



Natural Solutions



Protected Areas: Helping People to Cope with Climate Change, Desertification and Drought.



Kathy MacKinnon, WCPA



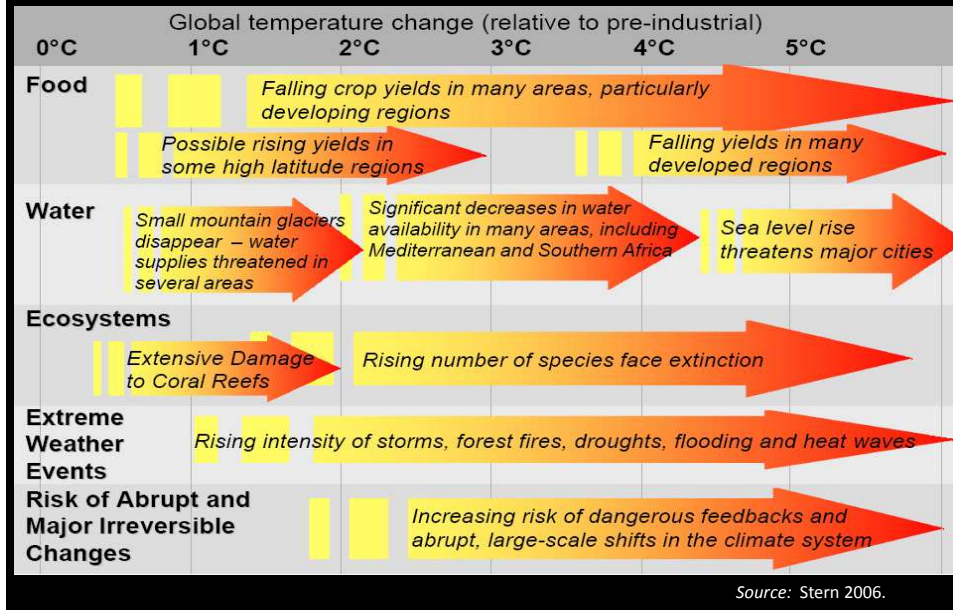
Drylands and Desertification



- ❖ **Drylands - 41% of Earth's land area**
- ❖ **Home to > two billion people**
- ❖ 70% drylands already degraded
- ❖ 250 million people directly affected
- ❖ One billion more are at risk
- ❖ New strategies to address desertification



Climate Change- Likely Impacts



Impacts on Human Communities and Livelihoods

Africa

- ❖ Desertification greatest impact in Africa
- ❖ Two thirds of continent is desert or drylands
- ❖ Almost three quarters of agricultural drylands are already degraded.
- ❖ By 2020 75-250 m people suffering water shortages
- ❖ Some countries - 50% reduction yield from rain-fed agriculture
- ❖ Strong links to poverty, migration and food security

But desertification and land degradation is a global problem

- ❖ **Small Islands**
- ❖ By 2050, with CC - reduced & insufficient water resources
- ❖ Higher temperatures - increased invasion by non-native species.



Climate Change Impacts in Drylands



❖ Water Shortages



❖ ‘**Natural disasters**’: **drought**, floods, storms, wildfire, pest infestations



❖ Further habitat loss and land degradation



❖ Spread of Invasive alien species

❖ Impact ag. productivity & food security

❖ Constrain poverty alleviation & economic development



Natural Solutions



❖ Land conversion 20% global emissions



❖ **Designated PAs -9% world’s drylands**



❖ **PAs can help people cope with climate change, drought, desertification and land degradation**





Protected Areas and Climate Change



❖ Enhance resilience to climate change:

❖ **Mitigation**



❖ Store : Prevent loss of C in vegetation & soils

❖ Capture: Sequester CO2 from atmosphere

❖ (Grasslands - 34% global C; PA 15% terrestrial C)

❖ **Adaptation – combating impacts of CC and drought**



❖ Protect : maintain vegetation cover and ecosystem integrity, buffer local climate, reduce risks and impacts of extreme events (droughts, floods)



❖ Provide: maintain essential services: water supplies, soil fertility, fisheries, agricultural productivity



Ecosystem-based Adaptation



❖ Natural ecosystems protect and provide ecosystem services - help people to cope with CC and desertification



❖ Maintain water flows and water quality

❖ Provide natural flood control and pollution-reduction mechanisms.



❖ Maintain nursery, feeding and breeding grounds for fisheries (wetlands) and wildlife

❖ Protect crop wild relatives - increase genetic diversity and resilience for crop improvements.



❖ Healthy ecosystems restrict spread of invasive alien species (IAS) and disease vectors





Maintaining water supplies



- ❖ Drylands -limited freshwater supplies, variable and erratic rainfall



- ❖ Natural vegetation & wetlands in PAs regulate water flow & reduce flash floods



- ❖ Protect watersheds & water supplies for domestic and agricultural needs.



- ❖ 33/105 cities depend on PAs for water



Food security and livelihoods



- ❖ Drylands sites of origin for food crops: barley, sorghum, other cereals, potatoes



- ❖ Crop wild relatives, medicinal plants



- ❖ Sierra de Manantlan ,Mexico - wild maize *Zea diploperennis*: increases disease resistance with crop cultivars.



- ❖ Local varieties & traditional knowledge adapted to drier conditions.





Poverty alleviation



- ❖ Working with local communities
- ❖ India: Ranthambhore Tiger Reserve. EDCs – famine relief, step wells
- ❖ Kenya: Masai Mara communities clearing invasive *Parthenium*
- ❖ Ecuador: Chimborazo. Native livestock increasing productivity and pasture.



Combating land degradation



- ❖ **Community agreements to reduce grazing in Jordan. Dana NR.**
- ❖ **Reducing impacts of climate change, Hövsgöl National Park in Mongolia**
- ❖ **Increasing carbon storage in arid areas of China.**
- ❖ **Restoring and reforesting flood plain ecosystems around Aral Sea**





Protected Areas: helping people to cope



- ❖ Protect watersheds, water sources & wetlands



- ❖ Maintain natural habitats & stabilise dunes to stop the advance of deserts



- ❖ Protect forests and other habitats; enable recovery and restoration



- ❖ Safety net in times of drought - food, water and grazing for livestock



Improving land management



- ❖ Range management - sustainable grazing and improved fire management.



- ❖ Control of invasive alien species

- ❖ Protect areas of high C & biodiversity



- ❖ Encourage community engagement & CCAs to improve land and water management & connectivity





Linking Rio Conventions



❖ CBD – global PA target 17% (now 12.7%)

❖ UNFCCC – REDD+, EBAs



❖ UNCCD – EBAs in Drylands

❖ Need to incorporate PAs in Climate and Adaptation (NAPAS) & DRR Strategies



❖ Need support for PAs in Climate Funds & REDD+ mechanisms



❖ Mainstreaming PAs & Green Infrastructure—, irrigation, reservoirs, flood control, HEP.



Cost benefits



❖ PAs: Ecosystem-based approaches



❖ Cost-effective, proven & sustainable solutions



❖ Complement other national and regional adaptation strategies





Natural Solutions Series



www.iucn.org/wcpa

NATURAL SOLUTIONS

Protected areas helping people deal with desertification and drought

Droughts occur approximately 60% of Earth's land area and are likely to occur more than 1 billion people. These droughts are especially a threat to food and livelihoods. Habitat conservation and sustainable land management are leading to desertification and desertification. Fortunately, drought protected areas can reduce the degradation caused by human activities and climate change and buffer communities at risk.

Desertification occurs when degraded habitats become degraded and eroded through deforestation, overgrazing, poor vegetation practices and other unsustainable land and water management. Droughts or more extreme or longer vegetation cover, fertile top soil and productivity. As food and water supplies are threatened, communities are forced to leave homes, mass migration and economic losses. According to the United Nations Convention to Combat Desertification (UNCCD), 70% of the world's drylands suffer droughts are already degraded. Over 250 million people are directly affected by desertification and one billion more are at risk.

Two thirds of Africa is semi-arid or drylands, with extensive areas used for agriculture. Almost three quarters of agricultural drylands are degraded. By 2025, between 75 million and 250 million people in Africa are expected to be displaced or affected due to climate change. In some countries, yields from crop agriculture could be reduced by up to 50%.

Land degradation and desertification are global problems.

Almost one third of Asia consists of arid or semi-arid habitats. A quarter of all Latin America is desert or drylands ranging from deserts along the Pacific coast from southern Ecuador to Chile, to the high altitude dry plains in the Andes, basin of Mexico and north-west Brazil in the Amazon and other drylands are increasing in Jamaica, Haiti, Dominican Republic, and Cuba from their contribution to the Pacific, land degradation in small island states has severe and lasting consequences.

Drought protected areas provide essential water supplies.

By definition, drylands have limited freshwater supplies with highly variable and erratic rainfall. In the past people adapted to droughty climate events by nomadic herding and dryland agriculture. Such strategies have become less practicable with changing economic and political realities, more settled communities, and conversion of natural habitats for large scale agriculture.

