JPI Climate symposium

"Designing Comprehensive Open Knowledge Policies to Face Climate Change"

Vienna, October 22-23, 2015

END REPORT

Executive summary

As stated in the official invitation, the JPI Climate symposium "**Designing Comprehensive Open Knowledge Policies to Face Climate Change**" pursued the following **goals**:

1. To foster the discussion on how to promote, design and implement effective and comprehensive policies towards "Open Access" and "Open knowledge" within the climate-relevant research community (including policy makers, funding agencies, research institutions, practitioners and non-academic stakeholders like NGOs, SMEs, or civil society).

2. To build capacity through the presentation and discussion of good practices from both climate research (including Research Funding Organisations) and other fields of knowledge.

3. To reinforce and legitimatise the *JPI Climate Guidelines on Open Knowledge* as a toolbox for policy makers and research funding organisations when designing and executing climate research policies.

Almost 60 participants from 40 different organisations in 15 different countries all around the world were registered for the event, although the number of participants was sensibly lower during the event (*see list of participants on the JPI Climate website*). In any case, all target groups defined in the goal were represented, even when the majority of the participants was directly related to what one can call the "open access - open science community". Ultimately, this circumstance might explain the ambitious character of the final recommendation list (*see p.3*).

The symposium was structured around three breakout sessions devoted to **three topics** that were considered to encompass the notion of "open knowledge"/"open science":

1. Availability and access.
2. Reuse and re-distribution.
3. Universal participation.

A summary of the outcome of each session, which was discussed in a plenary session during the second day, can be read in this report (*see Appendix*).

> ## *In a nutshell: the symposium's results confirm that*
>
> **…access and availability issues are just one issue within the "openness" approach of "Open Knowledge"/"Open Science"; therefore, comprehensive policies (i.e. tackling the whole research cycle) should encompass measures related to "reuse and re-distribution" of data, information and knowledge and "universal participation" when designing, creating, disseminating and evaluating such data, information and knowledge.**
>
> **…the concrete ways to make steps towards more progressive "open knowledge" policies are diverse and they are not necessarily incompatible, as the example of the "green" (i.e. repository-driven) and "gold" (i.e. Open-Access journal-driven) way when fostering Open Access to research publications shows.**

The Symposium's Outcome: Towards the Implementation of the *JPI Climate Guidelines on Open Knowledge*

The outcome of the 3 sessions is summarised in the following list of **seven recommendations** for JPI Climate:

1. **Research Funding Organisations (RFOs) should establish mandates for Open Access (OA) to publications, provided that they have sufficient resources.**

2. **Funding for Article Processing Charges (i.e. fees charged to an author in order to publish a manuscript in a given journal) should be ensured beyond a project lifetime.**

3. **The use of journal impact factors as a central criterion in research evaluation should be reconsidered. Revising the Research Performing Organisations' performance agreements might be a way to proceed. Alternative metrics should be promoted.**

4. **Research data, metadata, software, methods, etc. funded by public bodies should be open/public. Open licensing for data and software avoids collusion with legal restrictions at national or international level.**

5. **The use of free standards should be actively promoted in order to make steps towards the so-called "linked open data" (LOD), i.e. free available, traceable, in non-proprietary format, identifiable through URL.**

6. **Open software/formats (independent from vendors) should be mandatory for data repositories and Data Management Plans (DMPs). Research Funding Organisations should take the lead and foster changes of business models when dealing with data.**

7. **Ways to foster research "co-design" and "co-production" should be discussed in those scientific fields where transdisciplinary approaches are needed. These ways might be formulated in specific tools regulating who should be involved in a given research process, when and under which conditions.**

Following the symposium's goal 3 (*see p.2*), these recommendations have been cross-checked with the contents of the *JPI Climate Guidelines on Open Knowledge* in the following box. The first section shows to what extent the **contents of the *Guidelines* meet the recommendations**. In the second section the identified **room for improvement** is formulated.

1. What do the *JPI Climate Guidelines on Open Knowledge* say?

Recommendation 1

"Research Funding Organisations (RFOs) should establish mandates for Open Access (OA) to publications, provided that they have sufficient resources".

The *Guidelines* recognise and actively support the "Principles for the Transition to Open Access to Research Publications" (signed by 27 States under the umbrella of "Science Europe") (p. 6 in the *Guidelines*). This statement explicitly refuses hybrid OA.

Recommendation 2

"Funding for Article Processing Charges (i.e. fees charged to an author in order to publish a manuscript in a given journal) should be ensured beyond projects' lifetime".

The *Guidelines'* policy recommendation 6 on publishing costs (recommendation no. 6 on page 2 and no. 4 on page 3) establishes that "Fostering «gold» Open Access will mean financially covering the so-called «Author Processing Charges» (APCs)".

Recommendation 3

"The use of journal impact factors as a central criterion in research evaluation should be reconsidered. Revising the Research Performing Organisations' performance agreements might be a way to proceed. Alternative metrics should be promoted."

Such an issue is not included in the policy recommendations; however, point 7 in the Technical Annex (titled "Fostering debates on Open Knowledge policies at national and international level") establishes that JPI Climate commits to "fostering debates on the advantages and disadvantages of using article-level metrics instead of journal-level metrics in evaluation processes" (p. 8).

Recommendation 4

"Research data, metadata, software, methods, etc. funded by public bodies should be open/public. Open licensing for data and software avoids collusion with legal restrictions at national or international level."

In the Technical Annex it is argued that even when data management is more complex than publications, there are no technical reasons against establishing clear (and, where applicable, binding) mandates on what data should be preserved and shared, who is in charge, how it should be managed, and when it should be put at disposal. Manifold examples of documents, criteria and practices in open data management are mentioned (p. 5).

The *Guidelines* leave the door open to create a JPI Climate data repository (p. 6).

Recommendation 5

"The use of free standards should be actively promoted in order to make steps towards the so-called "linked open data" (LOD), i.e. free available, traceable, in non-proprietary format, identifiable through URL."

The *Guidelines* establish the mandatory use of open standards as a criterion for providing payments/subsidies for Open Access venues within JPI Climate (see Technical Annex, p.7).

Recommendation 6

"Open software/formats (independent from vendors) should be mandatory for data repositories and Data Management Plans (DMPs). Research Funding Organisations should

The *Guidelines* mention the importance of fostering free software and the relevance of linked open data in climate research; however, there is no specific recommendation.

The *Guidelines'* "policy guidelines" encourage

take the lead and foster changes of business models when dealing with data."	the use of open formats; however, this recommendation only refers to (internal) documents and not to software and research data.
Recommendation 7 *"Ways to foster research "co-design" and "co-production" should be discussed in those scientific fields where transdisciplinary approaches are needed. These ways might be formulated in specific tools regulating who should be involved in a given research process, when and under which conditions."*	The *Guidelines* explicitly adopt the approach of Open Knowledge/Open Science as the framework in which specific tools for fostering Open Access should be understood. However, the *Guidelines* do not integrate specific criteria to promote co-design, co-creation, co-dissemination and co-evaluation in the "policy guidelines".

2. Room for improvement in the *Guidelines*

✓ **The last sentence of the *Guidelines'* policy recommendation 6 on publishing costs (recommendation no. 6 on page 2 and no. 4 on page 3) should be reformulated as follows:**

"Fostering «gold» Open Access will mean financially covering the so-called «Article Processing Charges» (APCs). The corresponding mechanisms should be established to ensure budget availability beyond the research action's lifetime."

✓ **During the Symposium's plenary discussion it became evident that there is no real need for a new repository; therefore, JPI Climate should recommend using the existing infrastructure.**

✓ **The *Guidelines* should extend the recommendation about open formats both to research results (i.e. publications) and archiving.**

✓ **In addition to research results and data, open source software (used in the research process) should be mandatory and published under a free license.**

✓ **The following sentence concerning Data Management Plans (DMPs) in the *Guidelines'* policy guideline no. 5 ("Open Data"):**

"(…). The DMP should be submitted in the proposal and can be evaluated as a part of it."

should be reformulated as follows:

"A short description of the DMP should be submitted in the proposal and will be evaluated as a part of it. A complete version of the DMP should be submitted six months after the project start at the latest".

✓ **Recognising the relevance of Linked Open Data (LOD), the *Guidelines* should explore ways to progressively establish LOD following the "5-star model" shown in the Session 2 outcome (*see Appendix*) as mandatory when developing DMPs.**

✓ **The Guidelines should explicitly identify the need for a debate on knowledge "co-design", "co-production", "co-dissemination" and "co-evaluation" by adding the following bullet point in the Technical Appendix point 7 (p. 8):**

> "JPI Climate assumes that the discussion on involvement of stakeholders of non-academic nature is a necessary debate in the climate research community and therefore assumes a leading role in such a debate."

The way forward

Regardless of the room for improvement, the symposium's results endorse the *JPI Climate Guidelines on Open Knowledge* and their Recommendations as a flexible tool suitable to the different needs and priorities of the JPI Climate Governing Board members and partners and, ultimately, of other initiatives within the European Research Area (ERA).

In practice, the most specific way towards the *Guidelines'* implementation is to adopt their "policy guidelines" (and precisely no. 4 –on Open Access publishing, 5 –on Open Data mandates- and 6 –on publishing costs) when organising funding activities, including joint calls. In order to ensure that applicants and evaluators take them into consideration, these policy guidelines should be included in the proposal eligibility and evaluation criteria. Additionally, the call organisation committee should encourage each funder to include them in their national annexes.

Beyond that, there is some need for discussion of strategic nature, precisely on those issues which particularly challenge RFOs in their own daily business: for instance policy guidelines no. 1 (on internal information accessibility), no. 2 (on using CC0 license in all internal documents) and no. 3 (on using open formats). Another issue has to do with the active adoption of the policy guidelines 4 to 8 (*see paragraph above*) also when organising joint calls or other funding activities at national level.

Appendix: outcome from the parallel sessions

Session 1 – Availability and Access

Session facilitator: Michela Vignoli, Austrian Institute of Technology (AIT)

Goal of the session: to find a common understanding on how to boost Open Access (OA) policies (both for data and publications) that go beyond the discussion "green" vs. "gold") so that a list of very concrete recommendations to RFOs can be agreed on as a result of the session.

Speakers: Eric Laureys (Belgian Federal Science Policy Office –BELSPO-, BE); Patrick Danowski (Institute of Science and Technology –IST-, AT); Andreas Vogler (Max Planck Digital Library, DE); Brigitte Kromp (University of Vienna) and Kerstin Stieg (Austrian Library Network) (both AT); Kerstin Konitzer (Swedish Meteorological and Hydrological Institute –SMHI-, SE); Lorenzo Bigagli (Italian National Research Council; Institute of Atmospheric Pollution in Florence, IT).

Session's outcome

Open Access for publications as a consolidated roadmap

Some EU countries (NL, FI, DK, AT) agreed achieving Open Access (OA) for publications by 2025.

The agreed ultimate goal is fair "gold" OA (with no additional costs, i.e. no overlapping between subscription costs and the so-called Article Processing Charges - APCs). Nonetheless, during the discussion there was no agreement on how to achieve such a goal. Yet, two divergent arguments were exposed:

- "Green", "gold" and "hybrid" should be supported in order to run a smooth transition phase. Hybrid is considered important to support during a transition phase because it can play the role of a catalyst during negotiations between publishers and Research Funding Organisations (RFOs).

- "Double dipping" (i.e. generating extra costs for APCs without withdrawing subscriptions) is not acceptable; i.e. "hybrid" is not the proper way.

The key issue is how to achieve an effective budget shift from subscriptions to APCs. The (probably) most successful, large-scale shifting experiment ("SCOAP^3") was presented. This is in line with the arguments of a recent paper (Schimmer *et al* 2015).[1] However, in the session it was also argued that additional money will be required during a transitional phase.

Making "green" and "gold" OA for publications compatible

"Green" means much more than sheer publications and this should be taken into account. Repositories are therefore needed and indeed essential to guarantee the sharing of all material beyond scientific publications (e.g. grey literature, reports, metadata…). Thus, "green" and "gold" do not necessarily pursue the same goals and they are therefore compatible, even beyond a (desired) short transition time horizon.

On Open Access to research data

It should be facilitated, but it is less clear what should be formulated as recommendations.

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[1] The paper is available here:
http://pubman.mpdl.mpg.de/pubman/item/escidoc:2148961:7/component/escidoc:2149096/MPDL_OA-Transition_White_Paper.pdf.

The *JPI Climate Guidelines* shouldn't exclusively focus on newly created research data, but also very much take into account primary research and existing (empirical) data to be opened up.

Running a separate JPI Climate data repository does not seem to be the best choice, since existing functional infrastructure can be used. The best choice would be to take advantage of these infrastructures and make efforts to create a "fireplace" for climate-related data/publications within the existing infrastructures.

On carrots and sticks when fostering OA

Setting up recommendations might mean to leave a door open for not complying. Experience from marine research shows that using the existing infrastructures to run archiving, giving freedom to archive data at their generation and releasing them at any time before project ends works. It is therefore to highlight the benefits for the users sharing their data: their work (publications, data, grey literature, metadata…) enhances visibility and recognition (through alternative metrics) - on condition of the willingness of the data/information owners to share the latter in a single place.

It is absolutely necessary to increase attractiveness for researchers to publish OA. This should be reflected in evaluations necessary for career progression. This will only possible if evaluation procedures are reformulated. In this respect, it was argued that journal impact factor should not be used for evaluation processes.

(▶) *Watch the plenary discussion session here:* **https://www.youtube.com/watch?v=zRkiu_U-gWs**

Session 2 – Reuse and Re-distribution

Session facilitator: Chris Schubert, director of the Data Centre at the Climate Change Centre Austria (CCCA).

Goal of the session: To discuss on how policy makers (and precisely Research Performing Organisations, RPOs) can adopt progressive open access policies which properly take into account aspects (of technological and legal nature) that have often remained absent from the discussion.

Speakers: Topic 1: Erik Albers, Free Software Foundation Europe (FSFE); Topic 2: Sigmund Kluckner (Renewable Energy Partnership, REEEP); Topic 3: Raman Ganguly (Central Information Services, University of Vienna).

Session's outcome

Preserving data in the long run: data curation was identified as the main issue in this topic. In order to achieve a successful data curation, several aspects should be taken into account:

- Of technological nature: No truly open data (i.e. long term preservation) is possible without the appropriate technology, i.e. open source, and open formats. Open formats ensure independence from vendors, i.e. guarantee that a given data set will be readable regardless of the commercial formats (avoiding the so-called "vendor locking"). This, in turn, allows interoperability, which means going beyond access.

- Of cultural nature: Data curation or preservation is crucial in the long-term and independent of a given publication or research project (data has a value in itself and may gain some value in the future which is not known at the present time). Data curation can even be separated from availability and accessibility issues: A given dataset might not be freely available, but it can be

accessible if preserved in a locked archive in the institution where it was produced and may be eventually released in the future and/or to a certain public/user.

- Of financial nature: Due to this long-term character, it is usually difficult to find the right funding pools able to ensure data curation. In this context, time lags can play an important role.

- Of legal nature: Clarification of usage rights has to be in line with the legal framework. In principle, data owners are the only ones being able to manage usage rights (i.e. to allow people access, copy, share, modify, and use data). The sole responsibility of the data management is to keep the quality the data producer provides. The main point here is to ensure that data will be available independently of the circumstances of those who set them up.

  On the other hand, open source does not seem to awake legal uncertainties, since it is not based on copyright.

Linked Open Data (LOD) synthetises all these aspects since it goes beyond accessibility and availability issues. The following figure illustrates the quality of (linked) open data in a 5-star rating system:

★	Information is available on the Web (any format) under an open license
★★	Information is available as structured data (e.g. Excel instead of an image scan of a table)
★★★	Non-proprietary formats are used (e.g. CSV instead of Excel)
★★★★	URI identification is used so that people can point at individual data
★★★★★	Data is linked to other data to provide context

Source: Bauer, F.; Kaltenböck, M.: Linked Open Data. The Essentials. A Quick Start Guide for Decision Makers (available at http://www.reeep.org/LOD-the-Essentials.pdf*).*

In this session Data Management Plans (DMP) as a specific tool were also discussed. These plans describe the handling of data throughout the project and afterwards. The implementation of DMPs into the funding and research system is an important step towards an "Open Knowledge" paradigm, because it sets the tracks for data availability and curation. The figure above can act as a guideline for the quality of DMPs.

(▶) *Watch the plenary discussion session here:* **https://www.youtube.com/watch?v=pIrHyvOC0Pw**

Session 3 – Universal Participation

Session facilitator: Elena Šimuković, PhD Candidate in Science in Technology Studies at the University of Vienna / Electronic Publishing and Open Access specialist, University Library, University of Economics and Business, Vienna (WU).

Goal of the session: To find ways on how co-design, co-creation and co-dissemination of knowledge can be integrated in Open Knowledge policies and how the "Open Science" approach can contribute to that.

Speakers: Irina Reyes (European Commission, DG for Research and Innovation); Susanne Schuck-Zöller (Climate Service Centre Germany, DE); Kim van Nieuwaal (Ministry of Infrastructure and the Environment, NL); Steffen Fritz (International Institute of Applied Systems Analysis -IIASA)

Session's Outcome

The discussion was focused on *Guidelines'* chapter 5 and precisely on issues no. 3 ("knowledge transfer") and 4 ("active and smart involvement of the civil society"), p. 20-21 (extended version).

Four topics resulted from the discussion:

1. Dynamic spectrum of co-design and co-production

Open discussion on a decisive aspect: "When do you wish to involve other actors in the research process?" The Citizen Science (CS) "way" is interesting, innovative and important, but there are other ways to proceed. Most of the CS projects seem to involve laypersons only in the data collection process, while decisions are taken by "professional" researchers. At this point it is important to differentiate "expertise" (based on the scientific method) from "experience" (more general concept). Regarding the latter concept, laypersons can make important contributions.

An organisation should develop a plan in order to determine in what, under which conditions and when they involve a given actor. This would allow the distinction between co-design and co-production.

2. Incentives/Rewards

"Carrots" for researchers are needed: However, when designing "carrots", there are different levels to do so. A smart incentive management in which all actors (RFOs and RPOs) play their own role is needed.

In a realistic reward structure, fairness and transparency are important: by laying the cards on the table, common interests might be found from apparently divergent starting positions.

3. Language matters

When communicating, it is essential to identify the target and to adapt the language accordingly. A "middle way" between academic, public and popular audience, i.e. mixing terms and expressions from different jargons is not recommendable, since it would not match the needs of anyone.

4. Inclusiveness (of geographies, of research disciplines)

What about the "global South"? How can Open Science avoid to be class-biased?

Perspective from "other" disciplines (i.e. those not having a "dominant" role in a given problem, e.g. Social Sciences and Humanities in climate research) should also be included.

Generally speaking, it was argued to structure and embolden the outcome of the session (or even of all three sessions) around the so-called "3-Os" (open science, open innovation, open to the world).

Ways to include practitioners in developing OA tools themselves should be explored.

(▶) *Watch the plenary discussion session here:* **https://www.youtube.com/watch?v=Mm4vZUiJuDc**