

1. Change assessment, evaluation and reward systems in science

The problem

Open science presents the opportunity to radically change the way we evaluate, reward and incentivise science. Its goal is to accelerate scientific progress and enhance the impact of science for the benefit of society. By changing the way we share and evaluate science, we can provide credit for a wealth of research output and contributions that reflect the changing nature of science.

The assessment of research proposals, research performance and researchers serves different purposes, but often seems characterised by a heavy emphasis on publications, both in terms of the number of publications and the prestige of the journals in which the publications should appear (citation counts and impact factor). This emphasis does not correspond with our goals to achieve societal impact alongside scientific impact. The predominant focus on prestige fuels a race in which the participants compete on the number of publications in prestigious journals or monographs with leading publishers, at the expense of attention for high-risk research and a broad exchange of knowledge. Ultimately this inhibits the progress of science and innovation, and the optimal use of knowledge.

The solution

- Ensure that national and European assessment and evaluation systems encourage open science practices and timely dissemination of all research outputs in all phases of the research life cycle.
- Create incentives for an open science environment for individual researchers as well as funding agencies and research institutes.
- Acknowledge the different purposes of evaluation and what 'right' criteria are. Amend national and European assessment and evaluation systems in such a way that the complementary impact of scientific work on science as well as society at large is taken into account.
- Engage researchers and other key stakeholders, including communications platforms and publishers within the full spectrum of academic disciplines. Set up assessment criteria and practices, enabling researchers to exactly understand how they will be assessed and that open practices will be rewarded.

Concrete actions

- **National authorities and the European Commission:** acknowledge that national initiatives are reaching their limits, and that this is an area for a harmonised EU approach.
- **National authorities, European Commission and research funders:** reform reward systems, develop assessment and evaluation criteria, or decide on the selection of existing ones (e.g. DORA for evaluations and the Leiden Manifesto for research metrics), and make sure that evaluation panels adopt these new criteria.
- **Research Performing Organisations, research funders and publishers:** further facilitate and explore the use of so-called alternative metrics where they appear adequate to improve the assessment of aspects such as the impact of research results on society at large. Experiment with new approaches for rewarding scientific work.
- **Research communities, research funders and publishers:** develop and adopt citation principles for publications, data and code, and other research outputs, which include persistent identifiers, to ensure appropriate rewards and acknowledgment of the authors.
- **Research communities and publishers:** facilitate and develop new forms of scientific communication and the use of alternative metrics.

Expected positive effects

- An end to the vicious circle that forces scientists to publish in ever more prestigious journals or monographs and reinforcement of the recognition for other forms of scientific communication;
- A wider dissemination of a wider range of scientific information that benefits not only science itself but society as a whole, including the business community;
- A better return for the parties that fund research.