Open Science and the reform of the research assessment system

Francesca Di Donato

Istituto di Linguistica Computazionale "A. Zampolli" - CNR
francesca.didonato@ilc.cnr.it
orcid.org/0000-0003-0144-8934

This lesson: structure

Module 1.
Open evaluation

Module 2.
Lab: Your impact and your CV

Open evaluation
Towards a reform of the research assessment system

Preliminary question:

How many papers/outputs have you published?

R. Terry, Time to unlock the potential of the digital age, OpenScienceFair2021, settembre 2021, slides

The pandemic, and the urge to open up the research results (part 2)

Robert Terry (WHO): Less than 25% of the scientific material included in the WHO COVID Guidelines comes from traditional publications.

"They proved useless, just when we needed them most"

But who are THEY?

R. Terry, Time to unlock the potential of the digital age, OpenScienceFair2021, settembre 2021, slides

We do have a problem

36%

margin of scholarly publishers

Source:
https://www.theguardian.com/science/2017/jun/27/profitable-business-scientific-publishing-bad-for-science

10 billions dollar

annual cost for the subscriptions to scholarly publications (journals) worldwide

Source: Schimmer, R., Geschuhn, K. K., & Vogler, A. (2015). Disrupting the subscription journals' business model for the necessary large-scale transformation to open access. doi:10.17617/1.3

26 billions euro

lost every year in Europe because research data are not properly managed

Source: Directorate-General for Research and Innovation (European Commission), PwC EU Services Cost of not having FAIR research data, 2019-01-16

Photo by Piret Ilver on Unsplash

A publish or perish system

Based on bibliometric indexes or,
for non-bibliometric sectors, on selected «top class» list of journals
- many many publications
- high citation rate
- "important" venus (read: high IF)

But this does not in itself imply excellence in research!

Dr Maria van Kerkhove, WHO Covid-19 Technical Lead at HDR UK conference June 2021

'...publication in a high impact journal does not equal quality...... it is important we need to receive data from chemistry, engineering, architecture not just medicine...'

A problem of method

Goodhart's law:

"when a measure becomes a target, it ceases to be a good measure"

Strathern, Marilyn (1997). "'Improving ratings': audit in the British University system". *European Review*. John Wiley & Sons. **5** (3): 305–321. doi:10.1002/(SICI)1234-981X(199707)5:3<305::AID-EURO184>3.0.CO;2-4.

"Researchers will do anything to publish papers in some journals, including even creating fake authors"

" [...] publishing papers in certain journals is the only way to earn grants, tenure, and promotions"

M. Biagioli, A. Lippman, Gaming the Metrics: Misconduct and Manipulation in Academic Research DOI: https://doi.org/10.7551/mitpress/11087.001.0001

But things are changing

Many funders are embracing OS

- European Commission
- European Research Council
- In Italy Mur with the National Open Science plan
- Many other across Europe and worldwide
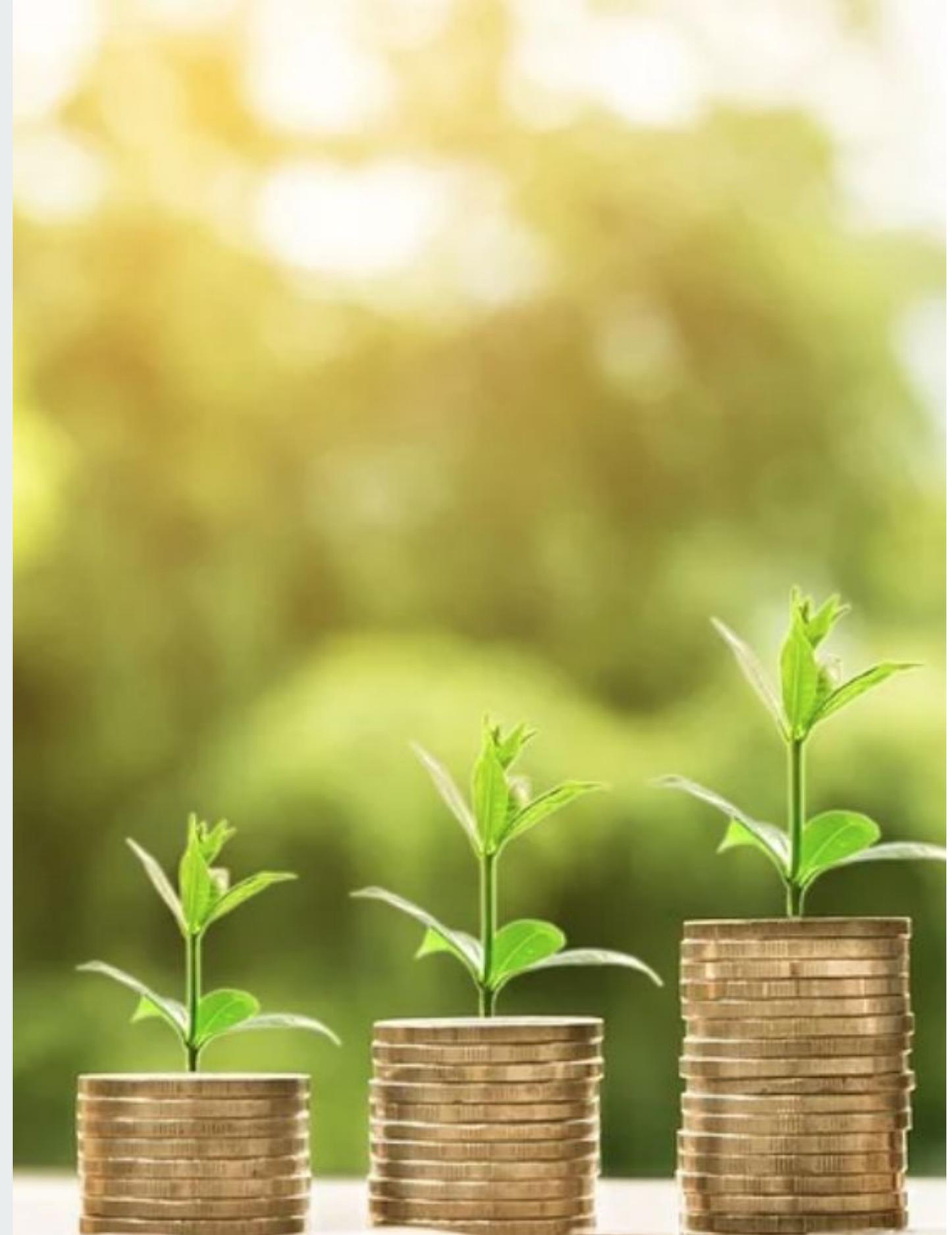
The Declaration on Research Assessment (DORA)

https://sfdora.org/

"There is a **pressing need** to improve the ways in which the output of scientific research is evaluated by funding agencies, academic institutions, and other parties".

Basic principles of DORA recommendations:

- the need to eliminate the use of journal-based metrics, such as Journal Impact Factors, in funding, appointment, and promotion considerations;
- the need to assess research on its own merits rather than on the basis of the journal in which the research is published;

Leiden Manifesto

LEIDEN MANIFESTO FOR RESEARCH METRICS

Home   Video version   Translations   Blog

10 principles to guide research evaluation
with 25 translations, a video and a blog

Research evaluation has become routine and often relies on metrics. But it is increasingly driven by data and not by expert judgement. As a result, the procedures that were designed to increase the quality of research are now threatening to damage the scientific system. To support researchers and managers, five experts led by Diana Hicks, professor in the School of Public Policy at Georgia Institute of Technology, and Paul Wouters, director of CWTS at Leiden University, have proposed 10 principles for the measurement of research performance: the Leiden Manifesto for Research Metrics published as a comment in Nature.

Hicks, Wouters, Waltman, de Rijcke, Rafols, Nature, April 23, 2015

Diana Hicks, Paul Wouters, Ludo Waltman, Sarah de Rijcke & Ismael Rafols, Bibliometrics: The Leiden Manifesto for research metrics, 22 April 2015

1) **Quantitative evaluation should support qualitative**, expert assessment

2) Measure **performance** against the research missions of the institution, group or researcher

3) Protect **excellence in locally relevant research**

4) **Keep** data collection and analytical **processes open, transparent and simple**

5) **Allow** those evaluated **to verify data and analysis**

6) **Account for variation** by field in publication and citation **practices**

7) Base assessment of individual researchers on a qualitative judgement of their **portfolio**

8) **Avoid misplaced concreteness and false precision**

9) Recognize the s**ystemic effects of assessment and indicators**

10) **Scrutinize indicators regularly and update them**

Reforming research assessment is a global issue

G7 Science Ministers Communiqué, Turin, 28 September 2017.

Lin Zhang, Gunnar Sivertsen, The New Research Assessment Reform in China and Its Implementation, Scholarly Assessment Reports, 2020.

.. the **G7 nations commit to work together to**:

"Explore incentives, including enhancements to research assessment that foster recognition and reward collaboration across all disciplines and topics to drive a culture of rapid sharing of knowledge, data, software, code and other research resources. Investigate how open science practices help achieve increasingly robust, reliable and impactful research outcomes;"

G7 Research Compact, 2021

In Europe

Council Conclusions on the New European Research Area

Dicember 2020

vi. **Open Science**: HIGHLIGHTS that open science, including mainstreaming open access to publications and research data, has a crucial role in boosting impact, quality, efficiency, transparency and integrity of R&I, and brings science and society closer together whilst taking into account legitimate legal, security and privacy aspects. ENCOURAGES the Commission, Member States and stakeholders to support and implement open science practices in their reward and evaluation systems for research, researchers and institutions, including RIs, and strengthen their European coordination. WELCOMES the launch of the Open Research Europe publishing platform. RECOGNISES that bibliodiversity, multilingualism and the acknowledgement of all scientific productions are relevant elements of an ERA policy on open science.

Photo by Taisiia Shestopal on Unsplash

1. **2016**: Amsterdam call for actions for OS
2. **2017**: Evaluation of research careers fully acknowledging Open Science practices.
3. **2017**: Rewards, incentives and/or recognition for researchers practicing Open Science
4. **2017**: Responsible metrics and evaluation for open science
5. **2017**: EOSC Declaration
6. **2018**: COMMISSION RECOMMENDATION (EU) 2018/790 of 25 April 2018 on access to and preservation of scientific information
7. **2019**: Indicator frameworks for fostering open knowledge practices in science and scholarship
8. **2019**: Future of Scholarly Publishing and Scholarly Communication
9. **2019**: Report: Research Assessment in the Transition to Open Science
10. **2020**: Open Science Policy Platform final report
11. **2020**: EOSC Strategic Research and Innovation Agenda
12. **2020**: Science Europe, Position statement and recommendations on research assessment processes

13. **2020**: Commission Communication COM(2020) 628 of 30 September 2020 on a new European Research Area for R&I

14. **2020**: Council Conclusions on the new ERA of December 1st 2020

15. **2020**: Digital skills for FAIR and open science. Report from the EOSC Executive Board Skills and Training Working Group:

16. **2021**: RDA: Rewards and Incentives for Open Science

17. **2021**: Conclusions for the Competitiveness Council of 27-28 May on attractive and sustainable researchers' careers and working conditions

18. **2021**: Proposal for a Council Recommendation on a "Pact for Research and Innovation in Europe", as a first key achievement of the new European Research Area

19. **2021**: G7 Research Compact

A radical reform of research assessment, in terms of rewards and incentives for researchers, is desired at multiple levels, and many experts agree that **a crucial factor to accelerate the uptake of open Science is to establish a system of rewards and incentives for it**.

In fact, the Achilles heel of Open Science is the lack of recognition of such work at researchers' level, and has cascading effects to the other levels: institutions, national and international.

Towards a common reform process

Towards a reform of the research assessment system

Scoping Report

November - 2021
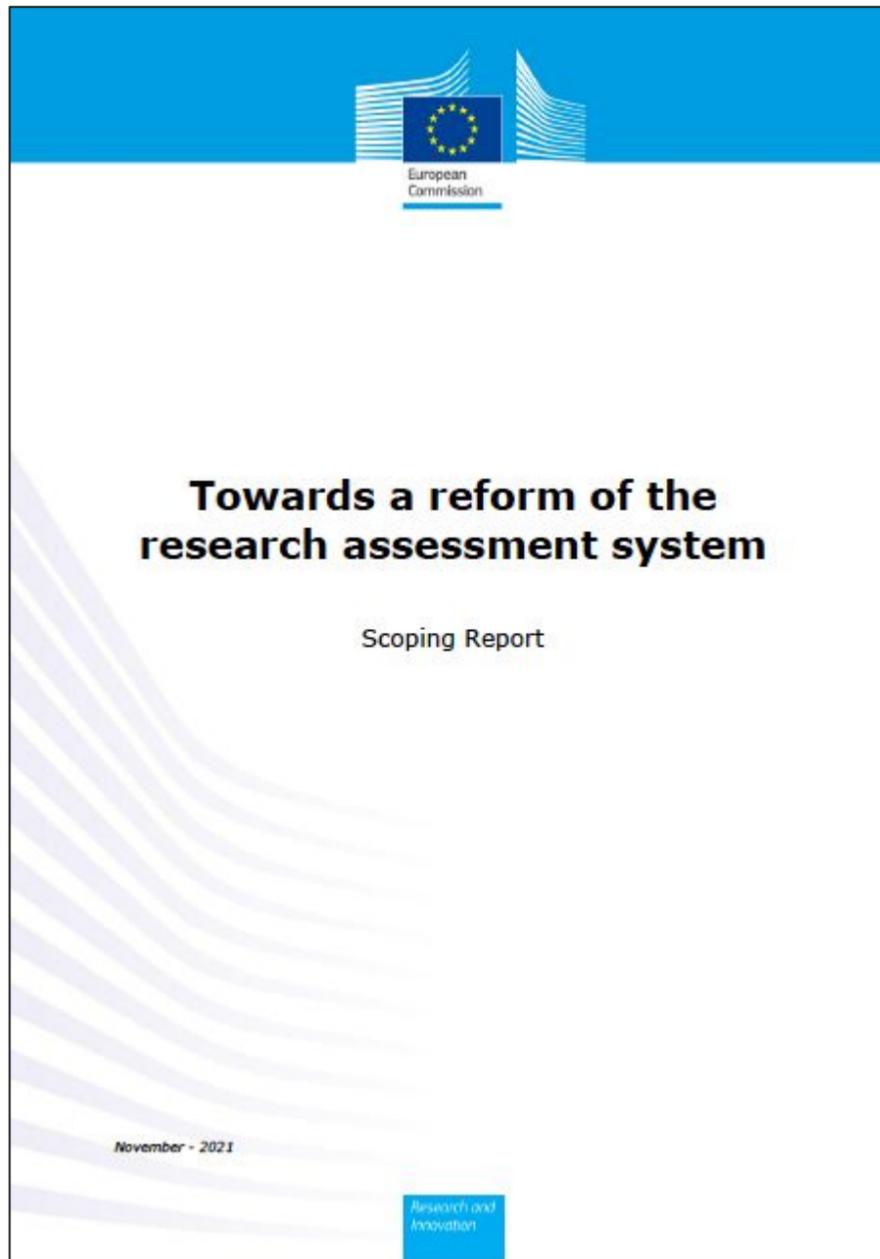
The **research process is changing**
Less linear, more open and collaborative, multiplicity of outputs, "team science"

The traditional valuation system is not suited to reflect this change
It is the Achilles heel of the OS, quantitative aspects and publications are evaluated, collaborative processes and different types of results remain outside

A process of reform, which increases the efficiency, impact, and social responsibility of research, was needed
The Council conclusions on the new ERA and on research careers go in this direction
A cultural change is needed
NB: Sant'Anna School adhered to this process.

EC, Towards a reform of the research assessment system, Scoping report, 29 novembre 2021.

Published on July 20th 2022

28 Sept. 2022: Launched and opened to signatures

NEWS ARTICLE | 20 July 2022 | Directorate-General for Research and Innovation

Reforming research assessment: The Agreement is now final

Launched in January 2022 as a co-creation exercise, the process ⟨EN •••⟩ of drafting an agreement for reforming research assessment has reached an important milestone. On 8 July, the final version of the agreement was presented at a Stakeholder Assembly bringing together the 350+ organisations from 40+ countries ⟨EN •••⟩ having expressed interest in being involved in the process. Today, the final Agreement is made public with this news.

Organisations involved include public and private research funders, universities, research centres, institutes and infrastructures, associations and alliances thereof, national and regional authorities, accreditation and evaluation agencies, learned societies and associations of researchers, and other relevant organisations, representing a broad diversity of views and perspectives. They have provided feedback to the evolving drafts of the agreement, as prepared by a team composed of representatives from the European University Association (EUA), Science Europe, the European Commission, and Dr Karen Stroobants, in her individual capacity as researcher with expertise in research on research. A core group of 20 research organisations, representing the diversity of the research community across Europe, also contributed to the drafting process, while EU Member States and Associated Countries have been consulted on the agreement in the framework of the ERA Forum and the European Research Area Committee (ERAC).

The Agreement on Reforming Research Assessment sets a shared direction for changes in assessment practices for research, researchers and research performing organisations, with the overarching goal to maximise the quality and impact of research. The Agreement includes the principles, commitments and timeframe for reforms and lays out the principles for a Coalition of organisations willing to work together in implementing the changes.

Final version of the Agreement ⟨EN •••⟩

The process towards the agreement

➔ **2021:** consultation of the EC with stakeholders and publication of the <u>scoping report</u>.

➔ **December 2021:** publication of a call for expressions of interest to join the coalition that helped drafting the agreement.

➔ **Jan -July 2022**: Drafting by drafting team + meetings with core group and stakeholder assembly to discuss the elements of the agreement + member states consultation process (ERAC and ERA Forum). June: <u>Council conclusions</u>.

The Council Conclusions of June 2022

Council of the
European Union

Brussels, 10 June 2022
(OR. en)

10126/22

RECH 371
TELECOM 267
COMPET 491
IND 227
MI 468
EDUC 245

OUTCOME OF PROCEEDINGS

From:	General Secretariat of the Council
On:	10 June 2022
To:	Delegations
No. prev. doc.:	9515/22
Subject:	Research assessment and implementation of Open Science
	- Council conclusions (adopted on 10 June 2022)

Delegations will find in annex the Council conclusions on "Research assessment and implementation of Open Science", adopted by the Council at its 3877th meeting held on 10 June 2022.

➔ Direct **connection** between the **research assessment reform and the Open Science implementation**

➔ The **principles** for a reform of RA are the same as in the Scoping report

➔ **WELCOMES** the **European initiative** which aims to facilitate the establishment of a broad coalition of stakeholders willing to develop and implement change through an *agreement* to foster concrete actions to reform research assessment systems;

➔ UNDERLINES that **researchers themselves should be at the core of this evolution**

https://data.consilium.europa.eu/doc/document/ST-10126-2022-INIT/en/pdf

Agreement: Content

1. Principles

2. Commitments

3. CoARA

4. Timeframe

Annexes
1. The need for a research assessment reform
2. Glossary
3. Reform journey
4. Toolbox

https://coara.eu/agreement/the-agreement-full-text

It establishes a **common direction** for a research evaluation reform, based on 10 commitments, respecting the autonomy of organizations.

In particular, it includes the principles, commitments and timeframe for reforms and establishes the principles for a coalition of organizations willing to work together in implementing such reform.

Vision

Our vision is that the assessment of research, researchers and research organisations recognises the diverse outputs, practices and activities that maximise the quality and impact of research. This requires basing assessment primarily on qualitative judgement, for which peer review is central, supported by responsible use of quantitative indicators.

https://coara.eu/agreement/the-agreement-full-text/, p. 2.

Goal

To facilitate and to accelerate a research assessment reform that:

➔ Promotes **qualitative assessment** based on peer review, supported by a more responsible use of quantitative indicators

➔ Considers the value and impact of a **plurality of research outputs** (bibliodiversity) and of multilingualism

➔ Recognizes the **diversity of a researcher's activities**, and supports collaborative science (team science) and interdisciplinary research.

➔ Encourages **open collaboration and the sharing of preliminary results and data**

Core commitments

1. **Recognise the diversity of contributions** *to, and careers in, research in accordance with the needs and nature of the research*

2. **Base research assessment primarily on qualitative evaluation** *for which peer review is central, supported by responsible use of quantitative indicators*

3. **Abandon inappropriate uses in research assessment of journal- and publication-based metrics**, *in particular inappropriate uses of Journal Impact Factor (JIF) and h-index*

4. **Avoid the use of rankings of research organisations** *in research assessment*

Agreement on Reforming Research Assessment, pp. 4-6.

Supporting commitments

5. Commit resources to reforming research assessment as is needed to achieve the organisational changes committed to

6. Review and develop research assessment criteria, tools and processes
(For units and institutions - promoting interoperability - and for individuals and projects, with the direct involvement of researchers)

7. Raise awareness of research assessment reform and provide transparent communication, guidance, and training on assessment criteria and processes as well as their use

8. Exchange practices and experiences to enable mutual learning within and beyond the Coalition

9. Communicate progress made on adherence to the Principles and implementation of the Commitments

10. Evaluate practices, criteria and tools based on solid evidence and the state-of-the-art in research on research, and make data openly available for evidence gathering and research

Agreement on Reforming Research Assessment, pp. 7-10.

In practice...

Signatories

http://coara.eu
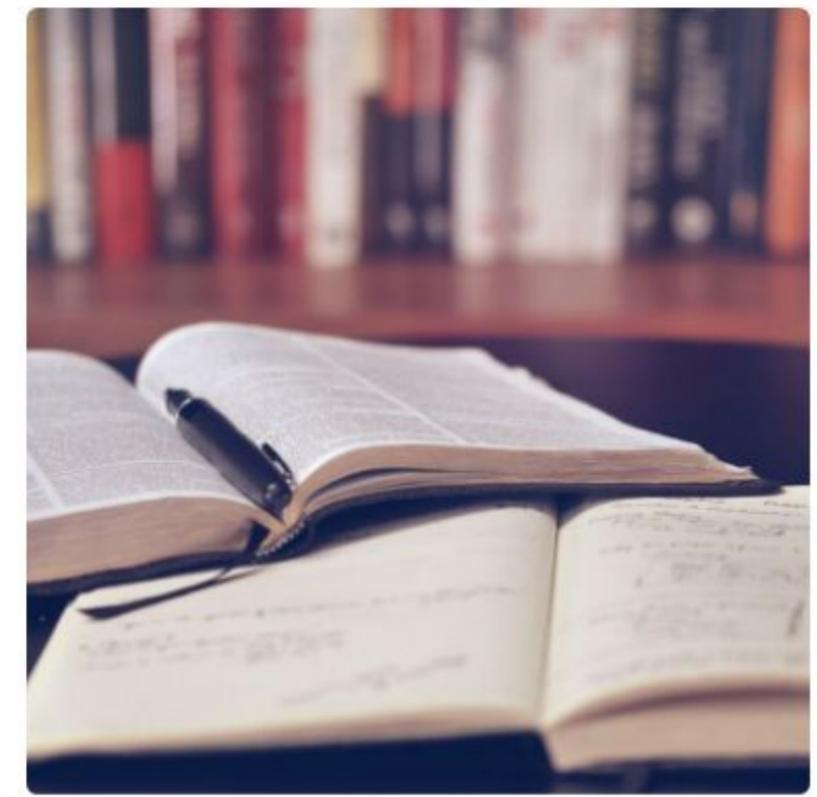
CoARA

First assembly: **1st December 2022**

CoARA will work to **enable systemic reform** based on common principles within an agreed timeframe and to **facilitate information exchange and mutual learning** among all who wish to improve research evaluation practices.

Reporting of individual members' progress in implementing the Commitments will primarily be based on a **publicly shared self-assessment**.

Agreement on Reforming Research Assessment, p. 16.

What does joining the Coalition entail?

By the end of 2023 (or one year after signing), Coalition members publish a **Roadmap and an action plan with milestones** to be respected in the reform plan.

Periodically, they **publish and showcase their progress** and **participate in Working Group** activities.

After 5 years (end of 2027) they undertake to have carried out at least one review and development cycle of the new evaluation criteria, processes and tools.

Agreement on Reforming Research Assessment, p. 11.

Lab: What about your impact (and your CV)

Interaction:

Describe the (possible) impact of one of your publications without using h-index and JIF

What do we mean by **impact**?

HORIZON EUROPE LEGISLATION defines three types of impact, tracked with Key Impact Pathways

Scientific Impact
1. Creating high-quality new knowledge
2. Strengthening human capital in R&I
3. Fostering diffusion of knowledge and Open Science

Societal Impact
4. Addressing EU policy priorities & global challenges through R&I
5. Delivering benefits & impact via R&I missions
6. Strengthening the uptake of R&I in society

Economic/ Technological Impact
7. Generating innovation-based growth
8. Creating more and better jobs
9. Leveraging investments in R&I

Article 50 & Annex V 'Time-bound indicators to report on an annual basis on progress of the Programme towards the achievement of the objectives referred to in Article 3 and set in Annex V along impact pathways'

European Commission

What about your CVs - have you ever described your impact?

Open discussion: describe your experiences

How do you demonstrate your impact in your CV?

1. **The structure**: make all your activities transparent

1. **Narrative CV**: give your reader a (pleasant to understand) your research path(s) and their context

Some examples. Royal Society CV

Education
and Professional
experience

Explain:
- Communication, fundings, output selection, explaining why they are relevant.
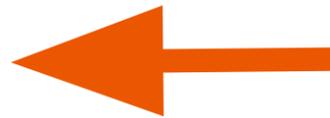- Include their DOI when available

Résumé for Researchers

Below is the suggested structure for the Résumé for Researchers tool.

Personal details

Provide your personal details, your education, key qualifications and relevant positions you have held.

Module 1 – How have you contributed to the generation of knowledge?

This module can be used to explain how you have contributed to the generation of new ideas and hypotheses and which key skills you have used to develop ideas and test hypotheses. It can be used to highlight how you have communicated on your ideas and research results, both written and verbally, the funding you have won and any awards that you have received. It can include a small selection of outputs, with a description of why they are of particular relevance and why they are considered in the context of knowledge generation. Outputs can include open data sets, software, publications, commercial, entrepreneurial or industrial products, clinical practice developments, educational products, policy publications, evidence synthesis pieces and conference publications that you have generated. Where outputs have a DOI please only include this.

Module 2 – How have you contributed to the development of individuals?

This module can be used to highlight expertise you provided which was critical to the success of a team or team members including project management, collaborative contributions, and team support. It can include your teaching activities, workshops or summer schools in which you were involved (for undergrads, grads and post-grads as well as junior colleagues), and the supervision of students and colleagues. It can be used to mention mentoring of members in your field and support you provided to the advancement of colleagues, be it junior or senior. It can be used to highlight the establishment of collaborations, from institutional (maybe interdisciplinary) to international. It can be used to describe where you exerted strategic leadership, how you shaped the direction of a team, organisation, company or institution.

Explain:
- Team development and early career researcher supervision/training;
- Collaborations

Module 3 – How have you contributed to the wider research community?

This module can include various activities you have engaged in to progress the research community. It can be used to mention commitments including editing, reviewing, refereeing, committee work and your contributions to the evaluation of researchers and research projects. It can be used to mention the organisation of events that have benefited your research community. It can highlight contributions to increasing research integrity, and improving research culture (gender equality, diversity, mobility of researchers, reward and recognition of researchers' various activities). It can be used to mention appointments to positions of responsibility such as committee membership and corporate roles within your department, institution or organisation, and recognition by invitation within your sector.

Explain:
- Peer-reviewing; committee membership (engagement with the scientific community)

Module 4 – How have you contributed to broader society?

This module can include examples of societal engagement and knowledge exchange. It can include engagement with industry and the private sector. It can be used to mention engagement with the public sector, clients and the broader public. It can be used to highlight positive stakeholder feedback, inclusion of patients in processes and clinical trials, and other impacts across research, policy, practice and business. It can be used to mention efforts to collaborate with particular societal or patient groups. It can be used to highlight efforts to advise policy-makers at local, national or international level and provide information through the press and on social media.
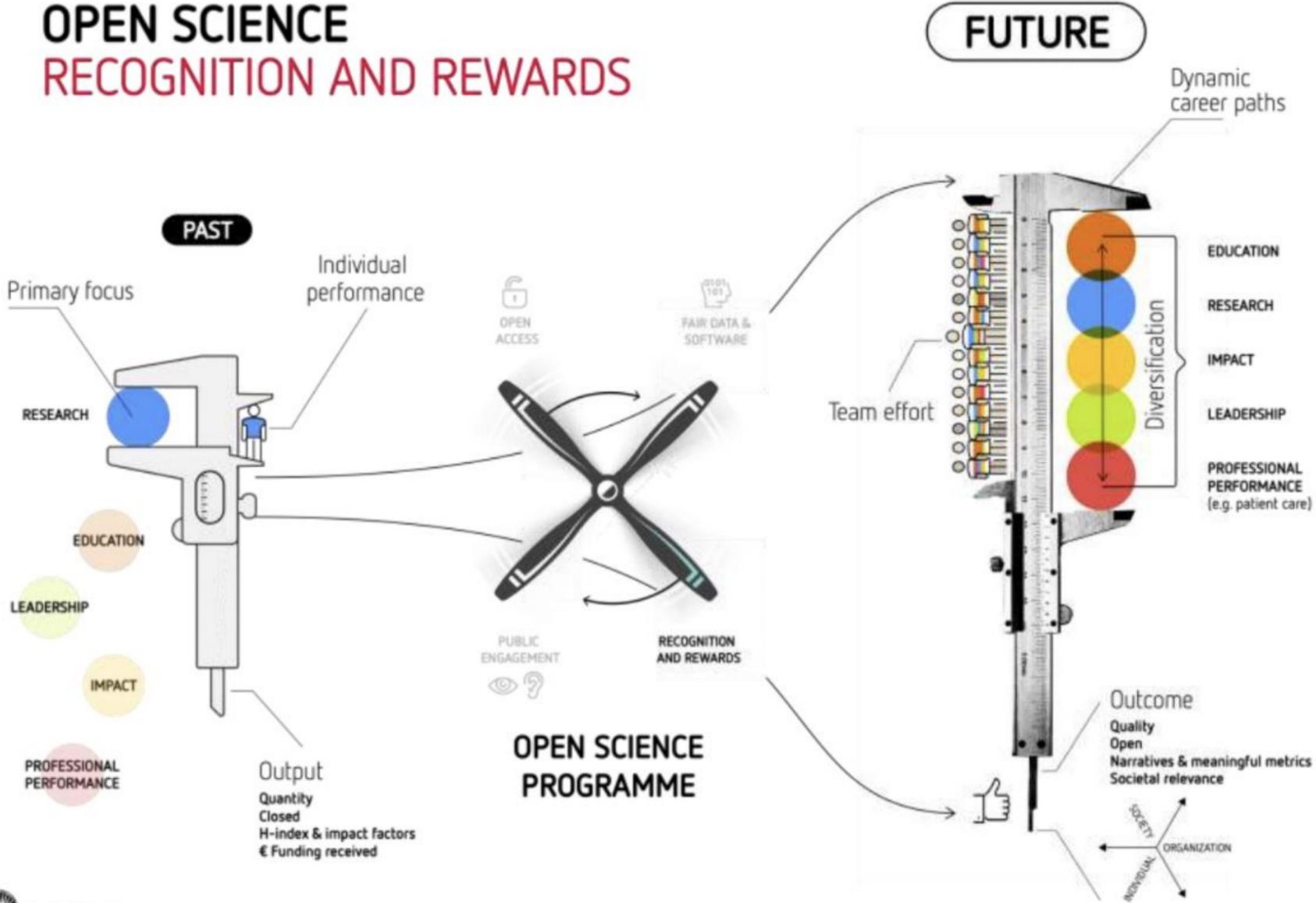
Explain:
- Societal engagement at different levels

Some examples. The Utrecht evaluation framework

Five Pillar/assets

1) Education
2) Research
3) Impact
4) Leadership
5) Professional Performance

National funders (NWO, ZonMW)

- Narrative CV:
  - Academic profile
  - Key outputs (not limited to publications)

- Indicate the importance of each output, how it is related to the project, and/or how it shows the applicant's abilities

- No aggregate indicators; provide context for indicators used: why is it a good measure? What does it imply?

Possible structures: 1

Personal data

Narrative description

Education

Professional experience

Teaching

Publications

Conferences

Projects

Other/ Outreach activities?

Possible structures: 2

Personal data

Research areas

Academic qualifications

Major academic courses

Relevant Training programs

Relevant key competencies

Computing and technical skills

Field data collection (survey) experience

Field data collection (survey) skills

Work experience

Publications and write ups

References

Possible structures: 3

Personal data

Education

Educational Activities

Research Activities

Management Assignments and other relevant activities

Possible structures: 4

PERSONAL INFORMATION

POSITION

WORK EXPERIENCE (with a narrative)

EDUCATION AND TRAINING

PERSONAL SKILLS

ADDITIONAL INFORMATION
Publications Projects Conferences Seminars Honors and awards Memberships Technical Courses/Workshops

Open discussion

Similarities and differences
Why should I choose one CV format of another?

Thank you!
Questions?

Homework

Mandatory readings:

Agreement on Reforming Research Assessment

Recommended readings:

Frank Miedema, Transition to Open Science: Rethinking Recognition and Rewards, 2021, Slides, video.

EC, Towards a reform of the research assessment system, Scoping report, 29 novembre 2021.

R. Terry, Time to unlock the potential of the digital age, OpenScienceFair2021, settembre 2021, slides

Readings

R. Terry, Time to unlock the potential of the digital age, OpenScienceFair2021, settembre 2021, slides

Agreement on Reforming Research Assessment

Francesca Di Donato, Una questione di qualità o una formalità? L'*Agreement on Reforming Research Assessment* e il processo di riforma della valutazione della ricerca in Europa, in «Bollettino telematico di filosofia politica», 2022, pp. 1-30, *https://commentbfp.sp.unipi.it/francesca-di-donato-una-questione-di-qualita-o-una-formalita-lagreement-on-reforming-research-assessment-e-il-processo-di-riforma-della-valutazione-della-ricerca-in-europa/* . Zenodo: https://zenodo.org/record/7433048#.Y6BZxezMJfW

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G7 Science Ministers Communiqué, Turin, 28 September 2017.

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Frank Miedema, Transition to Open Science: Rethinking Recognition and Rewards, 2021, Slides, video.

EUA (2021), Report. Reimagining Academic Career Assessment: Stories of innovation and change.

EUA, 2020-2021 EUA Open Science Survey results / From principles to practices: Open Science at Europe's universities

Royal Society Résumé for researchers

Health Research Board (Ireland), Research career path for academic researchers

Swiss National Science Foundation, SciCV

Luxembourg national Research Fund, Evolution of FNR funding policies in 2021

Readings

McKiernan, et al, 2019. https://elifesciences.org/articles/47338

Niles, et al, 2019. https://www.biorxiv.org/content/10.1101/706622v1

Alder, et al, 2008. https://www.mathunion.org/fileadmin/IMU/Report/CitationStatistics.pdf

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Further references

These slides are the reworking of teaching materials produced in the course of the past 15 years, and especially in 2021 in collaboration with Emma Lazzeri for the ICDI Competence Center on EOSC and Open Science, and in 2022. See in particular:

- Di Donato, Francesca (2020): Methodology of Bibliographical Research on the Internet. figshare. Presentation. https://doi.org/10.6084/m9.figshare.12936272.v1
- Di Donato, Francesca (2018): The Web as a Research Environment. Definitions, tools and best practices. figshare. Presentation. https://doi.org/10.6084/m9.figshare.5966926.v1
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