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Flagship Programme 4: Fostering science for the sustainable management of Africa's natural resources and disaster risk reduction

Rationale and background

This Flagship Programme aims to improve the environmental governance for a sustainable management of Africa's natural resources and resilient societies to natural disasters and to enhance related relevant capacity of Africa's scientific institutions and networks.

This programme is needed in Africa for many reasons. Despite the fact that the African continent is amply endowed with natural resources including minerals and oil, freshwater and ocean resources, rich biodiversity, a wide variety of ecosystems and in some areas very fertile soils, there is a lack of measures to sustainably manage this natural capital. This situation has had negative impacts in most African countries and continues to deprive this continent of the socio-economic progress it deserves. Many of these natural resources exist without being constrained by political borders and the related challenges for their preservation, protection, rehabilitation, rational and equitable exploitation could be a good opportunity for promoting cooperation among countries and relevant stakeholders such as governments, local communities and the private sector to effectively manage and share resources in a peaceful way, respecting and utilizing modern and indigenous knowledge.

In recent years African governments, scientists and policy-makers have acknowledged the importance of moving the continent away from resource-based economies into the age of information and knowledge-based society and innovation-led development.

Science, Technology and Innovation (STI) have been identified by African leaders as some of the major tools in achieving economic progress and sustainable development, which, for Africa, will be based to a large extent on the utilization of its human and natural resources.

The programme will contribute to promote the development of strategies and upstream policies informed by science, to strengthen governance structures of research and development institutes, networks and agencies in sectors relating to biodiversity, ecosystems and mineral resources for human well-being, climate change mitigation and adaptation, access to energy, protection and better use of oceans and water bodies and long- and short-term disaster risk reduction which can contribute to effectively reducing poverty in Africa and promoting social inclusion. In this regard, local and indigenous knowledge are an important component in creating inclusive knowledge systems. The programme will also contribute to enhance the capacity of research institutions and individual towards the sustainable management of different natural resources and development of tools for disaster risk reduction.

At sub-regional level, the flagship will be implemented in synergy with priorities and related strategies and actions plans of Regional Economic Communities (RECs) and in line with cooperative agreements signed between UNESCO and the different RECs.

The programme will contribute *inter alia* to the following Pan African frameworks: NEPAD African Action Plan on Environment particularly the areas relevant to UNESCO's under the Environment and Climate Change subject area, the African Mining Vision, the Africa Water Vision 2025, Africa's Integrated Marine Strategy 2050, the Extended programme of action for the implementation of the Africa Regional Strategy for Disaster Risk Reduction (2006-2015). It will strongly promote scientific cooperation under the newly agreed Global Alliance for STI in Africa.

Why UNESCO?

UNESCO through its different natural science programmes is well place to address the issues covered by the programme. In the area of ecological sciences and biodiversity, for four decades UNESCO has been implementing the intergovernmental Man and the Biosphere (MAB) Programme which aims to establish a scientific basis for the improvement of relationships between people and their environments. It proposes interdisciplinary research at the crossing natural and social sciences. The backbone of the MAB programme is the biosphere reserves where research results are tested, demonstrated and promoted for the preservation, conservation and management of important ecosystems at national and regional levels for human well-being. Biosphere reserves are frequently quoted as "learning laboratories for sustainable development"; they are meant to be the principal internationally-designated areas dedicated to sustainable development in the 21st century. There are in May 2014, sixty four biosphere reserve in Africa including 2 transboundary sites1. The programme has established the Afri-MAB network comprising the MAB national committees and the managers of the different biosphere reserves in Africa for the promotion of regional cooperation (research, training, monitoring, implementation of regional projects…) , sharing experiences and enhancing technical and scientific capacity.
In addition UNESCO has 41 natural and five mixed natural and cultural World Heritage sites in Africa. These, too, are places where UNESCO promotes the preservation and conservation of important ecosystems.

[1] The World Network of Biosphere Reserves counts in May 2014 , 621 sites in 117 countries, including 12 transboundary sites.

In the area of water resources, UNESCO has been implementing since 1975, the International Hydrological Programme (IHP) which is the only UN intergovernmental programme on water science, management and capacity building. The programme is built on networks of UNESCOChairs on water, affiliated centres, scientific programme related networks and national committees in countries. In Africa, the programme has established seven water Chairs, seven water centres and eight science programme related networks. The programme has developed experience on promoting scientific regional cooperation on water related issues including transboundary waters, climate variability and change, water related disasters and water scarcity and quality. The programme will build on the existing IHP networks to achieve the expected results related to water resources and water related disasters.

In the area of geoscience, UNESCO in partnership with the International Union of Geological Sciences (IUGS) has been implementing the International Geoscience Programme (IGCP) to the promotion of research and scientific cooperation. The programme has recently improved its interventions in Africa with more research projects approved and funded in various areas. Within the framework of the programme, an important project on challenges related to the environmental impacts of decades of mining activities in Africa has been initiated and will continue to be implemented within the framework this Flagship Programme.

On oceans and coasts, UNESCO has been implementing programmes on the promotion of knowledge and capacity for protecting and sustainably managing the oceans and coasts through the Intergovernmental Oceanographic Commission (IOC) for five decades. In Africa, a Sub-Commission has been created in order to strengthen the activities of the IOC in Africa and the adjacent island states, and particularly to improve the scientific knowledge and capacity in ocean science, ocean observations and services, and ocean hazard mitigation. The Sub-Commission builds on the existing network of marine science institutions, ocean related chairs and Ocean Data and Information Network for Africa (ODINAFRICA). The ocean component of the flagship programme will be implemented through the structure of the Sub-Commission for Africa.

Objectives:

- to promote transboundary cooperation and regional approaches and solutions for efficient, sustainable and peaceful management of shared natural resources;
- to strengthen Africa's scientific institutions and networks for the sustainable use and management of natural resources;
- to increase resilience to disasters and to enhance preparedness through the development of early warning systems;
- to improve Member States' governance in environmental management for better access and benefit-sharing of natural resources;
- to create an enabling environment to develop green and blue economies and move up the natural resources processing value chain.

Main actions:

- Prepare regional guidelines and frameworks for natural resources governance and on eco-systems management;

- Adopt cross border mechanisms that promote “shared management” or co-management approaches of natural resources;

- Put in place platform for advisory services for the improvement of regional cooperation and conflict resolution in relation to ecosystem conservation and management of trans-boundary biosphere reserves;

- Upgrade scientific institutions, in the fields of environmental, biological, earth, ocean and climate system sciences, through strengthening universities and research centres and mobilizing international science cooperation;

- Train a critical mass of natural resources and disaster risk managers (young skilled people and resourceful scientists and engineers) with the perspective of employability;

- Support the development of tools for disaster risk reduction (DRR), and integrated coastal management;

- Promote and support UNESCO-designated sites to be recognized and used as laboratories and learning platforms for sustainable development at the national and regional level.

Expected Results:

1. Strengthened regional policies and frameworks (ECOWAS, ECCAS, EAC, SADC) for natural resource governance;
2. African Member States’ needs for scientific knowledge and capacity development in ocean science, ocean observation, ocean hazard mitigation and data management addressed;
3. Capacity in Africa improved to manage the Earth’s resources, including the ocean, water, biodiversity and mineral resources;
4. UNESCO network of internationally designated sites expanded to foster sustainable socio-economic development including transboundary sites which successfully manage shared water and/or ecosystem resources;
5. African management of fresh water improved and made more secure with specific attention to water-related challenges including droughts, floods, infrastructure design and management, and urbanization;
6. African Member States with enhanced capacity in assessing risk and providing early warning of natural hazards and integrating DRR into national plans, in particular into educational plans and programmes;
7. Joint initiatives among indigenous and scientific knowledge holders established to co-produce knowledge to meet the challenges of global climate change