Rewards and Professional Development for Open Science and Open Education: Reflections and Recommendations of the SGHRM

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Content

- **SGHRM policy background**
  - C&C and HRS4R
  - ERA Priority 3: Open Labor market for Researchers
  - Open Transparent and Merit based Recruitment
- **Open Science Policy background**
  - European Science Agenda
  - Open Science Policy platform
- **WG Rewards & Skills for Researchers in Context of OS**
- **Final Remarks**

SGHRM and Policy Background

- '**A Mobility Strategy for the ERA**' focusing on the human resources element of the European Research Area (2001)

- As a result of the Communication, a **Steering Group for Human Resources and Mobility (SGHRM)** was created

  - **Mandate: to monitor the implementation of the objectives foreseen by the Mobility Strategy, and to improve co-ordination at national level with the relevant ministries.**

- The Mobility Strategy was strengthened by two successive communications from the Commission (2003):

  - **The Action Plan for Research**

  - '**Researchers in the ERA: One Profession, Multiple Careers**'

SGHRM and Policy Background

- ERAMORE / EURAXESS (since 2004)
  - EU wide network of mobility centers for researchers plus support in areas: Jobs, Links, Services and Rights

- European Researchers Charter and Code Recruitment (2005)

- Scientific Visa (since 2007)
  - Recommendations for fast track visa procedure and specific residence permit for third country researchers

- European Partnership for Researchers (2008)
  - Open recruitment and portability of grants
  - Social security and supplementary pension for mobile researchers
  - Attractive employment and working conditions
  - Improve training, skills and experience

SGHRM Policy Background

- Innovation Union (2010)
  - Commitments 1, 4 and 30 are all related researchers careers: to train young people to become researchers, to offer international competitive research careers, and attract the best researchers from abroad

- Human Resources Strategy for Researchers (since 2010)

- European Framework for Researchers Careers (2011)

  1. *R1 First Stage Researcher (up to the point of PhD)*

  2. *R2 Recognized Researcher (PhD holders or equivalent who are not yet fully independent)*

  3. *R3 Established Researcher (researchers who have developed a level of independence.)*

  4. *R4 Leading Researcher (researchers leading their research area or field)*

- ERA Memorandum of Understanding (2012) - A reinforced ERA Partnership for Excellence and Growth that defined five priorities

Charter & Code for Researchers

European **Charter for Researchers:**

- A set of general principles and requirements which addresses the roles, responsibilities and entitlements of researchers and their employers or funding organizations.
- It aims to ensure that the relationship between these parties contributes to successful performance in the generation, transfer and sharing of knowledge, and to the career development of researchers.

Code of Conduct for the Recruitment of Researchers:

- A set of principles and requirements that aim to improve recruitment, to make selection procedures fairer and more transparent, and proposes different means of judging merit.

Charter & Code for Researchers

RESEARCHERS

- Research freedom
- Ethical principles
- Professional responsibility
- Professional attitude
- Accountability
- Good practice in research
- Dissemination and exploitation of results
- Public engagement
- Relation with supervisors
- Supervision and managerial duties
- Continuous professional development

INSTITUTIONS

- Recognition of the profession
- Non discrimination
- Research environment
- Stability and permanence of employment
- Funding & salaries
- Gender balance
- Career development strategy
- Research training and continuous development
- Evaluation & appraisal
- Participation in decision making bodies
- Intellectual property rights

Charter & Code for Researchers

RECRUITMENT

Employers and/or funders should establish recruitment procedures which are open, efficient, transparent, supportive and internationally comparable, as well as tailored to the type of positions advertised.

- Open, efficient, transparent recruitment
- Selection committees: balanced (gender, public & private, disciplines)
- Transparency of criteria (before, during and after the selection)
- Judging merit (not only publications!)
- Open to variations in chronological orders of CV
- Recognition of mobility (another country/region or in another research setting (public or private)
- Recognition of qualification (academic and professional as well as non-formal qualifications)

Human Resources Strategy for Researchers

- It is implemented by research institutions and funding organizations on a voluntary basis;
- It is based on an internal self-assessment and respects the autonomy of the institution;
- It is as simple and light in terms of administration as is possible, avoiding cumbersome procedures and recognizing the variety of situations across institutions and national research systems;
- It is not a prerequisite for participating in the EU Research Framework Program;
- It is a transparent approach that provides easily accessible public information on the actions of participating institutions and organizations to implement the Charter & Code principles

Human Resources Strategy for Researchers

- To promote the implementation of the C&C, the EC has developed the 'HR Excellence in Research' logo, which recognizes institutions that are committed to improving their recruitment practices.

- Institutions can use the logo on their websites and in promotional material.

- The logo tells researchers that an institution is committed to a fair and transparent recruitment process, and that it takes diversity seriously.

- It also shows that practical support is available to help with relocation and career development.

- Moving countries for work is a big step – the logo therefore offers an outward sign that should give a researcher confidence that they are making a move to an institution that cares about their career and well-being.

European Research Area (ERA)

11 December 2012: "The Council NOTES that one of the most important remaining challenges across the EU is the realization of transparent, open and merit-based recruitment where this is not available, which would make research careers more attractive and foster mobility and ultimately research quality".

21 February 2014: "The Council CALLS ON Member States to take fully into account the ERA implementation when developing national strategies taking into account the use of open, transparent and merit-based recruitment practices with regard to research positions".

ERAC MLS March 2014: recommended to produce a toolkit/practitioner's guide including good-practice examples on OTM, templates, and other material useful for HR practitioners/employers of researchers

ERA Communication

<u>Member States</u> were invited to:

- Remove legal and other barriers to the application of open, transparent and merit based recruitment of researchers

<u>Research stakeholder organisations</u> were invited to:

- Advertise all vacancies on the EURAXESS Jobs portal using the common profiles established in the European Framework for Research Careers;

- Fill research positions according to open, transparent and merit based recruitment procedures proportionate to the level of the position in line with the basic principles of the Charter & Code and including non-EU nationals

ERA PRIORITY 3: Open Labor Market for Researchers

The **topic action priority** identified through consultations to Member State and Associated Countries

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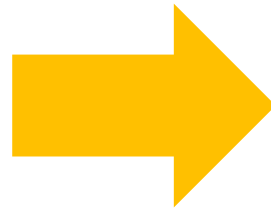
Using **open, transparent and merit based recruitment practices** with regard to research positions

ERA Priority 3: National Action Plans

PRIORITY ACTIONS IDENTIFIED

- Cross-sectoral mobility
- Foreign researchers / International Mobility
- Marie Curie Actions / H2020
- HR Excellence in Research/ Implement HRS4R
- Open procedures / Transparency /OTM-R
- Program Innovative Doctorate Training
- Gender/ Equal opportunity
- EURAXESS

INDICATORS FOR MONITORING ACTIONS

- Nº of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector (FTE)
- Share of national scientific positions advertised in EURAXESS
- Nº of Charter &Code Endorsements
- Nº of HRS4R logos OR % of institutions having the HRS4R Label
- Nº of appointments at universities from EU and third countries
- Number of signed EURAXESS declarations
- Nº of grants from domestic grants, ERC, MSCA and bilateral grants
- Nº of researchers working in the private sector OR % of researchers in companies or
- Share of interdisciplinary doctoral studies OR Percentage of doctoral program consistent with Innovative Doctoral Training Principles

Open Science Policy Background

Political priority of Commissioner Moedas: Open Science Agenda

- 5 broad lines for policy action
- 8 policy objectives

Open Science Policy Background

5 broad lines for policy actions

1. **Fostering** and **creating incentives** for Open Science
2. **Removing barriers** to Open Science
3. **Mainstreaming** and further promoting open access policies
4. **Developing** research infrastructures for Open Science
5. **Embedding** Open Science in society as a socio-economic driver

European Open Science Agenda

Removing barriers to Open Science

Objectives/Need to act:

- Lack of credit for Open Science activities of researchers
- Quality assurance and impact of Open Science
- Quality assurance and impact of Open Science'
- Increase Open Science Need to address low e-skills amongst researchers and underuse of professional support

Required action:

- Reward researchers engaged in Open Science activities (career development)
- Promote a discussion on evaluation criteria of research
- Experimenting with more open peer review
- Improve expertise and guidance

Implementation at EU level and National levels

Open Science Policy Background

1. **FAIR** data sharing is the default for funding scientific research
2. all European researchers are able to **deposit, access and analyse European scientific data** through the European OS cloud (EOSC)
3. Funders and stakeholders have taken a common position on **alternative metrics** to replace/complement the Journal Impact Factor and citation counts
4. All **peer reviewed scientific publications** are freely accessible
5. **Evaluation of research careers** fully acknowledge OS activities
6. All publicly funded research in the EU adheres to commonly agreed OS standards of **research integrity**
7. All young scientists in Europe have the **necessary skills and support to apply OS research routines and practices**.
8. **Citizen scientists** will make a significant contribution and be recognised as a valid knowledge producer of European science
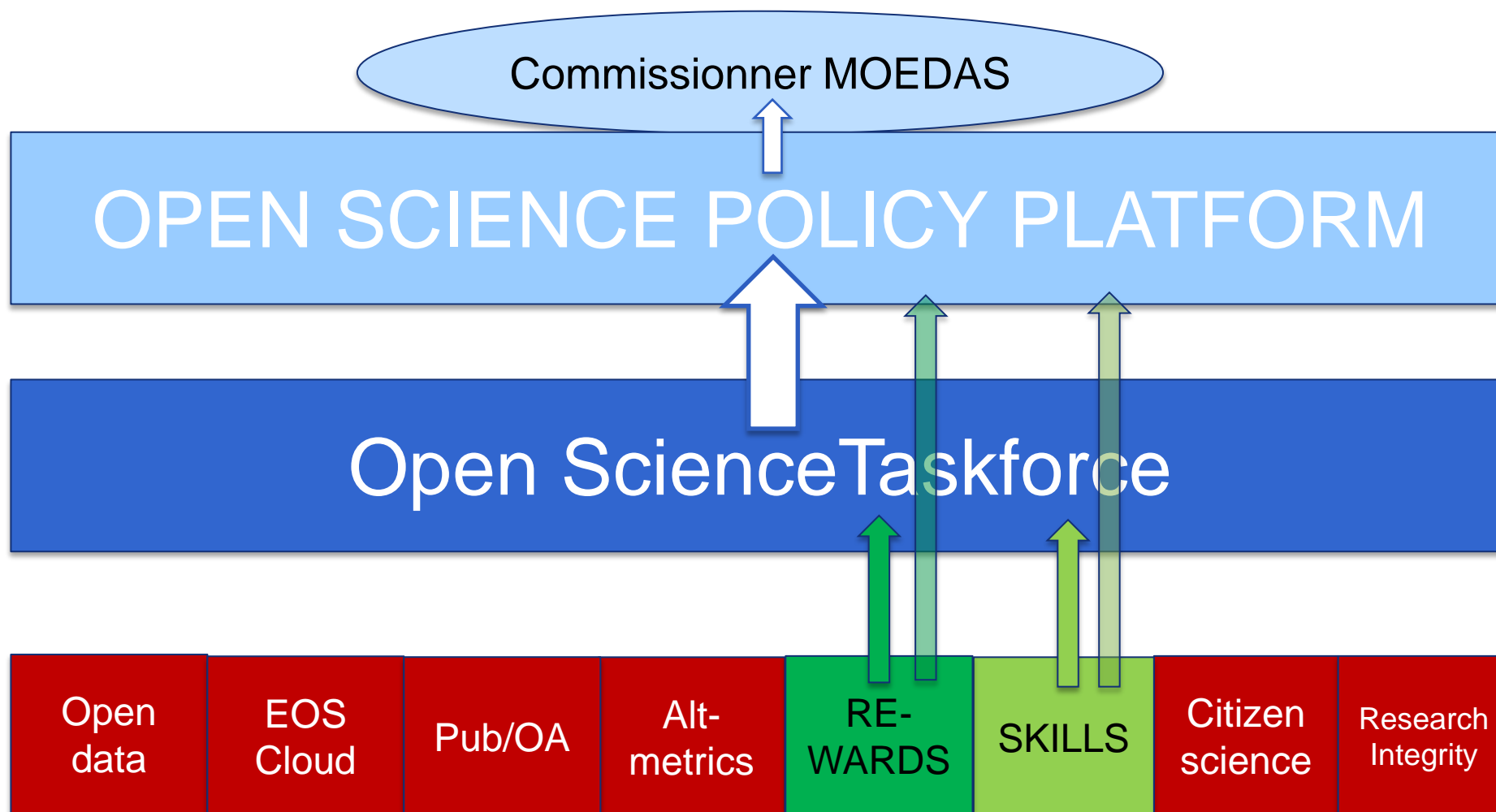
Open science policy platform

- The Open Science Policy Platform represents a new way of making policy: co-design and co-develop an Open Science Policy Agenda for Europe.

- The Directorate-General for Research and Innovation established a Commission Expert Group to provide advice about the development and implementation of open science policy in Europe.

- 25 experts nominated representing: universities, research organizations, academies/societies, funding organizations, citizen science organizations, publishers, open science platform/intermediaries, libraries.

Open science policy platform

The mandate of the Open Science Policy Platform is to:

- advise the Commission on how to further develop and practically implement open science policy, in line with the priority of Commissioner Moedas to radically improve the quality and impact of European science

- function as a dynamic, stakeholder-driven mechanism for bringing up and addressing issues of concern for the European science and research community and its representative organizations, following five broad lines for actions which are presented in the European Open Science Agenda

- support policy formulation by helping to identify the issues to be addressed and providing recommendations on the policy actions required

- support policy implementation, contributing to reviewing best practices, drawing policy guidelines and encouraging their active uptake by stakeholders

- provide advice and recommendations on any cross-cutting issue affecting Open Science

Open Science Policy Background

Commissionner MOEDAS

OPEN SCIENCE POLICY PLATFORM

Open ScienceTaskforce

| Open data | EOS Cloud | Pub/OA | Alt-metrics | RE-WARDS | SKILLS | Citizen science | Research Integrity |

SGHRM Policy Background

KEY issues:

REWARDS:

- Modernisation of **scientific career assessment** including elements related to **'recognition/rewards/incentives'** guaranteeing fair/equal career development of individual scientists

SKILLS:

- **Open Science education and training** tailored to research career stages (R1 to R4) as well as to early education while developing **links with the European Skills agenda**

SGHRM Policy Background

TASKS entrusted to the SGHRM

REWARDS:

- Work with Member States & Council Presidencies to follow up on the 2012 Recommendation on Scientific Information to **ensure that at MS level the academic career system supports and rewards researchers** working in a culture of OS

SKILLS:

- Raise awareness in the Member States to ensure that **Open Science education and training is offered in all curricula and at all levels**

REWARDS and SKILLS:

- Promote and encourage **implementation of best practices** of Open Science issues

Providing researchers with the skills and competencies they need to practise Open Science

Report of the Working Group on Education and Skills under Open Science

Research and Innovation

For Open Science to become a reality researcher need appropriate discipline-dependent skills training and professional development at all stages of their research careers.

https://euraxess.ec.europa.eu/useful-information/policy-library
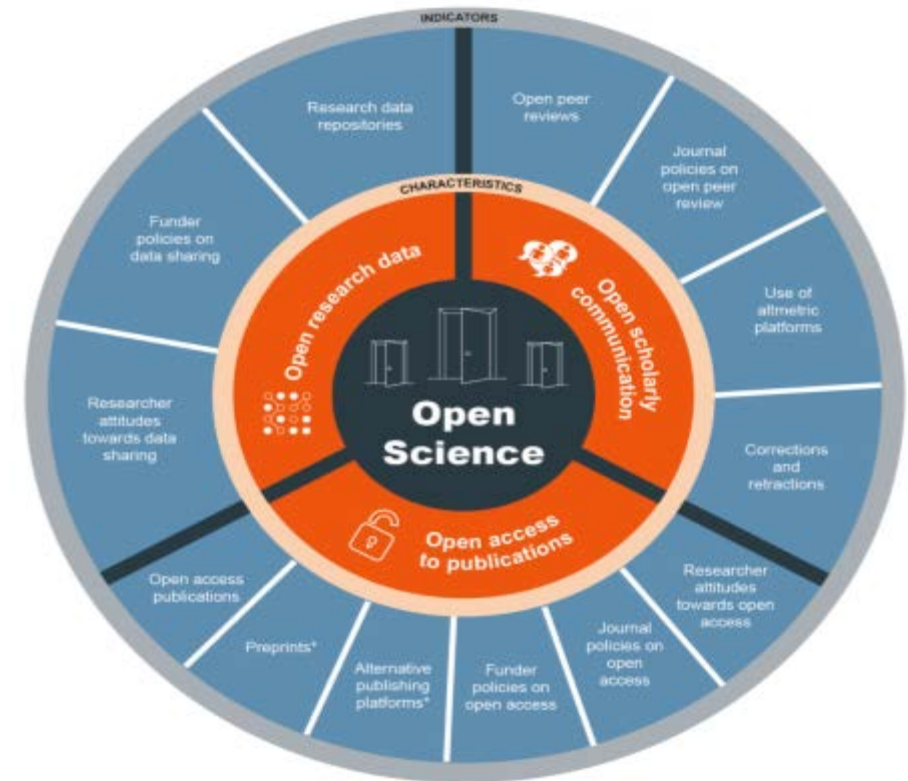
Skills for Open Science

Skills and expertise necessary for open access publishing.

Skills and expertise regarding research data (data production, management, analysis/use/reuse, dissemination and a change of paradigm from "protected data by default" to "open data by default", respecting legal, and other constraints)

Skills and expertise to act in and beyond one's own scholarly and disciplinary community.

Skills Enabling Professional Research Conduct (legal skills, research integrity and ethics skills)

Skills for Citizen Science (skills and expertise resulting from a general and broad concept of citizen science, where researchers interact with the general public to enhance the impact of science and research).
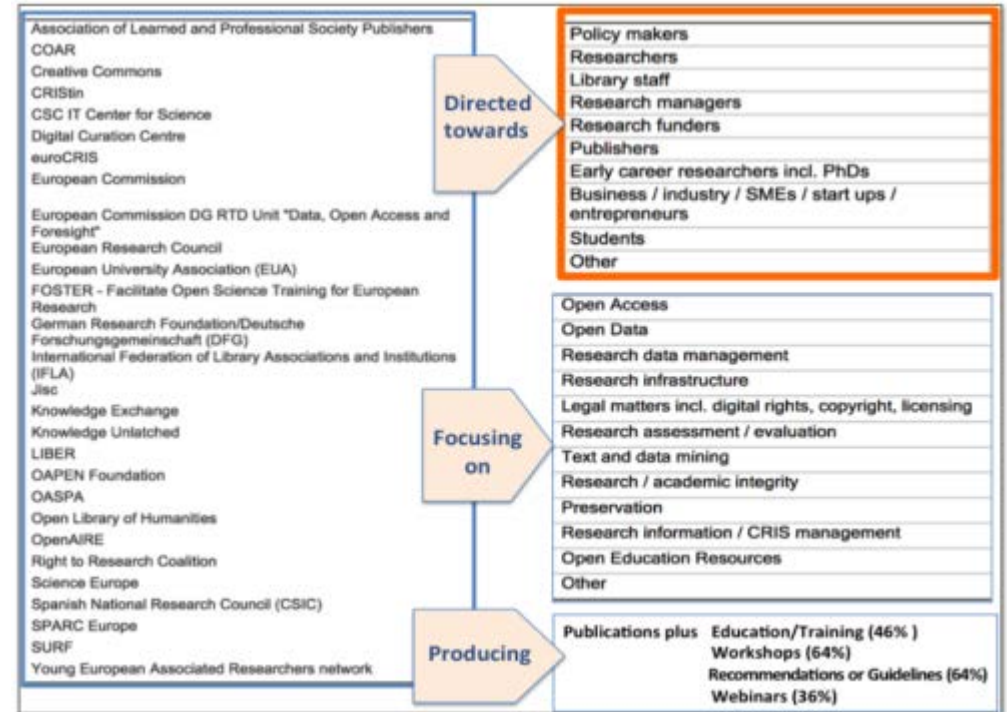
Current Open Science Skills Provision Landscape

A large number of research and innovation stakeholders are currently active in the provision of Open Science skills in Europe

BUT

- need greater coordination across these stakeholders is recommended to combat the issue of fragmentation and possible duplication

- The European Commission can play a role in the standardization of a set of recognized skills, competences and supports

| Directed towards | Policy makers |
| Researchers |
| Library staff |
| Research managers |
| Research funders |
| Publishers |
| Early career researchers incl. PhDs |
| Business / industry / SMEs / start ups / entrepreneurs |
| Students |
| Other |

SPARC Europe (2016) Mapping Open Science & Open Scholarship in Europe, December 2016, SPARC Europe. http://sparceurope.org/wp-content/uploads/2017/01/SPARCEuropeMappingOpenScienceinEurope.pdf

# But what do researchers think?

- The Working Group conducted a survey between March and May 2017 to assess the current situation.

- A total of 1,277 answers were received by researchers across Europe, of which nearly 50% were doctoral candidates (R1). The remaining 50% were distributed across career stages, from the postdoctoral to the very senior research career levels.

- A majority of researchers are unaware of the concept of Open Science.

- What is most known is open access publishing, and there is a very high interest in open access data management practices.

- Researchers indicate that training opportunities for open access and open data are not yet widely offered.

- 3 out of 4 researchers indicate that they have not yet participated in any open access or open data course but would like to.

- Although an even higher proportion of researchers deem data management relevant for their research, there is insufficient data archiving support and infrastructures at the institutional level.
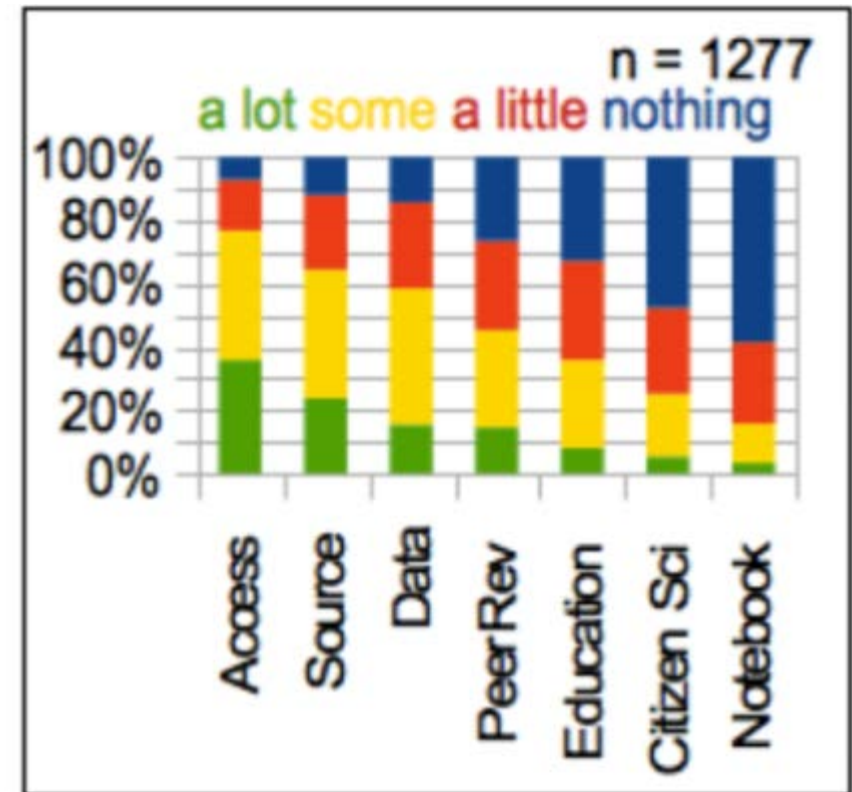
**Awareness of Open Science practices and initiatives**

Courses?

- Researchers perceive the opportunities for skills development better through actual practice than through training courses

- They more actively 'learn by doing' in most areasOne quarter of researchers are aware of courses on research and data management, teaching and supervising, intellectual property and patenting (IPR), research publishing and dissemination, and research integrity.

- Training opportunities specifically for Open Access and Open Data similarly do not seem to be in place from the perspective of researchers as

- This is remarkable since Open Science has long been on the agenda and many institutions have skills courses on offer.

- Few researchers have actually followed courses on publishing and data management. This contrasts sharply with the majority who would like to follow skills courses.
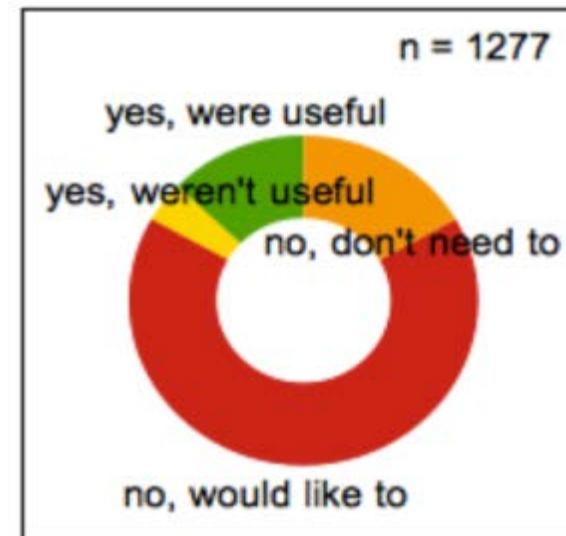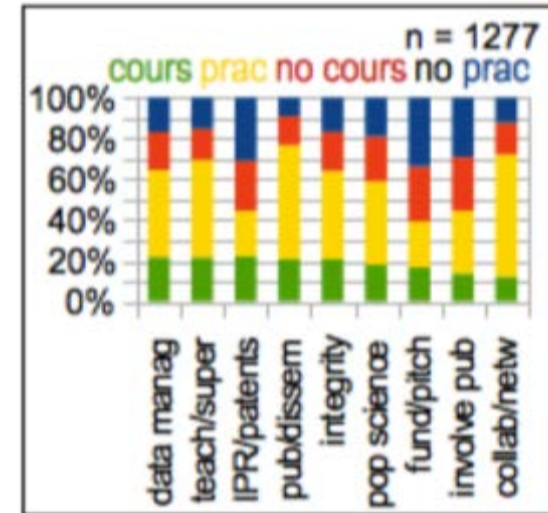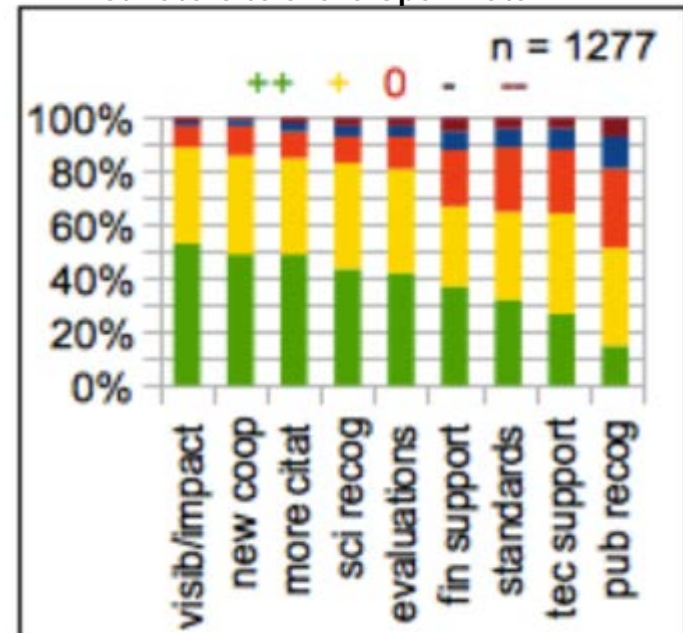
Rewarding Open Science

- Visibility and impact of research are clearly what most motivates researchers to make their research available

- The vast majority of researchers find it important for maximizing the visibility of research (providing free access to a wide audience; increasing the number of citations; reducing publishing costs in journals are also considerable; better research assessment and monitoring; better career development and chances of promotion).

- Enabling the reuse of data and recognizing time spent on publishing articles also score quite high

- *In summary, the survey results show that researchers are largely unaware of Open Science policies and practices, require more skills training and support to practise Open Science, and need to be incentivized to begin, and continue to practise, Open Science*
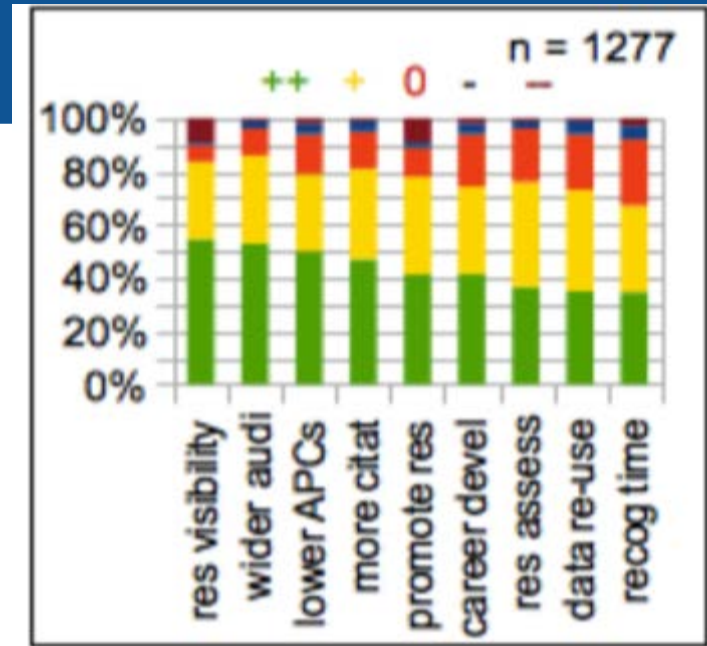
Motivators to share Open Data

Motivators to publish in Open Access

ERA Policy and alignment with the Open Science Agenda

- **The Human Resources Strategy for Researchers (HRS4R) -** embedding Open Science in the HRS4R will also help embed Open Science practices. In particular, the HRS4R should include specific reference to Open Science professional development for researchers through skills training and experiential learning as part of career development. Moreover, these skills should be formally accredited, recognized and rewarded as part of career progression

- **The Doctorate and the Innovative Doctoral Training Principles (IDTP) -** Innovative Doctoral Training Principles should thus be integrated into Open Science in the same way that the European University Association has integrated the Salzburg Principles into Open Science

- **European Framework for Research Careers (EFRC) -** The EFRC has been expanded to identify the detailed Open Science skills needed for researchers at their early careers until leading researchers in academic and non- academic settings

Recommendation 1: Open Science Policy

- In order to mainstream skills for Open Science, such that they are considered an integral component of the regular education, training and career development of researchers (and also other levels of education), the following should happen:

- All ERA policies and, in particular, the ERA partnership within the Open Science Agenda should be fully embraced. If necessary, policies must be modernized and updated in order to ensure compatibility with Open Science of certain tools already in place, such as the Charter and Code, the HRS4R and the Innovative Doctoral Training Principles.

- A call for proposals should be introduced in the H2020 program Science with and for Society (SWAFS) to fund RIA and CSA activities on the development of Open Science skills. This includes, but is not limited to, curriculum development, certification, accreditation, standards and qualifications.

- Open Science skills should be an integral part of the Work Program 2018 – 2020 and also of the next framework program (FP9) with dedicated actions and funding to support and promote Open Science.

- European, regional and national funders, as well as private foundations, should mandate that all researchers funded through their programs have access to Open Science skills training as part of their training and professional development.

Recommendation 2: Guidelines to Implement Open Science

- At European level, the existing guidelines on research careers and training should be adapted to integrate Open Science, specifically:

- A revised European Framework for Researcher Careers that identifies the specific Open Science skills for researchers at all levels should be implemented.

- The HRS4R should integrate Open Science skills as part of researcher career development.

- A revised version of the Innovative Doctoral Training Principles that integrates Open Science should be adopted.

- Create a European Qualifications Matrix for Open Science

- Greater coordination across stakeholders providing Open Science Skills training is recommended to combat the issue of fragmentation and possible duplication of such training in Europe.

- Given the importance of professional institutional environments for researchers' skills and expertise development, it is recommended that research funding and research performing organizations develop an integrated Open Science roadmap available to all students, researchers and staff. Such national, regional and institutional Open Science roadmaps are essential in order to address the requirements for the effective practice of Open Science in a coherent way.

- As part of this roadmap, we strongly encourage FAIR institutional and/or funding guidelines on Open Science practices be implemented, particularly for Open Access and Open Data.

Recommendation 3: Raising Awareness of Open Science

- In order to equip researchers with the appropriate skills to facilitate Open Science, it is crucial to first promote more awareness of Open Science practices, particularly Open Access, Open Data, Open Education, Open Peer Review and Citizen Science.

- Researchers should be made aware of Open Science policy initiatives such as Open Innovation, Open Science, and Open to the World, the European Open Science Cloud, OpenAIRE, the FOSTER project, and the Open Access Button and Logo.

- Researchers should also be made aware of existing institutional and funding agency guidelines as well as existing training and development courses for Open Science.

- Researchers should lastly be made aware of the value of Open Science practices, both at the personal level with respect to career opportunities and professional development, as well as the value of Open Science to society as a whole.

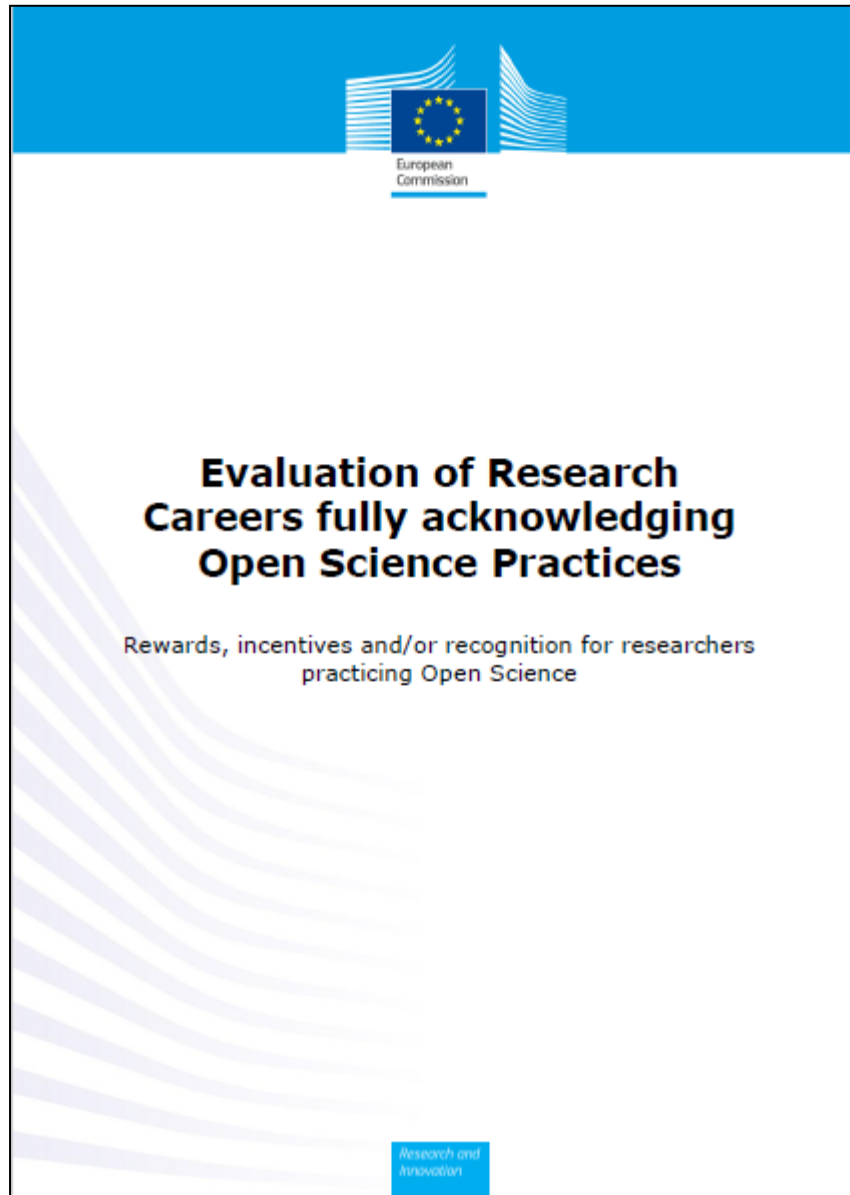# Recommendation 4: Training Researchers for Open Science

- Recognizing that there are already developments in Open Science skills provision, future activity must focus on improving the quality and relevance of skills for Open Science. Under this umbrella, the qualification frameworks for Open Science skills may need to be adapted or modernized. To facilitate this, institutions should offer and promote both traditional and/or online career-level appropriate Open Science training courses for researchers:

- These courses should be tailored for and delivered to researchers at all career stages (from R1 to R4).

- All Open Science skills courses should have career level appropriate accreditation and could also be modularized.

- In the case of R1 and R2 researchers, it should be mandatory for universities and research organizations to offer these as part of their training.

- Researchers need to acquire and improve the following skills: **Open Access publishing** and utilizing Open Access repositories; **Open Data** and particularly data management (analysis, use, and reuse of data), metadata, and data dissemination (sharing and granting access to data); **professional research conduct** which include research management skills, **research integrity and ethics skills**, and **IPR** and **legal skills**; **Citizen Science**, where researchers interact with the general public to enhance the impact of science, research and innovation in society.

Recommendation 5: Providing Support for Open Science

- Training courses are not enough to help researchers do Open Science but must be complemented by adequate support for Open Science. Institutions should:

- Provide the technical infrastructure for Open Science (high-speed data centres, data repositories and virtual platforms).

- Provide the technical tools to facilitate researchers in doing Open Science (software for data creation, storage, and sharing).

- Provide professional support staff for general and specialist support for researchers (data stewards, IT technicians, data scientists, legal experts, discipline specific data managers and librarians).

- Implement and promote the use of data management plans in all research projects.

- Ensure a legal framework is in place for the secure, legal, and ethical sharing of data.

Recommendation 6: Career Development for Open Science

- The acquisition and practice of Open Science skills should be an integral part of researcher professional training and career development. In this context:

- European and national public and private research funders should recognize and reward Open Science activities as part of grant evaluation criteria. For example, in the Marie Skłodowska Curie Actions, the provision of Open Science skills training should be integrated into the evaluation criteria.

- In the next framework program (FP9), an action should be developed for Open Science placements for R1 and R2 researchers, either within or separate from the Marie-Skłodowska Curie actions.

- Institutions should lastly recognize and reward Open Science training and Open Science track record in the research and career evaluations of researchers.

Evaluation of Research Careers fully acknowledging Open Science Practices

Rewards, incentives and/or recognition for researchers practicing Open Science

In order to increase the practice of Open Science, it is critical that researchers, who are the key agents of change towards Open Science activity need to be encouraged and incentivized

https://euraxess.ec.europa.eu/useful-information/policy-library

Rewards – Incentives - Recognition

- **Incentives (ex ante)**
  - Something that motivates or encourages someone to do something
  - A payment or concession to stimulate greater output
- **Recognition (ex post)**
  - Acknowledgement of evidence, validity or legality of something
  - Appreciation or acclaim for an achievement, service or ability
- **Rewards (ex post)**
  - Return or recompense for service or merit, payment for achievement

Mandate for Rewards Working group

- Promote a **discussion with stakeholders** on the current reputation system in the context of the standing ERAC groups and the Open Science Policy Platform (OSPP)
- Reflect about and propose alternative methods to recognise **contributions to OS, including 'rewards and incentives'** taking into account diversity in experience and career paths, while guaranteeing fair and equal career development of individual scientists
- Propose **new ways/standards of evaluating research proposals and research outcomes** taking into consideration all OS activities of researchers, possibly recommending to pilot
- Identify **existing good practices on how OS issues are already taken up** by researchers, research performing institutions and research funding institutions in Europe

Task and rationale

- The task of the expert group was two fold:
  - **Modernization of current researchers' career evaluation system**
  - **Creation of incentives and rewards for researchers engaged in open science**
- Career advancement currently:
  - **Relies mostly on number and quality of publications**
  - **Does not rely on the reproducibilty, availability and re-usabity of research results**

Considerations

- **Open Science practice to become mainstream** must be **embedded** in the evaluation of all researchers (R1 – R4)
- This will require changes of mind-set
  - **Universities and research centers** to change their approach in career assessment for recruitment and promotion
  - **Funding agencies** to reform methods for awarding grants
  - **Senior researchers** to reform assessment when employing on funded research projects
- A **cultural change is needed** in organizations and in the research community for the promotion of and engagement of Open Science

Considerations

- The approach to "rewarding practicing Open Science" is about
  - **Changing the way research is done**
  - **Who is involved in the process; and**
  - **How it is valued**
- There is a need for evolving from a **closed competitive system to a more open and collaborative one**
- Evaluating researchers cannot be **reduced to a number/metric** because their **merits, achievements, usefulness are a complex** set of different variables, impossible to be summarized by a single figure

Considerations

- It should be clear that a **multi-dimensional approach** to the evaluation is by far more reliable
- It provides a more realistic proxy of the measurement of quality and excellence
- It should be done through **multidimensional criteria**
- The **OS Career Assessment Matrix (OS-CAM)** can be used for this purpose, taking into consideration:
  - What is expected from a researcher
  - What is relevant for the specific post, grant, or career advancement

OS Career Assessment Matrix

- **Research Output**
  - *Research activity, publications, data sets and research results*

- **Research Process**
  - *Stakeholder engagement/citizen science, collaboration & interdisciplinarity, research integrity, risk management*

- **Service & Leadership**
  - *Leadership, academic standing, peer review, networking*

- **Research Impact**
  - *Communication & dissemination, IP (patents, licences), societal impact, knowledge exchange*

- **Teaching & Supervision**
  - *Teaching, mentoring, supervision*

- **Professional Experience**
  - *Continuing professional development, project management, personal qualities*

Recommendations

- A more comprehensive recognition and reward system for researchers are all levels (R1 – R4) must become part of:
  - ➢ **Recruitment criteria**
  - ➢ **Career progression**
  - ➢ **Grand assessment procedures**
- A review/update through the lens of Open Science might be needed to ensure compatibility for:
  - ➢ **ERA policies**
  - ➢ **ERA roadmaps**
  - ➢ **National action plans**

Recommendations

- At European level all means to encourage and incentivize researcher participation in Open Science through support and funding mechanisms should be pursued. This should include:
  - ➢ **The Human Resources Excellence in Research Award (HRS4R)** integrating OS assessment criteria for researchers recruitment, career progression and grant evaluation.
  - ➢ Open Science activity by researchers should become a cross cutting theme in all Work Programs of Horizon 2020 and most importantly in the future Framework Program FP9
  - ➢ At national, regional and institutional level, best efforts should be made to integrate the recognition and rewards for researchers engaging in Open Science into existing and future funding mechanisms

Recommendations

The assessment of researchers during:

- **Recruitment,**
- **Career progression and**
- **Grant evaluation**

should be structured to encompass the full range of their achievements including Open Science

This multi-dimensional approach could be implemented using the instrument OS-Career Assessment Matrix (OS-CAM) that takes into consideration the full range of achievements to reflect diverse career paths.

There should be a validation process on the content and feasibility of the OS-CAM in research assessment at European, national, regional and organizational levels, taking into account the wide spectrum of disciplines, research funding performing organizations.

Final Remarks

- These new approaches **will take time** and needs to be **well planned**
- The outcome of this change must:
  - **Improve the quality of science in its own right in a manner that ensures research integrity and greater peer and public engagement in research**
  - **Mainstream the practice of Open Science through incentivizing researchers with recognition and rewards**
  - **Improved integration with EHEA**
- There should be a need for **feasibility studies** and **pilot exercises** to ensure achieving the desired outcome:
  - **Continuous monitoring & improvement**
  - **One size does NOT fit all**

Thank you!

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