

AFRICAN UNION

الاتحاد الأفريقي



UNION AFRICAINE

UNIÃO AFRICANA

P. O. Box 3243, Addis Ababa, ETHIOPIA Tel.: (251-11) 5525849 Fax: (251-11) 5525855
Website: www.africa-union.org

**SECOND (2nd) CONFERENCE OF THE SPECIALIZED TECHNICAL COMMITTEE (STC)
ON AGRICULTURE, RURAL DEVELOPMENT, WATER AND ENVIRONMENT**

**REPORT ON THE IMPLEMENTATION OF THE MONITORING FOR ENVIRONMENT
AND SECURITY IN AFRICA (MESA) PROJECT**

**02 OCTOBER - 06 OCTOBER 2017
ADDIS ABABA, ETHIOPIA**

*“Enhancing environmental sustainability and agricultural transformation to achieve food and
nutrition security in advancing Agenda 2063”*

Original: English

Table of Contents

A.	BACKGROUND.....	2
B.	MAIN OBJECTIVE OF THE MESA PROJECT.....	2
C.	PROJECT COMPONENTS.....	2
D.	OBJECTIVE OF THE REPORT	3
E.	MAIN ACHIEVEMENTS OF THE MESA PROJECT	3
F.	SOME EXAMPLES OF SUCCESS IN THE USE OF MESA PRODUCTS AND SERVICES IN DECISION MAKING	9
G.	FOR THE STC CONSIDERATION.....	10

IMPLEMENTATION OF THE MONITORING FOR ENVIRONMENT AND SECURITY IN AFRICA (MESA) PROJECT

A. BACKGROUND

1. At its Fourteenth Session that took place in Arusha, Tanzania from 10 to 14 September 2012, the African Ministerial Conference on the Environment (AMCEN) adopted the AMCEN Report AMCEN/14/EGM/3 containing Decision 13/6 on African Monitoring of Environment for Sustainable Development (AMESD), urging Member States to integrate AMESD products and services into their planning and development processes. The Regional Implementation Centres (RICs) of the African Monitoring of Environment for Sustainable Development (AMESD) programme were instructed to articulate the AMCEN decision and disseminate information to users of AMESD products and services and for governments to integrate these products and services into their development planning processes. The respective Regional Economic Communities (RECs) were urged to facilitate this among their Member States. It was appreciated that policy makers would need training on how to integrate and also be exposed to the various options to integration. As part of the added value to measuring the impacts of climate change, AMESD products and services aims to provide updated environmental data to African policy makers to support decision making for sustainable development in the continent.
2. AMCEN also noted that the AMESD programme was coming to an end in June 2013 and that a new programme – ‘Monitoring for Environment and Security in Africa (MESA)’ – would bridge AMESD with the follow-up ‘Global Monitoring for Environment and Security (GMES) and Africa’ Initiative and build on the results of AMESD to address the needs for improved management of natural resources and environmental security towards sustainable development in Africa, at continental, regional and national levels, including all Sub-Saharan African countries. The implementation of MESA started in 2013 and will close in 2018. Under the coordination of the African Union Commission (AUC) and with financial support of 37 million Euros from the European Union, MESA is implemented in 49 Sub Saharan African Countries.

B. MAIN OBJECTIVE OF THE MESA PROJECT

3. The overall objective of the MESA project is to support African decision makers and planners at continental, regional, and national levels in designing and implementing policies, strategies, and development plans for sustainable development. The main purpose of the project is to increase the capacity of African mandated institutions in decision making, information management, and development planning by enhancing their access to, and exploitation of EO applications in Africa.

C. PROJECT COMPONENTS

4. In order to achieve the objective of the project and realise the purpose of the project, the implementation of MESA aims to address five key result areas (RA) as follows:
 - RA 1: Improved and sustainable access, by African stakeholders, to earth observation (EO) data and information at continental, regional and national levels.
 - RA 2: Improved EO data and information services that contribute to better decision-making and planning at continental, regional and national levels.

- RA 3: Improved geographic and thematic cross-fertilisation and cooperation, both among African regions and with European partners, in the interest of synergised, efficient, and integrated information services on a continental scale.
- RA 4: Strengthened political and policy development frameworks sufficient to ensure an active and sustainable participation of African stakeholders in initiatives concerning EO for environment and security.
- RA 5: Enhanced capacity that will contribute to sustainable and long-term benefits.

D. OBJECTIVE OF THE REPORT

- 5. This brief report aims to:
 - a) update the Specialized Technical Committee (STC) on the main achievements of MESA project, per result area, with a few selected examples of success stories registered in the five participating regions; and
 - b) seek the guidance of the STC on Agriculture, Rural Development, Water and Environment on ensuring sustainability and continued exploitation of the achievements of the MESA project now and beyond the project life span.

E. MAIN ACHIEVEMENTS OF THE MESA PROJECT

Result Area 1: Improved and sustainable access to EO data and information

- 6. In order to achieve the result, the project focused on two main issues, namely: (1) providing new and updated infrastructure to Member States for accessing, processing, and disseminating data and information; and (2) securing data sources by making agreement with data providers for all Member States to access.
- 7. During the course of implementation, the MESA project equipped mandated institutions with modern infrastructure needed to access satellite and in situ EO data in the areas of water monitoring for river transport, water monitoring for cropland and rangeland management, land degradation mitigation, natural habitat conservation, forest management, coastal and marine resources management, drought and food monitoring, wild fire monitoring, climate services for disaster risks reduction, and agricultural and environmental resources management.
- 8. In total, the project supplied 188 sets of satellite data receiving equipment (called stations) for both environmental and meteorological purposes 49 Sub-Saharan African countries (Figure 1).
- 9. 154 of the equipment are environmental stations (called MESA stations) integrated with e-station software to monitor various environmental indicators. The station allows the acquisition, processing, visualization and analysis of key environmental parameters derived from earth observation data. The e-station is customizable and contains raw data as well as environmental services and products designed for African users.
- 10. The remaining 54 stations are meteorological stations (called PUMA stations) supplied to 49 Sub-Saharan Africa Member States. The equipment is installed with weather

forecasting software to access data for sustainable and competent meteorological services.

11. On average, each Member State is equipped with four (4) sets of equipment one of which is for meteorological purposes.

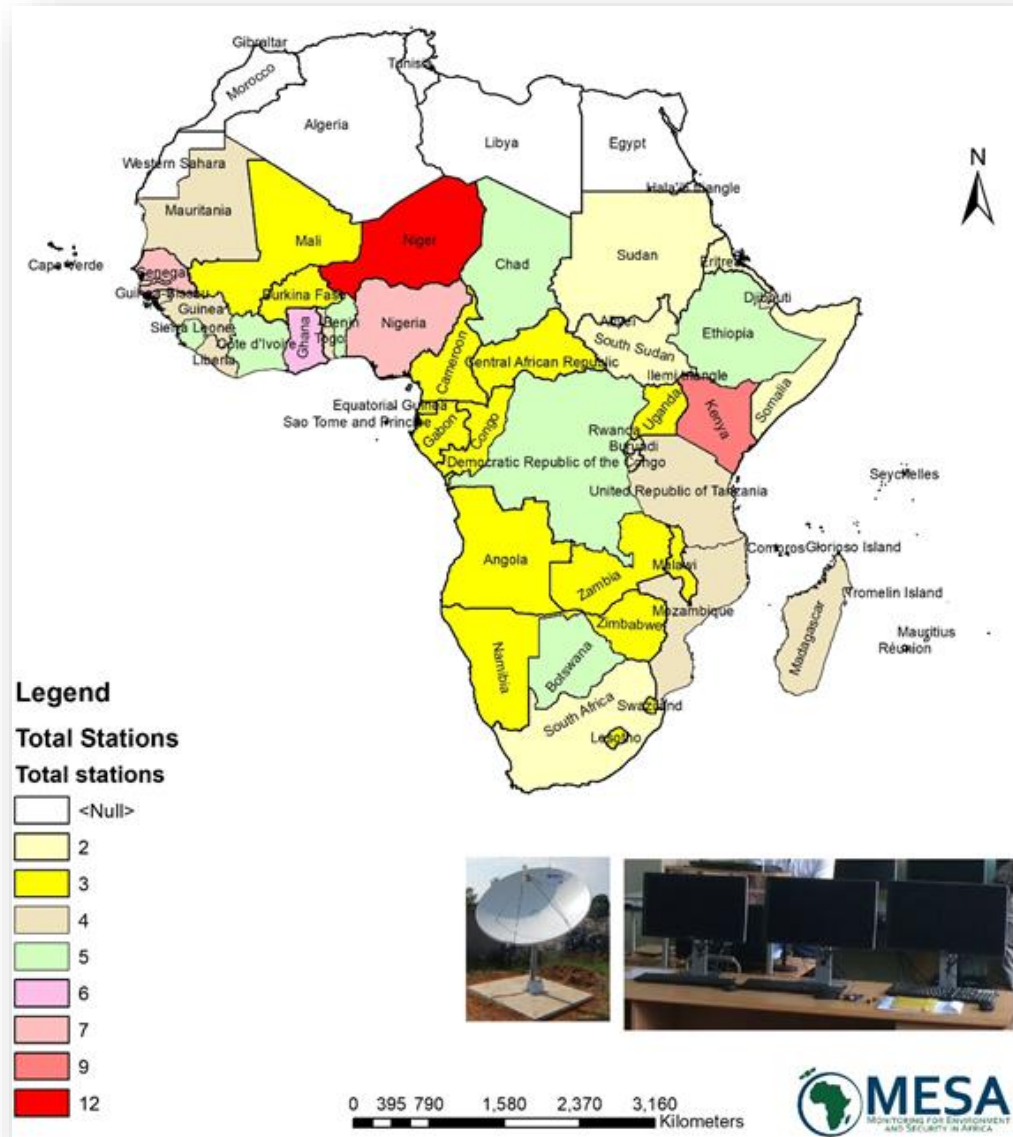


Figure 1: Number of Sets of Equipment per Member State

12. In addition to provision of equipment, the African Union Commission (AUC) signed a Memorandum of Understanding (MOU) with the European Organization for the Exploitation of Meteorological Satellite (EUMETSAT) to guarantee African institutions access to free EO data from Europe’s EUMETCast data dissemination system. The AUC

also has agreements with the European Space Agency to assess sentinel data and the European Union Copernicus programme data.

13. Each of the Regional Implementation Centre (RICs), also has agreements with other sector-specific data agreements and utilise data from other sources.

Result Area 2: Improved data and information services

14. In achieving Result Area 2, the project aimed at (1) sustaining and improving the products and services which were developed under AMESD; and (2) developing new services.
15. MESA developed and is routinely delivering 18 different information services. Table 1 below summarizes the thematic services, regions where the services are delivered, types of products and services disseminated to users, and online address for accessing the services.

Table.1: Data and information services developed, consolidated, and delivered by the MESA project

Region	Thematic Service	Institutions leading implementation in the region
Intergovernmental Authority on Development (IGAD)	<ol style="list-style-type: none"> 1. Land degradation assessment 2. Natural habitat conservation assessment 3. Forest monitoring 	IGAD Climate Prediction and Applications Centre (ICPAC) – Nairobi, Kenya Products can be accessed from http://mesa.icpac.net/index.php/products-and-services/ldms1/service1products
Economic Community of West African States (ECOWAS) <i>Marine thematic action</i>	<ol style="list-style-type: none"> 4. Management of marine resources including potential fishing zones (PFZ) 5. Ocean condition monitoring including safety at sea 	ECOWAS Coastal and Marine Resources Centre, University of Ghana – Accra, Ghana Forecasts, products, and services are disseminated via the UG MESA website. http://www.ug-mesa.org/index.php/observations
Southern African Development Community (SADC)	<ol style="list-style-type: none"> 6. Agriculture 7. Drought and flood monitoring 8. Wildfire 	SADC Climate Services Centre (SADC-CSC) / Botswana Department of Meteorological Services (BDMS) – Gaborone, Botswana Products and services are regularly disseminated and can be access on http://www.mesasadc.org/mesa http://www.mesasadc.org/bulletins
Indian Ocean Commission (IOC)	<ol style="list-style-type: none"> 9. Marine resources management 	Mauritius Oceanography Institute (MOI) – Albion, Mauritius Products and services can be accessed

	10. Monitoring of coastal environment 11. Ocean condition monitoring	through the website: http://moi.govmu.org/amesd/bulletins/list.php
Economic Community of West African States (ECOWAS) <i>Land management thematic action</i>	12. Crop management 13. Rangeland management 14. Wildfire monitoring	Agrhymet Regional Centre – Niamey, Niger Website: http://www.agrhymet.ne/portailCC/index.php/fr/ mesa
Central African Economic and Monetary Community (CEMAC)	15. Water level 16. Water balance	International Commission for the Congo–Oubangui–Sangha Basin (CICOS) – Kinshasa, Democratic Republic of the Congo Products and services can be accessed from the website: http://www.meteo-congo-brazza.net/cicos/home.php
Continental (ACMAD)	17. Drought service and seasonal climate forecast 18. Climate change assessment	African centre of Meteorological Application for Development (ACMAD) – Niamey, Niger Website: http://www.acmad-au.org/products-services/

16. 11 of the 18 services are consolidated and further improved from the previous AMESD program to provide information relevant for monitoring the water level and flow rate of key rivers used for commercial transport, water cycle information to help agriculture (best planting time, improved crop yields, etc.), monitoring of the condition of rangelands for livestock management purposes, fisheries resources, land degradation and natural habitat conservation.
17. The remaining seven (7) services are new introduced during MESA and are relevant for tracking the depletion and/or degradation of forest resources, monitoring of marine pollution and coastal erosion, coastal vulnerability, safety at sea, and climate services for disaster risks reduction. These services are regularly delivered products using the stations supplied under MESA and information bulletins disseminated by e-mail, website and FTP sites.
18. A well-defined service development mechanism has been developed with clear guidelines, steps, methodologies and tools for the standardization and harmonization of EO service development process in Africa. These include methods for service definition and products cataloguing, service validation and integration, peer review mechanisms by taking lessons from previous projects and other international standards and practices.

Result Area 3: Improved geographic and thematic cross-fertilisation and cooperation

19. The project is promoting collaboration and exchange of knowledge among African experts in the five participating regions through its cross fertilization and continentalization interventions. This improved geographical and thematic cross-fertilization and cooperation both among regions on the African continent and with European partners.
20. In its effort to promote cross fertilization, MESA successfully implement inter-regional knowledge transfer actions allowing a region to adopt products and services developed in another region.
21. Consequently, transfer two marine information services from the Indian Ocean Commission (IOC) region to the ECOWAS region took place; the transfer of the agriculture service from the SADC region to the IGAD region took place; and many other transfers are ongoing.
22. A number of exchanges and collaboration took place for the effective transfer of knowledge and methods between experts from different African and European institutions including the European Commission Joint Research Centre (JRC), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), and others.
23. Moreover, with the aim of developing synergized, efficient, and integrated information services at continental level, MESA successfully established and promoted an African platform for the development of the Continental Environmental Bulletin. A Team of African Experts is in place and collaborates with other experts from Europe.
24. A multi-disciplinary team of experts from the five African regions in collaboration with the Joint Research Centre (JRC) of the European Commission provides unique overviews of the African continental environmental situation twice every year. Five bi-annual Continental Environmental Bulletins based on analyses of environmental indicators have since been developed. This highly improved evidence based monitoring by using observed information derived from EO, complemented with climate forecast information to give an outlook on the environmental situation at continental level. These continent-wide environmental information is made available to relevant institutions across Africa in English, French and Portuguese languages.

Result Area 4: Strengthened political and policy development frameworks

25. The ultimate goal of MESA is reaching out to decision makers and development planners so that MESA operational information services are used for better environmental policies, decision structures and management interventions.
26. Accordingly, MESA organized policy dialogue days and fora at country level with the aim of popularizing MESA products and services to policy and decision makers, and demonstrate how these products and services can be used for decision making.
27. Continental policy dialogue workshops were organised with the aim of introducing products and services offered by MESA to decision makers (Directors, Permanent

Secretaries, etc.) and demonstrating to them how EO services can be used in decision making. The workshops also acted as a means of getting feedback on the use of MESA products and services, how they can be improved, etc.

28. Over 100 policy and decision makers participated in the policy dialogue workshops thereby creating huge awareness on use of EO in policy and decision making.
29. Two continental fora, drawing together policy and decision makers, academia, local community users, the media, and other, were organised to provide a platform for sharing information between service providers (technical institutions) and users (policy and decision makers, development planners, and local community users).
30. Some regions such as the Intergovernmental Authority on Development (IGAD) have reviewed their policy papers on the integration of EO in their regional development planning.
31. Apart from this, MESA has developed two environmental framework documents with the aim of strengthening political and policy development frameworks in Africa. These two key documents are expected to serve as a reference documents to help African stakeholders to actively participate in global environmental governance in initiatives concerning Earth Observation for environment and security.

Result Area 5: Capacity enhancement for sustainable and long-term benefits

32. The focus under this result area was on (1) conducting a needs assessment to inform areas where training is required; (2) developing relevant courses to address the needs; (3) delivering training; and (4) ensuring continued access to training and training materials.
33. Based on the training needs analysis, 54 course materials have been designed and developed.
34. The MESA project collaborated with African universities and regional training centers in the design of courses as well as training delivery.
35. A total of 1826 experts from the 49 Member States have been trained through both onsite (906 trainees) and distance (920 trainees) training modes.
36. 131 experts drawn from 40 African institutions have been trained as Trainers.
37. The web-based MESA Learning Management System (LMS) has been developed and offers a large volume of training resources that can be used by African training institutions and accessed by African experts from wherever they are even beyond the lifetime of the MESA project. The LMS can be accessed on lms.training4mesa.org.
38. The AU Commission also has agreements with four World Meteorological Organisation (WMO) Regional Training Centres and some National Training Centres in Kenya, Mauritius, Niger, and South Africa on the provision of training. The MESA project provided training equipment for the delivery of training and African experts have been undergoing training at the centres.

39. With the web-based MESA Learning Management System (LMS), sufficient numbers of trainers trained, and good training facilities that have been put in place, MESA ensures sustainability of its capacity building intervention beyond the program implementation period.

F. SOME EXAMPLES OF SUCCESS IN THE USE OF MESA PRODUCTS AND SERVICES IN DECISION MAKING

40. The main beneficiaries of MESA are the policy and decision makers who are provided with enhanced access to reliable, near-real time, accurate and timely information to support their decision making. This, ultimately, benefits the wider community. MESA is, thus, contributing to decision making in many instances as pointed out in just a few of the many available examples per region below:

a) In the Inter-Governmental Authority on Development (IGAD) region

41. The Kenyan Wild Service (KWS) Authority in Kenya used the project's land cover change maps of Mount Kenya to make a critical decision to fence a national park for protection of the wildlife from growing competition with the local population. By using the Natural Habitat Conservation (NHC) products of MESA, KWS took measures that help to protect the ecosystem by excluding destructive human and livestock activities in the protected area.
42. Authorities in Uganda used MESA data such as land cover/land use products to prepare of their National State of Environment (SOE) Report, which is used as a tool used to monitor and assess changes in the environment and also provides information necessary to put in place best practices to manage the environment. With this information, the public is sensitized about the actions that needs to be taken and allowed the government to engage with private owners in planning land restoration activities. Similarly, information provided for wetland resources led to cancellation of land titles in wetland areas to enable their restoration.
43. Through the MESA project IGAD region has revised its strategy on the use of earth observation technologies. IGAD developed its ***EO Policy for Environmental Monitoring*** and harmonized it with other relevant policy frameworks. The overall goal of the policy is "to promote efficient acquisition, use and dissemination of EO infrastructure and services among a broad range of stakeholders capable of fully harnessing EO data and services for enhanced environmental monitoring, management and decision making in the IGAD region",

b) In the Central African Region

44. The Federation of Enterprises of Congo Navigation use water alert information generated by the MESA project to navigate dangerous sections of the rivers. A Petroleum company which uses river transport made the use of daily bulletins on river height level mandatory for approving navigation. In the region, the project promotes trade, safe transportation, and integrated water resources management

c) In the ECOWAS region

45. Authorities in Ghana use the project information to manage fisheries as well as to track illegal, unreported, and unregulated (IUU) fishing by using MESA products for monitoring,

control and surveillance team to help them better plan their patrol mission to combat illegal, unregulated and unreported (IUU) fishing.

46. By using satellite based EO data on ocean condition, University of Ghana provides SMS alert of ocean condition to artisanal fishermen. These SMS messages further interpreted by fishermen association with simple three colour flag at community level to indicate the state of the sea. This use of SMS and flag system to transmit alerts of ocean conditions to the fishing community is found to be quite helpful in saving lives and ensuring safety at sea.
47. In Niger, the monitoring of pasture lands through MESA products enables the detection of risks in pastoral areas and consequently enhance sustainable livestock management. Through this mechanism in the year 2015, the National Mechanism for Prevention and Disaster Management and Food Crises (DNGPCCA) in Niger, stored 5000 tonnes of pastures in order to mitigate the crisis that was impending.

d) In the Indian Ocean Commission (IOC)

48. In Mauritius, the MESA project identifies vulnerable coastal areas which is critical for disaster prevention and response.
49. In April 2011, about 300 people in Madagascar who consumed harmful algal were killed. Now Authorities use MESA data and products to regularly monitor and warn communities against consumption.

e) In the SADC Region

50. MESA products are used by inter-ministerial teams to validate their drought indices for drought assessment. In Botswana, the products were used to prepare a report presented to Parliament about the severity and distribution of drought. Based on this report, H.E. the President of the Republic of Botswana declared drought in the country. This was very critical for putting in place appropriate and timely national response measures.

f) At Continental level

51. Through the Climate Services for Disaster Risk Reduction Action, the project produces hazard scenarios for various African regions in order to enable authorities plan for expected hazards.

G. FOR THE STC CONSIDERATION

52. Member States, the African Union Commission, Reginal Economic Communities (RECs), and Regional Intergovernmental Organisations have been playing a critical role in the implementation of the MESA project. The project has made a number of achievements which need to be sustained and continue to be benefits communities at continental, regional, and national levels beyond the project life time. The STC may, therefore, wish to take note of the achievements of the MESA project and accordingly:
 - a) Urge RECs and Member States to continue utilizing and integrating earth observation techniques in their environmental monitoring and reporting, policy and decision making, and development planning processes beyond the project life;

- b) Urge the African Union Commission to continue playing a catalytic role of ensuring inter-regional and thematic transfer (cross-fertilization) of knowledge and services; and
- c) Considering the contribution of MESA in the implementation of the MESA Climate Services for Disaster Risks Reduction thematic action, urge the AUC to continue playing its leading role of ensuring continued, coordinated, and coherent implementation of the Global Framework for Climate Services (GFCS) in Africa.