

# CLIMATE CHANGE FACTSHEET: BIODIVERSITY AND ECOSYSTEMS IN THE FACE OF CLIMATE CHANGE

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A rapidly changing climate, polluted air and a compromised ozone layer all pose a threat to our most critical source of life; nature. Ecosystems and biodiversity support all life on earth and are essential in mitigating the impacts of climate change. People and the planet are only as healthy as the natural resources we depend on<sup>1</sup>.

Ecosystems and the biodiversity they support are the backbone of the Namibian economy and the welfare of its people. About 70% of Namibia's population rely on natural resources for their livelihoods. Fisheries, agriculture and tourism provides approximately N\$13 billion in revenue annually. Subsequently, degradation of ecosystems directly threatens the economy and social welfare.



Low rainfall seasons and droughts are predicted to become more frequent as a result of climate change – causing further harm to Namibian ecosystems<sup>2</sup>.

## THE IMPORTANCE OF BIODIVERSITY

Ecosystems are made up of living organisms (biodiversity) and the interactions they have with each other and their surroundings. A grain of soil, a garden, a forest, are all examples of ecosystems at different scales. Ecosystems and the biodiversity they are made of provide us as humans with clear air, water, food, medicine and materials<sup>3</sup>.

Even though earth's biodiversity is vital to human life, we continue to overexploit nature. All over the world forests are being cleared, water polluted, wetlands drained and soils and oceans overused or degraded. This degradation is further exacerbated by climate change.

## CLIMATE CHANGE AND ECOSYSTEMS

It is hard to determine the exact extent of harm climate change causes to ecosystems. However, the negative impacts it has on the environment are becoming unavoidable and are predicted to intensify. Detrimental human activities like deforestation (the clearing of forested land), overfishing and overharvesting lead to land degradation which only amplifies ecosystems sensitivity to climate change.

On land, climate change causes rainfall variability, which results in extreme weather events like droughts and floods. In the ocean, frequent heat waves will place stress on marine ecosystems<sup>4</sup>.

In the wake of these natural disasters, humans will have to step in and restore what is left of the ecosystems<sup>5</sup>.

<sup>1</sup> Preventing, halting and reversing the degradation of ecosystems worldwide (<https://www.decadeonrestoration.org/>).

<sup>2</sup> Lutibezi, S. Placing Namibia in a global context (<https://conservationnamibia.com/blog/b2020-global-context.php>).

<sup>3</sup> Ecosystem restoration playbook. Why ecosystems are so important (<https://www.decadeonrestoration.org/what-ecosystem-restoration>)


<sup>4</sup> Malhi Y., et al. 2020. Climate change and ecosystems: threats, opportunities and solutions (<http://dx.doi.org/10.1098/rstb.2019.0104>)

<sup>5</sup> Society for ecological restoration. 2021. Climate change is here (<https://www.ser.org/news/576671/Climate-change-is-here-ecological-restoration-can-help-us-meet-this-moment.htm>).

# BIODIVERSITY MAP OF NAMIBIA

Namibia is one of the most arid countries in the world, making it prone to land degradation and biodiversity loss. The country has ample diverse ecosystems that include deserts, wetlands and savannas. It is characterised by its vast open spaces and natural landscapes, which means maintaining healthy ecosystems is essential for this desert country<sup>6</sup>.

Namibia is home to the Namib desert, the oldest desert in the world. Threatened species like the black rhino and elephants roam free here, as well as rare species like the Hartmann's zebra and black-faced impala.



On the 1 500 km long coastline one can find rich waters with marine life like seals, dolphins and whales.



The Sperrgebiet is a global biodiversity hotspot with a diversity of endemic succulent plants.



Another keeper of endemic plants, organisms and animals is the Fish River Canyon - the largest canyon in Africa.




<sup>6</sup> Convention on biological diversity. Namibia biodiversity facts (<https://www.cbd.int/countries/profile/?country=na>).



Ample game species like the kudu, oryx and springbok can be found in the northeastern part of the country.

**FACTBOX**

- Biodiversity in agricultural systems reduces vulnerability to climate events. Avoiding land degradation will benefit billions of people by maintaining crop yields for example.
- Nature is critical in mitigating the impacts of climate change. Oceans and land ecosystems have absorbed approximately 50% of total human carbon dioxide emissions. However, this causes ocean water to become acidic, negatively affecting ecosystems<sup>7</sup>.
- Land degradation is one of the various consequences of climate change. Plants will attempt to adapt by migrating. However, not all plant species will be able to migrate because most of the land in Africa is inhabited by humans<sup>8</sup>.
- The planet's largest Transfrontier Conservation Area (TFCA), the Kavango Zambezi TFCA, has more than half of Africa's elephants, a quarter of the continent's wild dogs, 15% of its lions, 15% of the world's wild cheetahs, 200 species of mammals and more than 600 bird species.
- The global populations of mammals, birds, amphibians, reptiles and fish declined by an average of 68% from 1970 to 2016. The main cause was habitat loss and land degradation<sup>9</sup>.

<sup>7</sup> United Nations Environment Programme. Making Peace with Nature: A scientific blueprint to tackle the climate, biodiversity and pollution emergencies (<https://www.unep.org/resources/making-peace-nature>)

<sup>8</sup> Desanker, P., et al. WWF Climate Change Program. Impact of Climate Change on Life in Africa.

<sup>9</sup> Lutibezi, S. Placing Namibia in a global context (<https://conservationnamibia.com/blog/b2020-global-context.php>).

## ECOSYSTEM RESTORATION AND BIODIVERSITY CONSERVATION

Namibia is one of the few countries globally that has a clause for the management of its rich biodiversity and natural environment. The country's first National Biodiversity Strategy and Action Plan (NBSAP) was constituted in 2001 as a framework for sustainable development through biodiversity conservation. It prioritises conservation, sustainability, biodiversity and ecosystem management, as well as resource management in arid landscapes.

Restoration is a fundamental instrument in the deterring or reversing of climate change. Healthy ecosystems capture and hold carbon dioxide from the atmosphere, while also repairing themselves. Rising temperatures cause water to expand and land-based ice (e.g. glaciers) to melt, which results in the sea level rising. This can cause storms, hurricanes and flooding to become more frequent. Healthy wetlands, coral reefs, kelp forests, seagrass beds and mangroves protect our coastlines from these storms and help control erosion<sup>10</sup>.

Ecosystems have the potential to be allies in adaptation and mitigation. However, humans have to step in to restore degraded ecosystems and conserve the biodiversity we have left<sup>11</sup>.

### Here are some ways in which ecosystems can be restored<sup>12</sup>:

- Biodiversity should be managed in order to conserve ecosystems. This will ensure that adequate habitat is available for the migration of plants, animals and humans.
- Focus on the production of indigenous drought-resistant or desert plants and animals.
- Rewilding is the practice of giving nature time to heal itself. Humans can assist nature in restoring ecosystems by actively managing wildlife, reintroducing rare and endangered species, allowing forests to regenerate and giving soil time to rest<sup>13</sup>.
- Sustainably debushing agricultural land can improve long-term rangeland production. It can also make more land available for plant and animal migration.
- Mining can be done in an environmentally responsible manner that minimises their impact on ecosystems. New alternatives should be investigated, such as developing sustainable sources of clean energy and potable water. For example, wind and solar power or desalination.
- Namibia already has systems in place to support community fisheries and forests. These systems however need more attention to continue conserving their resources. The communities that rely on these resources should be empowered to preserve them.
- The tourism sector can consider new methods of reducing the carbon offset emitted by tourists. For example, by allowing their clients to fund trees that can be planted.
- Involving the youth is essential in fighting the climate crisis. Support students that want to study in environmental fields - they play a key role in future conservation efforts.
- Environmental education is a necessity. All Namibians should be aware of how their lifestyles impact our biodiversity.

## CONCLUSION

It is clear that we need to change our ways and actively protect and restore our ecosystems. The conservation of Namibia's biodiversity will ensure resilient ecosystems that are vital for human life. As we can see and already know, climate change will have a significant impact on biodiversity. Therefore we need to utilise and support ecosystems on land and in the ocean in ways that strengthen their natural resources and processes.



### KNOW YOUR ENVIRONMENTAL POLICIES:

The Environmental Assessment Policy was approved in 1994. It obliges Namibia to place a high priority on maintaining ecosystems and related ecological processes and to uphold maximum biological diversity. The Policy recognises that environmental assessments are key towards implementing integrated environmental management.

The National Policy on Enabling the Safe Use of Biotechnology was prepared by the Namibian Biotechnology Alliance and the Ministry of Higher Education, Vocational Training, Science and Technology in October 1999. One of the policy's objectives is to guide the judicious use of modern biotechnology in Namibia for sustainable development in ways that do not in any way jeopardise human and environmental health, including Namibia's biodiversity and genetic resources<sup>14</sup>.

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<sup>10</sup> National Academies of Sciences, Engineering, and Medicine. 2019. Climate Change and Ecosystems. Washington, DC: The National Academies Press (<https://doi.org/10.17226/25504>).

<sup>11</sup> National biodiversity task force. Biodiversity and development in Namibia (<https://www.cbd.int/doc/world/na/na-nbsap-01-en.pdf>)

<sup>12</sup> Lutibezi, S. Placing Namibia in a global context (<https://conservationnamibia.com/blog/b2020-global-context.php>).

<sup>13</sup> Rewilding Europe. What is rewilding? (<https://rewildingeuropa.com/what-is-rewilding-2/>)

<sup>14</sup> Ruppel, O.C./ K. Ruppel-Schlichting (eds). 2022. Environmental Law and Policy in Namibia – Towards making Africa the Tree of Life. Windhoek. Hanns Seidel Foundation Namibia.