REPUBLIC OF SOUTH SUDAN
MINISTRY OF ENVIRONMENT AND FORESTRY
DIRECTORATE OF WETLANDS AND BIODIVERSITY

Workshop Report

Biodiversity Data Mobilization Awareness Workshop

Global Biodiversity Information Facility (GBIF)
BID-AF2017-0386-NAC
Land Mark Hotel, Juba South Sudan
17th – 18th May, 2018

Compiled by

Paul Lado Demetry & Lwanga Tiba Charles
BID-GBIF-Project Coordinator & Biodiversity Database Manager
Ministry of Environment and Forestry

28th July 2018

Table of Contents

List of Acronyms

AWF	African Wildlife Foundation
AGRA	Alliance for a Green Revolution in Africa
BMP	Biodiversity Management Program
BIOPAMA	Biodiversity for Protected Areas Management
BID	Biodiversity for Development
BRAHMS	Botanical Research and Herbarium Management System
CBD	Convention on Biological Diversity
CHM	Clearing House Mechanism
EIA	Environmental Impact Assessment
EU	European Union
FFI	Flora Fauna International
GBIF	Global Biodiversity Information Facility
GTI	Global Taxonomy Initiative
IPT	Internet Protocol Address
MEAs	Multilateral Environment Agreements
MoE&F	Ministry of Environment and Forestry
MWC&T	Ministry of Wildlife Conservation and Tourism
NBDS	National Biodiversity Database System
NMK	National Museums of Kenya
RVI	Rift Valley Institute
RRIS	Regional Reference Information System
RRIS	Regional Reference Information system
SANBI	South African National Biodiversity Institute
SSNCO	South Sudan Nature Conservation Organisation
UNFAO	United Nations Food and Agricultural Organisation
UNIDO	United Nations Industrial Development Organsiation
UNOCHA	United Nations office for Coordination of Humanitarian Affairs
WDPA	World Database on Protected Area
WCS	Wildlife Conservation Society
WDPA	Wildlife Database on Protected Areas

1. Introduction

The National Ministry of Environment and Forestry through funds from the European Union is implementing a project, Development of National Biodiversity Database System (NBDS) BID-AF2017-0386-NAC under the Global Biodiversity Information Facility (GBIF) co-funded by the Inter-Governmental Authority on Development (IGAD) Biodiversity Management program (BMP).

National Biodiversity Database System (NBDS) aims to contribute to the development, maintenance and update of biodiversity facility to mobilize data and information for different users to aid reporting and decision making process related to sustainable biodiversity conservation and management in the Republic of South Sudan.

Biodiversity Data Mobilization Awareness workshop was conducted from 17th to 18th May, 2018 in Juba Landmark Hotel, The workshop was organized with the aim to create awareness to the Biodiversity data holders, managers and users about the importance of data mobilization and sharing with decision makers, academia and wider public.

This workshop was plan under the BID-GBIF project co-funded by the IGAD Biodiversity Management Program (BMP) which the National Ministry of Environment and Forestry is currently implementing.

A total of 33 participants took part in this workshop and they were mostly drawn from the line Ministries, academia, National & International NGO's and developmental partners.

Two International consultants from the neighboring countries were invited to share their experiences, one regional consultant from the National Museum of Kenya, who work extensively with GBIF and the IGAD Biodiversity Management Program on Database and the other one from Future University Khartoum who also helped Sudan in developing their Biodiversity Portal and database system under the Higher Council of Environment and Natural Resources, Ministry of Environment and Physical Development.

Both shared their experiences in Biodiversity Data Mobilization, Data sharing, protocol and Data publishing.

Methodology

The workshop session consists of series of presentations, practical exercises, general discussions, questions and answer sessions. In the data mobilization exercise plan, two groups were formed to brainstorm on assessing biodiversity data, data holders where participants were randomly split in two groups depending on their background, institutions, agencies, local and international non-governmental organizations to identify the type and format of data they have and later presented their findings in a plenary.

2. Official Opening

Mr. Jada Albert, Moderator   Mr. David Batali Oliver, MoE&F   Mr. Martin Dramani, UNEP

The workshop was officially opened by the representative of the undersecretary for Environment in the National Ministry of Environment and Forestry Mr. David Batali who is also the Director General for Environmental Planning and Sustainable Development.

Mr. Jada Albert, a consultant conversant with environment and development issues moderated the workshop and facilitated the working groups to ensure the participants understand the objectives of the workshop and the Global Biodiversity Information Facility (GBIF) and the development of the National Biodiversity Database System (NBDS).

The United Nations Environment Program was represented by Mr. Martin Dramani, program specialist who delivered a remark on behalf of the UNenvironment office in South Sudan. He emphasized on the need for a centralize data and information depository for biodiversity to facilitate reporting and development of reports likes the 5th and 6th National Report to the Convention on Biological Diversity (CBD) and the development of the National Biodiversity Strategy and Action Plan (NBSAP). He reiterated the support of UNEP in the development of the Clearing House mechanism (CHM) which will host most of the biodiversity data and information country wide and will act as a one stop shop for biodiversity data and information in South Sudan.

Mr. David thanked the Global Biodiversity Information Facility (GBIF) and the Inter-Governmental Authority on Development (IGAD) and the European Union for the support they provided to the government of South Sudan through the Ministry of Environment and Forestry to develop the National Biodiversity Database System (NBDS) with the aim to mobilise data and information on biodiversity that could be shared regionally and globally.

He also applauded the participants in the workshop for their attendance and urged them to collaborate with the Ministry of Environment on the mobilization of the Biodiversity data to generate the much needed information to aid decision making process in the conservation and management of Biological diversity.

Mr. David declared the workshop opened and encourage the participants to deliberate in the two days to forge a way forward that could be implemented by the Ministry of Environment and Forestry and other relevant institutions to operationalize the National Biodiversity Database System.

3. Workshop Objectives and stage setting

3.1. National Biodiversity Database System (NBDS)

Figure 1: The Project Coordinator, Mr. Paul Lado Demetry presenting the objectives of the workshop

The project coordinator highlighted on the aims and objectives of the workshop by summarizing the following: He emphasized on the development of the National Biodiversity Database System (NBDS), whose aim is to contribute to the development, maintenance and update of biodiversity data and information for different users to aid reporting and decision making process related to Sustainable biodiversity conservation, management and utilization in the country and beyond.

Development of National Biodiversity Strategy and Action Plan (NBSAP) allows South Sudan to integrate its plans under the Convention on Biological Diversity (CBD) in consistent with its national development and sectoral planning frameworks through a participative 'biodiversity planning' and strategizing process, in a manner that is in line with the global guidance contained in the CBD's Strategic Plan for 2011-2020

The Project is co-funded by IGAD Biodiversity Management Programme, Development of National Biodiversity Database System (NBDS), BID-AF2017-0386-NAC under the Global Biodiversity Information Facility (GBIF) at the tune of 40,000 Euro. Many of available biodiversity data are unknown or kept by individuals, the loss of genetic diversity may be rapid in South Sudan and many species may be declining particularly or even getting extinct without being documented.

The NBDS aims to contribute to the development, maintenance and update of biodiversity data and information for different users to aid reporting and decisions, a nationwide assessment of Biodiversity data and data holders. Biodiversity cadres will be trained in packaging and disseminating tailored information to have greater impact and ensure decisions are taken in a wise and timely manner concerning biodiversity in South Sudan.

The workshop aims to listen to a brief of the IGAD-BMP Database Project and GBIF, Review of the existing databases for biodiversity, brief of Status of National Biodiversity Database for South Sudan. Learn from the experiences of Sudan, Kenya and the Region on data mobilization, management and use of Biodiversity Data, challenges and recommendations on the best way forward to mobilize Biodiversity data.

4. Biodiversity Database Mobilisation and Management

4.1.   National Biodiversity Data Mobilisation Plan

Figure 2: Mr. Lwanga Tiba Charles, Presenting the Biodiversity Data Mobilisation Plan for South Sudan

The Biodiversity database manager in the Ministry of Environment and Forestry presented the following highlights: The Global Biodiversity Information Facility (GBIF) is an international open data infrastructure, funded by governments. It allows anyone, anywhere to access data about all types of life on Earth, shared via the global platform www.gbif.org and through national and thematic portals.

The Global Biodiversity Information Facility aims of increasing the amount of biodiversity information available for use in scientific research and policymaking in the sub-Saharan Africa, the Caribbean and the Pacific (ACP) nations.

Identification of Biodiversity Data holders, Compilation of all the Biodiversity data from the data holders and incorporation in to the National Biodiversity database System is ongoing. Effective share of information with researchers, policy, decision makers and the wider public will be done towards the end of the project.

In the Ministry of Wildlife Conservation and Tourism, identification of Biodiversity Data holders on protected areas is ongoing e.g. shape files for Protected Areas - WCS & WDPA and other open sources, Mission to one of the founders of the Rift Valley Institute (RVI) Library in Nairobi – Philip Winter to mobilise data and information, Mission to National Museum of Kenya to digitized Herbarium data. Land cover maps accessed from UNFAO/UNOCHA.

Three members of the GBIF team from South Sudan were trained in Botanical Research and Herbarium Management System (BRAHAMS) software and Digitization and image capture in the East African Herbarium data of Sudan were conducted in National Museum of Kenya (NMK) in February, 2018.

Challenges encountered includes: Inadequate Biodiversity Database infrastructure, Inadequate funds to support Biodiversity data mobilization, many of available data sets are mainly kept and maintained by relevant institutions, Ngo's individuals and are often not publically accessible and are in different formats depending on how there were collected. Inappropriate perception on data ownership is among the biggest barrier for data exchange and sharing. Inadequate technical capacities, Weak internet Bandwidth to support the database were some of the challenges. Mechanism for collaboration with other institution, agencies in sharing, managing data is strongly recommended.

4.2. Wildlife Biodiversity Data and Information System

Figure 3: Mrs. Rachael Amina Cyrus, Presenting the Wildlife Biodiversity Data & Information System

Mr. Rachael Amina, the Wildlife Biodiversity Database officer presented on their efforts in the biodiversity database mobilization as summarized below:

The term Biodiversity used to encompass the variety of all organisms on earth, including their genetic diversity and the diversity of marine, terrestrial and aquatic ecosystems together with their associated evolutionary and ecological processes.

Biodiversity information system provides information of high disturbance and high biological richness areas suggesting future management strategies and formulating action plans.

Wildlife Biodiversity Data and Information System is funded by the GBIF (Global Biodiversity Information Facility) and the IGAD BMP in its effort to protect the diverse wildlife, habitats, and flora in the Horn of Africa, by building the capacity of the local people to manage their natural resources.

The objective is to establish Wildlife database office and information center, To Identify the Wildlife Biodiversity data holders, Compile all the Wildlife Biodiversity data from the data holders, to effectively share the information with researchers, managers in protected area management and the general public at large.

Some of the achievements were the establishment of biodiversity database office in the Ministry of Wildlife Conservation and Tourism, Identification of Wildlife data holders is ongoing, Mission to Philip Winter home library/ Kenya to digitized Wildlife data and reports, Protected area shape files were downloaded from World Database on Protected Areas (WDPA);

Protected Areas Maps, Management Plans, Species Specific Plans &Reports, Wildlife correspondence from 1990s, Aerial Survey Reports, 1980s, Sudan Open Data-Rift Valley Institute (RVI) are being capture and kept in digital and hard copies for easy access to aid reporting and decision making processes pertaining to wildlife biodiversity.

5. Biodiversity Data Mobilisation and Management Experiences from Sudan & the Region

5.1. Biodiversity Database Mobilisation & Management Experience from Sudan

Figure 4: Dr. Altaeb Ganawa, Consultant on Geo-informatics at Future University, Khartoum, Sudan
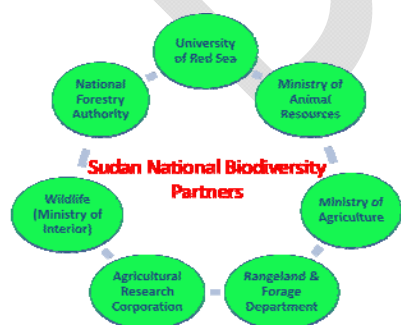
Dr. Ganawa, presented on the establishment of the Sudan biodiversity portal as summarized below:

The IGAD Biodiversity Programme (BMP) is a four year programme financed by the European Union's 10th European Development Fund. It supports IGAD in its efforts to protect the diverse wildlife, habitats and flora in the Horn of Africa.The objective of the project is to collect all relevant information of biodiversity in Sudan and Build a Geoportal Database.

Sudan Experience in Building the Sudan National Biodiversity Database (SNBD), started by the identification of biodiversity database partners, seven (7) meetings were held since the start of activity. Technical Committee was formed to oversee the Geoportal Biodiversity Database preparation and development.

Biodiversity Database components which Sudan started with were as follows; Plant Biodiversity, Animal Farms, Wildlife and Protected Areas, Marine Biodiversity and Forest Biodiversity

The first phase of the biodiversity database preparation concentrated on Range and Forage (genetic resources, surveyed data), Agricultural crops (gene banks), Wildlife and Protected Areas, Forestry biodiversity, Animal genetic resources & distribution, Marine Biodiversity and Herbarium Biodiversity (Herbarium Institutes including Universities). Equipment and Tools: Server Installation (finished), Hardware are and Software, GPSs, Satellite Images

Figure 5: Sudan National Biodiversity Partners and Sudan National Biodiversity Geoportal

5.2. Biodiversity Database Mobilisation & Management Experiences-Eastern African Region

Figure 6: Lawrence Monda – Regional Consultant, IT Manager, National Museums (NMK) of Kenya

Mr. Lawrence Monda, the IT Manager at the National Museums of Kenya presented on experiences from the Eastern African Region in terms of biodiversity data mobilization and management as summarized below: Defining biodiversity, what does Biodiversity Data Mobilization mean? Biodiversity is short for biological diversity, Mobilization means making data available for use by others. Examples of sites that provide access to mobilized biodiversity data is Biodiversity Heritage Library BHL, Global Biodiversity Information Symbiota.org

Participants from the IGAD member's states were trained on BRAMHS on different dates; Staff at the National Museums of Kenya was trained by Denis Filer /Lawrence Monda and was able to digitize 65,000 specimens. Participants from Ethiopian Biodiversity Institute (EBI), Haramaya University, Addis Ababa University, Gulele Botanical Garden and Khartoum University attending the training in Ethiopia from the 20th to 26th May 2017, Ethiopian Biodiversity Institute was able to digitize 3920 specimen and Khartoum University digitized 21,000 specimen.

Participants from Somalia and the University of Khartoum's Herbarium, Herbarium Department and Ministry of Environment attended the training session from 29th October to 3rd November 2017 in the National Museums of Kenya; Participants from Makerere University's Herbarium Department underwent digitization training from the 26th-28th March 2018 in Kampala.

Participants from South Sudan were trained at the National Museums of Kenya from the 19th to 23rd February 2018 and were able to mobilize 1,176 specimens for the whole Sudan but will have to be sorted to separate the specimens for Sudan and South Sudan.

Figure 7: Project Coordinator, Database Manager & Focal Point for GTI attending the Training in Kenya

The participants from South Sudan were also trained on how to manage biodiversity data and make them ready for publishing under GBIF and the IGAD Regional Reference Information System (RRIS).
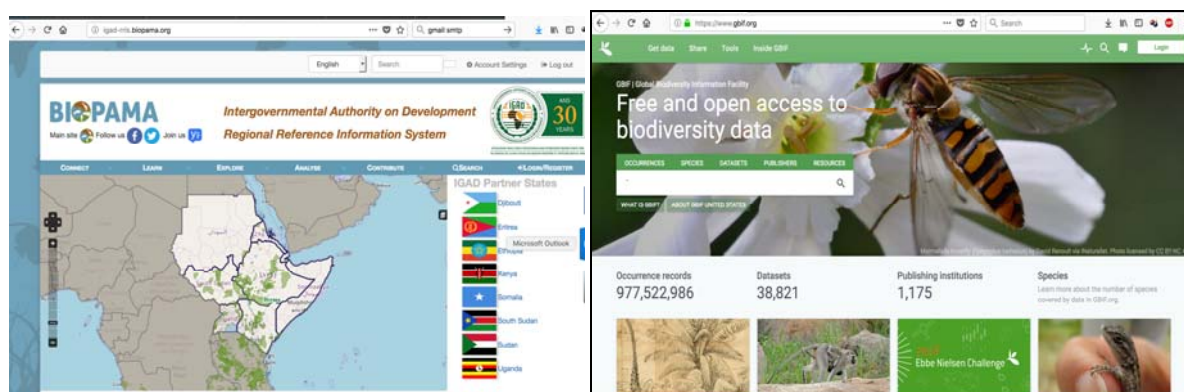

Figure 8: IGAD-RRIS-Biopama and the GBIF Geoportal

Figure 9: Biodiversity Atlas for Kenya developed buy the National Museums of Kenya (NMK)
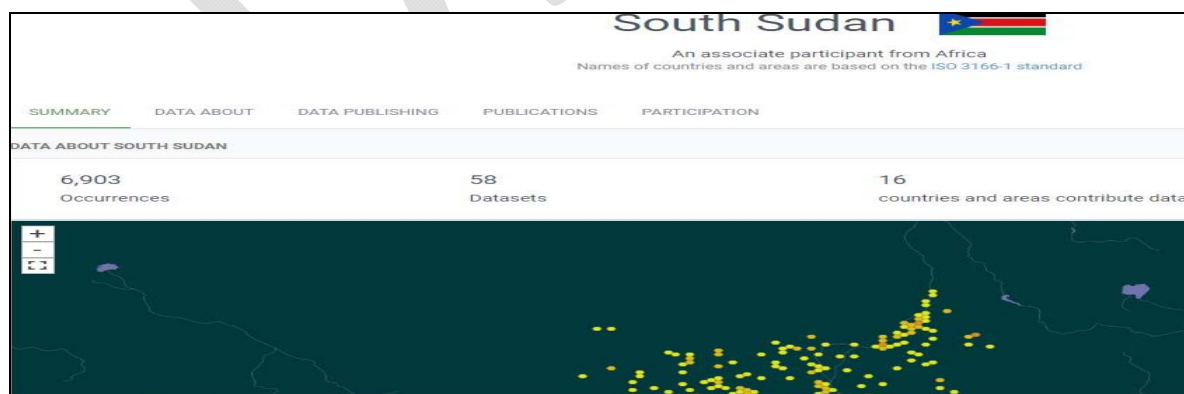

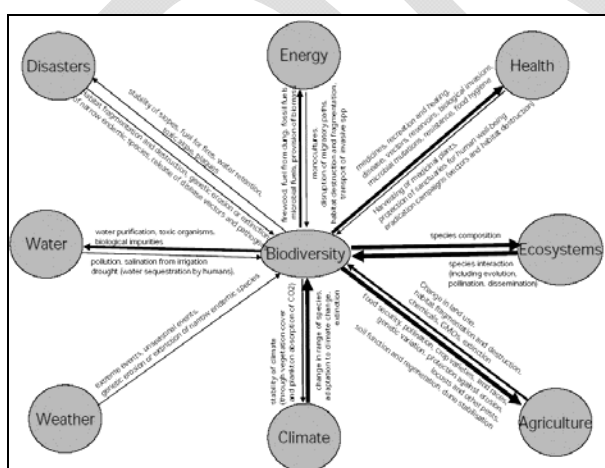*Figure 10: South Sudan Portal Under GBIF*

5.4 Biodiversity Data Use for Decision Makers- Experience from Sudan & the Region
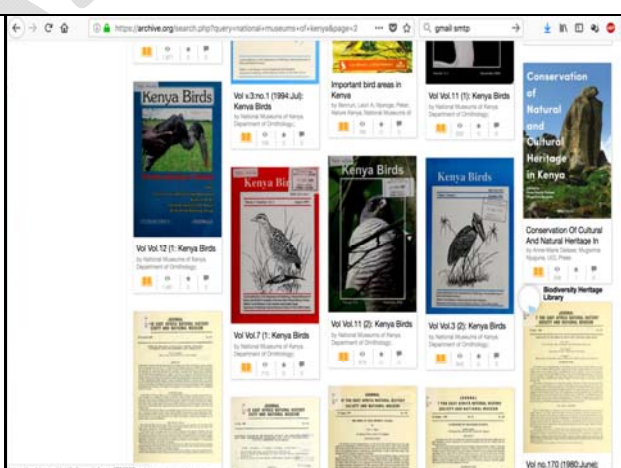

Figure 11: Lawrence Monda and Prof. Ganawa presenting biodiversity data use for Participants

The National Museums of Kenya (NMK) publishes data that are already part of the museum collection and in a database. Data publishing increases access to your data. When your data are accessible they can be used by others for research & education, the data's accuracy can be assessed by the community, & researchers or institutions can receive credit when their data are used in projects & publications.

Biodiversity data can be used in taxonomy, biogeographic studies, species diversity and populations, Life histories and phenologies, endangered, migratory and invasive species, impact of climate change, ecology, evolution and genetics, nvironmental regionalisation, Conservation Planning, natural resource management, agriculture, forestry, fisheries and mining, health and public safety, bioprospecting, forensics, border control and wildlife trade, education and public outreach, ecotourism and recreational activities, society and politics, human infrastructure planning among others.

Figure 12: Data Use in sectors and Publications   *Figure 13: Publications based on Biodiversity Data*

6. Group discussions & Plenary on Biodiversity Data Mobilisation, Management and Use

Figure 14: Participants during the Group Discussion on Data Mobilization, Management & Use

On the second day, the participants were divided into two groups to look at the sources of data from the line ministries at national and sub-national levels, non-governmental organizations (NGOs) international and national, research institutes and academia.

The participants deliberated on the exercise using the following criteria which includes the geographic scope (national /regional and international), data types (Report, shape files, text files, maps), accessibility (permission/data sharing arrangements), contact persons (data managers and ICT department were also identified.

The following Ministries were identified as sources of data and information, the Ministry of Ministry of Water Resources and Irrigation, Ministry of Wildlife and Tourism, Ministry of Livestock and Fisheries, Ministry of Agriculture and Food Security, South Sudan Metrological Department, Ministry of Humanitarian Affairs and Disaster Management, Academic Institutions, Un agencies like United Nations like UNFAO and UNIDO, Ministry of Mining, Ministry of Petroleum, Land Commission, civil society organizations, Environmental Impact Assessments (EIA) Reports and conservation organisation operating in South Sudan (Wildlife Conservation Society (WCS), Flora Fauna International (FFI) African Wildlife Foundation (AWF), South Sudan Nature Conservation Organisation (SSNCO), AGRA, and UNEP.

7. Summary and Workshop Conclusion

Figure 15: Mr. Joseph Africano Bartel, Undersecretary for Environment closing the Workshop

The participants in the workshop reached a consensus on a number of issues; they agreed that biodiversity conservation and management, resource mobilization to halt biodiversity loss and packaged biodiversity information will not be perfect without biodiversity data. Most of these biodiversity data are sitting in computers or gathering dust in the shelves. This was supported by formal presentation and plenary discussions from the group work. The workshop also helped assess the current level of understanding of biodiversity data and information and how the other stakeholders can contribute in its mobilization, management and use.

The workshop was officially closed by the Undersecretary for Environment in the National Ministry of Environment and Forestry Mr. Joseph Africano Bartel.

He thanked all the participants for attending the workshop, and was very impressed of the work done by the directorate of Wetlands and Biodiversity for organizing such important workshop on Biodiversity data Mobilization, He said the one thing that South Sudanese is lacking for decision making is data and information, but it doesn't mean that there is no data in the country, the data are there but mostly scattered all over the country, we need to gather this data in to one place for easy access to help in decision making.

The undersecretary also applauded the European Union for availing the funds through the Global Biodiversity Information Facility (GBIF) and the Inter-Governmental Authority on Development (IGAD)-Biodiversity Management Program (BMP) for technical and financially supporting the Ministry of Environment and Forestry to develop the NBDS.

He concluded by saying this project have started and the Ministry of Environment and forestry through his office will support the team to continue in their effort on data mobilization.

8. Recommendations and Way forward

The workshop recommended a number of issues to be addressed by the Ministry of Environment and Forestry and the other biodiversity related stakeholders as follows:

1. Continue mobilization of biodiversity data and information to be conducted by the Ministry of Environment and Forestry and other biodiversity related institutions and agencies to aide decision making processes

2. Strengthen the ongoing initiative within the Ministry of Wildlife Conservation and Tourism to establish their Wildlife Data and Information Unit to manage the wildlife data and protected Areas.

3. Encourages the learning institutions to establish herbarium and Botanical Gardens to start collecting specimens from research work and to be digitize as well.

4. The workshop recommended that efforts be made to contact other national and international organizations with biodiversity portfolio operating in South Sudan to share their biodiversity data for effective use in decision making

5. Encourage the Ministry of Environment and Forestry to develop an online integrated platform for biodiversity data and information up to the sub-national level e.g. South Sudan Biodiversity Geoportal

6. Encourage individuals, researchers, institutions, agencies to collect biodiversity data and datasets with the aim to share

7. The Ministry of Environment and Forestry should initiate process of data sharing arrangements with potential biodiversity data holders in South Sudan and beyond.

8. Encourage data holders to publish their biodiversity data into information and made accessible & discoverable in a standardized format that could be shared and use by policy makers, researchers and the wider public.

9. Cadres in biodiversity related fields should be train in a tailor made communication strategies and packaging of biodiversity information in a manner that is appealing to the decision makers.

10. Urges the Ministry of Environment and Forestry to mobilise more funds and resources to develop a centralize biodiversity geoportal as a one stop shop for biodiversity data and information country wide at national and sub-national levels.

11. The exercise on data assessment of data holders, users and managers should continue and produce a comprehensive report ultimately

Annexes

Annex 1: Workshop Agenda

Biodiversity Database Workshop
17th -18th May 2018, Landmark Hotel, Juba, South Sudan

Time	Activity	Responsibility
8.30 – 09.00	• Arrival and Registration	Workshop Secretariat
Session 1: Opening session **Moderator:** Mr. Jada Albert, Consultant		
09.00 - 10.00	• Self-introductions • Remarks by Representative-National Bureau of Statistics (NBS) • Remarks -Undersecretary for Wildlife Conservation & Tourism • Official Opening Remarks -Undersecretary for Environment	Dr. Malik Doka Morjan (PhD) Mr. Joseph Africano Bartel
10:00 – 10:10	Overview of the Workshop, Objectives and Expectations	Mr. Paul Lado Demetry, BID/GBIF Project Lead
10.10 – 10.50	Discussions /Q&A	
10.50 -11.00	Tea/Coffee Break	
Session 2: Biodiversity Database Mobilisation and Management **Session Chair:** Dr. Bojoi Moses Tomor, University of Juba **Moderator:** Mr. Jada Albert, Consultant		
11.00 – 12.50	• National Biodiversity Database System (NBDS) • National Biodiversity Data Mobilisation Plan • Wildlife Biodiversity Data and Information System	Mr. Paul Lado Demetry, BID/GBIF Project Lead Mr. Lwanga Charles, Biodiversity Database Manager Mrs. Rachael Amina Cyrus, Wildlife Database

Time	Activity	Responsibility
12.50 – 01:00	General Discussions	
01.00 - 2.00	**Lunch Break**	

Time	Activity	Responsibility
Session 3: Biodiversity Data Mobilisation and Management Experiences from Sudan and Kenya Session Chair: A/Prof. Bojoi Moses Tomor, University of Juba Moderator: Mr. Paul Lado Demetry, BID/GBIF Project Lead		
02.00 - 02.15	Biodiversity Database Mobilisation/Management Experience from Sudan	Dr. Elteeab Ganawa, Future University
02.15 - 02.30	Biodiversity Database Mobilisation/Management Experience from Kenya	Mr. Lawrence Monda, NMK, Kenya
02.15 - 02.30	Discussions /Q&A	
02.30 - 03.45	Group Work	Mr. Jada Albert, Consultant
03.45 - 04.00	**Tea Break**	
04:00	Closing of Day One	Ministry of Environment and Forestry
Departure		
DAY TWO		

Time	Activity	Responsibility
8.30 – 09.00	Arrival and Registration	Workshop Secretariat
Chair: A/Prof. Massimo Moilinga Moderator: Mr. Jada Albert, Consultant		
09.00 - 09.15	Recap of Day One	Mr. Paul Lado Demetry, BID/GBIF Project Lead
09.15 - 10.30	Plenary- Group Presentations	

10.30 - 11.00	Discussions Q&A	Mr. Jada Albert, Consultant
11.00 -11.15	**Tea/Coffee Break**	
11.15 - 11.35	Biodiversity Data Use for Decision Makers- Experience from Kenya	Mr. Lawrence Monda, NMK, Kenya
11:35 – 12:05	Biodiversity Data Use for Decision Makers- Experience from Sudan	Dr. Elteeab Ganawa, Future University, Sudan
12.05 – 01.00	Discussions/ Q&A	
01.00 – 02.00	**Lunch**	
02.00 – 02.45	Recommendations and Way forward	Mr. Paul Lado Demetry, BID/GBIF Project Lead
02.45 – 03.30	Wrap-Up and Closing of the Workshop	Undersecretary for Environment
03.00 – 04.00	**Departure**	