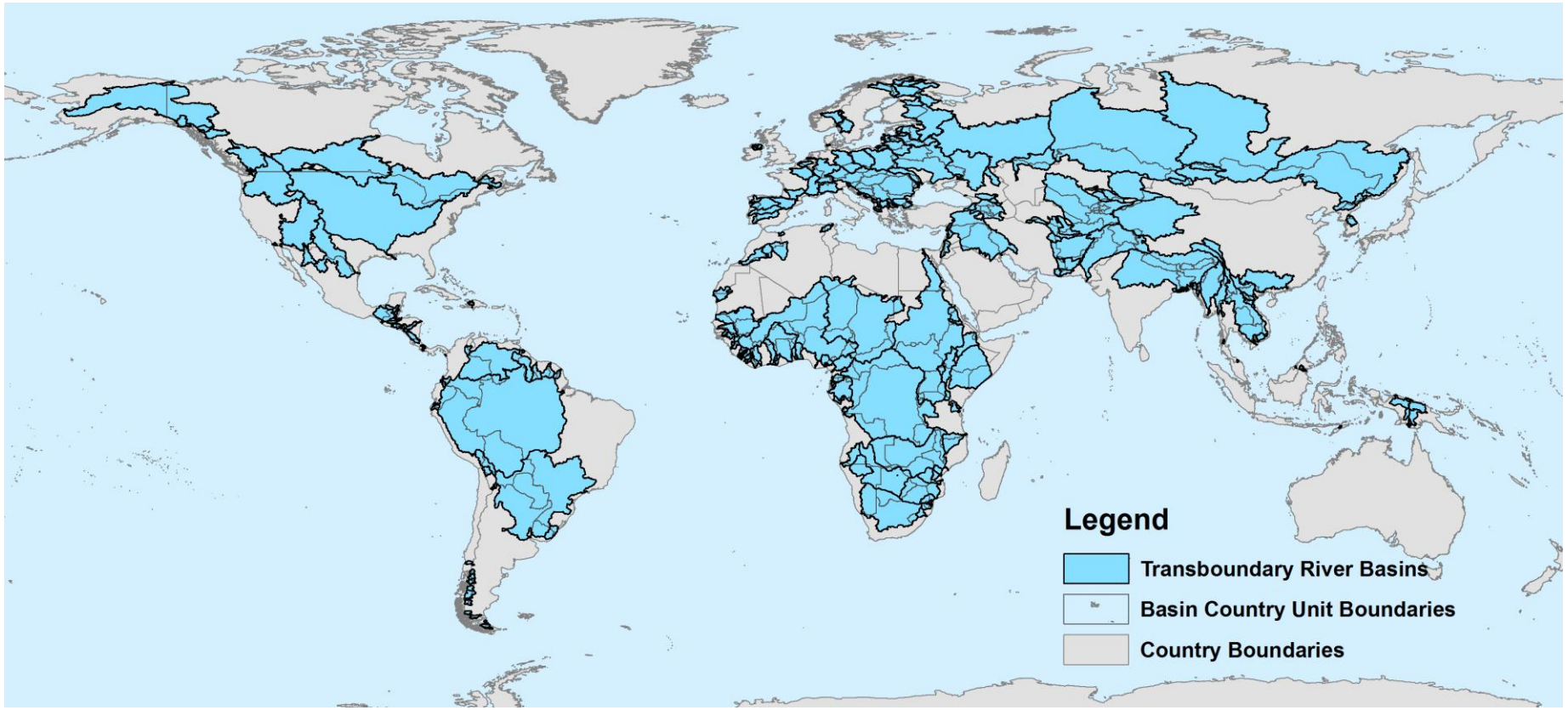
Transboundary Water Basins



Source: Transboundary Waters Assessment Programme

Transboundary basins and protection zones

Top 15…In total, more than 300 zones globally where transboundary waters cross national parks

Protected Areas	Bordering Countries	Transboundary Water Basins	Area (km^2)
North-East Greenland	Greenland/Canada	Arctic Ocean Islands/NW Territories	1,008,470.17
Yapacana	Venezuela/Brazil	Amazon/Orinoco/South Atlantic Coast	443,976.25
Rio Negro	Paraguay/Bolivia/Brazil	La Plata	305,747.04
Zambezi	Zimbabwe/Zambia/Angola/Botswana/Namibia	Zambezi/South Interior, Africa	244,567.43
Wrangell-St. Elias	United States/Canada	Pacific and Arctic Coast	190,238.41
Yukon Flats	United States/Canada	Pacific and Arctic Coast	146,824.27
Urochische Peschanka	Russian Federation/Mongolia	Lena/Yenisey	112,366.59
Yaigoje-Rio Apaporis	Colombia/Brazil	Amazon/Orinoco	80,389.12
Richtersveld	South Africa/Namibia	Coast, Namibia/Orange	78,512.19
Torres del Paine	Chile/Argentina	Pacific Coast, Chile/South Atlantic Coast, Argentina	67,854.97
Sengwe	Zimbabwe/Mozambique/South Africa	Limpopo/South Coast, South Africa	65,092.40
Manu	Peru/Brazil	Amazon	56,858.71
Titicaca	Peru/Bolivia	Amazon/La Puna	53,712.89
Parc national de la Keran	Togo/Benin/Burkina Faso/Niger	Niger/Volta	52,619.01
Sagarmatha National Park	Nepal/China/India	Ganges Brahmaputra	51,903.25
			197,275.51

Transboundary basins and nature protection zones

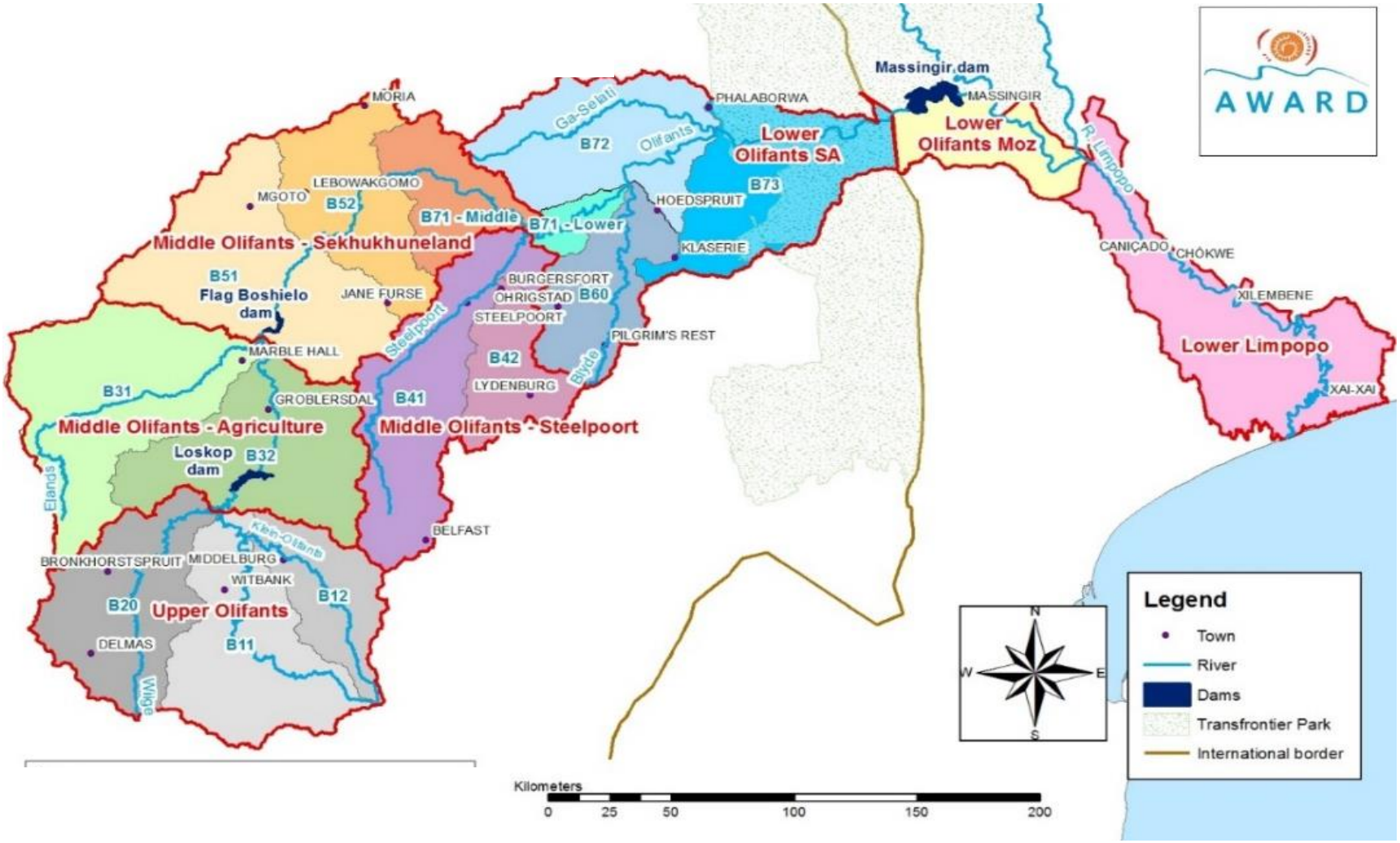
- Poor governance and conflicts over using shared ecosystem resources are main causes for:
  - escalating water scarcity,
  - water quality decline, and
  - related ecosystem services degradation in many transboundary river basins and overlapping nature protection zones across the world.

Management of Transboundary Waters

- Limited United Nations (UN) mandate in managing transboundary water resources
- International water basins have been historically governed by about 3,600 regional and bilateral agreements, 200 of such agreements were signed in the past 50 years.
- The Olifants Basin is one of such international water basins, shared by South Africa and Mozambique.

Sources: Gupta et al., 2013; Shrestha & Ghate, 2016, Marton-Lefèvre et al., 2013

The Olifants River Basin



Source: Atlas for Disaster Preparedness and Response in the Limpopo basin

Water for People and Nature

- The Olifants river is heavily polluted by industrial, mining and residential waste, with high levels of eutrophication (Linz & Tsegai, 2009; Rudolph, 2016)

- Substantial negative impacts on the ecosystems of the Great Limpopo Transfrontalier Park

- Numerous incidences of wildlife die-off have been recorded

- The utilization of transboundary waters is a potential source of conflict among riparian states and competing water users within the countries

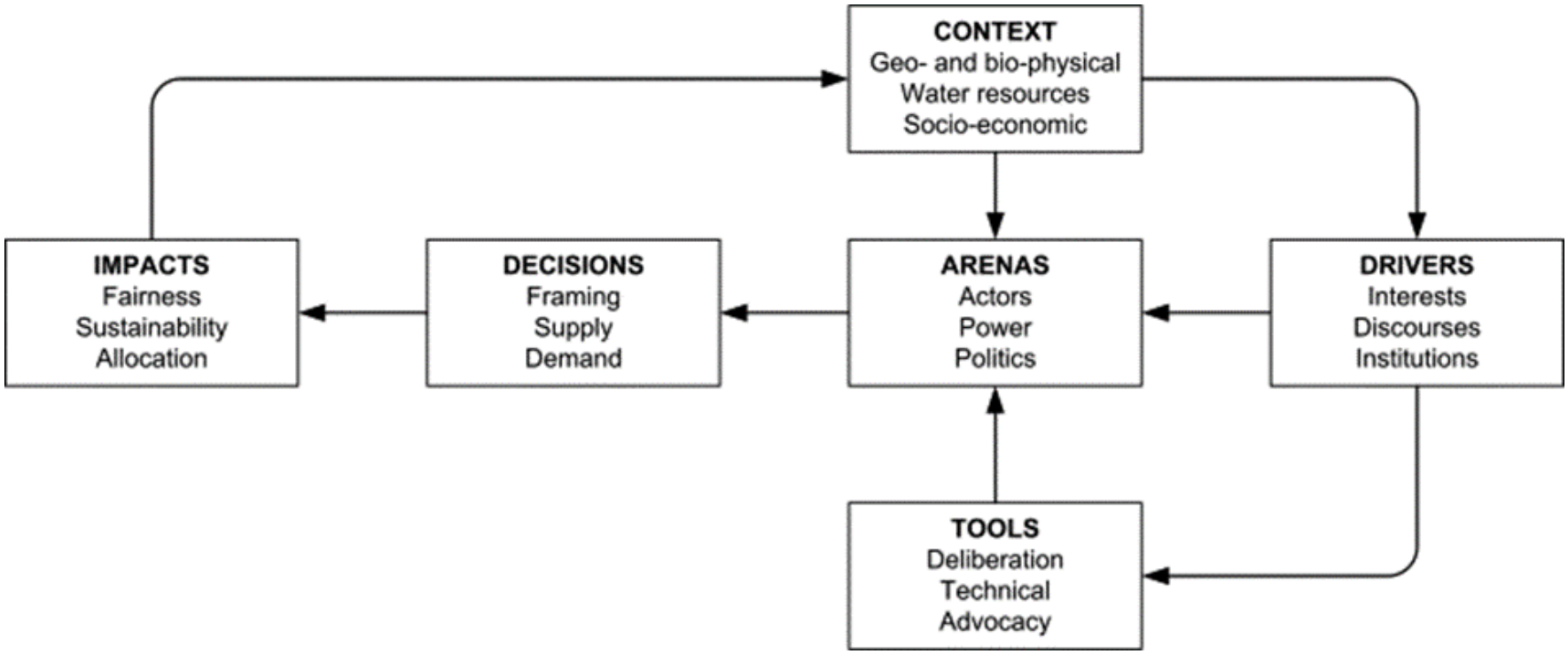
Objective of this Work package

- This work package seeks to advance transboundary water governance as an essential element of sustainable environmental governance in the protected natural reserves.
- To our knowledge, there has been limited research into the interactions of transboundary water governance, impacts on people and nature protection in the past (Biggs et al., 2017; Pollard et al., 2011).
- We contribute to filling this gap through the example of the Olifants river basin.

Transboundary Water Governance

- **Transboundary water governance** is the mechanism in which cross-border water resources are governed by different stakeholders who have complex interests regarding the use and utilization of the limited water resources that flow across borders.
- Transboundary water governance is a social process of dialogue, negotiations and decision-making to achieve a pre-determined objective regarding the transboundary water allocations and water quality.

Transboundary water and nature governance framework



Source: based on Dore et al. (2012)

Research questions

- What are the impacts of current transboundary water governance on the provisioning and non-provisioning ecosystem services in the Kruger and Limpopo national parks?
- Which alternative transboundary water governance approaches and what are their costs and benefits?
- Are proposed governance mechanisms valid and locally applicable ?

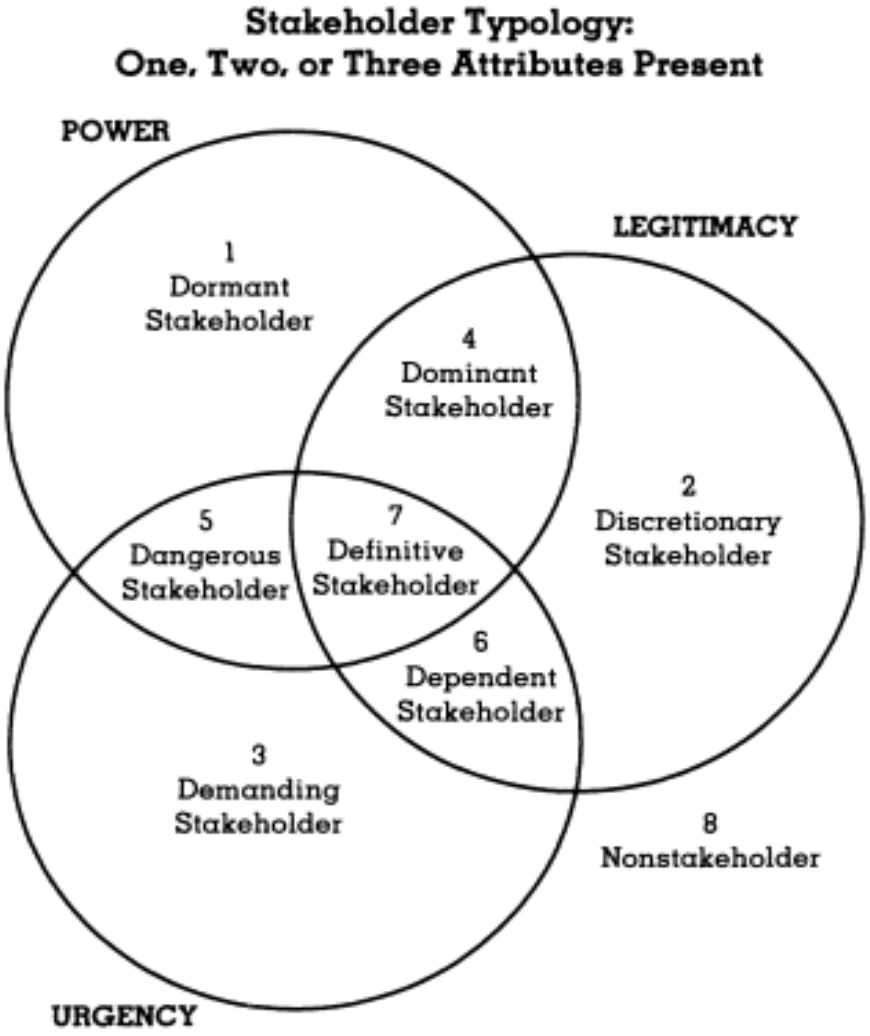
Methods

- Focus Group Discussions in South Africa and Mozambique (experts, households)

- Selection of stakeholders: rapid institutional analysis + snowballing approach

- Q Methodology and cognitive maps of selected actors about the impacts of water quality changes on ecosystem services and required solutions

Ensuring Representativeness

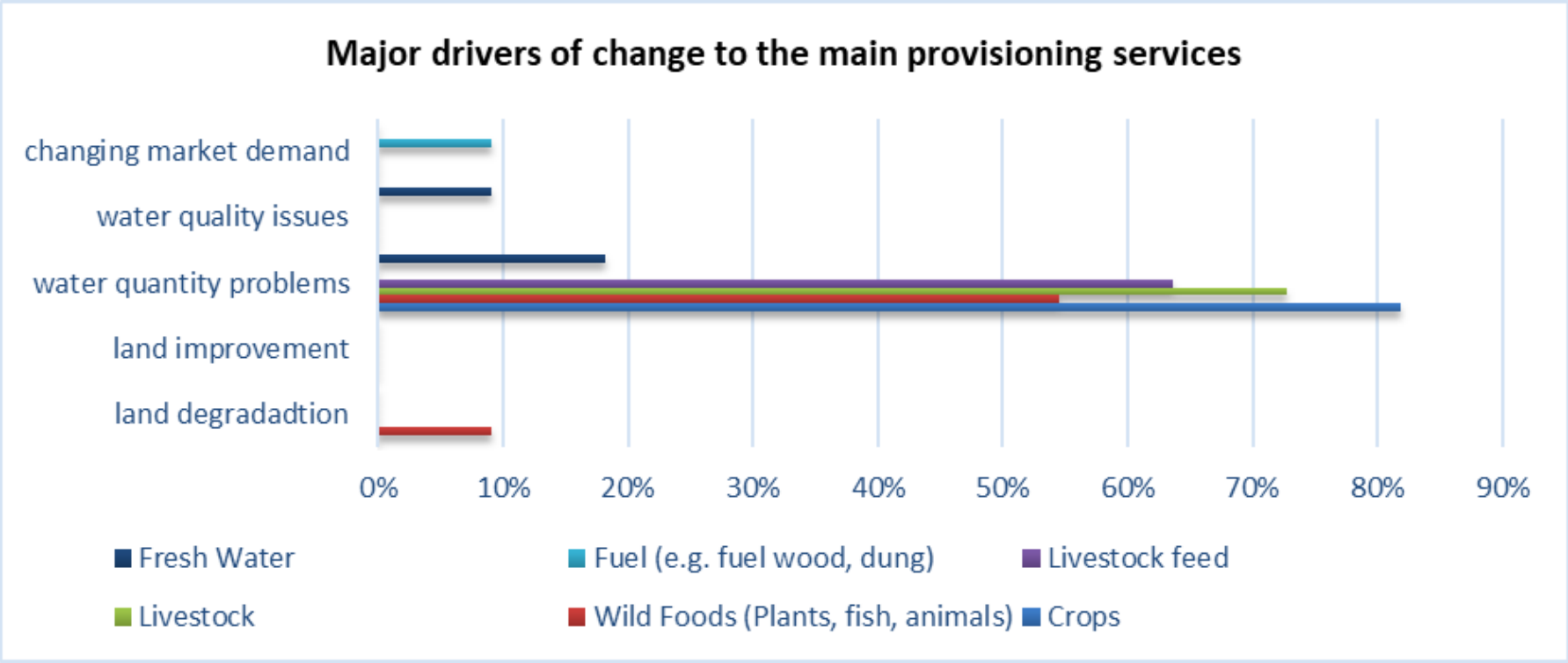


Water Quality Impacts on Kruger and Limpopo Natural Parks

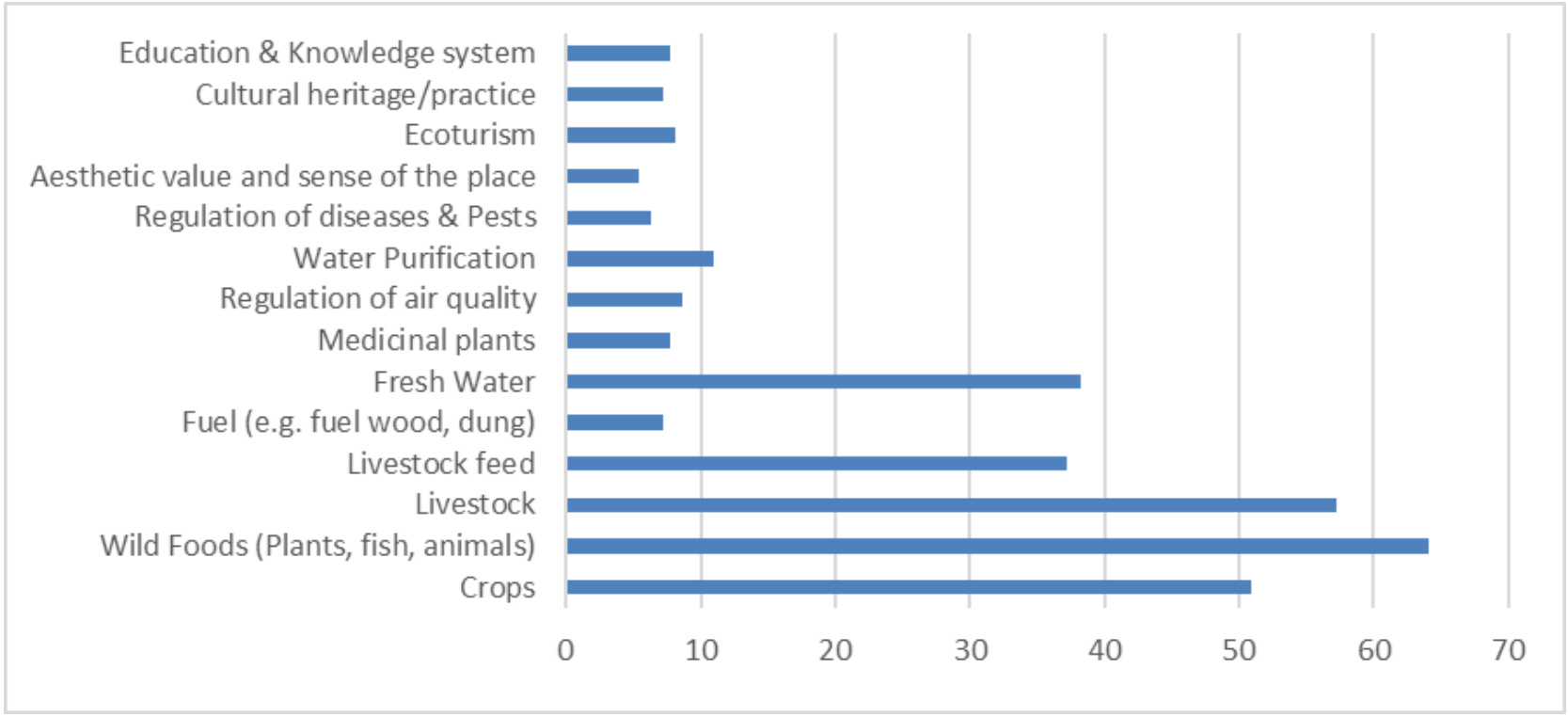
Water pollution: eutrophication, heavy metals in the Olifants river:

- Biodiversity conservation
- Tourism
- Food safety (agriculture and fisheries)
- Human health

Major drivers of decrease in ecosystem services as perceived by the stakeholders



Average decreases in quality of ecosystem services between the year 2000 and 2018 as perceived by the stakeholders (in %)



Barriers to transboundary cooperation in water and nature governance

- uneven distribution of resources and needs
- difficulty of defining sensible and equitable use of water resources
- variances in technical and financial capacity
- historical tensions between countries
- asymmetrical political and economic power
- lack of enforceability of international water laws
- lack of key procedures and institutional structures that allow information sharing, conflict resolution and water allocation strategies

Successful Transboundary Water Governance

- Firstly, measures to overcome mistrust among stakeholders:
  - though joint research, data collection and monitoring, capacity building
  - dialogues for consensus building
  - providing advisory support

Successful Transboundary Water Governance

- Secondly, power asymmetries may hinder transboundary water governance, therefore, there is a need to:
  - involve multi-scale links across stakeholders to counter-balance local power asymmetries, and
  - engage all stakeholders in consultations and negotiations.

Successful Transboundary Water Governance

- Thirdly, science-policy interactions for facilitating transboundary water governance were found to be most effective when:
  - the knowledge on joint water and nature governance is co-produced
  - in a trans-disciplinary manner,
  - in collaboration with wide-ranging informal networks of scientists, policy makers, and civil society.

Successful Transboundary Water Governance

- Finally, transboundary water governance organizations can serve as platforms:
  - for facilitating water diplomacy,
  - building trust and cooperation.

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