

Valuing what matters: Developing new approaches to research assessment

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Helmholtz Association

Helmholtz Open Science Office

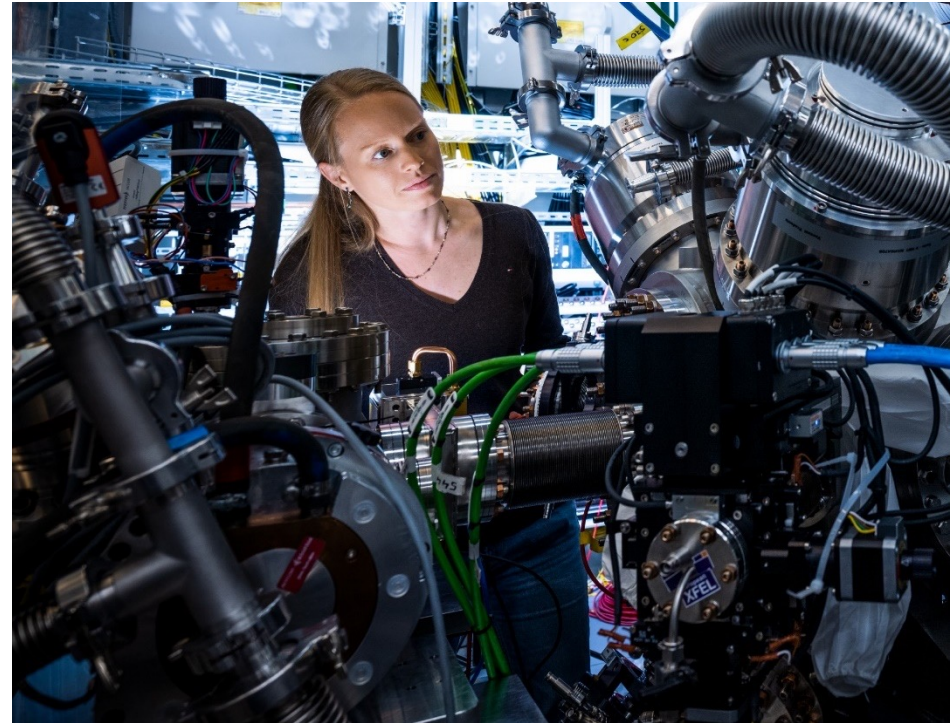


FZJ Open Access Week, 23 October 2025

Helmholtz Research Mission and Strategy

Research for Grand Challenges

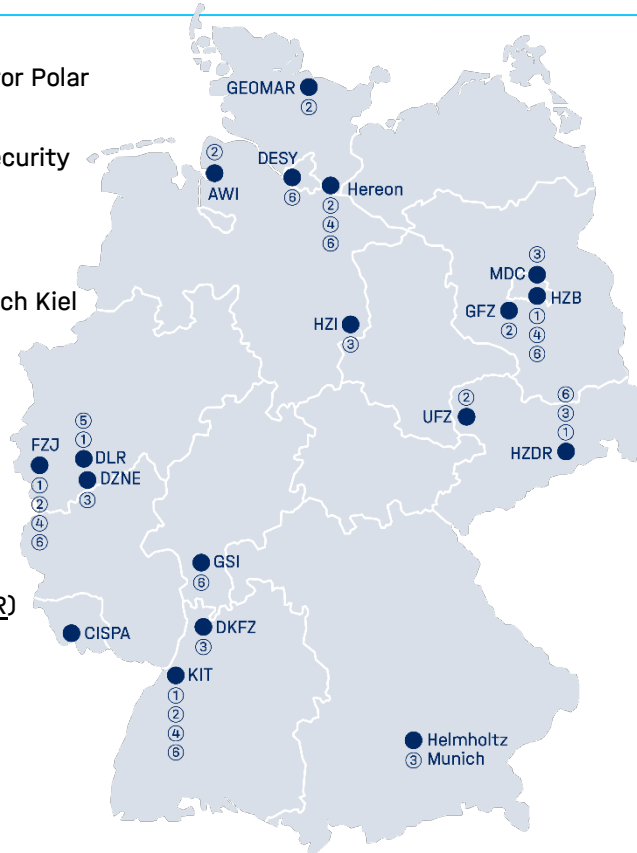
- Systems solutions for grand challenges based on:
 - Scientific excellence
 - Interdisciplinarity and critical mass
 - Long term research programs
- Helmholtz provides a highly attractive environment for talents and brilliant brains
- Profound expertise in large scale research infrastructure
- Helmholtz as a prime strategic partner at the local, national and international level
- Transfer of knowledge into economy and society



Helmholtz research centers

18 centers in 6 Research Fields

- Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (AWI)
- CISPA - Helmholtz Center for Information Security
- Deutsches Elektronen-Synchrotron DESY
- Forschungszentrum Jülich (FZJ)
- GEOMAR Helmholtz Centre for Ocean Research Kiel
- German Aerospace Center (DLR)
- German Cancer Research Center (DKFZ)
- German Center für Neurodegenerative Diseases (DZNE)
- GSI Helmholtz Center for Heavy Ion Research
- Helmholtz Center Dresden Rossendorf (HZDR)
- Helmholtz Center for Environmental Research - UFZ



- Helmholtz Center for Infection Research (HZI)
- GFZ Helmholtz Centre for Geosciences
- Helmholtz Munich
- Helmholtz-Zentrum Berlin für Materialien und Energie (HZB)
- Helmholtz-Zentrum Hereon
- Karlsruhe Institute of Technology (KIT)
- Max Delbrück Center (MDC)

Research Fields:

- (1) Energy, (2) Earth and Environment
- (3) Health, (4) Information
- (5) Aeronautics, Space and Transport, (6) Matter

The six research fields of the Helmholtz Association

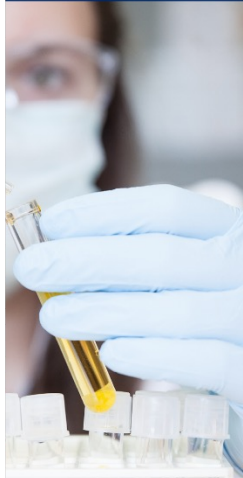
Energy



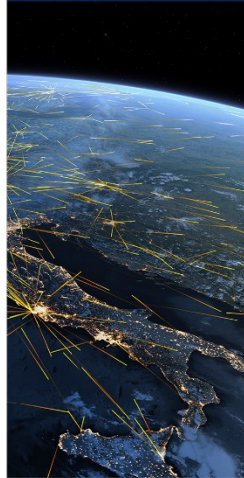
Earth and
Environment



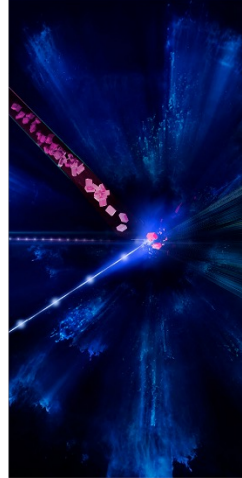
Health



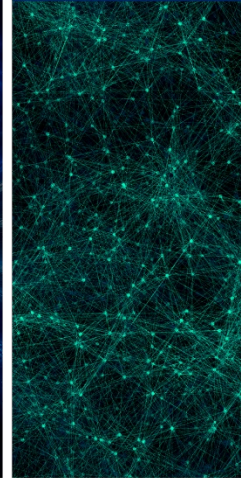
Aeronautics,
Space
and
Transport



Matter

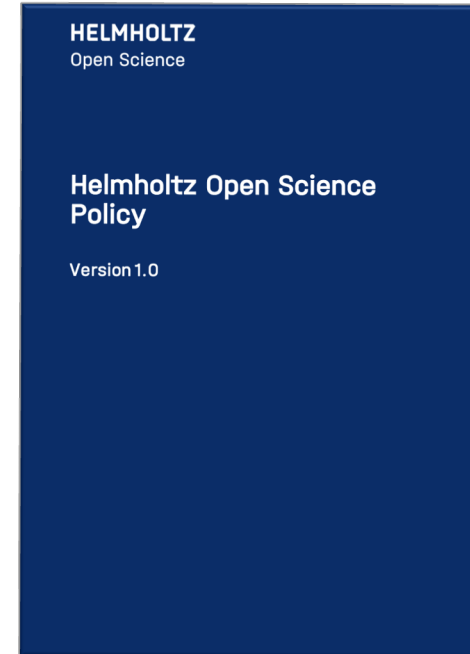


Information



Helmholtz Open Science Office

- Das Helmholtz Open Science Office
 - unterstützt die Helmholtz-Gemeinschaft und ihre Forschungszentren dabei, den Kulturwandel hin zu Open Science zu gestalten
 - fördert den Dialog in der Gemeinschaft und gibt Impulse in die Gemeinschaft hinein.
 - bietet Informationen und Beratungen rund um das Thema Open Science an.
 - kooperiert mit den Zentren im Arbeitskreis Open Science und in gemeinsamen Task Groups
 - vertritt die Helmholtz-Positionen zu Open Science auf nationaler und internationaler Ebene.



<https://doi.org/10.48440/os.helmholtz.056>

Advancing Open Science at Helmholtz and beyond



Open-Science-Publizieren

- Open Access
- Offene Forschungsdaten
- Offene Forschungssoftware



Offene Wissenschafts- infrastrukturen

- Repositorien
- Metadaten / PIDs
- Digitale Souveränität



Forschungsbewertung

- Qualitätsbasierte Indikatoren
- Bewertungskriterien und -prozesse
- Offene Forschungsinformationen



Verantwortungsvolle Wissenschaft

- Forschungsintegrität
- Impact und Transfer
- Forschungssicherheit

Why do we need to rethink research assessment?

HELMHOLTZ Open Science

Research assessment takes place at different levels:

- Hiring, promotion, and evaluation of researchers
- Funding applications
- Organisational evaluation (e.g., PoF)

- Current assessment processes predominantly rely on **journal-and publication-based metrics** (Impact Factor, H-Index, etc.)
- These can be a **hurdle to the recognition of diverse contributions** to research.
- The resulting **publish-or-perish culture** is directly linked to misconduct and the reproducibility crisis.
- And contributes to an **unhealthy research culture** and unaffordable publication system.

San Francisco Declaration on Research Assessment (DORA)



- Draws attention to potential problems of journal-based metrics in hiring, promotion, and funding decisions
- Currently [signed](#) by over 25,000 individuals and organizations

General Recommendation:

- Do not use journal-based metrics, such as Journal Impact Factors, as a surrogate measure of the quality of individual research articles, to assess an individual scientist's contributions, or in hiring, promotion, or funding decisions.

Impact	Global initiative (2012)
Committment	Supporting the adoption of a set of non-binding recommendations
Organizational form	Declaration
Signatories/Membership	Institutions, organizations and individuals
More information	https://sfdora.org

2015 - Leiden Manifesto for research metrics

<https://doi.org/10.1038/520429a>

2020 - Hong Kong Principles for assessing researchers

<https://doi.org/10.1371/journal.pbio.3000737>

Coalition for Advancing Research Assessment (CoARA)



- The Agreement on Reforming Research Assessment sets a shared direction for changes in assessment practices for research, researchers and research performing organisations.
- Currently [signed](#) by over 700 organizations

Overarching goal:

- To recognise the diverse outputs, practices, and activities that maximise the quality and impact of research through an emphasis on qualitative peer review, supported by the responsible use of quantitative indicators.

Impact	Originates for the European Research Area, but increasingly global (2022)
Committment	Implementing the 10 committments outlined in the Agreement according to a defined timeframe
Organizational form	Structured Coalition-membership and governance, working groups and national chapters
Signatories/Membership	Institutions and organizations
More information	https://coara.eu

Our motivation

- Driving the cultural change towards Open Science requires setting the right incentives
- But, this also provides us with opportunities to look further...

National & international context

- Membership in the Coalition for Advancing Research Assessment (CoARA)
- Coordination of the CoARA National Chapter Germany
- German Alliance of Science Organizations – Interest Group “reputation & incentives”

Within the Helmholtz Association

- Promoting dialogue and providing impulses within the Helmholtz Association
- Helmholtz Software Award
- Task Group Quality Indicators for Data and Software Products
- Task Group Research Assessment (since March 2025)

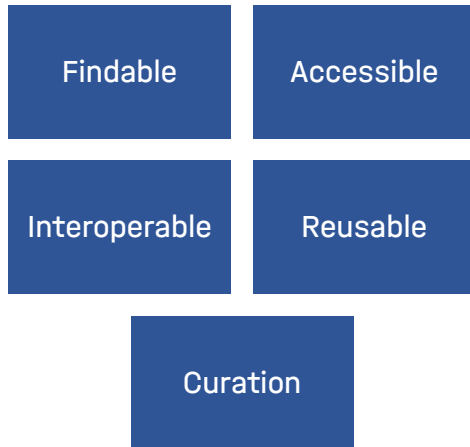


Helmholtz Quality Indicators for Data and Software Products

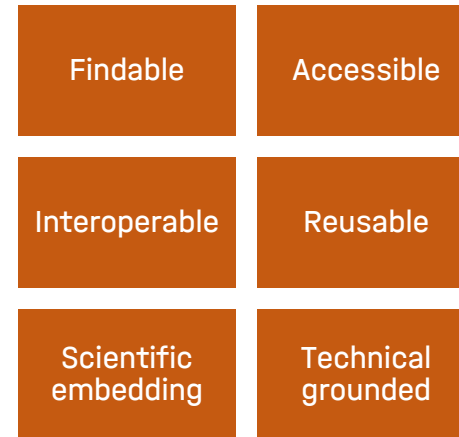
Helmholtz Quality Indicators for Data and Software Products

- In 2023, a basic indicator for counting citable research data and software publications was established as part of annual institutional evaluations.
- In parallel, a dedicated [Helmholtz Task Group Quality Indicators for Data and Software Products](https://os.helmholtz.de) was set up to develop Helmholtz quality indicators for data and software products in line with the FAIR Principles.

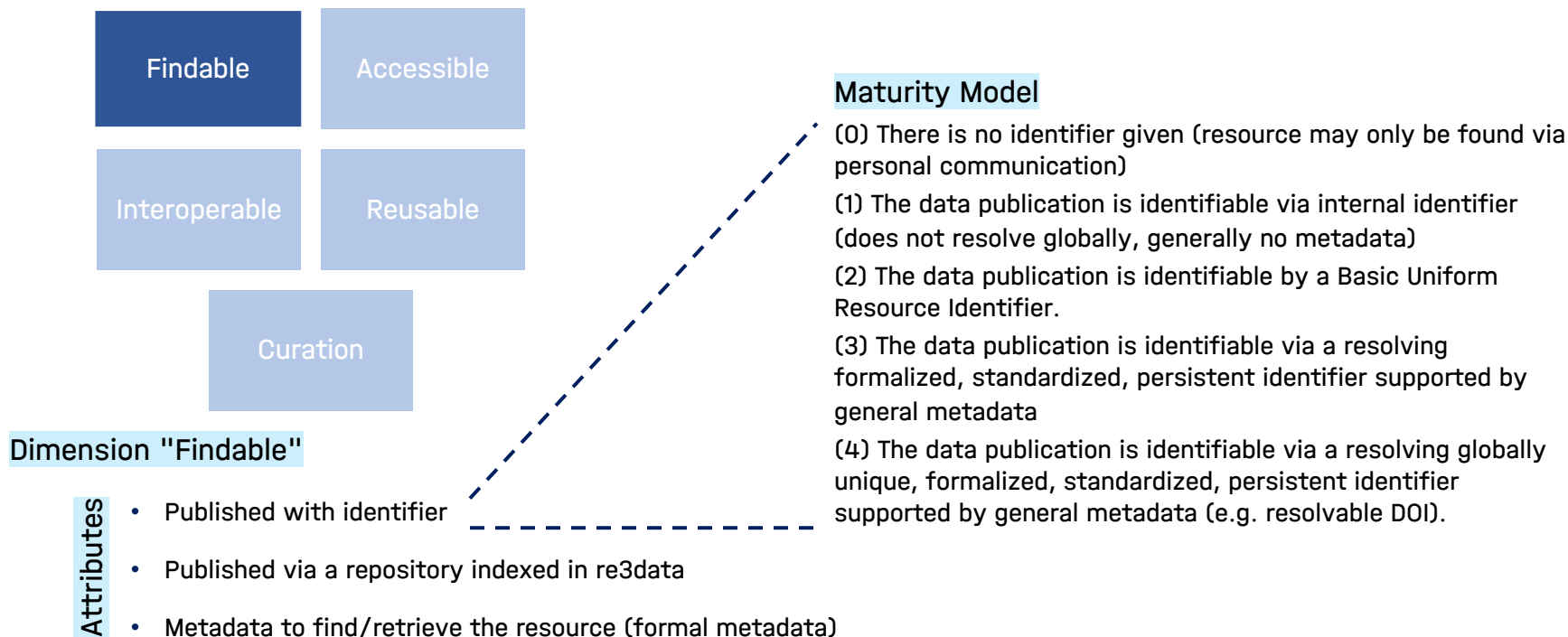
FAIR-C (data)



FAIR-ST (software)



Example: quality dimensions and attributes for data publications



Qualitative and quantitative assessment

- Every publication receives average scores (0-4) for each dimension (FAIR-C / FAIR-ST)
- These are visualized using a radar plot (dashed lines)

Qualitative Assessment (individual publications)

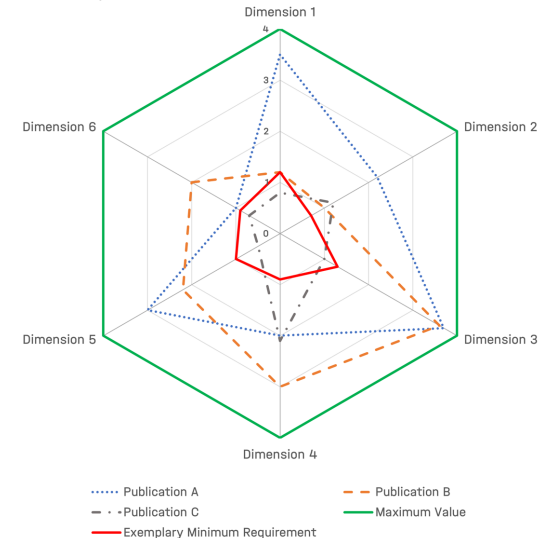
- Definition of a "minimum polygon" (red line)
- Do individual publications meet the required quality standards?
- Which attributes can/should be improved on?

Quantitative Assessment (institute-level KPIs)

- If a publication meets the minimum requirements: count as "1"
- Aggregation for research groups / departments / research centers
- The minimal polygon can be raised over time to incentivize improvements

Next steps

- Helmholtz-wide implementation starting 2026
- Developing ways towards automation



Task Group Research Assessment

Valuing what matters?

Q1. Which of the following criteria do you believe **are used** to assess or value your performance, for example when applying for a permanent position or promotion?

Q2. Which of the following criteria do you believe **should be used** to assess or value your performance, for example when applying for a permanent position or promotion?

Contextual information:

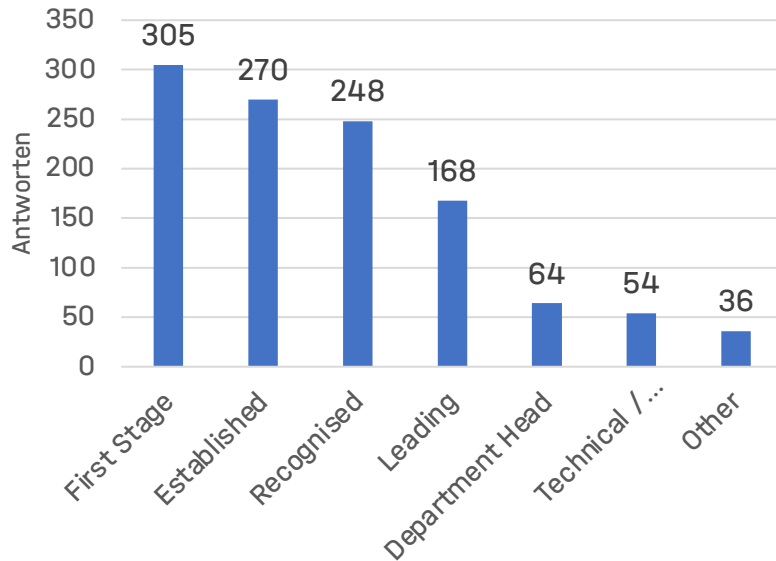
- Career stage (according to EU Research Career Framework)
- Research area (6 Helmholtz research areas)
- Institute name (18 Helmholtz research centers)

Timeframe: 23 June 2025 – 23 September 2025

Adapted from: Lim, B.H., D'Ippoliti, C., Dominik, M. *et al.* Regional and institutional trends in assessment for academic promotion. *Nature* **638**, 459–468 (2025). <https://doi.org/10.1038/s41586-024-08422-9>

Administrative roles
Advisory role to policymakers
Authorship order/position
Awards
Collaborations
Commercialization and consultancy
Communication and outreach
Conference attendance
Conference organization
Contributions to a healthy institutional culture
Contributions to equity/diversity/inclusivity
Contributions to peer review
Developing/maintaining digital infrastructures and software
Developing/operating research facilities and instruments
Editorial roles
Ethics and integrity
Far-sight
Funding
Interdisciplinarity
Internationalisation
Invited positions
Journal impact factor
Memberships in committees/boards etc.
Mentoring
Non-metric journal quality
Non-metric quality of publications
Non-text publications (data/software/methods/etc.)
Number of citations
Number of co-authors
Number of publications
Number of recent publications
Open Science practices
Patents
Presentations
Professional development
Professional titles
Role of authors
Societal impact
Supervision
Teaching

Distribution of responses: 1145 Helmholtz researchers



Research Area	Number of responses
Energy	134
Earth & Environment	372
Health	420
Information	140
Matter	154
Aeronautics, Space & Transport	23

!! Preliminary Analysis !!

Perceived vs. Desired evaluation criteria (number 1 responses)

Perceived Criteria ($n=1145$)

Criteria	"are used"
1 Number of publications	259
2 Funding	185
3 Authorship order/position	115
4 Number of recent publications	84
5 Journal impact factor	64
6 Professional development	61
7 Developing/operating research facilities and instruments	56
8 Administrative roles	42
9 Awards	39
10 Collaborations	35

Desired Criteria ($n=1145$)

Criteria	"should be used"
1 Professional development	116
2 Non-metric quality of publications	104
3 Ethics and integrity	98
4 Collaborations	98
5 Number of publications	61
6 Developing/operating research facilities and instruments	61
7 Far-sight	51
8 Authorship order/position	50
9 Contributions to a healthy institutional culture	45
10 Administrative roles	43

!! Preliminary Analysis !!

Different research cultures value different contributions

Healt ($n = 344$)

Criteria	"should be used"
1 Professional development	34
2 Ethics and integrity	33
3 Non-metric quality of publications	32
4 Collaborations	25
5 Authorship order/position	23
6 Contributions to a healthy institutional culture	19
7 Societal impact	17
8 Far-sight	16
9 Communication and outreach	16
10 Supervision	14

Earth & Environment ($n = 285$)

Criteria	"should be used"
1 Professional development	34
2 Collaborations	30
3 Non-metric quality of publications	27
4 Ethics and integrity	24
5 Number of publications	20
6 Far-sight	16
7 Number of citations	12
8 Contributions to a healthy institutional culture	11
9 Developing/operating research facilities and instruments	11
10 Communication and outreach	9

Q2. Which of the following criteria do you believe **should be used** to assess or value your performance, for example when applying for a permanent position or promotion?

A generational shift in valued contributions?

Leading researcher ($n = 168$)

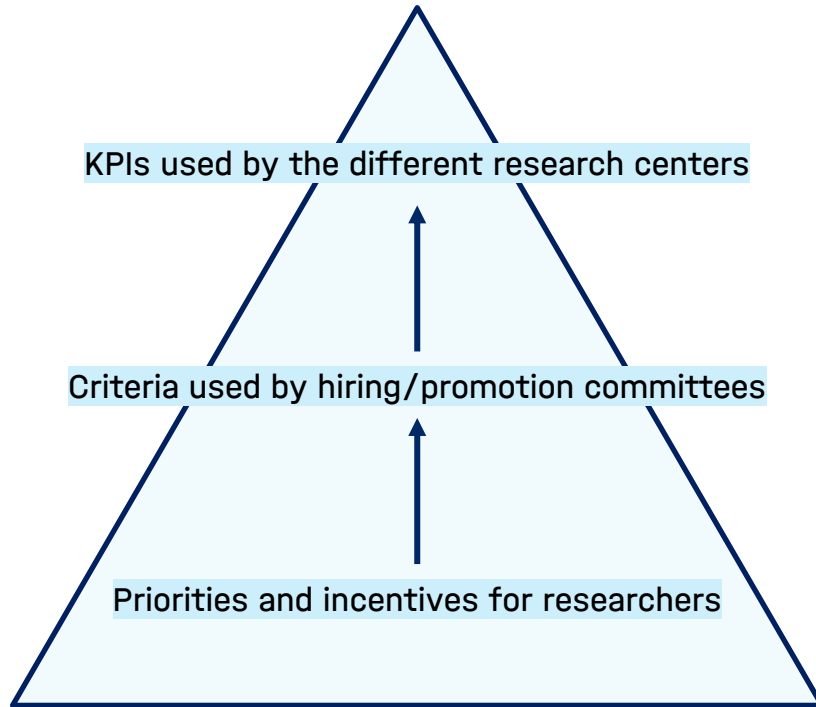
Criteria	"should be used"
1 Non-metric quality of publications	20
2 Number of publications	19
3 Professional development	18
4 Authorship order/position	14
5 Ethics and integrity	12
6 Number of citations	11
Developing/operating research facilities	
7 and instruments	10
8 Far-sight	8
9 Collaborations	7
Contributions to a healthy institutional	
10 culture	5

Early Career Researcher ($n = 305$)

Criteria	"should be used"
1 Ethics and integrity	37
2 Collaborations	34
3 Professional development	33
4 Non-metric quality of publications	23
5 Communication and outreach	20
6 Societal impact	15
7 Far-sight	14
8 Supervision	13
Contributions to a healthy institutional	
9 culture	13
10 Authorship order/position	11

Q2. Which of the following criteria do you believe **should be used** to assess or value your performance, for example when applying for a permanent position or promotion?

Reforming research assessment – what's next?



Thank you to all contributors!

- [Task Group Helmholtz Quality Indicators](#)
- [Task Group Research Assessment](#)
- The Helmholtz Open Science Office



Task Group Helmholtz Quality Indicators



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Keep in touch



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<https://os.helmholtz.de>



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Publications and recommended readings: [Zotero](#)



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