Memo – Researcher Recognition and Rewarding

To   : Steering group NPOS
From   : Working Group 3 (Researcher recognition and rewarding)
Date   : 16 May 2018
Subject   : Recommendations for recognition and rewarding of researchers in relation
                 to open science

Content

Chapter 1 Introduction

This memo contains recommendations for the recognition and rewarding of researchers' efforts to achieve open science[1]. This is based on the conviction that to ensure the sustained viability of open science, the mechanisms governing recognition and rewarding of researchers must support this on at least three levels:

- During the selection, supervision, development and evaluation of researchers (HR policy)
- During the issuing and evaluation of research proposals (research funding)
- During the quality assessment of research in accordance with applicable standards (SEP for scientific research at research universities, university medical centres and KNAW (Royal Netherlands Academy of Arts and Sciences) and NWO (Netherlands Organisation for Scientific Research) institutions; BKO for applied research at universities of applied sciences).

Chapter 2 of this memo formulates recommendations along these three lines. These recommendations focus on the (national) organisations indicated. These can apply the recommendations at their own discretion to create an important stimulus for open science.

The recommendations elaborate on the related goals in the National Open Science Plan[2] and align closely with recommendations formulated at the European level[3]. The methods are further explained in Chapter 3 of this memo.

This memo is intended for the National Open Science Plan steering group, whose membership represents the boards of all major national research organisations. If the steering group approves the recommendations in this memo (including any amendments) on 7 June 2018, the indicated organisations are expected to implement these in the coming years.

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[1]For an explanation of what open science is, please see https://www.openscience.nl/open-science.

[2]As a result of European agreements, on 9 February 2017, the National Open Science Plan (NPOS) was launched (www.openscience.nl). The National Open Science Platform was established to facilitate shared, coordinated execution of the NPOS. This contains four working groups. Working Group 3 focuses on 'Recognition and rewarding of researchers'. See the relevant section in Appendix 2 (p. 11).

[3]Compare the Commission recommendation of 25 April 2018 on access to and preservation of scientific information (https://ec.europa.eu/digital-single-market/en/news/recommendation-access-and-preservation-scientific-information).

Chapter 2 Recommendations

Preamble

The evolution towards open science has been underway for some time now, and it will take some time (probably beyond 2020) before open science rivals traditional scientific practice – especially worldwide. This transition must take the following aspects into account, among others:

- Open science isn't a goal in itself, but is intended to improve the accessibility, impact and societal relevance of scientific research[4].
- For the transition to open science to go well for researchers and other involved parties, shared, co-ordinated action is required. There must be leadership and conviction within the organisations.
- The transition to open science will play out in the international arena of scientific research. The Netherlands mustn't lag behind, but we don't want to pull too far ahead either (due to the disadvantages of being first).
- The transition to open science can and will vary within different fields. The diversity in approaches to research data and publication cultures must be taken into consideration. Not all research data needs to be openly accessible, but – at least long-term – it should be FAIR[5].
- Certainly initially, the transition to open science will require an investment, both in people and in the infrastructure. Identifying these (additional) costs, as well as possible savings, is advisable. Research institutions will need to invest in this themselves as well.

Note

1. Implementation of the recommendations must avoid increasing administrative loads, while taking the above-mentioned aspects into account.
2. More attention to (and research on) evidence-based incentives is necessary. Perhaps the recently started VSNU project on the appreciation and rewarding of researchers[6] can focus more on this.
3. The transition to open science will require increased awareness and training[7] on a grand scale. Training reviewers of research proposals, for example.

The remainder of this chapter addresses the recommendations as follows:

- Assessment of researchers (1 and 2)
- Assessment of research proposals (3)
- Assessment of research (4 and 5)

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[4] At its core, open science aims at: "increasing research quality, boosting collaboration, speeding up the research process, making the assessment of research more transparent, promoting public access to scientific results, as well as introducing more people to academic research". Taken from: Open Science Policy Platform Recommendations, adopted on 22 April 2018.

[5] FAIR stands for "Findable, Accessible, Interoperable, Reusable". FAIR data assumes that data should be available under clearly described conditions and licences, with clear references and well-described metadata. So even data that cannot be completely openly accessible, for example due to privacy considerations, can still comply with FAIR principles.

[6] Annual Plan VSNU 2018 (http://vsnu.nl/files/documenten/Publicaties/Jaarplan%202018%20VSNU.pdf)

[7] This is also the focus of Working Group 4: Stimulation and support of open science.

Assessment of researchers

The recommendations below (1 and 2) are intended for all research performing organisations in their role as employer.

Recommendation 1: Include (realised and expected) contributions to open science as selection criteria when hiring new researchers and support staff.

Explanation: Talent is crucial in science. Research institutions determine for themselves how to recruit and select new staff. It is important that employers base this talent selection on a substantiated combination of quantitative and qualitative metrics. Both the researcher's scientific and societal track records should be considered. Open science activities[8] are part of this. For example, has the researcher previously taken care to make research data and scientific software re-usable? Are their publications openly accessible? Have they actively engaged groups from society in the research process? Additionally, selection committees can ask candidates about their ambitions relating to open science.

Recommendation 2: Incorporate open science into policies on the development, support, rewarding and appreciation of scientific staff[9].

Explanation: Open science isn't a goal in itself, but serves the broader goals of scientific quality, impact and transparency. Some concrete examples:
- Propagate the open science vision, mission and strategy within the organisation.
  - Use case histories to stimulate the exchange of views on pros and cons, motivations and obstacles.
  - Organise courses, workshops and lectures with role models for both scientific staff and scientific support staff.
- Assess staff as a team (in the context of their research group) and include open science activities in evaluations and promotions for all scientific positions and at all levels.
- Have open science achievements included in resumes and personal digital profile pages. Support this and recognise and value these achievements, through annual awards, for example.
- Provide technical and ethical-legal support for the practice of open science.
- Explicitly recognise and value researchers' efforts to encourage 'citizen science'[10] (societal participation in scientific research) where useful and/or necessary.

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[8] The Open Science Career Assessment Matrix can be of use in this. See Appendix 1 (p. 9-10).

[9] Research software engineers and data stewards are of increasing importance in open science and in principle, their recognition and rewarding is no different from those of the researchers.

[10] Citizen science is scientific research performed entirely or partly by volunteers, often in collaboration with or under the supervision of professional scientists. See also the memo on Citizen Science for the NPOS Steering Group of 7 June 2018 and https://www.knaw.nl/nl/actueel/agenda/citizen-science-overzicht.

Assessment of research proposals

The recommendation below (3) is intended for NWO[11] and ZonMw as the main research funding organisations in the Netherlands [12].

Recommendation 3: Ensure that assessment of research proposals incorporates a positive rewarding of a researcher or research group's open science track record (open access publication, FAIR data sharing, engaging societal stakeholders). Train reviewers accordingly.

Additionally, include the following conditions in grant provisions for publicly funded research projects:

a) Where possible and appropriate, include stakeholders in the drafting of the research strategy, research proposals and/or execution of the research, or assurance that society's needs are reflected
b) Where possible in the project, (systematically) search for and reuse existing available research data[13]
c) FAIR storage of research data collected during the project (including the approach and/or method used)
d) Open access to the resulting publications, immediately if possible and otherwise within a reasonable period of time[14] after (online) publication

Monitor compliance with the grant provisions on completion of the research project.

Explanation: Some concrete examples:

• Concentrate the assessment on the quality and societal relevance of the intended research and how open science is interpreted therein, and beware of one-dimensional 'traditional bibliometry' (focusing on quantities and impact factors)[15].
• If possible, have applicants perform a data review of available research data and publications for the research project proposals, and provide a budget or 'pre-grant' resources to enable this. If no research data is available for the intended project, this must be substantiated.
• Support applicants through the definition of (groups of) possible stakeholders who can and may be contacted (preferably with a list of contact details) and if possible, engage stakeholders in the assessment of research project proposals.
• Consider designating a budget for citizen science within regular research funding, for example to support networks or cover additional expenses.

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[11] Including the National Coordinating Body for Applied Research SIA.

[12] The Collaborative Health Funds (http://www.gezondheidsfondsen.nl) also contribute significantly to scientific research funding, but strictly speaking, these are not "public resources". However, it is advisable to strive towards the same conditions for all forms of scientific research funding and to explicitly invite the health funds in particular to join in.

[13] This is also the focus of Working Group 2: Optimisation of research data for re-use.

[14] The term 'reasonable period' is taken from the Copyright Act amendement by Member of Parliament Taverne and requires further expansion (which version; embargo period of 0, 6 or 12 months; etc.). This is being addressed by Working Group 1 (100% open access publication).

[15] See also 'The Leiden Manifesto for research metrics' by Diana Hicks, Paul Wouters e.a. (*Nature*, 2015); San Francisco Declaration on Research Assessment (https://sfdora.org/read/); James Wilsdon, *The Metric Tide: Independent Review of the Role of Metrics in Research Assessment and Management* (Sage, 2015).

Assessment of research

The following recommendations (4 and 5) are intended primarily for KNAW, NWO and VSNU, as the developers of the Standard Evaluation Protocol (SEP 2015-2021). The SEP is used to evaluate scientific research in the Netherlands. The recommendations also apply for the VH (Dutch Association of Universities of Applied Sciences). For quality assurance relating to applied research at Dutch universities of applied sciences, the Branch Protocol for Quality Assurance in Research (BKO 2016-2022) applies.

Recommendation 4: Invite research units that submit self-evaluations in 2018-2021 based on the current SEP or BKO to reflect on their contributions to open science at all appropriate research stages.

Explanation: The current SEP[16] and BKO[17] have only recently gone into effect. Changing the current version of these protocols is not advisable. The next amendment is scheduled for 2021. In the meantime, a pilot is possible in which research units with evaluations scheduled for 2018-2021 are requested to reflect on open science[18] as part of their self-evaluation.

- In accordance with the SEP, along with the request (under 'Research Integrity') to reflect on "how the unit deals with and stores raw and processed data" in the self-evaluation narrative, academic research groups can indicate how they make their publications, research data, methods and materials (openly) accessible, address other facets of open science, and what their future plans are in that regard.
- In the BKO this challenge fits within the self-evaluation with regard to Standard 3 ("The research of the research unit meets applicable standards for research within the field of study"), which asks the research unit to reflect on the explicit standards for preparation, execution and evaluation of applied research.

In their self-evaluation, research units can make use of the previously mentioned Open Science Career Assessment Matrix[19]. They can also indicate to what extent they have realised the NPOS goals such as 100% open access publication in 2020 and optimal re-use of research data, and which infrastructure is used to achieve this.

After evaluation, the results of these pilots could be incorporated in the amendment of the SEP (in 2021) and BKO (in 2022).

Recommendation 5: In the next SEP (2021-2027) and BKO (2022-2028), consider including a table with possible open science metrics (similar to the current SEP table D1 and BKO tables 3 and 4) to allow research units to make their own selections, in close alignment

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[16] www.vsnu.nl/sep

[17] http://www.vereninghogescholen.nl/kennisbank/thema-s-en-subthema-s/artikelen/kwaliteitszorg-praktijkgericht-onderzoek

[18] It should be noted that an evaluation covers the past six years, and the earlier years will likely contain little to report concerning open science.

[19] See Appendix 1 to this memo.

with national[20] and international[21] developments in this area and respecting differences between the various disciplines. Also have the research units describe how they engage stakeholders as part of the self-evaluation.

Explanation: The current SEP contains no mandatory metrics and encourages research units to choose their own metrics to fit their strategy. The current BKO contains both mandatory and freely chosen metrics. Therefore, research units can already opt to include metrics relating to open science in their self-evaluation.

During the SEP 2015-2021 mid-term evaluation, KNAW, NWO and VSNU can investigate to what extent research units already use open science metrics to complete Table D1. For the next SEP and BKO, KNAW, NWO and VSNU and the VH respectively can develop a new range of metrics ('next generation metrics'). In doing so, these research organisations can incorporate relevant developments such as the aforementioned Open Science Career Assessment Matrix and CWTS research findings[22]. Clearly, this also has consequences for the documentation in research information systems.

> "How could one argue for extensive practicing of Open Data if there is no remuneration for those who do it? How could one expect a researcher to work collaboratively online if platforms are too complicated to use? Why should a researcher invest time and effort in writing a blog if it has no impact on his or her reputation?"
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> Fecher, Benedikt & Friesike Sascha (2016). 'open science: One Term, Five Schools of Thought'. In: S. Bartling & S. Friesike, *Opening Science*, Springer. P. 44

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[20] One example is OCW's request for advice from the KNAW, Impact in kaart (Charting the Impact). The advice is expected to be completed by the summer of 2018.

[21] See among others the previously mentioned Open Science Career Assessment Matrix (Appendix 1 to this memo).

[22] See https://www.cwts.nl/research/research-themes/open-science.

Chapter 3 Method

Working Group 3 Composition

The working group for the recognition and rewarding of researchers in relation to open science consists of representatives of those national research organisations directly involved in the subject.

Coordinator:
- Melle de Vries (KNAW)

Additional participants:
- Sebastiaan den Bak (NWO, until February 2018)
- Nathalie Bovy-van der Lugt (NFU, Radboudumc)
- René Daane (OCW, as of April 2018)
- Kim Huijpen (VSNU)
- Hans de Jonge (NWO, as of February 2018)
- Erik van de Linde (KNAW)
- Danielle Paulssen (OCW, until April 2018)
- Wendy Reijmerink (ZonMw)
- Frank van der Zwan (VH)

Administration
- Linda van Rossum (SURF)

Working Group 3 Method

Between November 2017 and April 2018, the steering group held four meetings, with additional discussions in subgroups and by email. On the basis of relevant documentation and national and European developments they drew up a discussion paper with eight concept recommendations for the recognition and rewarding of researchers. The guiding principle was that the recommendations could be implemented within the national context, for the 2018-2020 period. The recommendations therefore focus on national organisations. At the same time, it was and is clear that the implementation of these recommendations should align with relevant activities by the European Commission as well as global developments.

The Working Group then presented the discussion paper to researchers and other interested parties in a series of six panel meetings. Members of the working group and the National Coordinator for open science were present at all panel meetings. They also presented the discussion paper to administrative bodies and staff members of the involved organisations and to the other Platform NPOS working groups. The comments from these consultations have been processed in this memo.

Going forward, the working group sees itself in the following dual role:
- The individual members will help their own organisations implement the recommendations while also acting as each other's sounding board.
- The working group will monitor the implementation of the recommendations and track relevant national and international developments, reporting their findings to the NPOS steering group twice a year.

Panel Meeting Participants

- Rinze Benedictus, research policy advisor, UMC Utrecht
- Raf de Bont, assistant professor in Scientific History, Maastricht University (member of The Young Academy)
- Inge van den Bosch, central government trainee, AWTI
- Lex Bouter, professor of applied and Integrity, VU University Amsterdam
- Anneke Bovens, secretary-director, AWTI
- Paul Diederen, theme coordinator, Rathenau Institute
- Ron Fouchier, professor of Molecular Virology, Erasmus University Medical Center (member of KNAW)
- Carola Hageman, substitute director, Netherlands Association of Universities of Applied Sciences
- Bolinda Hoeksema, manager Library, HU University of Applied Sciences Utrecht
- Maarten Hogenstijn, senior researcher, Hanze University of Applied Sciences and Amsterdam University of Applied Sciences
- Aletta Huizenga, director HR, Utrecht University
- Jan Jurriëns, lecturer in Sustainable Strategy and Innovation and board member of lecturers' association, Avans University of Applied Sciences
- Mina Karami, PhD candidate in Cardiology, Academic Medical Center (AMC), University of Amsterdam
- Merel Keijzer, assistant professor in Applied Linguistics, University of Groningen (member of The Young Academy)
- Frank Miedema, dean and vice-chair of Board of Directors, University Medical Center Utrecht (UMC)
- Wijnand Mijnhardt, professor of Comparative Scientific History, Utrecht University (member of KNAW)
- Mira van der Naald, PhD candidate in Cardiology, University Medical Center Utrecht (UMC)
- Daniël Oberski, associate professor in Data Science Methodology, University Medical Center Utrecht (UMC) (member of The Young Academy)
- Sarah de Rijcke, professor of Science and Evaluation Studies, Leiden University
- Hester den Ruijter, associate professor in Cardiology, University Medical Center Utrecht (UMC) (member of The Young Academy)
- Margrit Ruissen, PhD candidate in Clinical Psychology, Leiden University
- Rens van de Schoot, associate professor in Methodology and Statistics, Faculty of Social Sciences, Utrecht University (member of The Young Academy)
- Anja Schumann, advisor on Leadership and Organisational Development, Radboudumc
- Judith ter Schure, PhD candidate in Statistics/Machine Learning, Centrum Wiskunde en Informatica (CWI)
- Remco Smulders, policy advisor, VSNU
- Marjo Stevens, strategic policy advisor, Avans University of Applied Sciences
- Annekee Vervoort, HR manager, Delft University of Technology
- Martijn Wieling, associate professor in Information Science, University of Groningen (member of The Young Academy)
- Nanske Wilholt, research policy advisor, HAN University of Applied Sciences Arnhem and Nijmegen

Appendix 1: EU Open Science Career Assessment Matrix[23]

open science activities	Possible evaluation criteria
RESEARCH OUTPUT	
Research activity	Pushing forward the boundaries of open science as a research topic
Publications	Publishing in open access journals Self-archiving in open access repositories
Datasets and research results	Using the FAIR data principles Adopting quality standards in open data management and open datasets Making use of open data from other researchers
Open source	Using open source software and other open tools Developing new software and tools that are open to other users
Funding	Securing funding for open science activities
RESEARCH PROCESS	
Stakeholder engagement/citizen science	Actively engaging society and research users in the research process Sharing provisional research results with stakeholders through open platforms (e.g. Arxiv, Figshare) Involving stakeholders in peer review processes
Collaboration and Interdisciplinarity	Widening participation in research through open collaborative projects Engaging in team science through diverse cross-disciplinary teams
Research integrity	Being aware of the ethical and legal issues relating to data sharing, confidentiality, attribution and environmental impact of open science activities Fully recognizing the contribution of others in research projects, including collaborators, co-authors, citizens, open data providers
Risk management	Taking account of the risks involved in open science
SERVICE AND LEADERSHIP	
Leadership	Developing a vision and strategy on how to integrate OS practices in the normal practice of doing research Driving policy and practice in open science Being a role model in practicing open science
Academic standing	Developing an international or national profile for open science activities Contributing as editor or advisor for open science journals or bodies
Peer review	Contributing to open peer review processes Examining or assessing open research

Networking	Participating in national and international networks relating to open science
RESEARCH IMPACT	
Communication and Dissemination	Participating in public engagement activities Sharing research results through non-academic dissemination channels Translating research into a language suitable for public understanding
IP (patents, licenses)	Being knowledgeable on the legal and ethical issues relating to IPR Transferring IP to the wider economy
Societal impact	Evidence of use of research by societal groups Recognition from societal groups or for societal activities
Knowledge exchange	Engaging in open innovation with partners beyond academia
TEACHING AND SUPERVISION	
Teaching	Training other researchers in open science principles and methods Developing curricula and programs in open science methods, including open science data management Raising awareness and understanding in open science in undergraduate and masters' programs
Mentoring	Mentoring and encouraging others in developing their open science capabilities
Supervision	Supporting early stage researchers to adopt an open science approach
PROFESSIONAL EXPERIENCE	
Continuing professional development	Investing in own professional development to build open science capabilities
Project management	Successfully delivering open science projects involving diverse research teams
Personal qualities	Demonstrating the personal qualities to engage society and research users with open science Showing the flexibility and perseverance to respond to the challenges of conducting open science

Appendix 2: Original (translated) text from National Open Science Plan (2017)

3.3 Researcher Recognition and rewarding
The current evaluation systems don't yet adequately stimulate the incorporation of open science criteria in scientific practice. Current assessments often assign significant weight to the number of publications in journals of historic renown with a high impact factor. This helps preserve a "publish or perish" culture. Technical and practical support alone are insufficient to get open science moving. To make open science viable, encouragement and rewards are needed. To stimulate open science within first, second, third and fourth-stream funding, it is essential to research how to position open science within the evaluation of researchers and research proposals. The important work required in order to be able to share research data – performed partly by data stewards or data engineers – is often underestimated. Such efforts can be difficult to acknowledge using traditional citation methods. When open science criteria are included in future research evaluations, it is vital not to ignore the context within which researchers operate: they desire international relevance and distinction. Furthermore, care must be taken not to let scientific practices from the natural sciences dominate the open science transition. The National Open Science Platform must remain aware of the significant differences between various scientific disciplines.

3.3.1 Goal: To research how the Standard Evaluation Protocol (SEP) can stimulate the transition to open science
The SEP in its current form provides opportunities for the inclusion of open science metrics. It is essential that these metrics truly be chosen and implemented by the actual units being evaluated within the institutions. The upcoming interim review of the current SEP protocol will pay special attention to the subject of open science and if necessary, formulate recommendations for amendments to the next SEP to encourage implementation.

Responsible coalition: NWO, KNAW, VSNU, possibly ZonMw
Indicative time-line: Mid-term review takes place in early 2018.

3.3.2 Goal: To research how to position open science within the evaluation of researchers and research proposals
Open-access publication is becoming the default and the importance of sharing research procedures is increasingly acknowledged. Therefore, research will be performed on how to incorporate open science in institutional HR policies. The coalition will start by first researching alternative metrics (altmetrics) for researcher assessments. NWO already uses more than lists of publications in their current assessments. NWO already expects open access and data management plans of its researchers. NWO has taken up the challenge to incorporate open science more widely in research proposal assessments as well. In doing so, NWO strives for alignment with international developments.

Responsible coalition: NWO (funding), VSNU (institutions), VH (institutions)
Indicative time-line: Research starts in the course of 2017.