

Call to action on the World Environment Day

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Some of the key environmental challenges specific to the African continent

- Land degradation & desertification –poor agricultural practices/overgrazing.
- Loss of biodiversity & ecosystems – overextraction of resources.
- Pollution – air (1.1 million deaths in 2019), water & soils.
 - air pollution is the second leading risk factor for premature deaths after malnutrition
- Vulnerability to climate change -rising temperatures, changing precipitation patterns, extreme weather events, pests and diseases pose enormous challenges for smallholder farmers and alter growing conditions, leading to decreased crop yield & and impaired livestock value chain.
- Impacts:
 - declining agricultural production, increased burden of diseases, and extreme poverty.
 - impediments in achieving food security, improving livelihoods, and human wellbeing.

Strategies for addressing them?

- Implement nature-based solutions that align interests of people, nature and business:
- Policies that incentivize NbS, e.g., developing and adopting Natural Capital Accounting frameworks to guide and accelerate the uptake and use of natural capital as a portfolio of assets that provide benefits to the people and economies of the continent.
- Collaboration across boundaries and sectors, particularly in managing shared natural wealth.
- Call to action
 - Land use planning and tenure regularization.
 - Landscapes restoration and afforestation programmes.
 - Innovation in agriculture.
 - Diversification of income streams for communities supported by private sector investments.

Your research interests include water resources management. Considering the growing global water crisis, what innovative approaches or technologies do you see as promising for sustainable water management in both urban and rural areas?

- High water stress is estimated to affect about 250 million people in Africa.
- Four out of five African countries are unlikely to have sustainably managed water resources by 2030.
- *E.g., there will be an estimated 8,800 percent increase (2,620 MCM) in water demand for the Mara River Basin in the Ke/Tz transboundary landscape by 2045 cf 2017.*
- African countries have inadequate capacity to implement Integrated Water Resource Management as many activities are undertaken on an ad hoc basis with unsustainable financing.

Call to action

- Transboundary Water Management Cooperation to conquer water scarcity, protect biodiversity, build stronger economies, and ensuring peace and security.
- Implement rainwater harvesting technologies at all levels, as part of IWRM:
- Provide stakeholders with practical knowledge and experiences that can be replicated and up scaled.
 - Household
 - For HH use, e.g., roof catchment for potable water
 - Investment in Agricultural Water Management (AWM) through rainwater harvesting irrigation (RWHI) would be an appropriate intervention to mitigate seasonal soil moisture deficit.
 - Runoff storage systems (farm ponds) have proven to improve household resilience and livelihoods.
 - Subnational and national levels
 - Pans, dams, and ground water research
 - Conservation or restoration of natural infrastructure such as wetlands
 - Urban areas –
 - reduce wastage by improved reticulation, and prompt repairs of broken or leaking pipes
 - Harvest water to irrigate lawns, wash cars
 - Encourage recycling in industries
 - Adopt PES framework to incentivize catchment conservation and increase responsibility of the urban user.

Biodiversity conservation is crucial for ecosystem health and resilience. Could you share some examples of successful biodiversity conservation initiatives or projects in Africa, and what lessons can be learned from them?

- There is an increasing shift from predominantly centralized natural resource management towards more devolved models known very broadly as Community-Based Natural Resource Management (CBNRM).
- Establishing and promoting cross-border CBNRM offers the most scalable avenue to ensure wildlife habitats are secured, dispersal areas and migration corridors are established, wildlife are afforded protection, and inter-community conflicts are reduced.
- CBNRM linked to PES is an innovative approach to securing natural capital and building the regional economies.
- E.g., Carbon Tanzania's REDD+ projects had, by 2018, protected 270,000 ha of dryland forest, incorporating over 8.2 million trees.
- By keeping 1,536,700 trees in the ground, the equivalent of 95 million paperback books, an additional 291,000 tons of carbon dioxide was prevented from entering the atmosphere, equivalent to 159,590 return flights from London to New York.
- Of the carbon credit accrued, over \$300,000 was paid to forest communities.

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- In southern Kenya, conservation and livestock enterprises by SORALO (Communities) in an area of 1.5 million hectares, support livelihoods for 240,000 people while providing space for wildlife while capture up to 1700 MtCO₂^e annually valued at US\$126 million/yr.
 - 76 community conservancies provide 11,000 km² of space to wildlife in Kenya.
- In Namibia communal land conservancies have proliferated, and now cover more than 14% of the country, involve over 200,000 people and earn US\$ 2.5 million per annum.
- In Ghana, 200,000 hectares of forest have been demarcated under the Community Resource Management Area Policy of 2000.
- Bwindi Impenetrable Forest Conservation Trust in Buhoma, Uganda runs an ecotourism program with a handicraft workshop that showcase artisans at work, taps into rich biodiversity and cultures through bird watching, village cultural walks, and camping facilities, generating income to communities.

Climate change is impacting various regions differently. What are the specific climate-related challenges that Africa is facing, and how can countries on the continent effectively adapt and build resilience to these changes?

- Rainfall patterns are disrupted, glaciers are disappearing and key lakes are shrinking.
 - Lake Chad, bordering Chad, Cameroon, Nigeria, and Niger, has shrunk from 25 000 km² in the 1960s to 1350 km²
 - Mount Kenya (Kenya), Mount Kilimanjaro (Tanzania), and the Rwenzoris Mountains (Uganda) are retreating at a faster rate than the global mean.
- Rising water demand combined with limited and unpredictable supplies, due to climate change, threatens to aggravate conflict and displacement.
- Extreme weather and climate change are undermining human health and safety, food and water security and socio-economic development.

Climate change is impacting various regions differently. What are the specific climate-related challenges that Africa is facing, and how can countries on the continent effectively adapt and build resilience to these changes?

- High exposure and limited adaptive capacity to climate change makes urban life risky especially to the poor.
- 43% of Africa's land mass is under pastoral production systems, this provides main livelihood for about 268 million people or 22% of the continent's population (Fava & Vrieling, 2020).
- It is estimated that climate change will push 39.7 million people in SSA into poverty if no concrete climate and development action takes place by 2050 (Jafino et al. 2020).
- In 2021, around 14.1 million people were internally displaced in Sub-Saharan Africa, including around 11.5 million due to conflict and violence and 2.5 million due to climate related disasters.

Climate solutions

- Strengthen early warning systems, e.g., farmers need to know when to commence land preparations.
- Increasing need for climate-informed transboundary management and cooperation.
- Interventions must address societal and ecosystem challenges.
- Must build resilience and natural adaptive capacity.
- There is need for more investment in adaptation and to embrace integrated water resource management.
- **NbS, e.g., Carbon Markets can address climate change challenges in multiple ways:**
 - Incentivize mitigation by storing carbon in soils
 - Finance adaptation by increasing tree cover, forage, and biodiversity
 - Increase community and ecosystem resilience to extreme events.

Call to action

THERE IS A ROLE FOR EVERYONE.

EVERYONE MUST PLAY A ROLE

1. Broaden the conversation about what matters
2. Invest in local capabilities
3. Design for engagement, commitment, and action
4. Climate action is collaborative

Education and awareness play a vital role in environmental conservation. How do you believe universities and academic institutions can enhance their contribution to environmental education and empower the next generation of environmental leaders?

- The dispersed nature of environmental governance means that the multiplicity of levels - global, regional, national and local regimes, norms, and regulatory mechanisms are linked into a complex institutional architecture.
- Such multi-stakeholder environmental governance processes emphasize participation, collaboration, and learning that are essential to realize social and ecological outcomes.
- This necessitates polycentric decision-making involving individuals, civil society, the state and other actors and invariably addressing questions of economic efficiency, environmental effectiveness, equity, and political legitimacy.

- Historically, environmental decisions studies were supported by different disciplines in natural, physical and social sciences with experts in the different disciplines acting separately in silos.
- This limit of disciplinary specialisation has spurred the evolution of interdisciplinary research and action to address knowledge integration and transfer of environmental governance.
- *We need to establish centres of excellence for capacity building in environmental governance, comprising environmental law, policy and diplomacy.*
- *Good governance in these technical fields require advanced studies and training which ensures a critical mass of expertise in each country.*
- *Without that scope of capacity there will be inadequate or poorly designed policies, leading to flawed laws and their implementation, with the result that the natural resources, which form the basis for development in Africa, will be endangered and sustainable development put in jeopardy.*