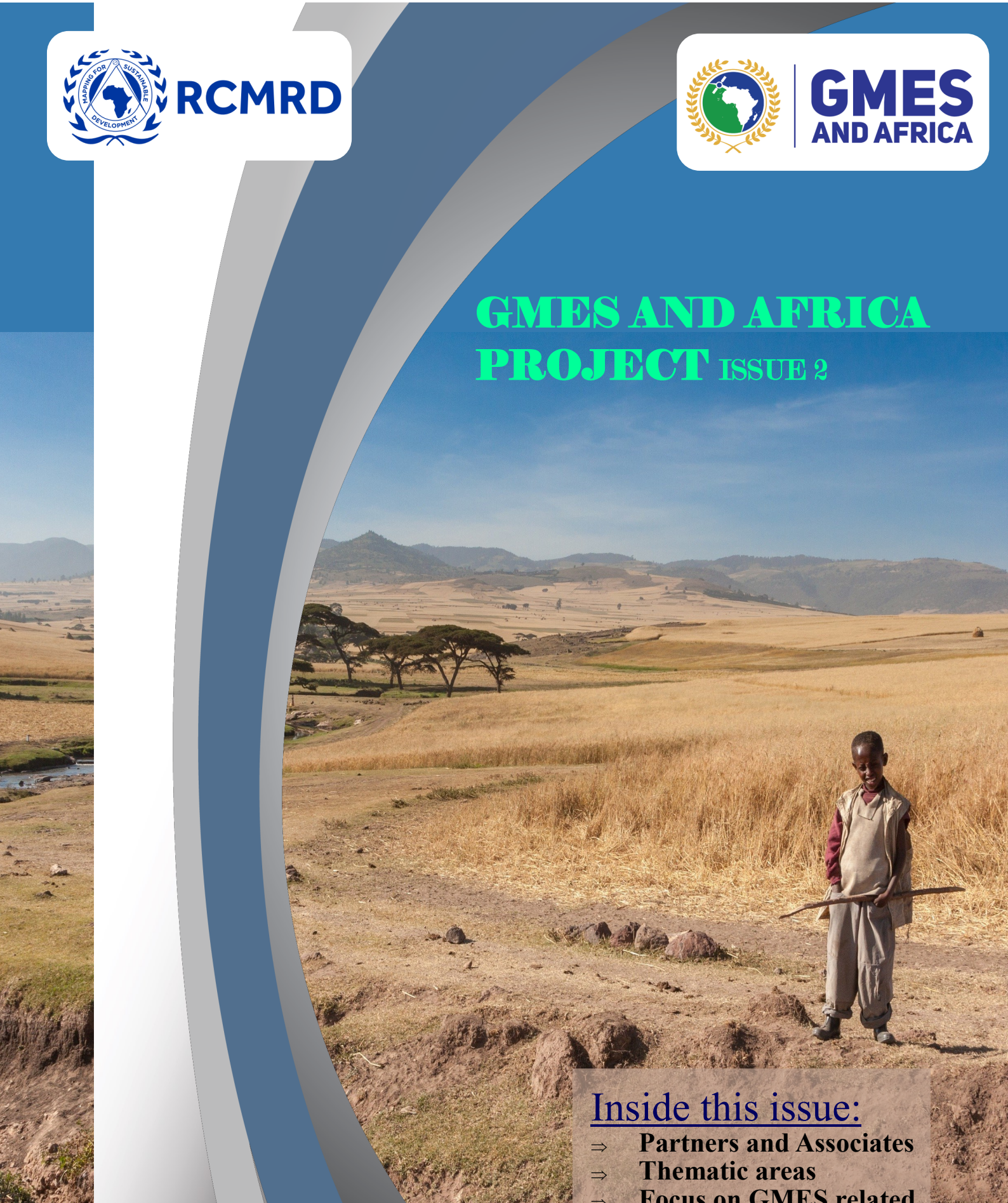
RCMRD

GMES AND AFRICA

GMES AND AFRICA PROJECT ISSUE 2



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European Commission

GMES Aspirations

RCMRD GMES & Africa Programme Implementation in East Africa

Regional Centre for Mapping of Resources for Development (RCMRD) is one of the 13 consortia of institutions selected and awarded the contract to implement the Global Monitoring for Environment and Security (GMES) and Africa programme in partnership with the Ethiopian Mapping Agency, Makerere University and Rwanda Water Resources Board.

About GMES and Africa

GMES & Africa is an Earth Observation programme initiated jointly by the African Union Commission and the European Commission. It is aligned to Priority 7 of the African Agenda 2063 and the African Space Policy, designed to address the growing needs of African countries to access and use Earth Observation data for sustainable development, including through climate change mitigation, environmental management, civil security and capacity building.

GMES & Africa Programme aimed is at improving African policy-makers', planners', scientists', business and private sector and citizens' capacities to design, implement, and monitor national, regional and continental policies and to promote sustainable management of natural resources using Earth Observation data and derived information.

RCMRD GMES and Africa Activities

The main activities will include: Accessing Earth Observation data and provision of new data, establishing operational information system, Strengthening and harmonizing national and regional policies, training stakeholders, conducting research and dissemination; and Establishing a Monitoring & Evaluation framework. Effective overall coordination and communication is ensured for delivery of programme objectives, sustainability and visibility by Communicating and disseminating of services and products using appropriate media.

Figure 1: GMES and Africa Monitoring Mission at RCMRD

Partners and Associates of the RCMRD GMES and Africa

*A **partnership** is a relationship of substance between two or more organizations involving shared responsibilities in undertaking the action funded by the AUC (Contracting Authority. To ensure that the action runs smoothly, the contracting Authority requires all partners to acknowledge this by agreeing to the principles of good partnership practices.*

RCMRD GMES and Africa Project has two types of major stakeholders namely Partners and Associates.

Partners

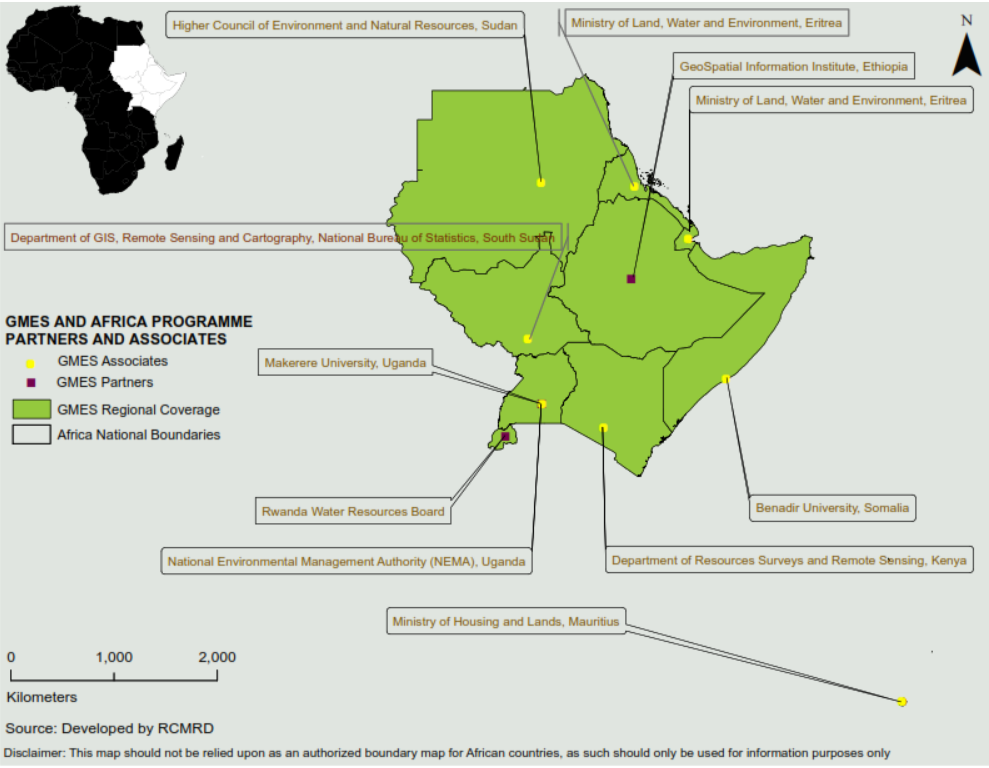
Partners are those participated in the development of the project proposals and signed for the submission to work in cooperation with the RCMRD.

Further, they have a role to play an active role on planning and implementation of the project including and participating in most of the trainings, workshops and data collection and processing.

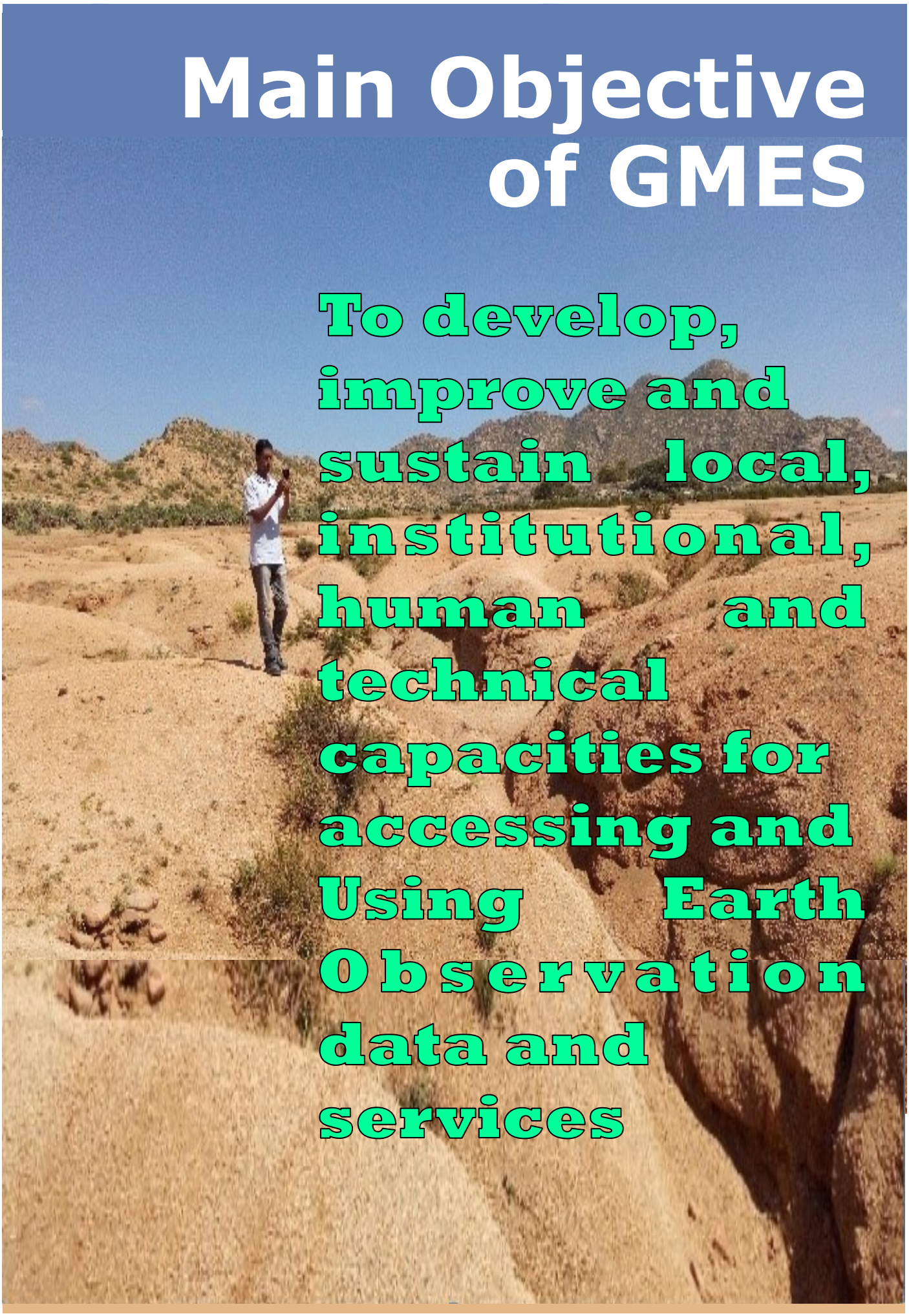
Associates

Are the ones which participate in the project implementation mainly on data collection, validation, training and workshops. They have joined the project after the project is awarded.

There are three partners from different countries. According to the agreement, two of them are from industries like government organizations dealing with the thematic activities of the project (*Land Degradation Monitoring an Assessment, Wetlands Monitoring and Assessment and Regional Reference Vector Database*) .



Main Objective of GMES



GMES SERVICES

RCMRD is implementing three services that are designed to respond to global needs to manage the environment, understand and mitigate the effects of climate change and ensure civil security. Our services also contribute to achieving the **Sustainable Development Goals** *(SDGs)*.

Land Degradation Monitoring and Assessment

To develop an operational information service that support policy and decision making at regional and national level towards improved

Wetlands Monitoring and Assessment

Build institutional and human capacities in accessing and utilizing EO data in assessing and monitoring Wetlands.

Open Geographical Regional Reference Vector Database for Water and Agro-Ecological Zonings

To improve the interpretation of earth observation data and develop the confidence on earth observation derived information in decision making.

Land Degradation Monitoring and Assessment Service

Land degradation is a major challenge in the continent of Africa. It is often considered that land degradation in Africa has been vastly detrimental to agricultural ecosystems and crop production and thus an impediment in achieving food security and improving livelihoods.

Figure 2: Degraded Ecosystem in North Eastern Kenya

It is a well-known fact that soil degradation not only results in decreased food production but also in droughts, ecological imbalance and consequent degradation of the quality of life. In Africa, the most conspicuous symptoms of the negative impact of land degradation on food production are stagnating and declining yields and increasing levels of poverty.

The aim of land degradation assessment within GMES project is to enhance use of earth observation technology for assessment of the level and severity of land degradation in Eastern Africa region.

Land degradation service also identified hotspots (*severely degraded ecosystems)* for comprehensive assessment. The service seeks to generate evidence based information products that support decision making at national and regional level towards policy harmonization for environmental sustainability.

A simplified soil erosion model is used to generate the land degradation products. The products are shared with decision makers within national government, research institutions and development agencies to support policy making and intervention efforts towards sustainable land use practices.

Land Degradation Service Linkage with SDG

SDG in focus

Calls on countries to "*combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world*". This target is focused on the sustainable management and restoration of our landscapes.

In this respect, the United Nations General Assembly, in its resolution noted that "the achievement of the **Sustainable Development Goals** and targets, including **Goal 15** and target 15.3, would serve as an accelerator to ending poverty and hunger, tackling inequality, empowering women and stimulating economic growth".

It also "*reiterates that degraded land, if recovered, would, inter alia, contribute to restoring natural resources, thus potentially improving food security and nutrition in the affected countries, and in the process could, inter alia, contribute to the absorption of carbon emissions*".

Land restoration initiatives, if designed with the intent of achieving multiple benefits simultaneously, can not only help ensure land degradation neutrality is maintained or exceeded, but also contribute to meeting the targets of a range of other **SDGs**. (*UNCCD, 2018*)

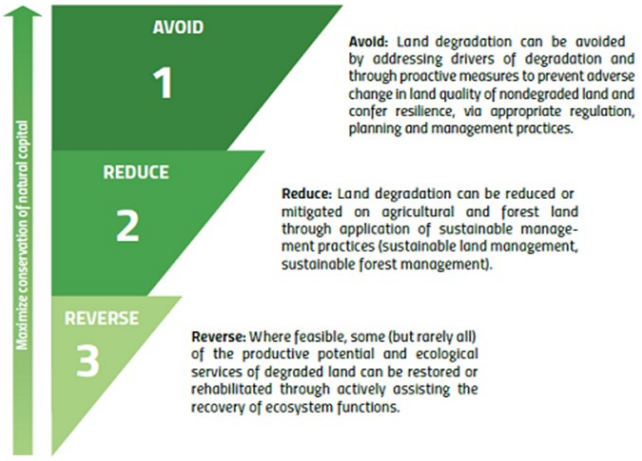


Figure 3: UNCCD 2018

The consequences of land degradation are high, with widespread loss of biodiversity and ecosystem services. Annual global economic losses due to deforestation and land degradation were estimated at 1.5 - 3.4 trillion euros in 2008 (*ELD Initiative, 2014*). Ongoing degradation of fertile soil needs to be halted, so that land can continue to provide sufficient land-based ecosystem services for an ever-increasing number of inhabitants.

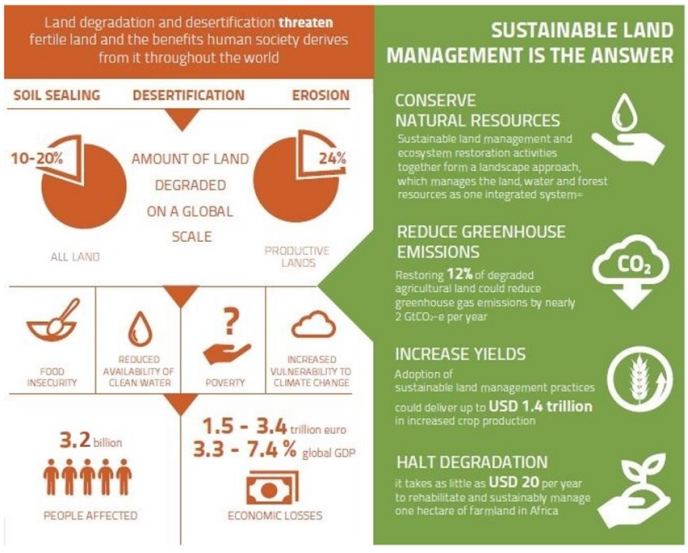


Figure 4: UNCCD 2018

Wetlands Monitoring and Assessment

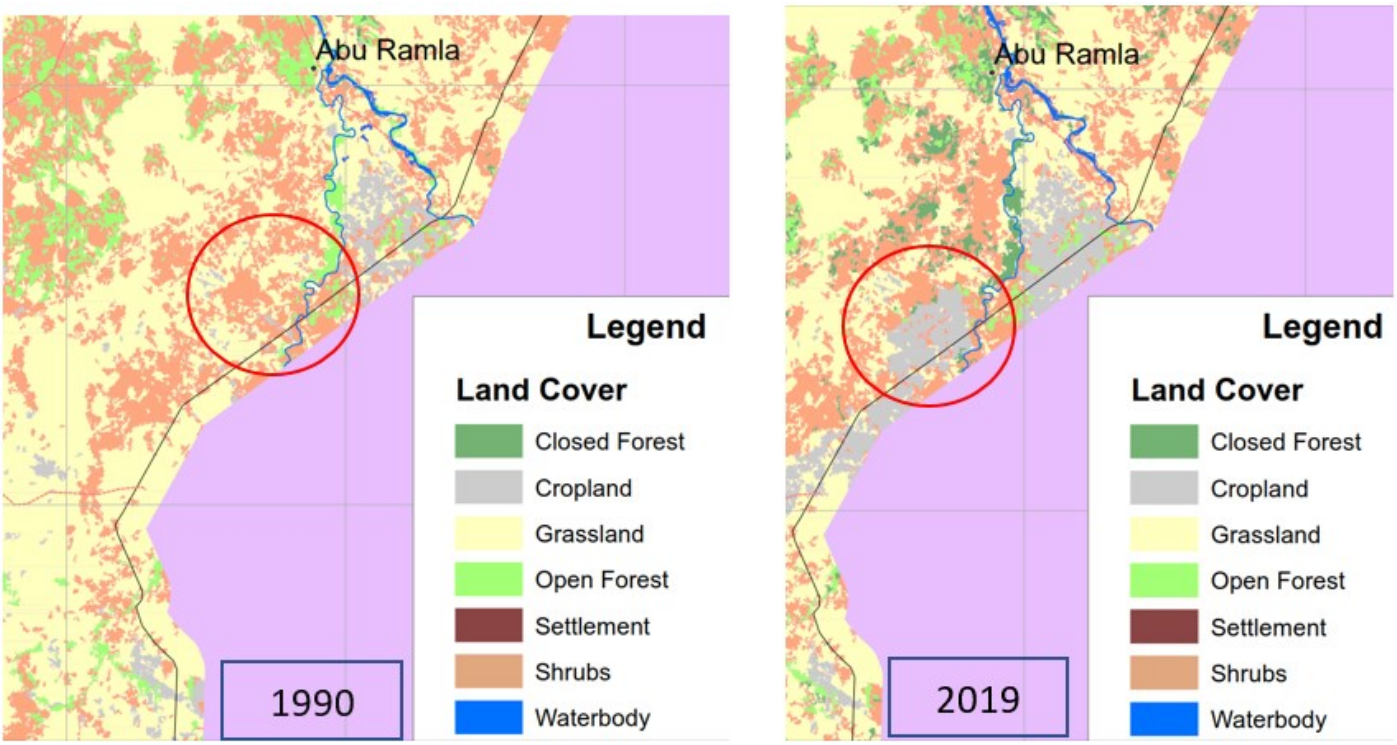


Figure 5: There is increased agricultural activities in the south eastern part of the Al Dindir Wetland.

The GMES & Africa support program is meant to address the interconnected environmental challenges that the countries in the region are struggling with as a result of widespread land degradation and desertification, due to the unsustainable land use management practices which is further aggravated by the climatic variabilities.

The **Wetland Monitoring and Assessment** theme is meant to monitor the prevalent conversion and degradation of wetlands that result in their reduced capacity to discharge their ecological and economic functions such as supporting biodiversity, provision of clean water, regulation of floods, provision of food, recreation, contribution in carbon sequestration among others.

Wetland Monitoring and Assessment involves establishing a baseline in wetlands extent through mapping by utilization of Earth Observation data, performing wetland change detection, characterizing the change trends and generating change statistics and finally performing wetlands vulnerability analysis.

Figure 6: A man with a Mat made from papyrus- A product of wetland in Yala

Wetlands Monitoring and Assessment

SDGs in focus

In Africa, women are predominantly responsible for agricultural food production and management, water collection and the general sanitation and management of the homesteads. All these responsibilities are water linked and wetlands are the source. However, women's indigenous knowledge and roles in wetlands management are largely unnoticed and their contribution in the social and economic wellbeing of the society continue to be undermined.

To increase women representation in the natural resource information and management and to promote wise use of wetland resources, RCMRD under the GMES & Africa program proposed to promote gender equality in the utilization of the GMES & Africa grant, by ensuring at least 30% representation of women in the GMES project team, thematic workshops and trainings.

This proposed action has been addressed by making sure that out of five staff in the Wetland monitoring and assessment service, two are women. Further, three out of the four private consultants, that the GMES & Africa program engaged, were led by women.

This ensured that women's voice and experience are providing a new breadth in the wise use of wetland resources and that women can provide information that will influence policies on natural resource management. To this end the program can report with confidence that implementation of GMES & Africa program is effectively addressing the **SDG 5**.

Most of water consumed in an ordinally African family is drawn directly from the wetlands. The GMES & Africa program is addressing the issue of sustainable utilization of wetland resource by undertaking a wetland vulnerability analysis that looks at the drivers, threats and exposures that a particular wetland is exposed to. The finding of the wetland vulnerability analysis are meant to influence policies on wise use of wetlands for a sustained provision of clean water as a service while protecting them against pollution.

Figure 7: Part of the Stakeholders: representative from HCENR (the lady), Directorate of Natural Reserves in the General Administration for Wildlife Services (in military fatigues) and the local communities who occupy a five kilometres buffer zone within the Dindir Wetland and Natural park

Wetlands Monitoring and Assessment

It is a well-known fact that upstream water provides a clean and safe energy source in form of hydroelectric power. The GMES & Africa program has undertaken a socio-economic valuation of land and wetland degradation with a focus on the value lost due to wetland degradation. Economic loss in local currencies due reduced power generation within an established power grid can be visualized in both extent and in monetary loss for effective planning to meet the deficiency.

Wetlands sustain economic activities and jobs to millions of people across the globe in form of tourism, agricultural activities, conservation and management activities, research and utilization of some of the wetland products as medicinal remedies. The GMES & Africa program implementation has included local communities and local institutions as direct beneficiaries of the program. The local communities, institutions and scientists are also providing local knowledge on the conversion trends and their effect to the wetland ecology.

Wetlands hosts a myriad of biodiversity and most of the GMES & Africa participating countries are signatories and members of a number of international biodiversity protection and or conservation instruments and networks such as; Convention on Biodiversity (*CBD*), Convention on International Trades in Endangered Species (*CITES*), International Union for Conservation of Nature (*IUCN*), African Ministerial Conference on the Environment (*AMCEN*) and the RAMSAR convention among others. GMES & Africa program included institutions who are agents or act on behalf of these multilateral conservation bodies as stakeholders and in some cases targeted them as beneficiaries of the Wetland monitoring and Assessment services.

Open Geographical Regional Reference Vector Database for water and Agro-Ecological Zonings

Objective

To improve the interpretation of earth observation data and develop the confidence on earth observation derived information in decision making.

This will be undertaken in two way i.e.

- Developing a consistent and comprehensive common and shared geographical database at regional level in using open source data.
- Creating agro-ecological zonings by weighted overlay (*land cover, land use / change, climatology, soils, demography, limits*…).

Target End Users

Regional organizations, universities and research institutions, international organizations, national mapping organizations, agriculture, forest and environment agencies.

Anticipated Outcome

- Reliable and accessible vector database of Geographical data
- Ability to interpret Earth Observation Data

Dataset to be availed

- Administrative Data
- Slopes, watersheds & contours
- Water bodies - lakes, ponds, rivers, wetlands
- Transportation network - roads, railways, airstrips
- Settlement - town, villages, Population, demographic
- Parks and natural reserves
- Others - Land cover, Ecosystems, Rainfall

SDG in focus

Agro-Ecological Zonings can offer an important vehicle to reduce poverty (*SDG 1)* and inequality (*SDG* 10), by contributing to decent work (*SDG* 8) and addressing a fundamental human need – access to food (*SDG 2*). Agro-ecological zoning (*AEZ*), as applied in FAO studies, defines zones on the basis of combinations of soil, landform and climatic characteristics.

The particular parameters used in the definition focus attention on the climatic and edaphic requirements of crops and on the management systems under which the crops are grown. Each zone has a similar combination of constraints and potentials for land use, and serves as a focus for the targeting of recommendations designed to improve the existing land-use situation, either through increasing production or by limiting land degradation.

The purpose of zoning, as carried out for rural land-use planning, is to separate areas with similar sets of potentials and constraints for development. Specific programmes can then be formulated to provide the most effective support to each zone.

Capacity Building

GMES and Africa Meetings and Workshops held in the 2nd and 3rd quarter of 2020 (April to September 2020)

The COVID-19 Pandemic forced people to adapt to a new way of doing things. All the workshops and meetings in the 2nd and 3rd quarter of the year were held virtually.

The major meetings that RCMRD participated in were with the private companies that were contracted to undertake various projects whose aim is to support the services: Wetlands Monitoring and Assessment and Land Degradation Monitoring and Assessment.

The four companies contracted are Geo-MIK Africa-Uganda, Locate IT Limited-Kenya, ESIPPS (*Environmental Surveys, Information, Planning and Policy Systems*) International-Uganda and Geospatial Research International (*GRI*)-Kenya. The initial meetings with the private sector focused on discussions on the proposed methodologies and approaches. RCMRD's role was to review and approve the suggested methodologies.

Upon approval of the methodologies other meetings were on preliminary findings and the final products. The meetings helped RCMRD and the private sector to have a common understanding and ensure smooth running of the projects.

RCMRD also participated in consortia meetings organized by the AUC to discuss the progress of the project and forge a way forward in the face of the pandemic. The meetings focused on project road map, work plan and extension. Most of the planned workshops were cancelled due to the pandemic.

However, RCMRD facilitated virtual stakeholders' workshops that were dissemination channels for the four private companies. The workshops focused on the methodologies, analysis and findings of the projects.

The workshops took place between *14th to 17th September 2020*. The workshops were officially opened by the Director General, RCMRD, Dr. Emmanuel Nkurunziza. The Director emphasized the need of building of partnerships with the private sector in the region.

He also appreciated the role played by the private companies in the field of Earth Observation. The workshop drew participants from consulting firms, partner institutions and stakeholders from the 10 GMES and Africa project countries.
The workshop schedule was as follows:

Table 1 Workshop Training Schedule

Date	Company	Presentation
Monday, 14th Sept 2020	Geo-MIK Africa	Land Productivity Analysis
Tuesday, 15th Sept 2020	Locate IT Limited	Wind Erosion Modelling
Wednesday, 16th Sept 2020	ESIPPS International	Wetlands Vulnerability Analysis
Thursday, 17th Sept 2020	Geospatial Research International	Socio-economic valuation of wetlands and land degradation

Capacity Building

Land Productivity Analysis Training

Objective

The aim of Land degradation application is to enhance the assessment of extent and severity of land degradation in the region using earth observation technology. This is being achieved by using improved earth observation datasets and improving the methodology that develops the land degradation model.

Specific objective of the consultancy service is to develop EO based methodology of Land Productivity assessment in relation to land degradation.

Wind Erosion Modelling Training

Objective

The aim of Wind Erosion Modelling is to assess and analyze the impact of wind on land degradation in the region. This is being achieved by using improved earth observation datasets and improving the methodology that develops the wind model.

Specific objective of the consultancy service is to develop EO based methodology of wind and related erosion analysis in relation to the land degradation monitoring and assessment.

Wetlands Vulnerability Analysis Training

Objective

The aim of Wetlands vulnerability analysis is to identify major challenges encountering wetlands in the region. This is being achieved by using improved earth observation datasets and improving the methodology that develops wetlands vulnerability analysis through GIS modeling and analysis.

Specific objective of the consultancy service is to develop EO based methodology of wetlands monitoring analysis in relation to the multitemporal data processing for the Service Area of Wetlands Monitoring and Assessment.

Socio-Economic Valuation Training

Objective

The aim of Socio Economic Valuation of Land Degradation and Wetlands is to assess and analyze the effect of land degradation challenges and wetlands expansion or depleting on the social and economic situation of the in the region. This is being achieved by using output data from both service areas and considering hot spots where the project is implemented.

Specific objective of the consultancy service is to identify impact land degradation and depletion of wetlands through socio-economic point of analysis.

Capacity Building in Numbers

Countries
4

Trainees
96

Courses
4

Days
20

GMES and Africa Communications Experts Present Results of Their Efforts

11 Representatives of the 13 GMES and Africa Project consortia members of the are meeting in Addis Ababa, Ethiopia. The GMES and Africa Program at the African Union Commission invited the communicators of the 13 consortia of the program to a capacity building workshop. The workshop, started on March 9, 2020 in Addis Ababa, Ethiopia, and will end on Thursday March 12, 2020.

"*Communication is the key, the main pillar for the success of the GMES and Africa Program. It is not satellite or technological data, it is not the services you provide. You can provide the services, but if the decision makers don't know what you produce, if the users do not know the products exist, whatever the quality of the service, it won't be used or useful,*" Said **Dr. Tidiane Ouattara**, Coordinator of the GMES and Africa Program.

Dr. Ouattara, emphasized that communication, outreach and awareness-raising form part of the strategic pillars and indicative outputs of the GMES and Africa programme. The capacity building session led by Mr. Stephane Ourevitch, Director General of Space Tech. "*As a specialist in space science, I will share my experience as Communication Manager at Copernicus''.*

Mr. Ourevitch said he was conducting the training in memorium of the late Erick Khamala who was a dear friend and who believed in the use of Earth Observation for the development of Africa. "*It is because of the friendship and commitment that Erick had for Africa and use of Earth Observation that encouraged me to offer my services to all of you for free*."

Through traditional and social media tools and platforms, as well as other relevant techniques of advocacy, dedicated outreach and engagement, GMES and Africa is designed to provide information to policymakers, scientists, businesses and the public on a real time basis, whilst promoting intra-African collaboration

Figure 8: GMES and Africa Communications Working Group During the Officially Launch

GMES and Africa Communications Experts Present Results of Their Efforts

and driving regional and national advocacy. This will inspire and mobilize African stakeholders, and raise public awareness on the critical role of Earth Observation in sustainable development..

Mr. Adiatou Fatty Communications Officer, GMES and AfricaThe African Union Commission said the training intended to strengthen the communications output and delivery of GMES and Africa by supporting the 13 consortia in terms of their communications capacity, effectiveness and impact.

The workshop sought to provide training for communications functionaries of consortia on how to deploy communications in Earth Observation for integrated decision making. It was also intended to expose consortia communications functionaries to strategic tools and techniques for the enhancement of communications delivery within their regions and share best practice ideas and experience on packaging, documenting and transmitting the results attained by consortia and provide a platform to discuss the harmonization of communications activities across various consortia and operational levels of GMES and Africa.

As the first phase of this program draws to a close, this workshop reinforces awareness, mobilization, engagement and decision-making techniques for the main targets of this program at regional and continental level. The African Union Commission through this training wants to improve the quality of communication products, generate more impact in the dissemination of these and ensure an effective and efficient evaluation of different communication activities. It is also a question for the communicators to join their efforts in order to bring a strong message of awareness in order to create a regional commitment of the different governments.

Eleven consortia responded to this workshop, in particular; *OSS, ICPAC, RCMRD, NARSS, CICOS, CSSTE, MOI, CSIR, SASSCAL, UG and AGEOS.*

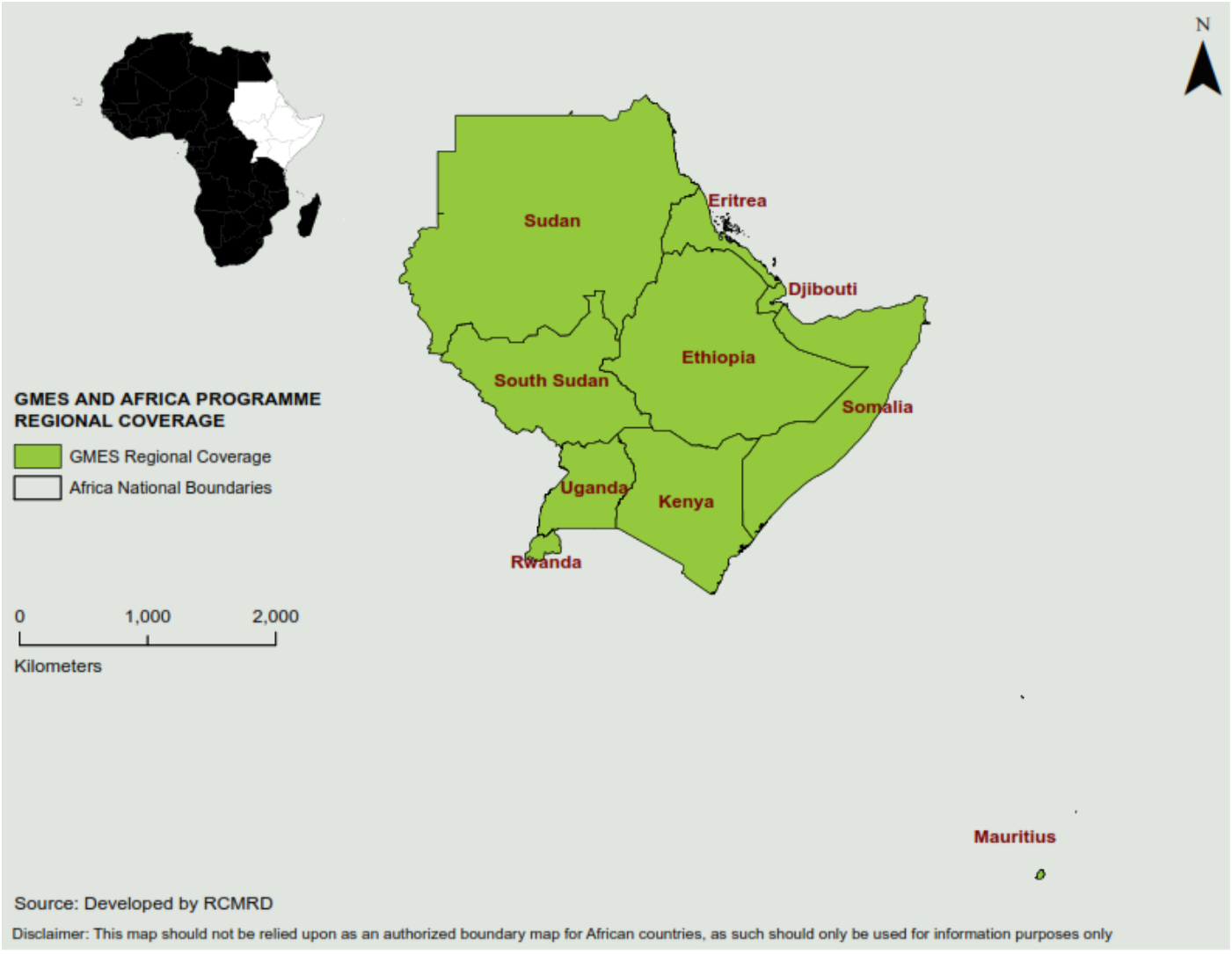
This workshop was an excellent platform for communicators to share their different experiences, successes and challenges and to define new forms of collaboration to improve the impact of their activities. It was expected that after the training, there will be increased capacity of consortia in deploying communications to raise awareness, and embark on regional outreach; improved skills of consortia communications staff in identifying and utilizing most effective mechanisms and tools for EO communications towards promoting integrated decision making; strengthened capacity of consortia to chronicle and popularize the impact made by GMES and Africa at the grassroots level; greater harmony and synchronization between the communications platforms, approaches and practices of consortia and integrated recommendations for group practice.

On the final day, the Communications Experts presented the GMES and Africa Successes to Mr. Pietro Nardi Program Manager at European Commission *(EEAS-ADDIS-ABABA*), Ethiopia and Ms. Iride Boffardi, Communications Team Leader, Delegation of the European Union to the African Union, Addis Ababa, Ethiopia. Communications Experts received a certificate on the GMES and Africa Communications on Earth Observation Course conducted at African Union Headquarters, Addis Ababa, Ethiopia.

Figure 9: GMES and Africa Communications Discussion During the Officially Launch

Countries Coverage

The 10 Countries that are covered by RCMRD are: Djibouti, Eritrea, Ethiopia, Kenya, Mauritius, Rwanda, Somalia, South Sudan, Sudan and Uganda.



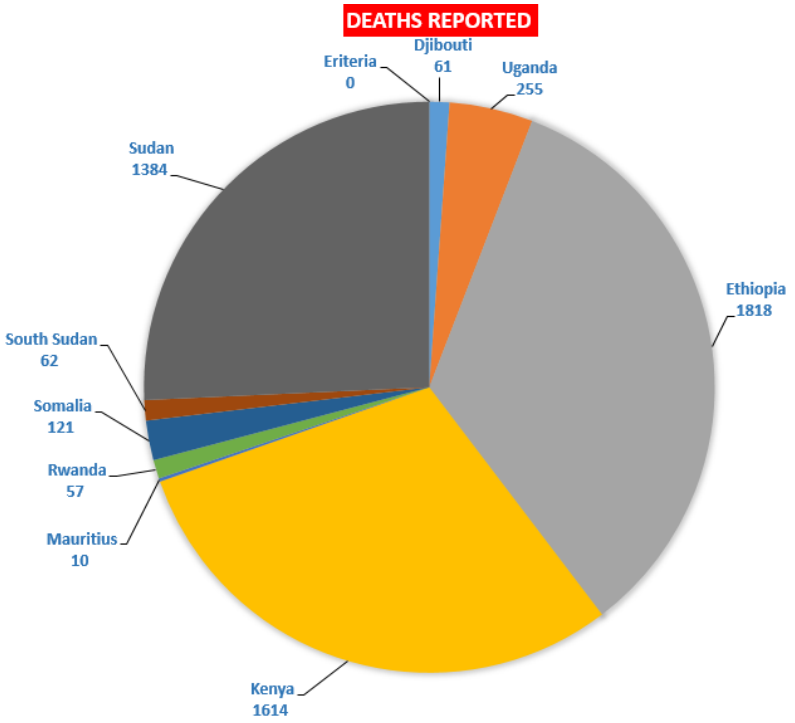
Djibouti Eritrea Ethiopia Kenya Mauritius Rwanda Somalia South Sudan Sudan Uganda

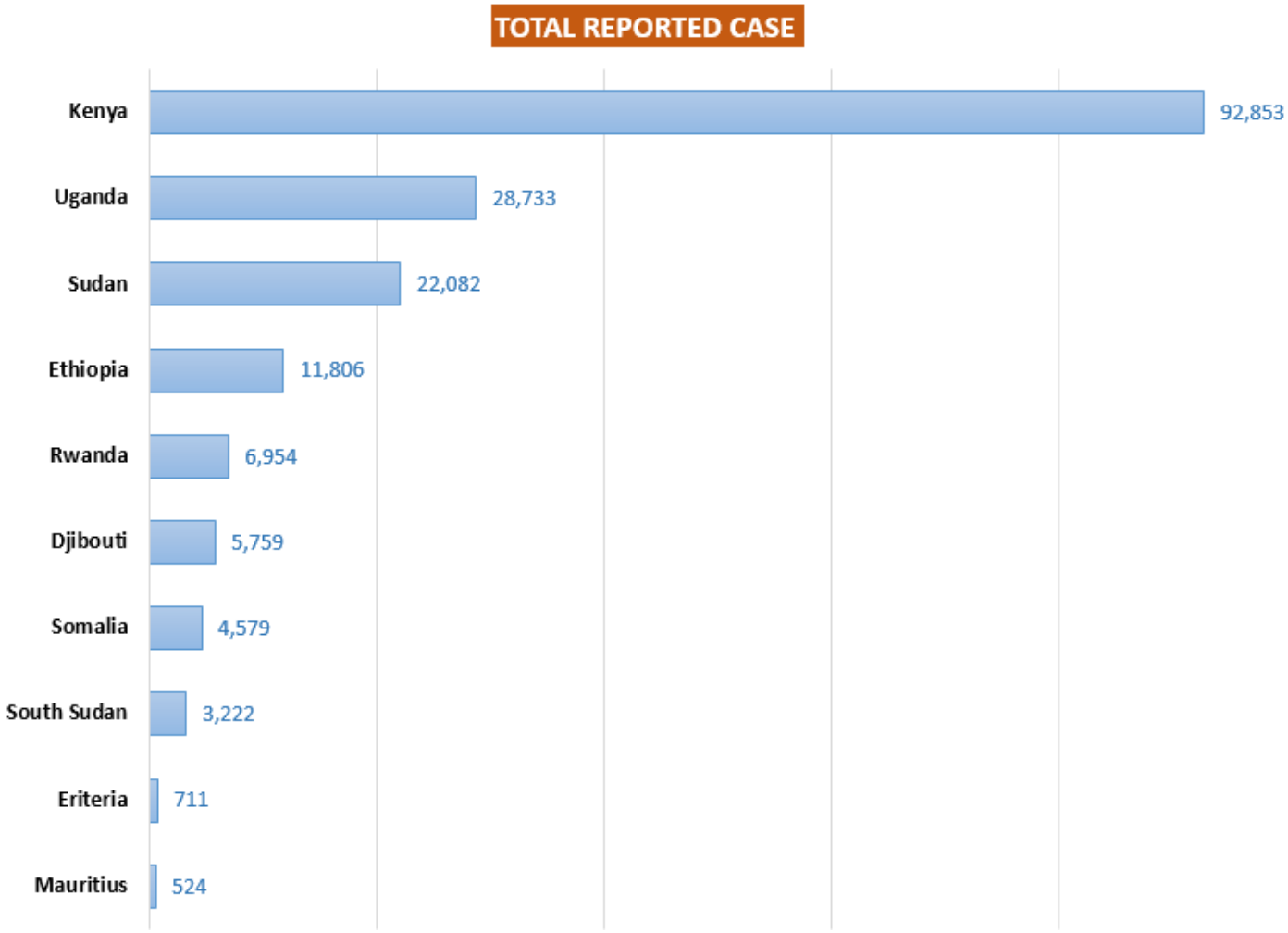
Covid 19 statistics

RCMRD came up with a **Covid 19 Open Data Hub** page that provides information, maps and resources about the coronavirus response in our 20 Member States in Eastern and Southern Africa.

Here is the Coronavirus **Reported Cases** and **Deaths Reported** in GMES and Africa covered countries, as at 17-Dec-2020.

https://covid19.rcmrd.org

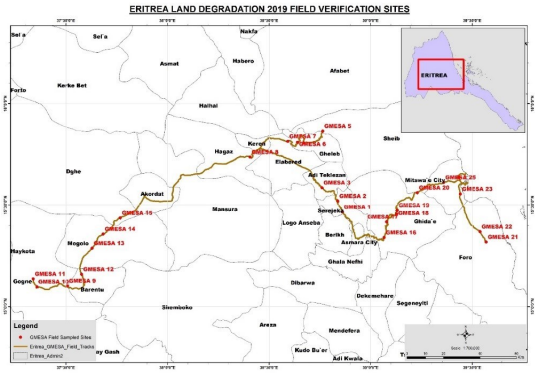




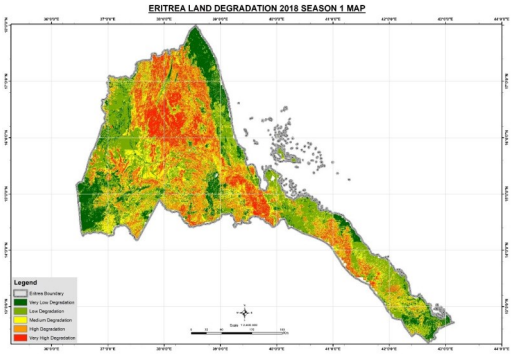
Pictorials

Land Degradation

Land Degradation



Eritrea Land Degradation 2019 Field Verification Sites

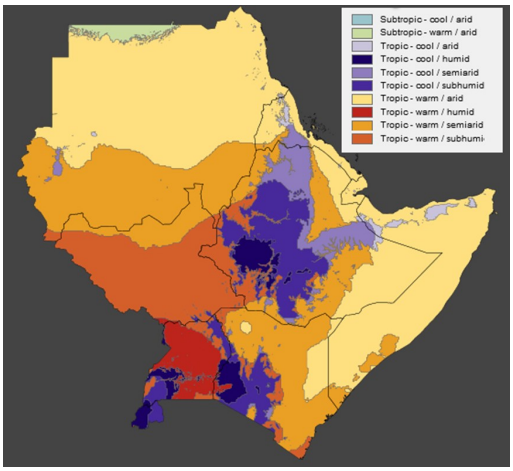


Eritrea Land Degradation 2018 Season 1 Map

Monitoring Visit 2020

GMES & Africa Team visit to RCMRD for a follow up monitoring

Land Degradation



Agro-Ecological Zonings in Participating Countries

Regional Centre for Mapping of Resources for Development

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