National Open Science Policy

Summary and progress

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INTRODUCTION

- Open Science … seeks to improve the practice and return on investment in science, and deepen the positive socio-economic benefits across all sectors of society
  - Rapidly evolving international policy framework, including *UNESCO Recommendation on Open Science,*
  - the *European Open Science Policy*, and the *African Open Science Platform*
- Benefits of Open Science demonstrated at global level
- Open Science will facilitate equality of opportunity within our National System of Innovation, and be a vehicle of the 'democratisation of knowledge'
  - Strengthen the RSA research enterprise…including
  - Historically Disadvantaged Institutions
  - Gender equality
  - Indigenous Knowledge Systems

- 2020: Reviews by the National Advisory Council on Innovation (NACI) show declining global competitiveness of innovation in South Africa
  - Disparity across higher education and research performing organisations aggravated by hurdles to accessing research publications and outputs
  - Research cyberinfrastructure for Open Science growing, … but requires clear policy framework and investment to realise its full potential and equality of opportunity

PROBLEM STATEMENT (2/2)

- Open Science is transforming the global practice of publicly funded research and development
  - Competitiveness: requires understanding and implementing new research paradigms
  - Transition towards an open research culture requires an enabling environment and appropriate support mechanisms in place
  - Clear policy framework is needed.

OBJECTIVES

- Adoption of an Open Science policy will
  - Facilitate equality of opportunity within South Africa's National System of Innovation
  - Enhance opportunities for environmentally sustainable and inclusive socio-economic development through the scientific research endeavour
- Six inter-related outcomes
  - **Open Access**
  - **Open Data**
  - **Open Source**
  - **Open Resources**
  - **Open Methods**
  - **Open Review**

STAKEHOLDER CONSULTATION & ENGAGEMENT (1/2)

- **SA-EU Open Science Dialogue Report**
  - Delivered by SA-EU stakeholders to Steering Committee of stakeholders
    - DSI, DHET, ASSAf, UCT, University of Botswana, NRF, USAf, European Commission, EU Delegation to SA, DIRISA, SKA, NIPMO
  - Two consultative workshops with a broad set of stakeholders
    - Government departments, research funding organisations, universities and research performing organisations, scientific societies and academies, citizen science and public engagement organisations, professional researchers, citizen scientists, research and cyber/e-Infrastructures, research libraries, museums and publishers
  - Final report was input into Draft Open Science Policy

STAKEHOLDER CONSULTATION & ENGAGEMENT (2/2)

- Draft Open Science Policy
  - 2020: Open Science Advisory Board founded
  - 2020: Expert Task Team appointed
  - 2021/2022: Delivered by Expert Task Team to the DSI, with guidance from Open Science Advisory Board
  - One consultative workshop with broad set of stakeholders (similar to SA-EU Dialogue Consultative Workshops)
  - Considerations by the Expert Task Team
    - SA-EU Open Science Dialogue Report
    - International declarations and policies, such as the *UNESCO Recommendation on Open Science*
    - International best practice; Stakeholder inputs
    - Policy linkages, such as the *AU Agenda 2063*, *National Development Plan 2030*, *Science Technology and Innovation Strategy for Africa 2024*, and the *African Open Science Platform;*
    - *ASSAf report "Twelve Years Later", 2019*

Values informing the principles

- Quality and integrity

- Equity, fairness and collective benefit

- Diversity and inclusiveness

GUIDING PRINCIPLES

- Key Principle
  - *'As open as possible, as closed as necessary'* **– research outputs shall be open unless untenable risks arise**
  - Roots in Human Rights and SA Constitution
  - Refer to Intro to UNESCO Recommendation on Open Science
  - Ethical: Including but not restricted to protection of human rights; right to privacy and respect for human subjects of study; protection of sacred or secret indigenous knowledge; protection of vulnerable populations

GUIDING PRINCIPLES

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  - *'As open as possible, as closed as necessary' – research outputs shall be open unless untenable risks arise*
  - Legislative: legislation or policy, legal process and public order; protection of personal information; national security
  - Intellectual Property: protection of Intellectual Property Rights and copyright
  - Contractual or commercial: confidentiality, contractual agreements, and research agreements
  - Environmental: protection of rare, threatened or endangered species and preservation of the natural environment

GUIDING PRINCIPLES

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  - Research credibility:
  - Compromise of the scientific credibility of the researcher or research output due to publication context
  - Examples
  - journals in the correct research scope are not open
  - relevant open journals have been identified as predatory
  - transitional impediments (examples: inadequate funding sources for Article Processing Charges, relevant journal does not offer Open Access)

GUIDING PRINCIPLES

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- Open Science Principles
  - FAIR –Findable, Accessible, Inter-operable and Re-usable
  - CARE – Collective Benefit, Authority to Control, Responsibility, and Ethics
  - TRUST – Transparency, Responsibility, User Community, and Sustainability, and Technology

IMPLEMENTATION: GUIDING PRINCIPLES

- Flexibility – flexible approach, context driven
- Sustainability – sustainable long term practices, services, infrastructures and funding models

- Regulatory Changes
  - Provisions to ensure alignment with Copyright and Intellectual Property needs
  - Open Science licensing/copyright should be used when appropriate use of research is without cost to the user
  - IP licensing when income should be generated …NIPMO
  - Strong need to reconsider Copyright, IP law and regulation in terms of an Open Science-friendly environment

- Open Access
  - 1. 'As open as possible, as closed as necessary'
  - 2. Establish a National Open Science Forum … dialog with users
  - 3. Approve Open Access Code of Conduct for reference by universities, editors …
  - 4. Adopt Incentive schemes
  - 5. Paywalls, including APCs:
  - The OSAB will consider and advise on a national scheme that provides publication funding and resources that are sustainable and robust, and fast, effective and equitable to enable both authorship and readership. Such a scheme should not compromise research funds or research time.

  - A severe problem: publish a paper, or support a student?
  - Be excluded from publication?
  - Funding
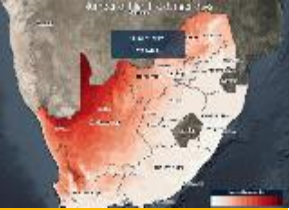
- Open Data
  - Provisions to ensure publicly funded research data is accessible, in line with technical standards
  - 1. Data Management Plans integrated into a FAIR framework
  - 2. Identify and resource an agency to
  - Identify curators and stewards of valuable publicly funded research data …
  - Serve as long term curators and stewards of all valuable publicly funded research data …
  - Provide oversight
  - Provide necessary archiving or mirroring.
  - Advise on standards
  - Develop tools.
  - 3. Consult through Open Science Forum

- Education & Skills
  - Provisions to ensure development of necessary Open Science skills, and development of an Open Science culture within the research community
  - 1. Establish Human Resource Development Strategy
  - 2. with objectives:
  - Establish OS culture
  - Ensure equitable human resource development
  - Establish e-learning platforms
  - Identify, codify best practice
  - Foster qualifications
  - Adopt in Basic Science Education curriculum
  - Promote innovative approaches
  - 3. Open Science Communication Strategy … across business and industry

- Rewards & Incentives
  - Provisions to ensure appropriate incentives and evaluation systems are in place to promote adoption of Open Science amongst researchers
  - 1. Online tools
  - 2. Monitoring and evaluation
  - 3. Enhance reward and recognition frameworks
  - 4. Resource data curation
  - 5. Encourage private sector funding

- Open Science Infrastructure
  - Provisions to establish open science infrastructure with relevant technical support, tools and software to enable data intensive research across broader research community
  - 1. Develop a plan with National Integrated Cyber Infrastructure System (NICIS)
  - 2. OSAB advise on infrastructure
  - 3. DSI provide financial support
  - 4. Data Management Plans
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- Open Science Infrastructure
  - Provisions to establish open science infrastructure with relevant technical support, tools and software to enable data intensive research across broader research community
  - 1. Develop a plan with National Integrated Cyber Infrastructure System (NICIS)
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  - 4. Data Management Plans
  - and focus on:
  - Reliable and freely accessible broadband internet connectivity …
  - Safety of researchers, especially women, utilizing research facilities and resources …
  - 'last kilometer connectivity', within District Development Model.

- Citizen Science

  ◦ Provisions to establish a Centre for Citizen Science to fund and promote research collaboration between professional scientists and the public

  ◦ 1. Establish an independent Centre for Citizen Science

  ◦ 2. Provide for scientific and ethical oversight and, where necessary, supervision of a Professional Scientist

  ◦ 3. Include in Basic Education curriculum

  ◦ 4. …Measure the contribution and impact of Citizen Science on South Africa's scientific output

IMPLEMENTATION: CRITICAL SUCCESS FACTORS

- Universal access
- Trusted security of repositories
- Cognisance of publishing realities, which are discipline specific
- Legislation to establish appropriate balance
- Sustainability
- Stakeholder Engagement
- Change Management: test and design cycle!
- Global Compatibility
- Consistent Inter-departmental policy

MONITORING AND EVALUATION

- ## South African Open Science Observatory

  - make available to stakeholders appropriate online tools for the monitoring and evaluation of the implementation

  - establishment of the Open Science Observatory shall take into consideration the existence of other entities that have similar functional scope

GOVERNANCE RESOURCES, STAKEHOLDERS, RESPONSIBILITIES

- Governance
  - Open Science Advisory Board (OSAB)
  - National Stakeholder Forum(s) to provide input into the OSAB
- OSAB shall approve an Open Science Implementation Plan

DECISIONS

- ✓ DSI Exco submission of Draft 1, accepted 2022
- ✓ Economic Sectors, Investment, Employment and Infrastructure Development (ESIEID) cluster, accepted 2022

science, technology & innovation

Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA

DRAFT NATIONAL OPEN SCIENCE POLICY

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- ✓DSI Exco submission of Draft 1, accepted 2022
- ✓ Economic Sectors, Investment, Employment and Infrastructure Development (ESIEID) cluster, accepted 2022
- Submission to Cabinet started 2022
- Restarted 2024…

science, technology & innovation

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DRAFT NATIONAL OPEN SCIENCE POLICY

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TAB B - DRAFT NATIONAL OPEN SCIENCE POLICY 11 11 2024.docx   12/08/2024