WATER ALLOCATION

LIMPOPO BRIEFING NOTE

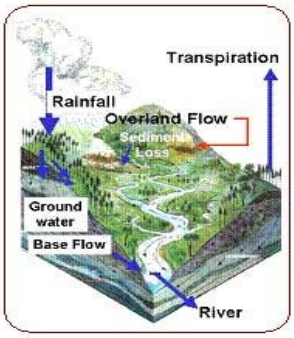
Sustainable Water Supply: Maintaining Environmental Flows

Both people and nature need access to water.

Storage dams in the Limpopo river system are helping the country provide reliable supplies of clean water to its people in both rural and urban settings. The dams are impressive feats of engineering that reflect years of forward thinking, planning and disciplined management. The water provided improves population health and enables industry. Such dams are national and regional assets.

When dams are planned, environmental flow requirements are included in the plan for their management. Environmental flows are the quality, quantity, and timing of water flows required to maintain the components, functions, processes, and resilience of aquatic ecosystems that provide goods and services to people.

Periodic releases of water from dams help maintain these environmental flows.



Generic River Model on River Flow
World Agroforestry Centre

Changing river bed ecology downstream of Dikgatlhong Dam

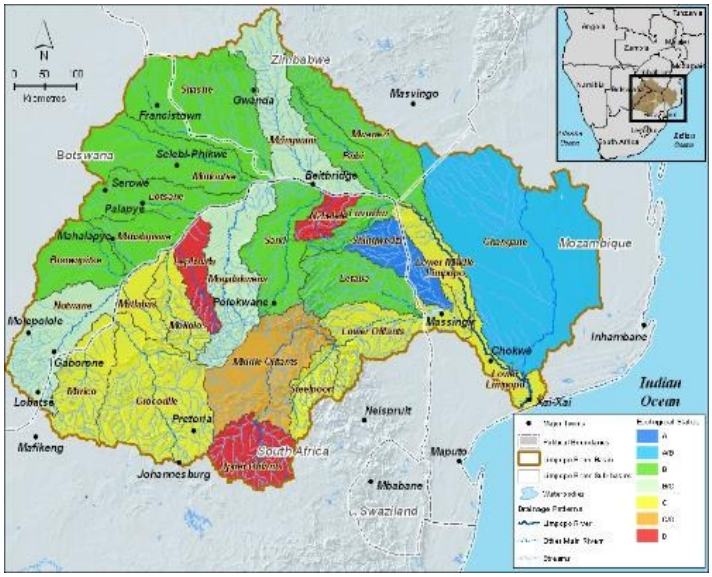
Water Supply Comes First

In water-poor regions, dam managers have proved reluctant to release the water needed to maintain environmental flows, as they wish to ensure a steady supply in the face of drought and climate variation. At Botswana's largest and newest dam, Dikgatlhong on the Shashe River, the downstream river bed is already showing the signs of new vegetation growth. Further north in Botswana, since 2009, there are perceptions that the Tati River downstream ecosystems have been changed by Ntimbale Dam. While 52 villages now have access to clean piped water, farmers downstream lack the groundwater for their livelihoods. They are also seeing changes in the quantity and nature of the sand and the way it was deposited, in the amount of erosion along the riverbanks, and rotting vegetation in the normally clear water.

Management

- demand management
- drought management planning
- high-flow skimming
- use of off-channel reservoirs
- forecasting

The Science behind the Issue



Status of ecological requirements in the Limpopo Basin

"Member States should, in their mechanisms for allocating water resources among many users, allocate sufficient water to maintain ecosystem integrity and biodiversity" SADC Water Policy"

Dam managers are expected to periodically release water downstream to maintain a balance between water storage and the river's ecological health. Without this mimicking of the river's natural flow patterns, the ecology around the river bed changes, specifically in the downstream.

Riparian vegetation stabilises river banks. Flows maintain riparian vegetation by depositing moisture, nutrients and seeds. High pulse flows restore normal water quality conditions after prolonged low flows, flushing away waste products and pollutants.

A river with environmental flows is more resistant to the intrusion of exotic species. Dammed, diverted and modified rivers that create permanent standing water and more constant flow regimes provide favorable environment for aquatic invasive species.

Large floods can maintain balance of species in aquatic and riparian communities. They can also maintain diversity in floodplain forest types through prolonged inundation. Sufficient flows to maximise aesthetic values and contribute to cultural services are also an important component of the environmental flow regime.

Effects of climate change on flow regimes will change the magnitude, frequency, duration, and variability of the different components of a river flow regime. Stream flow modifications will affect water availability, determine ecosystem fragmentation, wetland infilling and drainage, and increase sediment transport.

The USAID RESILIM Program supports the LIMPOPO Watercourse Commission (LIMCOM) in helping the people and ecosystems of the Limpopo River Basin to adapt to climate change through effective transboundary water management.

LIMCOM's Integrated Water Resources Management plan has identified water allocation as a key challenge in the Limpopo Basin.

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