Open Science as Public Good: ISC's Perspective

CONFERENCE ON DIAMOND OPEN ACESS

December 2024 | Cape Town | Megha Sud, Senior Science Officer, ISC

International Science Council

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The International Science Council

An introduction

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OUR VISION

The vision of the council is to advance ==science as a *global public good*==

OUR MISSION

The mission of the Council is to be the *global voice for science*

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Our members

142

National and regional scientific organizations, including Academies and Research Councils

45

International scientific unions and associations, across the natural and social sciences

70

National, regional or global affiliates, including young scientist organizations, scientific federations and societies

We maintain **active partnerships** with:
Other international scientific bodies, including the InterAcademy Partnership, the World Federation of Engineering Organizations and the Global Research Council

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GLOBAL RESEARCH COUNCIL

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Our regions

Latin America and the Caribbean

Based at the Colombian Academy of Exact, Physical and Natural Sciences

Asia and the Pacific

Based at the Australian Academy of Science

Africa

Agreement with Future Africa to co-design the ISC's presence in Africa

The ISC has Members and partners across the world and is active in all regions.

The **ISC Regional Offices** convene the scientific community and act as a hub for ISC Members and activities in **Latin America and the Caribbean, Asia and the Pacific and Africa.**

Global Vision, regionally and nationally contextualized

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Open Access (really open) is foundational to ISC's vision

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SCIENCE AS A GLOBAL PUBLIC GOOD

A POSITION PAPER OF THE INTERNATIONAL SCIENCE COUNCIL
November 2021

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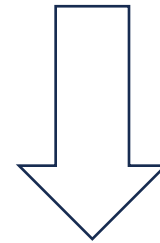The global voice for science

Global Public Goods and Open Science

Knowledge is a global public good. It has no marginal cost. It is therefore counter-productive to deny access.
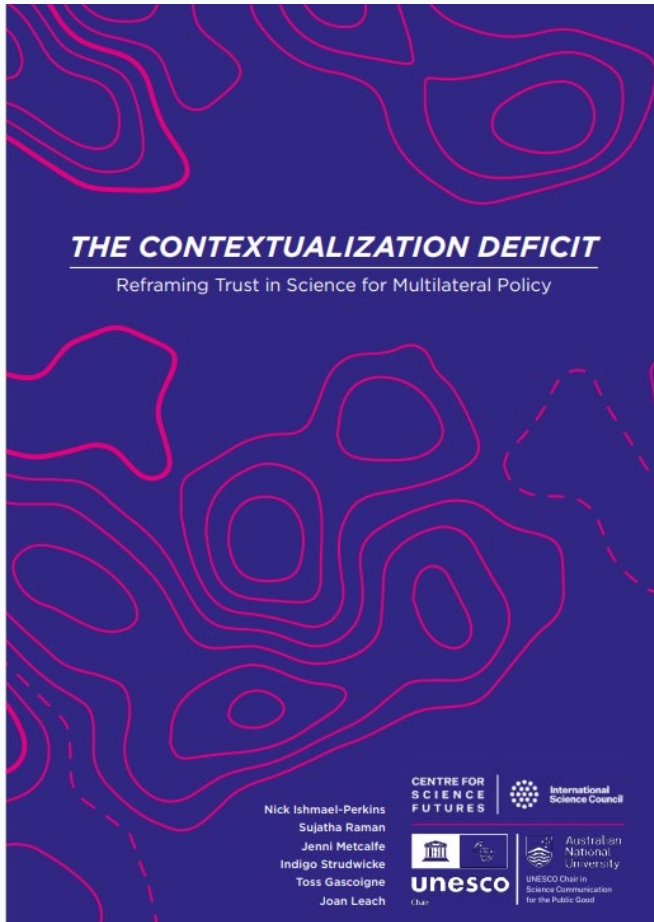
As a public good, the value of knowledge increases as the number of people possessing it increases.

The opposite of "open`" is not "closed". The opposite of "open" is "broken".

The public value of science

Theme: Public Value of Science   **Status:** Completed

- Aimed to promote the importance of science as a global public good, focusing on **policy-makers and the public:** the main stakeholders ISC members engage with

- **Misleading information** can undermine trust in science and threaten progress toward greater use of scientific evidence to inform decision-making.

- To promoting evidence-based policy-making we need to interrogate our understanding of **how perceptions of science inform and impact policy**

- Work with members **on understanding, enabling and extending scientific engagement**.

THE CONTEXTUALIZATION DEFICIT
Reframing Trust in Science for Multilateral Policy

Nick Ishmael-Perkins
Sujatha Raman
Jenni Metcalfe
Indigo Strudwicke
Toss Gascoigne
Joan Leach

1. **Responsive Engagement is Crucial**: Effective socialization of science with policy and the public requires a responsive mode of engagement.

2. **Build Trustworthiness** : Trust in science and policy institutions relies on demonstrating their trustworthiness by addressing context, transparency and reflecting on cultures of science

3. **Research institutions should support science** through the changing context of social media, echo chambers, and the dynamic interaction between perceptions and information.

4. **Institutional support and incentives constrain scientists'** communication and engagement activities need to reduce these barriers.

5. **Bi-directional learning** for scientists, value for local knowledge

6. **Context is key**. The subject under consideration, social, economic and political factors play a role, scientists must remain sensitive to these.

7. **Action Areas for Socializing Science and Policy**: building partnerships, organizational development, supporting deliberative processes and technical support for communication.

PUBLIC PERCEPTIONS AND UNDERSTANDINGS OF SCIENCE:
FROM INTERNATIONAL CONTEXTS TO INSTITUTIONAL RESPONSES
ISC Occasional paper
October 2021

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Focus on *how* not just *what*

We need integrated science that works with society to generate actionable knowledge in the pursuit of transformations to sustainability

PILOTING MODELS FOR ENGAGED SCIENCE

A Roadmap to Science Missions for Sustainability

Describes and advocates for **transdisciplinary mission science for sustainability** as an urgently needed new form of science for the SDGs.

Call, inviting **all stakeholders**, both familiar and unconventional, to unite with the science community in this endeavor of catalyzing science's power to drive transformative action towards a more sustainable world for all.

Pilot projects to be launched in January 2025

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The Future of Scientific Publishing

THE CASE FOR REFORM OF SCIENTIFIC PUBLISHING

- In 2019, asked to identify the most important contemporary issues for science: **'the future of scientific publishing'** was on top of the list.

- Urgent need to shift from a 'publish or perish' culture to prioritize the global dissemination of knowledge as a public good.

- From improving the peer review process to ensuring open access to scientific papers, the ISC lays out a comprehensive roadmap for reform.

- Resources for stakeholders on various elements on reforming science publishing are co-produced and made freely available

Where do we want to go?

Affordable publishing (reader and author), efficient and transparent peer review, incorporating advantages of digital revolution

The growth that commercialization introduced supported the expansion of scientific activity - but the interests of Science and investors have now diverged so strongly that major reform is needed

Research Assessment reforms, a full international index of scientific publications should be created

Organisations working towards reforming scientific publishing need to collaborate and governance of science by the scentific community

Open Science for the 21st Century

Draft ISC Working Paper
June 2020

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THE NORMALIZATION OF PREPRINTS

ISC Occasional paper
March 2022

Business Models and Market Structure within the Scholarly Communications Sector

ISC Occasional Paper
September 2020

OPENING THE RECORD OF SCIENCE

MAKING SCHOLARLY PUBLISHING WORK FOR SCIENCE IN THE DIGITAL ERA

STRENGTHENING RESEARCH INTEGRITY

THE ROLE AND RESPONSIBILITIES OF PUBLISHING

ISC Occasional paper
November 2021

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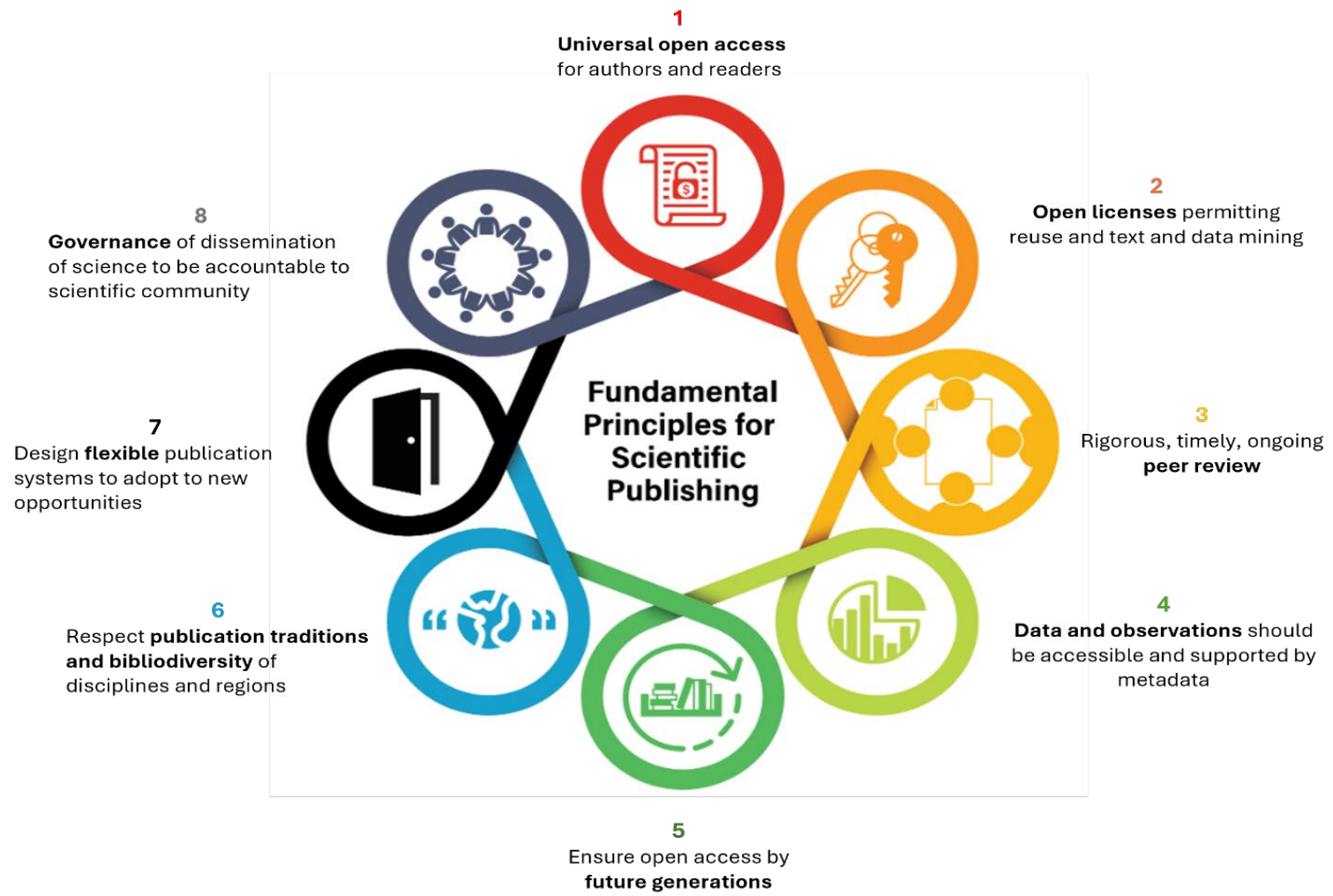# THE KEY PRINCIPLES FOR SCIENTIFIC PUBLISHING

Key Principles for Scientific Publishing

AND THE EXTENT TO WHICH THEY ARE OBSERVED

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1
Universal open access for authors and readers

2
Open licenses permitting reuse and text and data mining

3
Rigorous, timely, ongoing **peer review**

4
Data and observations should be accessible and supported by metadata

5
Ensure open access by **future generations**

6
Respect **publication traditions and bibliodiversity** of disciplines and regions

7
Design **flexible** publication systems to adopt to new opportunities

8
Governance of dissemination of science to be accountable to scientific community

Fundamental Principles for Scientific Publishing

THE FUTURE OF RESEARCH EVALUATION

Need to **move beyond traditional metrics** that prioritize quantity over quality.

Systematic change is necessary to create environment where all researchers can thrive and engage in the kind of science needed to produce actionable knowledge.

First report provides insights into the current state of researcher evaluation a synthesis of debates and developments.

Second report finds that **our collective membership organizations can play a role** in supporting the reform of researcher evaluation through:

1. Championing missing voices

2. Lending the credibility needed to put reform on the agenda

3. Supporting interventions that have reached their 'tipping point'

4. Protecting researcher mobility within the global system

5. Promoting the exchange of ideas and lessons

Snapshots of Reform
Researcher Evaluation within Science Organizations

May 2024

A joint paper from the Global Young Academy, InterAcademy P
and the International Science Council.

Delivered by CultureBase

iap | GLOBAL YOUNG ACADEMY | CENTRE FOR SCIENCE FUTURES | International Science Council

THE FUTURE OF RESEARCH EVALUATION:
A SYNTHESIS OF CURRENT DEBATES AND DEVELOPMENTS

DISCUSSION PAPER

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OPTIONS FOR REFORM

NORMALIZE

🔵 Rapid communication to disciplinary peers through preprint servers.

🔵 Overlay processes

🔵 Innovative approaches to peer review and quality control

🔵 Rights retention strategies and open licences

🔵 Concurrent deposition of relevant data/evidence in line with FAIR principles as a condition of publication.

DEVELOP AND IMPLEMENT

🟢 Business models that support 8 principles and diverse publication modes

🟢 A sustainable business model for learned society open access publication

🟢 Reform peer review

🟢 Platform-agnostic discovery services

🟢 Global curation infrastructures for the Record of Science

🟢 A record of versions, not a version of record

🟢 Reform incentives away from bibliometrics

GOVERNANCE

🟠 International organizations as custodians of the scientific interest

🟠 Compliance and audit of agreed standards (8 principles)

🟠 Adhere to UNESCO open science values

🟠 Foreground academic institutions

🟠 Build on robust, distributed, community controlled infrastructures

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Catalyzing Action

Working together on a complex inter-linked issue

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## WORKING TOGETHER FOR REFORM OF SCIENTIFIC PUBLISHING

Strong need to bring together a network of actors working towards the same goal through different channels as a priority.

Key requirements:

- **Coordinated action and information sharing** between various actors working on different aspects of the complex problem (such as funding, infrastructure, incentives, capacity building, policy etc.).

- Integrating efforts in the area of **reforming research and researcher assessment** with those in the area of **reforming the publishing system**.

Regular <u>discussions</u> with a clear agenda for change and developing pathways for <u>information sharing</u>, combined with an <u>annual milestone meeting</u> to enable development of partnerships for action.

The figure below (based on Nosek, 2019) illustrates the elements that must be considered if culture change is to be successful. It also shows examples of the kinds of organizations involved in this discussion (this is a non-exhaustive list as we continue to add stakeholders).
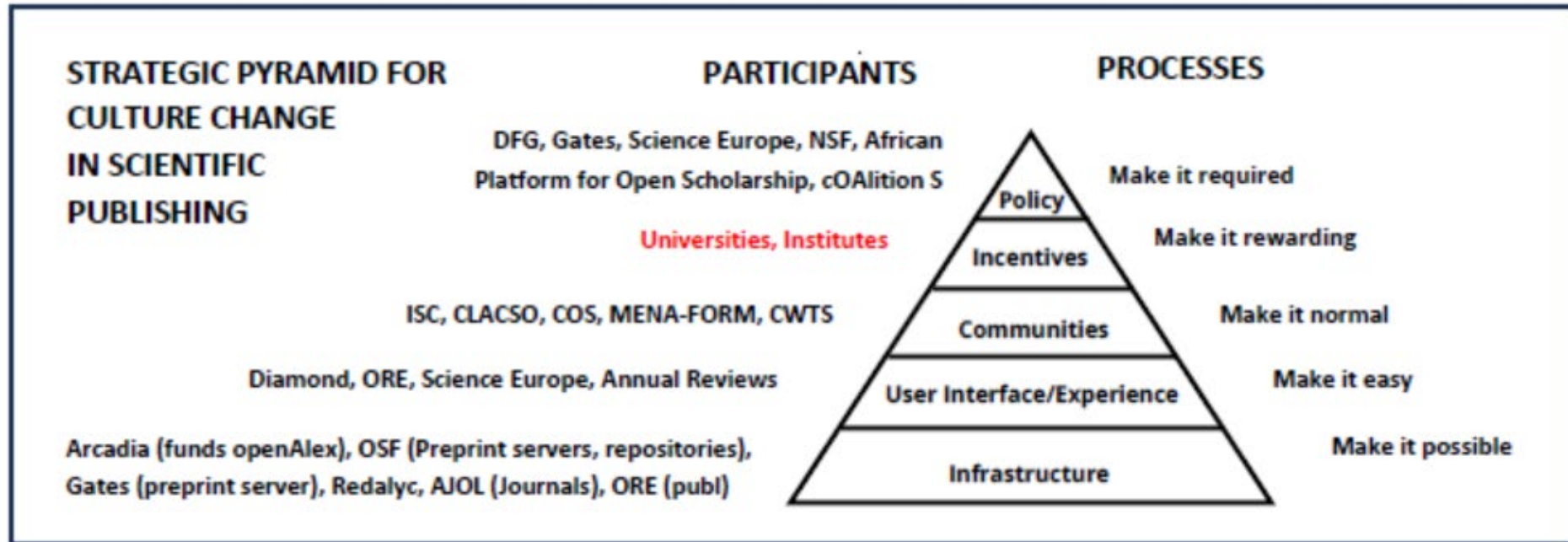
COMMON PRIORITIES

Initial consultation and meetings have raised common priorities

- **Access to Science:** <u>Reforming the business model</u> to enable universal, prompt open access to the record of science as a norm, both for authors and readers, with no barriers to participation, in particular those based on ability to pay, institutional privilege, language or geography.

- **Open Data:** <u>A fundamental principle of science</u>, essential to the process of self-correction, is that truth claims must be associated with the evidence/data on which they are based.

- **Assessment:** It has been repeatedly argued that <u>assessments of individual scientific contributions based solely on the power of bibliometrics</u> in incentivizing academics excessively priorities publication to the detriment of <u>other priorities of science, and generates massive over-publication of little value</u>, to the gross detriment of scientific productivity.

- **Peer review:** Much <u>current review is highly inefficient</u> in its use of human resources, with many neglected opportunities that should be implemented.

- **Governance:** The scientific community plays little or no organized role in governance. Governance, such as there is, rests with publishers. <u>Standards and principles should be set by and accountable to the scientific community</u>.
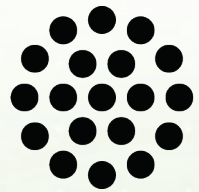
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ISC'S VALUE AS A MEMBER OF THE COMMUNITY

Preparing resources needed for collective action: gathering expertise, hosting deliberations, drafting studies for consultation

A space for sounding ideas and testing innovations with a diverse membership (disciplinary spectrum, geographical spread, early and mid-career researchers)

Adding to critical mass for agenda setting

Collaboration with and coordination of like-minded stakeholders

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Thank you!

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