



Ethiopia: Open Data / Open Science Agenda

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Outline

- ✓ Understanding Open Science
- ✓ Benefits of Open Science
- ✓ Open Science Eco-system
- ✓ Open Science/Open Data Practices in Ethiopia
 - ✓ Open Access Publishing
 - ✓ Initiatives and Achievements
 - ✓ Different Players in Open Science uptake
 - ✓ Challenges
 - ✓ Way Forward - Recommendations

What is Open Science?

- An effort to make the **outputs** of publicly funded research more widely accessible in digital format for the benefit of the scientific community, the business sector and society more generally (OECD 2015).
- Open Science refers to a scientific **culture** that is characterized by its **openness**.
- The evolution of science towards a more open and **data-driven** enterprise.

Open Science Environment

- Open Science depends on **ICT based scientific collaboration** between scientists and citizens
- Scientists **share research results** almost immediately to a very wide audience
- It includes **many stages of research processes** thus enabling **re-usability** of scientific data

Open Science System Architecture

Open science is much more than just open access publishing:

- Research process – Open research
- Research data – Open Data
- Research result – Open Access
- Software code – Open Software

R e s e a r c h

Planning

- Problem definition
- Funding
- Method

Data gathering

- Data collection
- Recording

Analysis

- Processing data
- Discovering findings
- Evaluation of findings

Writing

- Generating research output
- Describing findings

Publication

- Evaluating and publishing finding
- Communicating /distribution

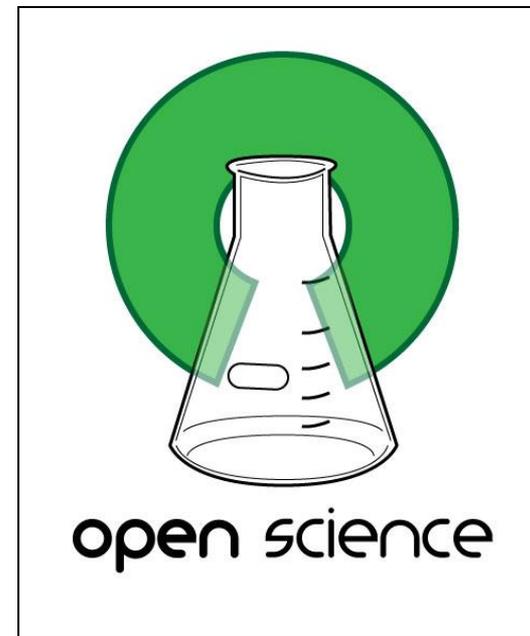
Open to public

Benefits of Open Science/ Data

- Advance science and technology more than the conventional means of scientific communication
- Increase transparency and accountability
- Enhance visibility and access to additional expertise
- Helps to secure needed funding
- Increases the efficiency and productivity of institutions and enhances their governance
- Promotes public participation in decision making and social innovation
- Fosters economic innovation and wealth creation

Open Science Practices in Ethiopia

- Open Access Publishing
- Open Research
- Open Data
- Open Software



Open Access Publishing - **The Gold Route**

- Publishing about 70 Scientific Journals
- Managed by scientific societies/ associations, not commercial publishers
- About 30 of them have given themselves up to open access initiatives
- Quality is still an issue
- Publishing in an Int. high impact (open & traditional) journal is a challenge by the Ethiopian young scientists

Open Access Practices - the Green Route

- Institutional Repository Initiative at AAU
 - The DATAD project by the AAU, Accra (2000/2001)
 - The launch of AAU-ETD project (2007)
- Forum for Social Studies (FSS) launched its digital repository (2012)
- Universities (Jimma, St. Mary's, Mekelle, Haramaya, Gondar, Adama, etc.)

National Achievements

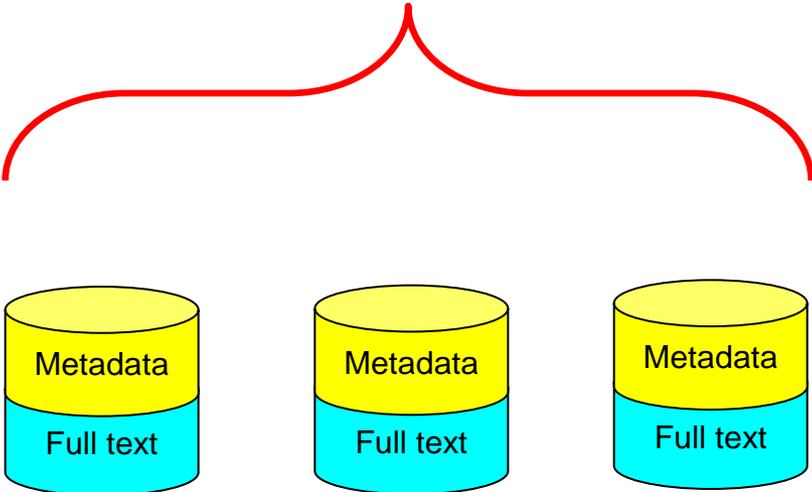
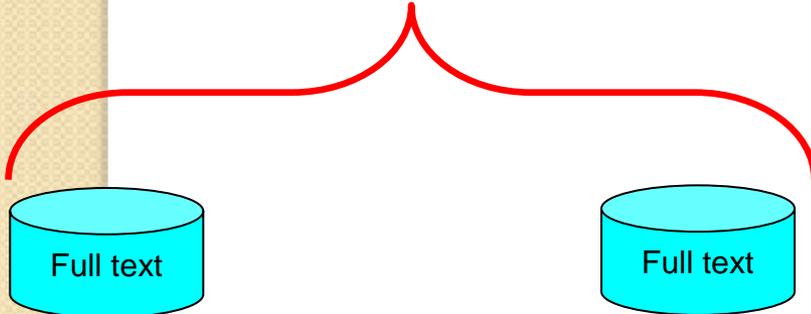
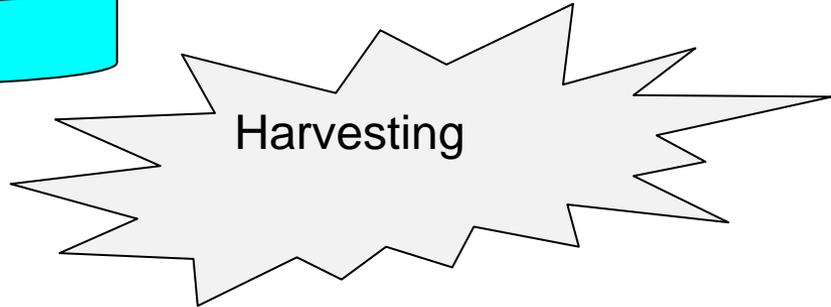
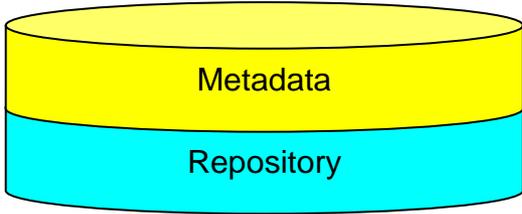
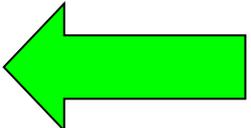
1. National Digital Repository Model
2. Collaborative Framework Agreement (MoU signed by institutions)
3. Trained personnel (Technical & Advocacy)
4. Institutional Repositories at various level
5. National Harvester System

National Harvester - Hybrid Model



User

Hosting collection from other institutions



Open Science/ Data Uptake in Ethiopia

- Open research practice among Ethiopian scientists is at infancy stage
- University of Cornell / ITOCA programme in the field of agriculture
- Installation of TEEL database at about 30 academic and research institutions
- Capacity development training in the use and management of research data (30*25)
- Medley as the research collaborative platform

Open Science/ Data Uptake in Ethiopia

- Ministry of Information and Communication Technology (MCIT), & Ministry of Health (MoH) have already made their data open through their portals
 - An Indication that the GOE put the expansion of open data as its first strategic priorities
- Discussions are happening on potential benefits of open science for Ethiopia in terms of innovation, knowledge transfer and raising the profile of Ethiopian research across the world
- More later in Roberto Barbera's talk on the Sci-GalA Open Science Platform

Actors in Open Science

- **Researchers** - motivation stems from the values inherent in science (e.g. openness to scrutiny, solving societal problems)
- **Funding agencies** - they adopted mechanisms to promote open science by including open or public access of funded research outputs as a requirement
- **Universities and research institutes** - play a role in training students and researchers in repositories, data cleaning, curation and management

Actors in Open Science

- **Libraries & repositories** - constitute the physical infrastructure that allows scientists to share, use and reuse the outcome of their work
- **Government ministries** - have developed strategies for open data, either as stand-alone strategic efforts or as part of broader open government agendas

Actors in Open Science

- **Scientific journal publishers** - offers a broad range of open access publishing – open in full or hybrid
- **Businesses** - constitute part of the demand for open access and data that they use to develop new technologies and products
- National **Advocates** and **leader**
- **Infrastructure** providers - EtherNet

Challenges to Open Science Practices

- Absence of policy framework needed to encourage and govern Open Science practices
- Low level of awareness of open science and its benefits among academic and research communities
- Financial circumstances of the authors themselves to practice elements of open science
- Lack of incentives for publishing in open access

Challenges to Open Science Practices

- Institutional legal mandate to coordinate open science at national level
- Confusion with regards to ownership of research datasets
- Inadequate infrastructure and skills to curate and preserve research data
- High cost of Internet connectivity and low bandwidth

Challenges to Open Science Practices

- Misconception about Open Access Journals by leaders in the academia which often resulted in denying academic promotions
- Lack of trust in digital services and cloud technologies, or concerns about their reliability, security and resilience
- Difficulty to integrate DR projects into regular staff duty

What is Needed to Embrace Open Science? - Way Forward

1. Nation-wide **policy framework** that encourage Open Science - will not only help to solicit content but also get away with many bureaucratic hurdles
2. Creating **awareness** on the basics of open science; benefits, principles of research ethics, repeatability, and reliability
3. Devising **reward mechanisms** for planning research using open methods and tools
4. Provision of **platforms** to managing research data

What is Needed to Embrace Open Science?: Way Forward

5. Involving the national infrastructure operators such as the EtherNet will help to circumvent the **hosting** and **infrastructure** issues
6. Sustainable **advocacy** work at various levels for opening the whole research process, open access publishing, and open data practices
7. Collaborating with national and international partners helps to supplement **financial** and **skill** requirements

What is Needed to Embrace Open Science?: Way Forward

8. **Standardized** approach helps to ensure **interoperability** between different data repository and open access management technologies
9. Institutional legal **mandate** at national level would enable easier coordination and encourage more faster collaboration
10. Developing a **pool of funds** for authors practicing open access publishing is instrumental to speed up communication of their research results and advance science



Thank you!

Any Question?