Recommendation Science and Scientific Researchers:

An Overview

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Global Imbalances

We live in a world that is alarmingly out of balance

Severe imbalance between people and planet earth

The persistent imbalance between people

Imbalance Between People

Modern Medicine has answers to many diseases, yet millions die every year of curable diseases

Many nations produce surpluses of food, while close to a billion people suffer from hunger

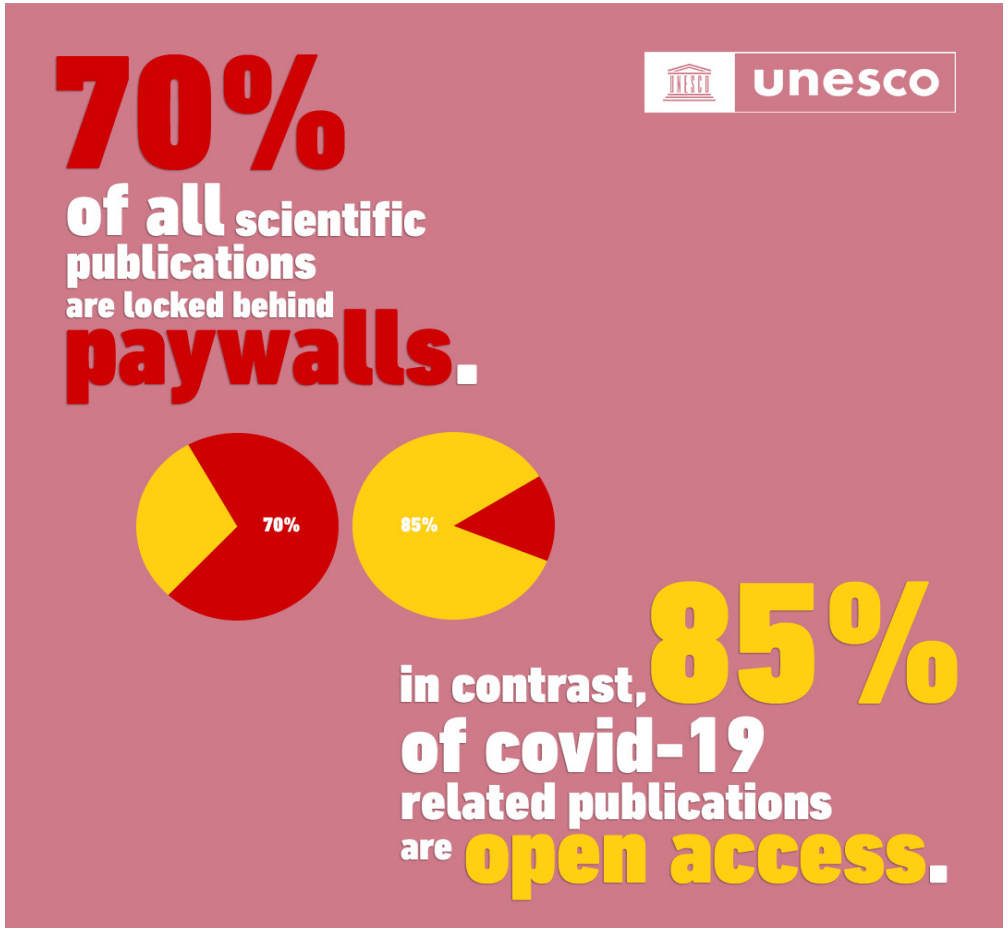
Imbalance between people and planet

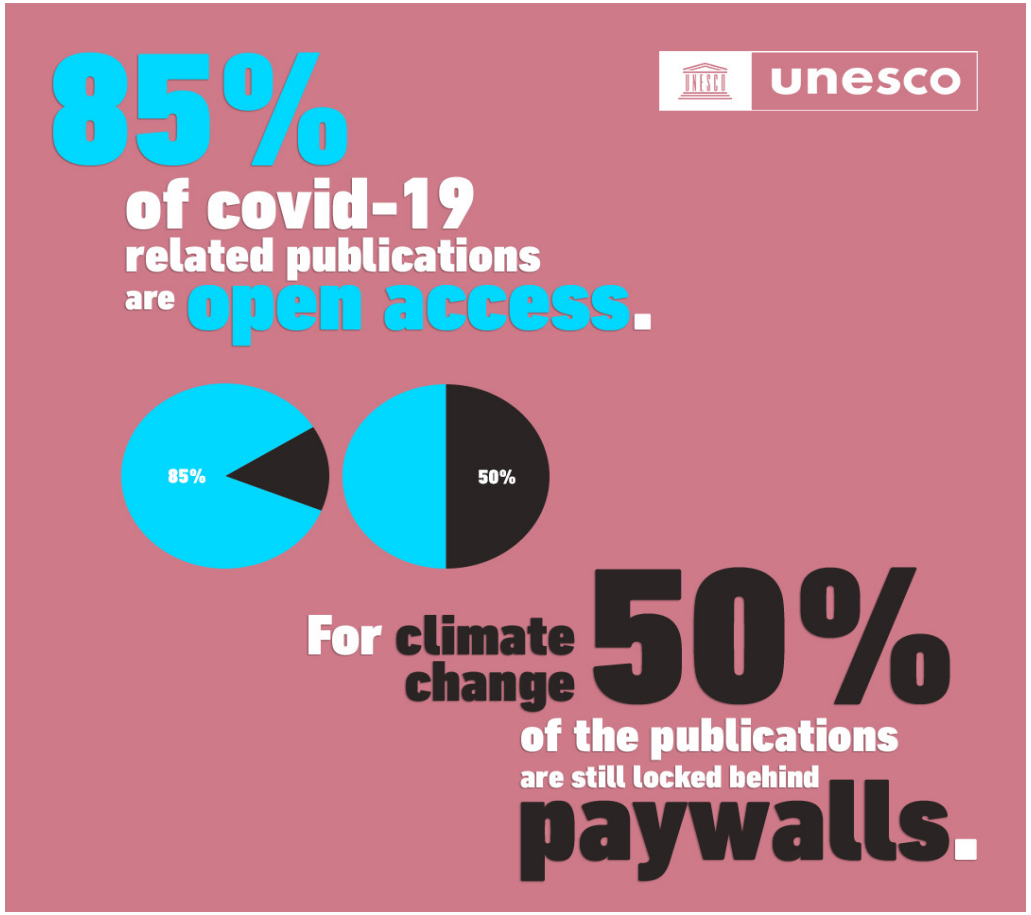
Biodiversity Loss

Massive Pollution of air soil and water

WATER: A defining issue of our time

Unequal Access to Knowledge





Lack of an International Policy and Action Framework

Source: Dimensions

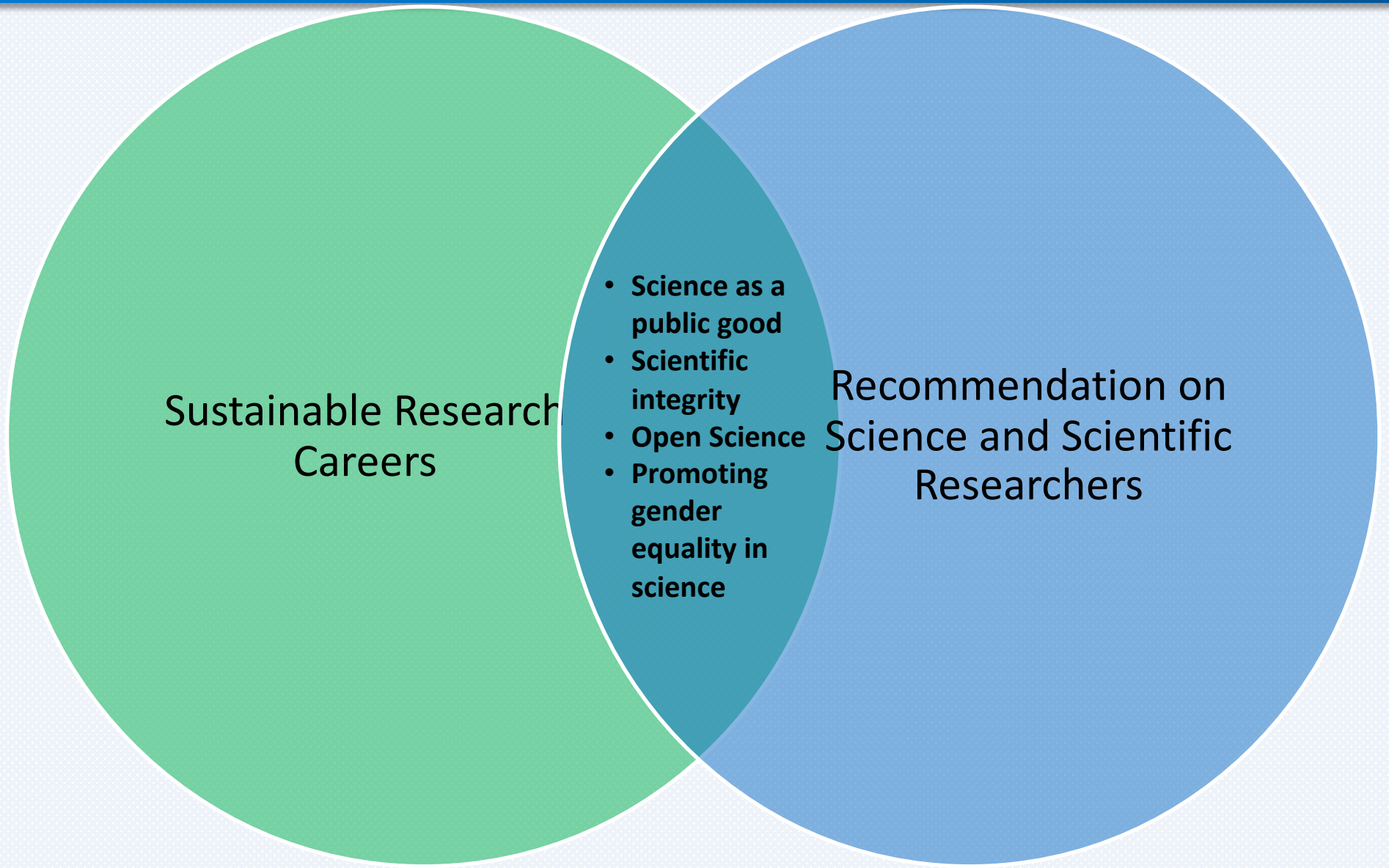
UNESCO Recommendation on Science and Scientific Researchers (RSSR)

- The Recommendation is an important standard-setting instrument adopted on November 13, 2017.
- It codifies the goals and value systems by which science operates and emphasizes that these need to be supported and protected if science is to flourish.
- The RSSR aims to inform science policy and ethics worldwide.
- The goal is to trigger action that will help prevent future emergencies in which scientific research, knowledge, data, policy, or evidence play an important role.
- This Recommendation is of value, especially for developing countries in building up their scientific skills and institutions, providing a useful checklist of political and institutional requirements.

UNESCO Recommendation on Science and Scientific Researchers (RSSR)

1. The responsibility of science towards the United Nations' ideals of human dignity, progress, justice, peace, welfare of humankind and respect for the environment.
2. The need for science to meaningfully interact with society and vice versa.
3. The role of science in national policy and decision-making, international cooperation and development.
4. Science as a common good.
5. Inclusive and non-discriminatory work conditions and access to education and employment in science.
6. Scientific conduct is subject to universal human rights standards.
7. Freedoms, rights and responsibilities of researchers.
8. Scientific integrity and ethical codes of conduct for science and research and their technical applications.
9. The vital importance of human capital for a sound and responsible science system.
10. The role of Member States in creating an enabling environment for science and research.

Sustainable Research Careers and the RSSR



UNESCO – SIDA Science, Technology and Innovation Project

- **Focused on Strengthening STI Systems for Sustainable Development in Africa in the context of the RSSR.**

Expected outcome

- Governments and national science institutions in six pilot countries are taking measures to strengthen their national and regional STI policies, governance of STI, and institutions in research and innovation in accordance with the 2017 RSSR and the African Union Agenda 2063

Overall Intended impact

- To reduce the vulnerability of African societies to threats, including global threats such as the current health emergency situation, and to promote the achievement of the SDGs and national development strategies.

Sweden
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- **West Africa:** Ghana and Sierra Leone
- **Central Africa:** Republic of Congo
- **Eastern Africa:** Tanzania
- **Southern Africa:** Zimbabwe and Namibia

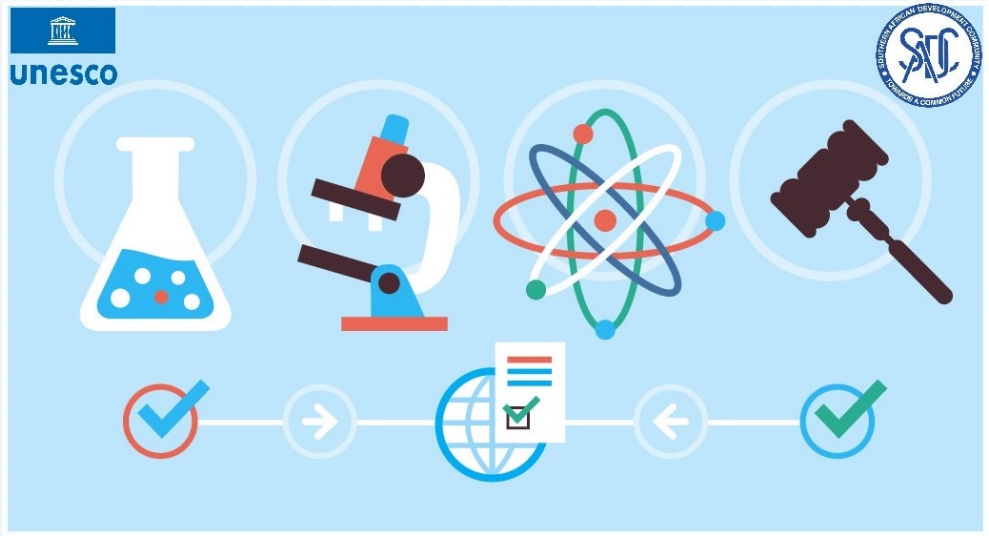
Implementation in Southern Africa

Working with and assisting member states to:

- Promote the integration of scientific and technological knowledge in decision-making and policies and science diplomacy.
- Cultivate opportunities for scientific researchers to participate in developing national science, technology and innovation policy.
- Promote research and development in all areas of society, funded by public, private and non-profit sources.
- Strengthen scientific culture, public trust and support for sciences throughout society, in particular through a vigorous and informed democratic debate on the production and use of scientific knowledge, and a dialogue between the scientific community and society.
- Recognise the key role of research and development in the acquisition of knowledge, in addressing the root causes and impacts of conflict, and in achieving sustainable development.
- Promote the uptake of Open Science and related policies in the region

UNESCO plans for the STI project v2

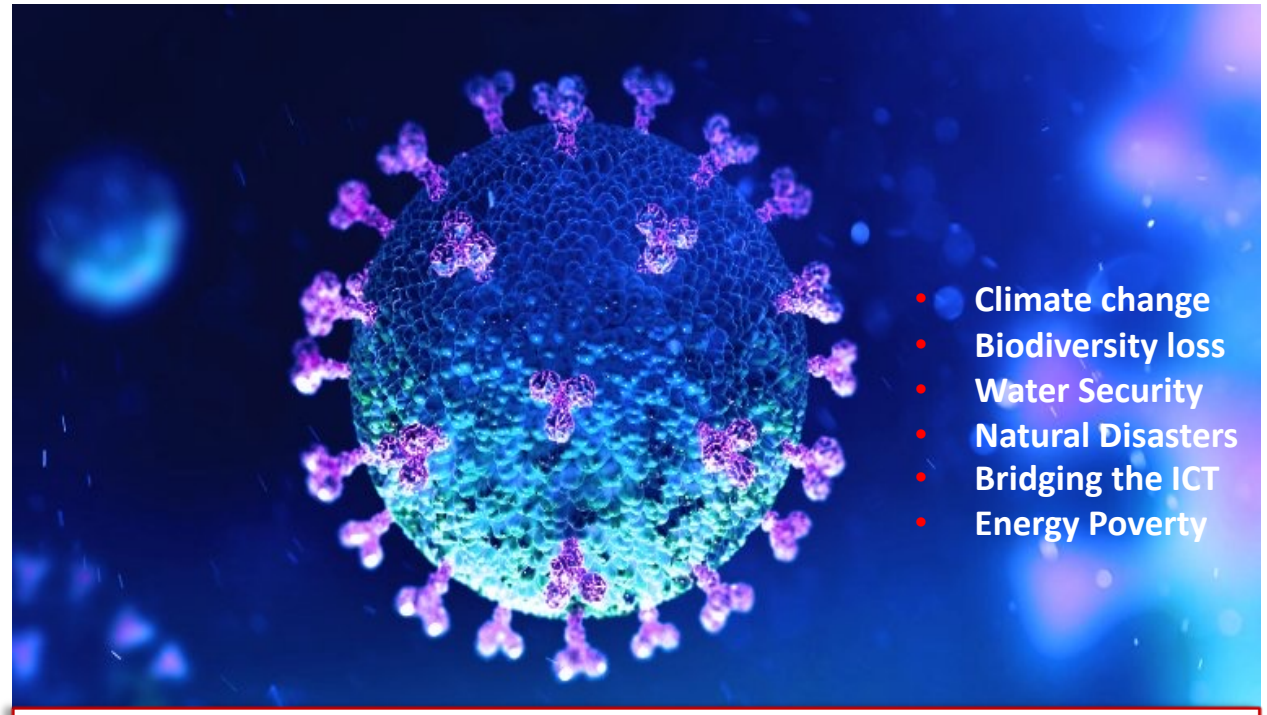
- Implementation of the action plans developed by the pilot countries.
- Monitoring the implementation of the Recommendation in the Member States.
- Raising awareness of and commitment to the 2017 RS|SR and its 10 key areas among African governments and science institutions raised by targeted advocacy in support of its relevance to SDG challenges
- Continuous capacity building of government officials, policy-makers and researchers strengthened in-country to design inclusive STI policies that better implement the 2017 RS|SR and support the SDGs
- Extend the project activities beyond the pilot countries



Implementing Partners

- SADC Secretariat
- Member States
- UNESCO Chairs
- Tshwane University of Technology
- UN Interagency Task Team on STI for the SDGs (IATT)

Achieving the Sustainable Development: Global Imperatives



Global health crisis and other threats

Science for Transformational Change

Importance of timely access to scientific and engineering data and information

International collaborations and sharing of information at all levels

Interconnected nature of societies and how scientific innovations, through the effective implementation of engineering can increase resilience

Bridge the Technology knowledge and Gender Gaps

Background - UNESCO Recommendation on Open Science

- At the 40th session of UNESCO's General Conference (2019), 193 Members States tasked the Organization with the development of an international standard-setting instrument on Open Science in the form of a UNESCO Recommendation on Open Science to be adopted by Member States in 2021.
- The Recommendation was expected to define shared values and principles for Open Science, and identify concrete measures on Open Access and Open Data, with proposals to bring citizens closer to science and commitments to facilitate the production and dissemination of scientific knowledge around the world

Towards the UNESCO Recommendation on Open Science

2019-2021: UNESCO led a two-year **inclusive, transparent and consultative process:**

- ✓ A global online consultation (online survey) on OS
- ✓ Regional multistakeholder consultations for the 6 UNESCO electoral groups
- ✓ Thematic consultations and inputs from partners and stakeholder groups
- ✓ The draft text of the Recommendation was negotiated by the intergovernmental special committee meeting of experts, May 2021.

UNESCO Recommendation on Open Science

In 2021, at the UNESCO 41st General Conference, 193 Members States adopted the first international standard-setting instrument on Open Science in the form of a UNESCO Recommendation on Open Science.

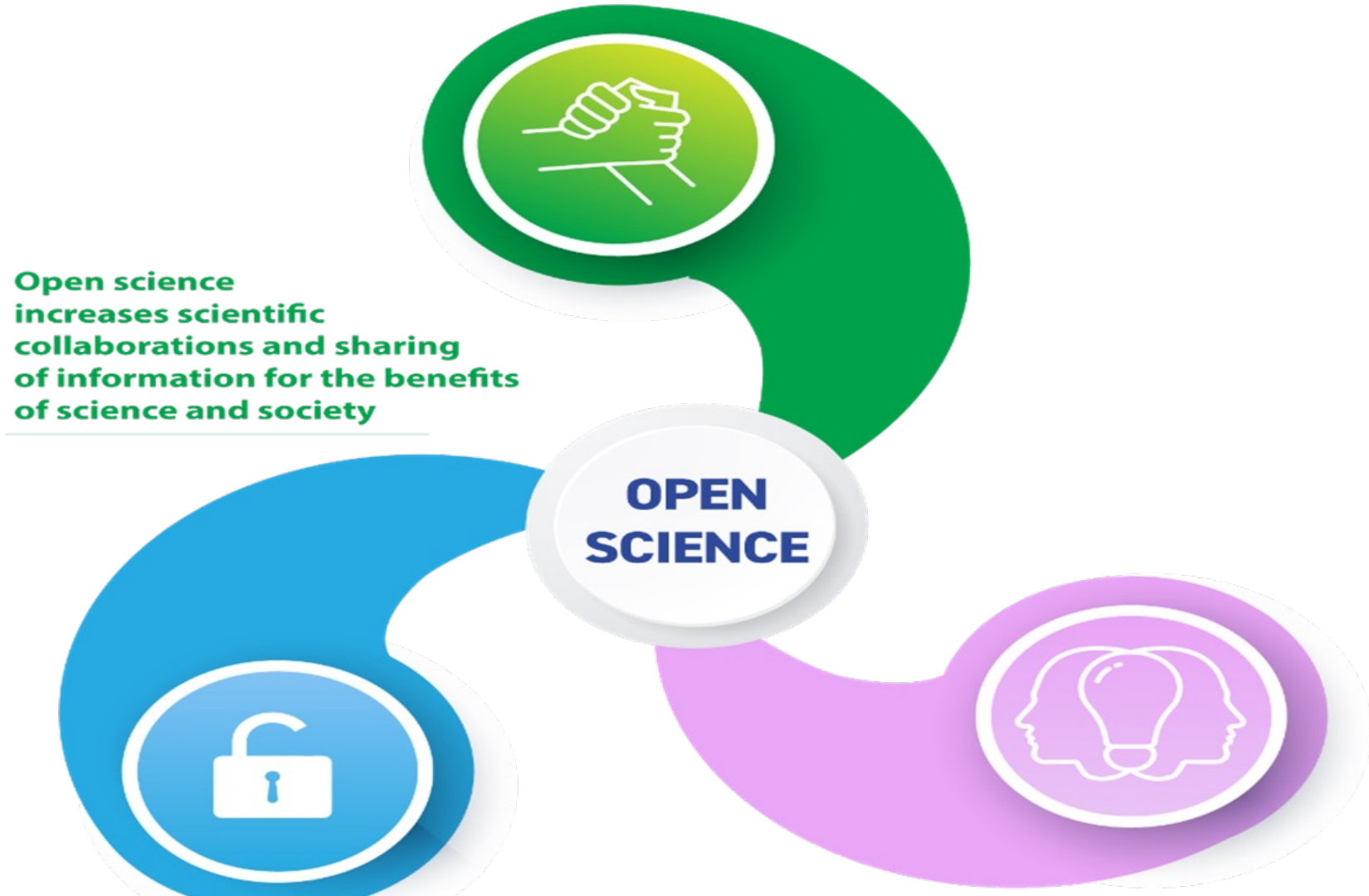
UNESCO Recommendations

Legal instruments in which "the General Conference formulates principles and norms for the international regulation of any particular question and invites Member States to take whatever legislative or other steps may be required in conformity with the constitutional practice of each State and the nature of the question under consideration to apply the principles and norms aforesaid within their respective territories".

In adopting the Recommendation, Member States agreed to embrace the culture and practice of OS and committed to reporting on their progress every 4 years

Highlights of the Recommendation

- It is the first **international normative instrument** on OS;
- it contains the first **internationally agreed definition** of OS;
- it spells out the consensus **core values and guiding principles** of OS;
- it addresses **multiple actors and stakeholders** of OS;
- It recommends **actions on different levels** to operationalize the principles of OS;
- it proposes **innovative approaches for OS at different stages** of the scientific cycle;
- it calls for development of a **comprehensive OS monitoring framework**.

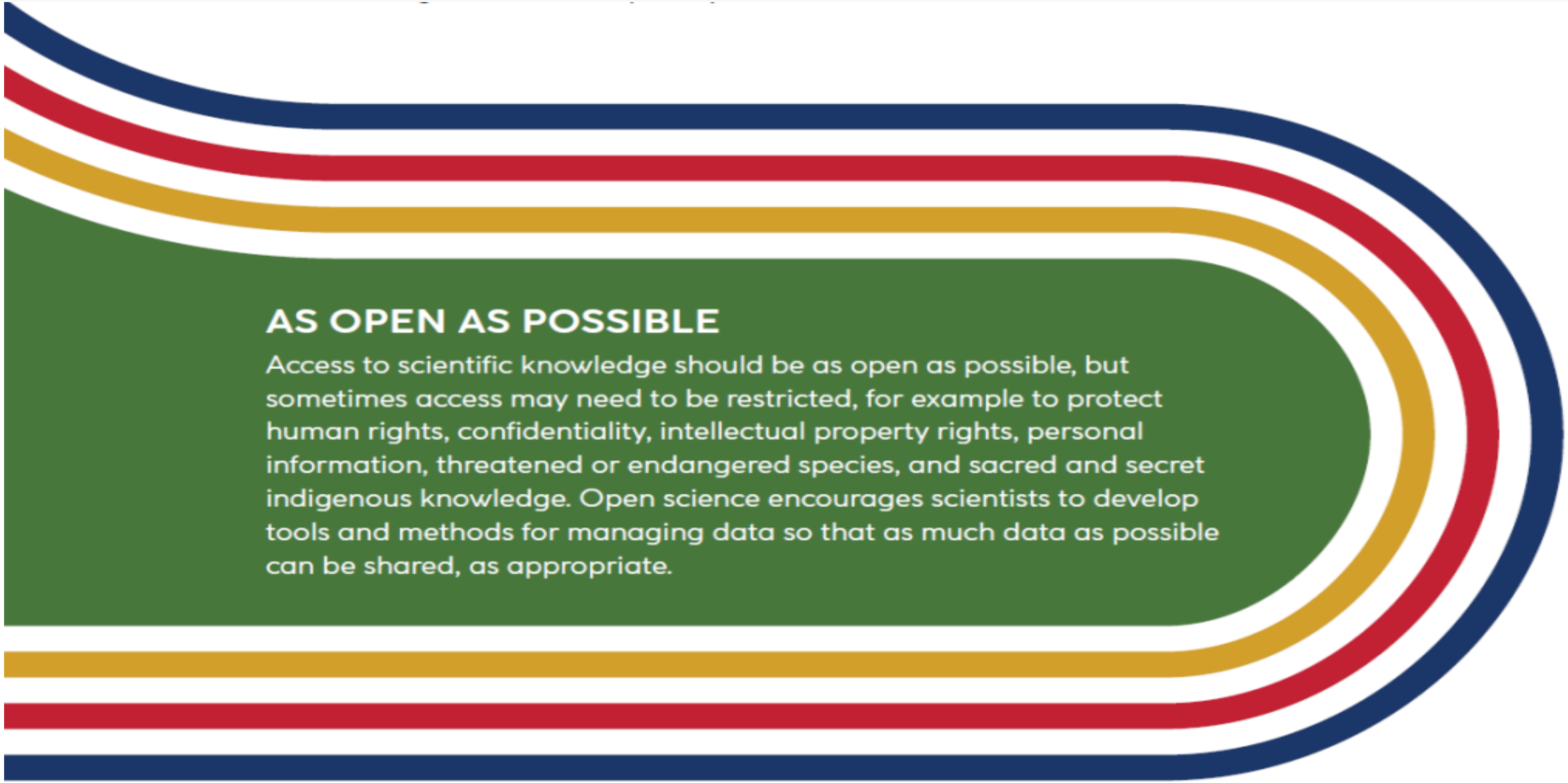

Open science increases scientific collaborations and sharing of information for the benefits of science and society
OPEN SCIENCE
makes multilingual scientific knowledge openly available, accessible and reusable for everyone
opens the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community.

As open as possible and as closed as necessary

OPEN DOES NOT MEAN UNREGULATED

OPEN DOES NOT MEAN WITHOUT ANY COSTS

As open as possible and as closed as necessary



Key challenges and high impact areas for the implementation of the UNESCO OSR

Change in the conventional scientific culture

Human and institutional capacity

Adequate infrastructures, including reliable internet connectivity

Alignment of incentives and revision of criteria for evaluation of scientific excellence and scientific careers

Addressing the unintended negative consequences of OS practices

CAPACITY BUILDING **POLICIES** **FINANCING/INCENTIVES** **INFRASTRUCTURES** **MONITORING**

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Specific Recommendations for Universities

- Encouraging research institutions, universities, scientific unions and associations, and learned societies **to adopt statements of principle in line with this Recommendation to encourage OS practice** in coordination with national science academies, associations of early-career researchers such as young academies and the International Science Council (ISC).

- Combining efforts of many different stakeholders, including research funders, **universities, research institutions**, publishers and editors, and scientific societies across disciplines and countries, **to change the current research culture and to recognize researchers for sharing, collaborating** and engaging with other researchers and society, and to support, in particular, early-career researchers in particular to drive this cultural change.

Educational System

- Are our institutions configured to encourage team work or competitions?
- Criteria for evaluation of scientific excellence – reward system, incentives, etc.

Role of Universities

Challenges:

- Quantity: universities, researchers, publications, patents
- Quality
- Lack of harmonisation, mobility, cooperation
- Gaps in quality assurance

Quality has a Price!

- University budget
- % GDP for R&D
- Infrastructure: Top facilities, ICT backbone

Role of Universities: Enabling environment

Opportunities:

- Harmonisation of programmes
- Open access to scientific publications
- Strong quality assurance systems (Addis Convention)
- Joint-collaborative programmes (research, MSc, PhD), shared facilities (laboratories, etc)
- FAIR (Findable, Accessible, Interoperable and Reusable) data principle
- Mobilise the power of Connectivity
- Preparedness for AI and other innovative / disruptive technologies
- Thinking outside the box

Role of Governments – Policies, framework and global strategy

- In adopting the Recommendation on OS, Member States have agreed to embrace the culture and practice of OS and have committed to reporting on their progress every 4 years

- Ensure the successful Implementation of Recommendation on OS
  - Need for greater global understanding of the opportunities and challenges of OS for policy makers, science practitioners and communities.
  - Development of National OS strategy and Policies

Role of Governments

- Open Infrastructures
  - ICTs, connectivity (Internet backbone, last mile connectivity particularly for the most left-behind), HPC and data centers
  - Electricity (Renewable Energy, etc)
  - AI readiness
  - Shared national research laboratories and other regional research facilities
- Invest in open science—considering the financial implications of OS and developing sustainable open science business models;
- Promote innovative international scientific collaborations and innovative public-private partnerships.

Role of Governments

To take measures to strengthen national and regional STI policies, governance of STI, and institutions in research and innovation in accordance with the 2017 UNESCO Recommendation on Science and Scientific Researchers (RS|SR) and the African Union Agenda 2063

Role of Governments

- Now, we need the translation of all of this into action
- To repeat the UN SG call, we need a decade of action.
- We need a decade of Action in making STI work for Africa's transformation

Long Term Vision

A sustainable world in which, by mid-century, 9 billion people can all enjoy the benefits from scientific progress and live a decent quality of life within the planet's limited resources

Join the Global Open Science Movement

Join the UNESCO Open Science Partnership!

Contribute to global open science calls !

Engage in the global discussions!

UNESCO Open science website:
https://on.unesco.org/openscience

Contact: openscience@unesco.org

Thank you


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