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
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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

Metadata
Repository

Harvesting

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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-GaIA 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 leaders**
- **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?