WETLANDS AND CLIMATE CHANGE

Introduction

Wetlands are vital for countless ecosystem services/benefits that they provide humanity, ranging from freshwater and food supply, craft and building materials, biodiversity protection, flood control, groundwater recharge, climate change mitigation and adaptation, and recreational opportunities. They also support biological diversity that provides the water and productivity upon which countless species of plants and animals depend for survival. Wetlands provide natural infrastructure that delivers a wider range of services and benefits than corresponding man-made infrastructure, and at lower cost. They are also an important complement to man-made infrastructure in catchment planning and management efforts.

Figure 1: A wetland in the KZN Midlands supplying water to a stream.

Threats to wetlands

However, despite all their benefits, wetlands remain one of the most threatened ecosystems and they continue to be lost due to conversions for developmental purposes (urban, agriculture, mining, and industry), transformation for water diversions (dams and canalization), pollution, invasive alien vegetation and erosion. In KwaZulu Natal, there are catchments such as the uMfolozi, in which an estimated 50% of wetlands are reported to have been degraded or lost. The continued degradation of wetlands results in significant economic burdens on communities, businesses and the country.

Managing wetlands for climate change

Ecosystems, including wetlands, are at risk of damage from climate change. The effects of climate change on wetlands may include loss of carbon stored in soil, changes in soil structure, changes to the hydrological regime due to more frequent drying or flooding, changes in plant or animal communities, and saltwater intrusion to freshwater coastal wetlands. Climate change projections for KZN, as contained in the 2021 provincial Draft Climate Change Strategy, include increasing temperatures, increasing rainfall variability, increasing periods of drought, increasing storms and flooding events, and sea level rise. These impacts will have adverse effects on biodiversity and ecosystems. Wetlands are particularly threatened by impacts that contribute to loss of water resources such as increased temperatures, drought conditions, changes in precipitation and the spread of invasive alien

vegetation. Wetlands that are highly modified or degraded may be even more sensitive and less resilient to climate change.

While wetlands may be vulnerable to climate change impacts, they present real opportunities for climate change mitigation and adaptation. Wetlands play an important role in climate change mitigation through capturing and storing carbon to reduce atmospheric greenhouse gases. They are some of the largest carbon reservoirs on earth, storing more than one-third of the world's terrestrial carbon. Their destruction often results in major releases of greenhouse gases to the atmosphere. The UN General Assembly and the Ramsar Convention has noted the potential for coastal 'blue carbon' ecosystems (mangroves, seagrass and saltmarsh) to play a key role in climate change mitigation through carbon sequestration.

Wetlands also contribute to improved climate change resilience through their ability to remove toxic substances and sediment from the water leading to improved downstream water quality; reduce the severity of droughts and floods by regulating stream flow; provide habitat for many different plants and animals; and provide many essential services such as portable water, livestock grazing, and harvestable materials for food, craft, medicine and building.

Focus on wetland restoration

While every effort must be made to protect intact wetlands from degradation, plans must also be put in place to restore degraded wetlands to improve their ability to deliver vital ecosystem services. This is in line with the UN Decade on Ecosystem Restoration, which calls for the protection and revival of ecosystems around the world for the benefit of people and nature. It aims raise awareness about the need to halt the -degradation of ecosystems, and restore them to achieve global goals. It is only when ecosystems such as wetlands are healthy that they can enhance people's livelihoods, counteract climate change, and support biodiversity. The UN Decade runs from 2021 through 2030, which is also the deadline for the Sustainable Development Goals and the timeline scientists have identified as the last chance to prevent catastrophic climate change.

Figure 2: A wetland in Kokstad before and after rehabilitation to block an artificial drain.

Conclusion

Government has a responsibility to set targets and allocate required resources that prioritize wetland conservation and restoration. Wetlands can only offer climate resilience and deliver other important services optimally if they are in a healthy state. Investing in their protection and restoration is of vital importance in the face of climate change. Lack of community awareness on the value and benefits of wetlands has often led to their transformation by humans, and therefore education and awareness must be an integral component of planning processes for wetland conservation. Governments, businesses and communities need to work together to protect these important ecosystems which, in turn, will help mankind adapt to the impacts of climate change.

References

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