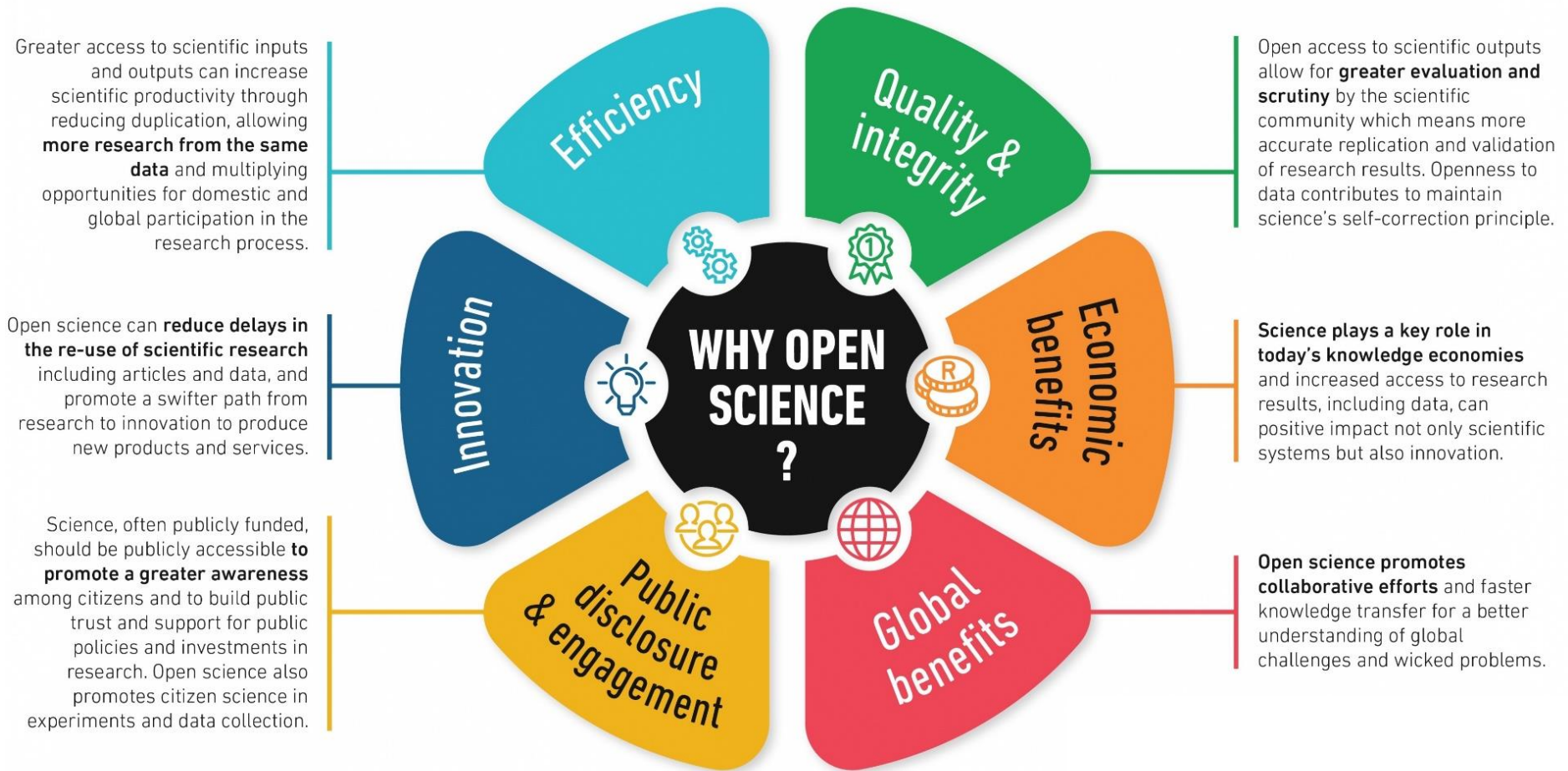




# Question 1

How can Open Science democratise the scientific process in the African context and assist in reducing the existing gaps in science technology and innovation (STI)?

# Why Open Science



University of Cape Town

# Open Science and Research

In order to unleash Africa's full knowledge potential, it would be appropriate to consider **adopting the philosophy of Open Science** and adapt the **national intellectual capacities, capabilities and infrastructures** to this new reality.

# Question 2

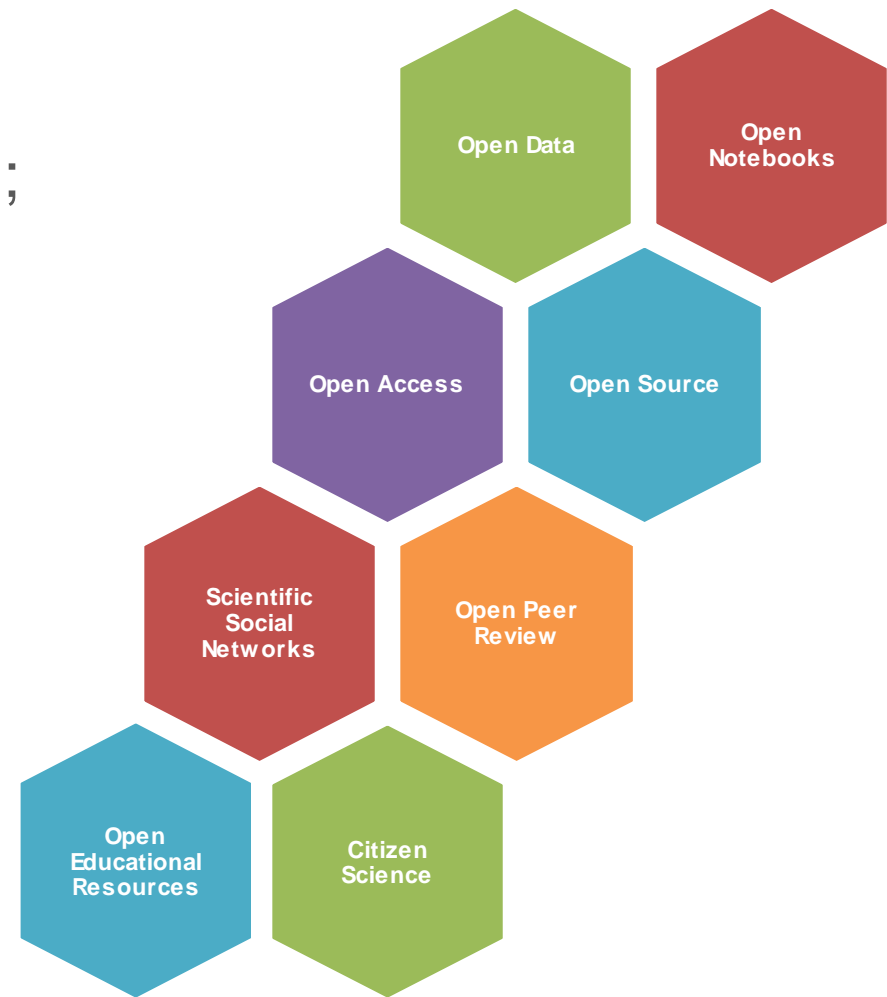
Which components of Open Science are the most relevant in this regard?

Open Data and Open Access

# Components of Open Science

## Open Science:

- Vital enabler in maintaining the **rigor and reliability** of research;
- Supports the **creative integration of diverse data resources** to address complex modern challenges;
- Involves **various movements** aiming to remove the **barriers for sharing** any kind of output, resources, methods or tools, at any stage of the research process.



# Citizen Science and Open Data

- Citizen science occurs when real people get involved in the research and scientific process.
- Specific qualifications are not necessary to make a contribution;
- The benefits to society are measure through the developing discourse on social media and at dinner tables – people are starting to speak science!



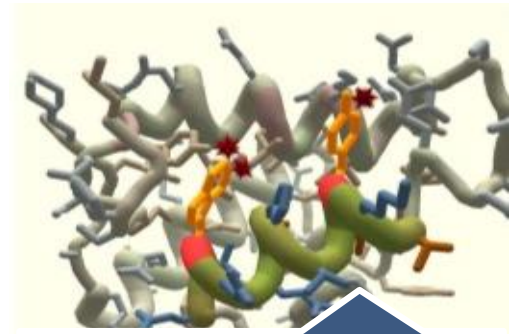
**Galaxy Zoo** is a crowdsourced astronomy project where global citizens help in the morphological classification of large numbers of galaxies.

50 Million classifications were received by Galaxy Zoo an more than 150 000 people contributed.



Thousands of people around the world contribute bird observations to the **Cornell Lab of Ornithology** which gathers to reveal how birds are affected by habitat loss, pollution, disease, climate, and other environmental changes.

More than 60 scientific papers have been written using Cornell Lab since 1997.

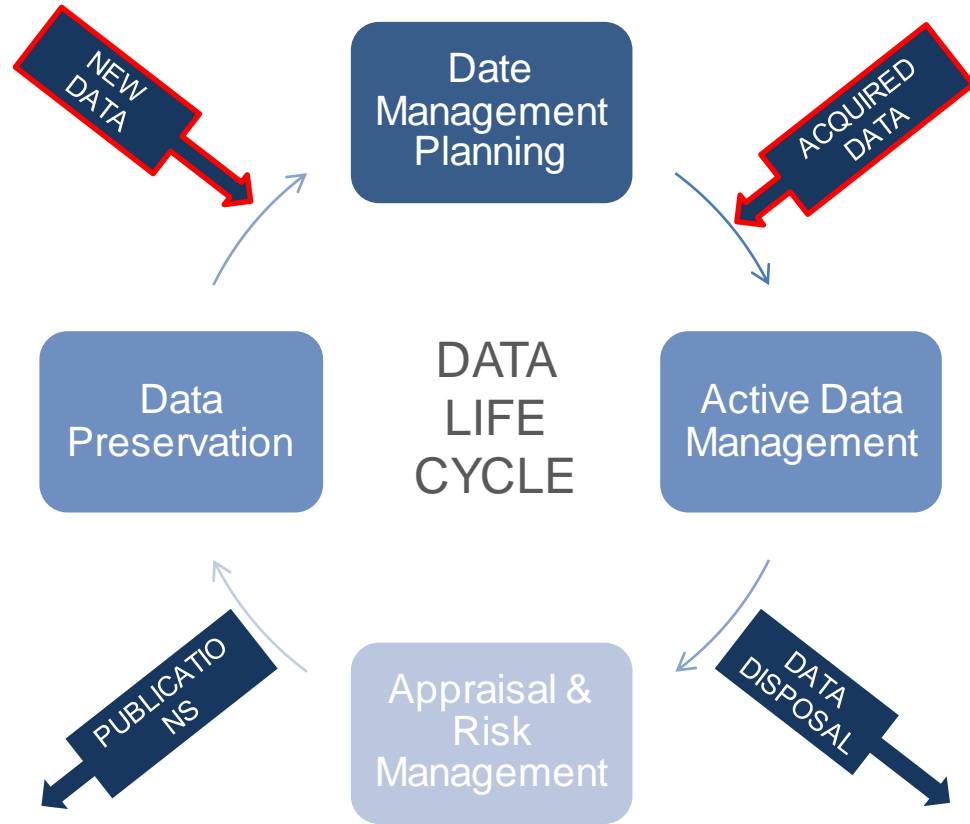
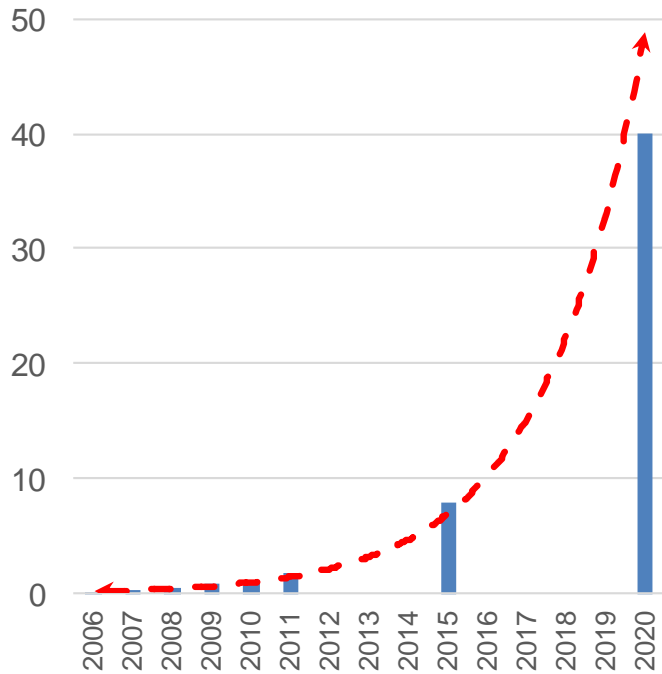


**Foldit** is an online puzzle video game about protein folding. It is part of an experimental research project where the objective is to fold the structures of selected proteins as perfectly as possible, using tools provided in the game.

Fold-it players discovered the structure of protein cutting enzymes produced by an AIDS like virus in monkeys - in 3 weeks!

# Open Data

Growth in Data Volume





# QUESTION 3

What are the key challenges?

Improve our capacity and capability to leverage on the power of Open Data and Open Access

# Status of Research on the African Continent

- Africa accommodates **16.64%** of the world's population (1 314 187 677);
  - **41%** of the African population is urbanised;
  - **Median age 19.4 years**
- 
- **Researchers/ million of population is a global metric of maturity:**
    - **Europe: 3500** researcher/ mil of population;
    - **China: 1100** researcher/ mil of population;
    - **Africa: <100** researcher/ mil of population.



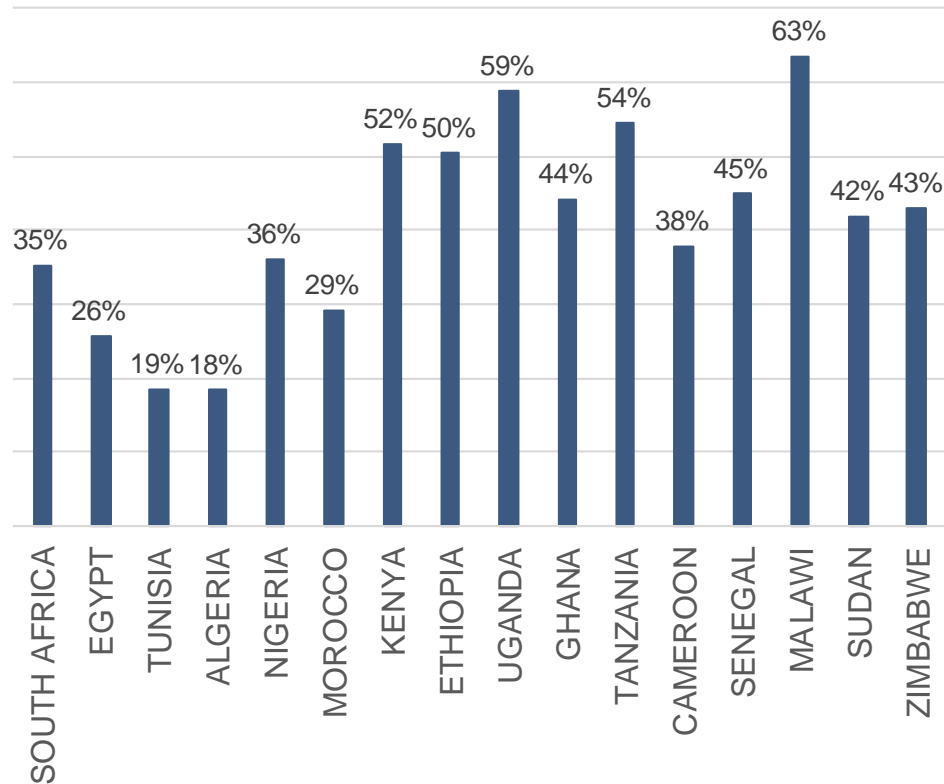
# Open Access – A Global Movement

**Embrace Open Access** as part of our agenda for **Open Science**  
**Open Access** is a commitment to the **democratisation of knowledge** through **equity of access**:

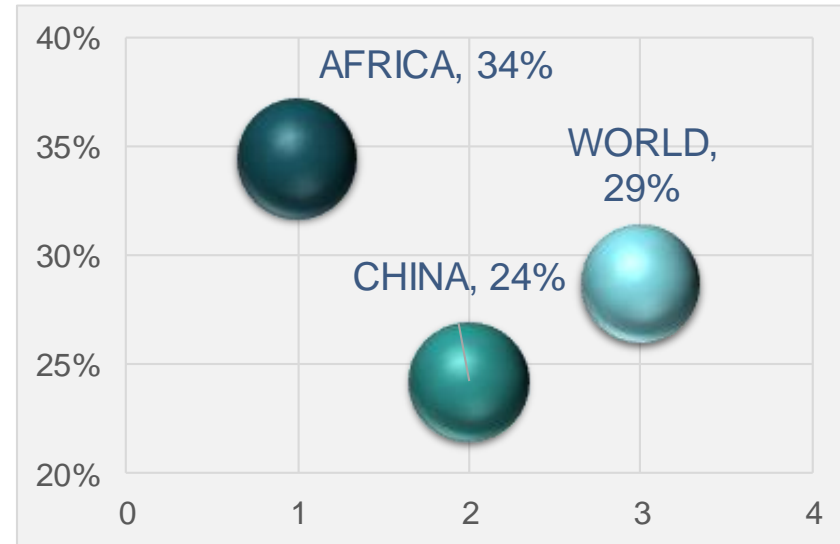
- Research system has to move towards new approaches;
- Need an alignment of vision and purpose to harness the benefits of the OA2020 movement;
- Collective negotiation of a transformative agreement which seeks to:
  - Move the systems out of a “pay to read” framework to a “pay to publish” framework;
  - On the basis that copyright will reside with individual authors; and
  - Cost Neutrality

# Challenges: Open Access Publications 2009 – 2018

Africa: Percentage Open Access Publications 2009 – 2018  
(countries with >5000 records)



Percentage Open Access Publications 2009 – 2018



# Challenges: Open Access

Currently the bulk of scholarly articles are published through a paywall system - In the Open Science era:

- Alternate publishing models will need to be adapted, adopted and or created;
- Incentives for publishing in open access journals;
- Research data standards will have to be adopted;
- Data protection issues.

Scientific contributions will require alternate metrics:

- Develop new protocols to support open peer review;
- New ways of managing research performance; and
- New ways of funding research.

# Question 4

Who are the main stakeholders? – Strategic Partners?

# The African Open Science Platform



## The Africa Open Science Platform (AOSP):

- Embraces the vision of the African Union Agenda 2063: ‘The Africa we want’
- Is Pan-African in scope
- Recognises that size, diversity and interconnectivity of a science community are key to a dynamic, robust and creative discourse

“The creation of an African platform for research and innovation will enable the dissemination of goal relevant African research and innovation to governments and citizens”

United Nations Economic Commission For Africa, Dakar 2018



# The African Open Science Platform



- The platform is the **connective tissue** between **dispersed actors** in pursuit of **shared and overlapping** open science goals and has the potential to provide:
- **Cloud computing** facilities that provide **networked computation, data access** and **analysis tools** for African Science.
- **Software tools, experience-based advice** on **research data management** and on open science **policies and practice**.





# Question 5

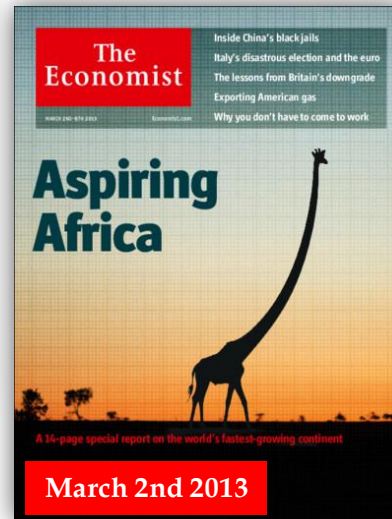
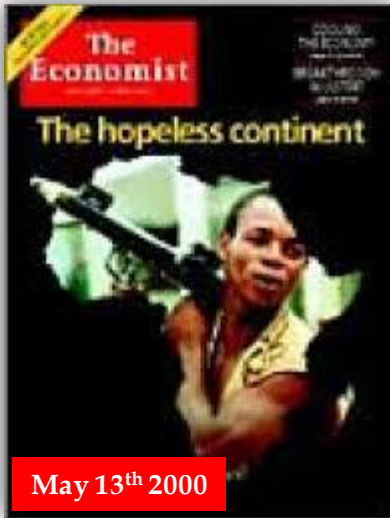
Which key aspects of the transition to Open Science should be considered by the UNESCO Recommendation?

# The Transition to Open Science

Recommendations to UNESCO:

- **Partner with the AOSP** in pursuing tangible outcomes towards establishing the platform as a Pan African initiative;
- **Expand the African landscape assessment** (ASSAf: 2018) in order to confirm and / or expand on the aspects of:
  - Political willingness to invest in research and research infrastructure;
  - Enabling policy initiatives including incentives and skills development for the digital revolution.
- **Co-ordinate in partnership with AOSP** a coalition of participants amongst the research community on the Continent to address the change management issues related to:
  - Open access
  - Open notebooks
  - Open peer review etc.

# Changing perspectives of Africa



## Let's write our own narrative for 2030

Asante

Ke a Leboga

Dankie

Amesegënallô

Webale

enkosi

merci

THANK YOU

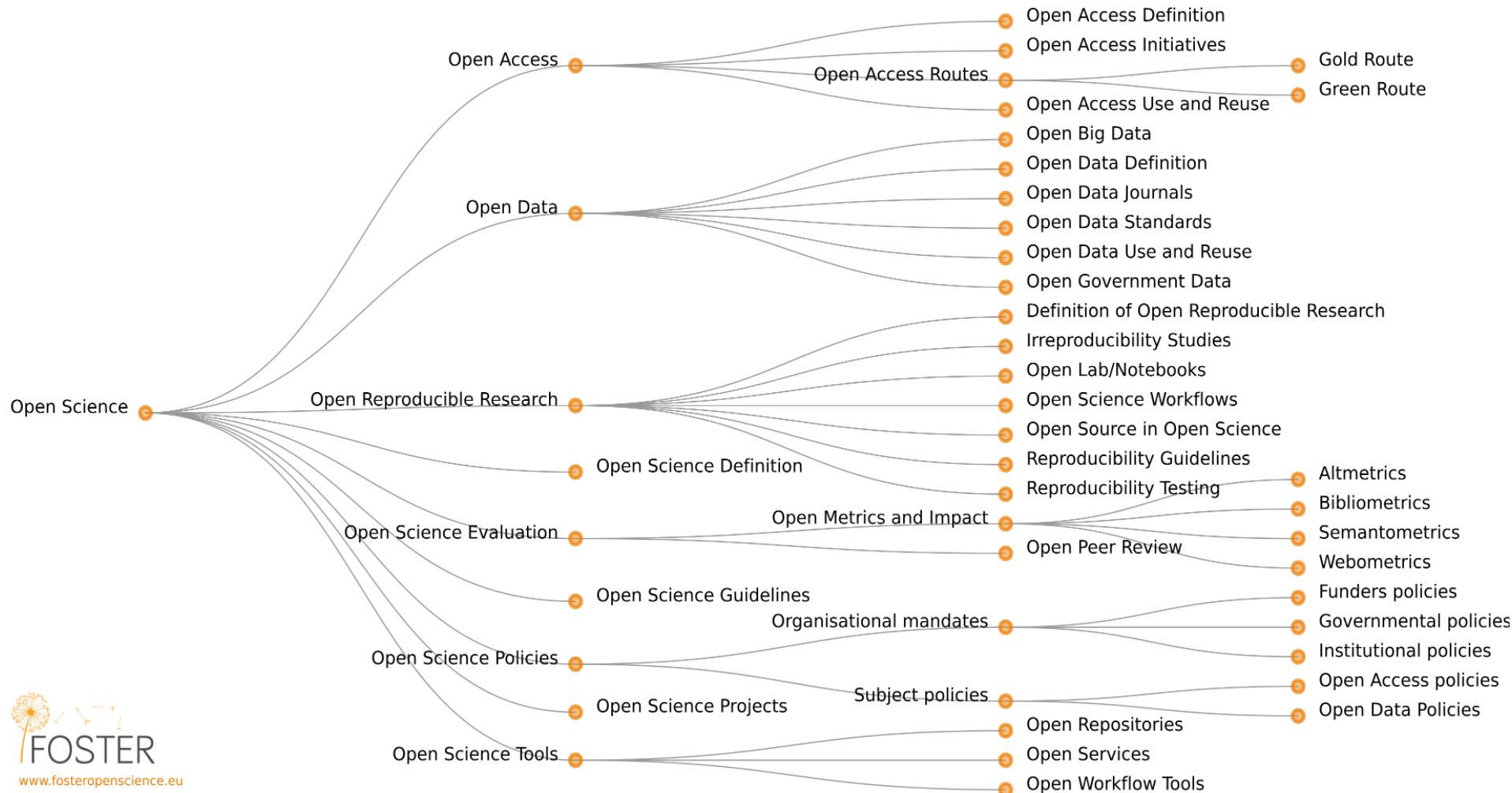
SHUKRUN

OBRIGADO

ngiyabonga



# Foster's Open Science Taxonomy



Pontika et al. (2015).

# Status of Research on the African Continent

## Africa: Normalised Citation Impact 2009-2018

