An Roinn Breisoideachais agus Ardoideachais,
Taighde, Nuálaíochta agus Eolaíochta
Department of Further and Higher Education,
Research, Innovation and Science

National Action Plan for Open Research

2022-2030

Prepared by
Ireland's National Open Research
Forum for Impact 2030

NORF
NATIONAL OPEN
RESEARCH FORUM

Impact
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Contents

Introduction

The international movement towards greater openness and transparency in research sets new expectations for research to be open, collaborative and shared for the benefit of science and society.

As demonstrated by COVID-19, open and timely access to research publications, data and other outputs is essential to meet societal needs and grand challenges.

Open research is positioned as a cross-cutting priority for Ireland's research system in *Impact 2030: Ireland's Research and Innovation Strategy*. Progress on this agenda will increase the visibility of Irish research and support research excellence and impact.

The *National Action Plan for Open Research 2022-2030* sets out a roadmap for meeting national objectives, as initially set out in Ireland's *National Framework on the Transition to an Open Research Environment*, published in 2019.

This National Action Plan strengthens Ireland's commitment to open research, including our contribution to the European Research Area Policy Agenda and its priority action to enable the open sharing of knowledge and the re-use of research outputs.

The National Action Plan has been prepared by Ireland's National Open Research Forum (NORF) through a detailed and consultative planning exercise. Its objectives and actions set out a roadmap for fostering and implementing open research, including nationally coordinated actions that have been resourced by my Department.

I welcome this National Action Plan and encourage all stakeholders to engage and contribute to its vision and actions. I wish to acknowledge the efforts of all those involved in its development and I am delighted that the support of my Department has made this possible.

Simon Harris TD
Minister for Further and Higher Education, Research, Innovation and Science

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Ireland's *National Action Plan for Open Research* was developed collaboratively by the National Open Research Forum (NORF). Through a planning exercise involving its Working Groups, Coordination Groups and public consultation, NORF developed a shared vision and identified nationally coordinated actions to help accelerate Ireland's progress in open research.

We thank the many stakeholder representatives involved in NORF and the broader research community for their considered input and engagement in this process. We are grateful to the Minister and his Department for their continued support to keep Ireland at the forefront of this research policy agenda. We look forward to working together to implement these actions and monitor progress towards a research system fully aligned with the principles of open research by 2030.

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1 Context

This *National Action Plan for Open Research* outlines objectives and actions for the next chapter in Ireland's transition towards open research. It builds on a number of national policies and international recommendations, including the *National Principles on Open Access (2012)*, the *European Commission Recommendation on access to and preservation of scientific information* (2018), the *National Framework on the Transition to an Open Research Environment* (2019), and the *UNESCO Recommendation on Open Science* (2021).

The process of developing this National Action Plan has been led by Ireland's National Open Research Forum (NORF),[1] a broad group that combines the expertise of representatives from policy, research funding, research performing, the library sector, research infrastructures, enterprise and other key stakeholders in the research system across Ireland. During a planning exercise conducted in 2021, NORF Working Groups and Coordination Groups analysed the landscape of open research support structures in Ireland and developed recommendations for nationally coordinated actions that would improve support for open research and assist researchers in navigating this transition. NORF's analyses have been published in a *National Open Research Landscape Report* and series of policy briefs that provide background and further details on the actions described in this plan (see Section 7). Opportunities for public consultation and comment were held in conjunction with the drafting of the *National Open Research Landscape Report*, followed by targeted consultations with specific communities to help develop recommended actions, and a further public consultation on a draft version of the National Action Plan in 2022.

Implementation of the *National Action Plan for Open Research* will be overseen by NORF and delivered under *Impact 2030: Ireland's Research and Innovation Strategy*[2] with the support of the Department of Further and Higher Education, Research, Innovation and Science. Open research and this National Action Plan form part of the strategic objective under Impact 2030 to 'embed consistent good research practices to drive research excellence and quality of outcomes'. Resourcing for initial actions has been provided by the Department of Further and Higher Education, Research, Innovation and Science.

Open research requires collective action. The transition to a national open research environment is a shared responsibility across the research system, with local efforts required to implement policies, infrastructure and incentives within research performing and research funding organisations. National-level actions as outlined in this action plan are designed to encourage a coordinated approach and complement and connect with efforts at international and local levels. Periodic reviews of the National Action Plan will be conducted every three years to review progress made and release updates with further actions. For further details regarding coordination, implementation and monitoring, see Section 6.

This National Action Plan and a list of endorsing organisations is available at: https://norf.ie/national-action-plan/

1 Ireland's National Open Research Forum (NORF): https://norf.ie/

2 *Impact 2030: Ireland's Research and Innovation Strategy*: https://www.gov.ie/en/publication/27c78-impact-2030-irelands-new-research-and-innovation-strategy/

2 Vision for Open Research in Ireland

Open research: definitions, core values and ambitions

Open research,[3] also referred to as open science or open scholarship, is an approach to the scientific process based on open cooperative work, tools, and diffusing knowledge.[4] As part of Ireland's endorsement of the *UNESCO Recommendation on Open Science*,[5] we adopt the following definition:

Open science is defined as an inclusive construct that combines various movements and practices aiming to make multilingual scientific knowledge openly available, accessible and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community.

Further, we align with and support UNESCO's definition of the core values of open research, which include quality and integrity, collective benefit, equity and fairness, and diversity and inclusiveness. The practices of open research support research quality and integrity by encouraging transparency and allowing broader evaluation and scrutiny. Open practices benefit the collective in that sharing outputs with the global community positions research as a global public good and promotes equity through equal access to knowledge.

In terms of specific practices, open research includes open access to publications, open research data, open source software/tools, open workflows, citizen science, open educational resources, and alternative methods for research evaluation. More broadly, these practices are not ends in themselves, but contribute to realising a more transparent and trustworthy shared global research knowledge system or knowledge commons.[6] As the Open Science Policy Platform (European Commission, 2020, p. 4) has stated:

Openness is a vital instrument which, when used responsibly, can fuel a faster, more effective, more reliable, more trustworthy, more equitable and more innovative shared research knowledge system. Research cannot be 'excellent' without such attributes at its core.

We also seek to align with the ambitions of the European Commission in relation to open science, which have been structured through eight areas: open data; European Open Science Cloud (EOSC); new generation metrics; future of scholarly communication; rewards; research integrity and reproducibility of scientific results; education and skills; citizen science.[7] Open science is a fundamental part of Horizon Europe, in which a range of open science practices are mandated or recommended, and open science is considered in the evaluation of proposals under 'excellence' and 'quality and efficiency of implementation'.

Open science forms part of the European Research Area (ERA) Policy Agenda, with an action to 'enable Open Science, including through the EOSC' being one of 20 concrete actions for the period 2022-2024.[8] This action aligns with and builds on recent conclusions of the Council of the European Union which have noted the role of open science in boosting impact, quality, efficiency, transparency and integrity of research and innovation, underlined that these benefits have been highlighted by the COVID-19 crisis, and recommended approaches to the implementation of open science.[9] Council conclusions have also acknowledged the need

3 The term open research is used to clarify that all disciplines are included in this National Action Plan.

4 As defined by the Horizon Europe (2021-2027) Framework Programme for R&I. For a further introduction see https://open-research-europe.ec.europa.eu/an-introduction-to-open-research

5 *UNESCO Recommendation on Open Science*: https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en

6 As called for in the final report of the European Commission's Open Science Policy Platform (2020) and the *Joint Appeal for Open Science* by the Directors-General of UNESCO and WHO and the United Nations High Commissioner for Human Rights (https://www.unesco.org/en/articles/joint-appeal-open-science).

7 The EU's open science policy: https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/our-digital-future/open-science_en

8 ERA Policy Agenda: https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/european-research-area_en

9 *Council Conclusions on the New European Research Area* (Dec 2020): https://data.consilium.europa.eu/doc/document/ST-13567-2020-INIT/en/pdf; *Council Recommendation on a Pact for Research and Innovation in Europe* (Nov 2021): https://data.consilium.europa.eu/doc/document/ST-13701-2021-INIT/en/pdf; *Council Conclusions on Research Assessment and Implementation of Open Science* (June 2022): https://www.consilium.europa.eu/media/56958/st10126-en22.pdf

to reform research assessment in order to accelerate the implementation of open science policies and practices. For example, Council conclusions of June 2022 stressed that research assessment should include a range of research outcomes and processes and promote early knowledge sharing and collaboration, and emphasised that applying open science principles should be appropriately rewarded in researchers' careers.

At the national level, Ireland's *National Framework on the Transition to an Open Research Environment* outlines national objectives across five strategic areas: open access to research publications; enabling FAIR research data; infrastructures for access to and preservation of research; skills and competencies; and incentives and rewards.[10] These objectives are reaffirmed and updated in this National Action Plan, streamlined according to three overarching themes.

National Action Plan for Open Research

This National Action Plan serves as a roadmap for the implementation of open research across Ireland, outlining national goals and coordinated actions that will assist the national research system as a whole to better support open research practices. The plan covers the period 2022-2030, aligned with *Impact 2030: Ireland's Research and Innovation Strategy*. It will be subject to periodic assessment and updates to further define actions needed.

In the implementation of this National Action Plan, special attention will be paid to groups that may be particularly vulnerable during a process of transition or change, such as Early Career Researchers. The plan therefore takes a holistic approach, emphasising the need to align systems of research reward and assessment with open research principles, and foregrounds a theme of establishing a culture of open research. Furthermore, the plan will be implemented with full acknowledgement and respect for key principles, including academic freedom, integrity and excellence. As stated in the *UNESCO Recommendation on Open Science:*

Building on the essential principles of academic freedom, research integrity and scientific excellence, open science sets a new paradigm that integrates into the scientific enterprise practices for reproducibility, transparency, sharing and collaboration resulting from the increased opening of scientific contents, tools and processes.

10 Ireland's *National Framework on the Transition to an Open Research Environment* (July 2019): https://doi.org/10.7486/DRI.0287dj04d

The action plan is structured according to three themes or overall aspirations, under which a vision, goals, and actions are articulated. The overall national vision for a research system fully aligned with open research principles and practices by 2030 is as follows:

THEME 1:

Establishing a culture of open research

By 2030 a culture of open research will be embedded at every level of the Irish research system. The re-orientation of research recognition and rewards towards responsible research evaluation and open research metrics and practices will be well underway or complete, and approaches to research assessment will be broadly aligned at a system level across all stakeholders. Researchers at all career levels will have opportunities to learn open research skills, with clear incentives to do so. Across the system, there will be widely available specialist open research support for researchers, provided by dedicated support professionals, who have access to accredited training and clear career progression routes. Embedding open research through responsible research evaluation and assessment, national training and education, and increased specialist support, will promote and support the quality and impact of Irish research.

THEME 2:

Achieving 100% open access to research publications

By 2030 Ireland will have implemented a sustainable and inclusive course for achieving 100% open access to research publications. Provisions put in place to support a diverse open access publishing ecosystem and the retention of authors' rights will ensure Irish researchers have the freedom to choose from a range of quality options for making their research open access. An interoperable and robust network of repositories will contribute to making Irish research more visible and accessible locally and internationally. Benchmarking, drawing on a transparent national open access monitoring mechanism, will place Ireland amongst the leading countries internationally in terms of achieving 100% open access.

THEME 3:

Enabling FAIR research data and other outputs

By 2030 Ireland will have a mature ecosystem of infrastructures to support the responsible management and sharing of research data and other outputs in line with the FAIR principles. A diverse range of research activities and outputs will be recognised and rewarded in research assessment and evaluation, including data sharing. Data stewardship will be firmly established in the national landscape, with data stewards providing key expertise to assist researchers with research data management needs. Open research infrastructures will be considered and planned for within national roadmaps for research infrastructures. As an outcome of national roadmapping processes, open research infrastructures will receive adequate funding, form part of a coherent and sustainable approach to RIs, and will be benchmarked against other national RIs.

Establishing a culture of open research

As an approach to the research process, open research practices impact on methodologies across the research lifecycle and contribute to research excellence. Open research should therefore be fostered and become embedded in the Irish research system through consistent and system-wide recognition and reward mechanisms. Key to achieving this objective of broader uptake and incentivisation is the systematic provision of standardised skills and training in open practices, local support networks, and the alignment of research assessment with the principles of open research.

In line with the *National Framework on the Transition to an Open Research Environment*, we reaffirm the importance of training in open research for researchers at all career levels, and specialised training for relevant professional support staff.[11] Institution-wide open research support units or networks should encompass roles and services designed to support open practices throughout the research lifecycle and maximise the use of local, national, and international open research infrastructures.

At an organisational level, we encourage the prioritisation of open research in institutional strategies, supported by policies and organisational action plans for open research aligned with international and national objectives. Policies and procedures should cover key areas including open access, research data management, and research assessment. Institutional support networks should be broad, involving professional support staff as well as teams of academic champions or fellows that support local awareness, engagement and effective implementation.

As called for by international initiatives such as the San Francisco Declaration on Research Assessment (DORA) and the *Agreement on Reforming Research Assessment* (2022), the assessment of research and researchers should move away from an overreliance on journal- and publication-based metrics and towards more qualitative evaluation, supported by responsibly used quantitative indicators where appropriate.[12] Broad and inclusive research assessment supports a diversity of contributions and careers in research and helps to acknowledge and reward open research practices and open sharing of research results.

Vision for 2030

By 2030 a culture of open research will be embedded at every level of the Irish research system. The re-orientation of research recognition and rewards towards responsible research evaluation and open research metrics and practices will be well underway or complete, and approaches to research assessment will be broadly aligned at a system level across all stakeholders. Researchers at all career levels will have opportunities to learn open research skills, with clear incentives to do so. Across the system, there will be widely available specialist open research support for researchers, provided by dedicated support professionals, who have access to accredited training and clear career progression routes. Embedding open research through responsible research evaluation and assessment, national training and education, and increased specialist support, will promote and support the quality and impact of Irish research.

11 Professional support staff for open research include, but are not limited to, library professionals and other experts in scholarly communication, research data management and digital preservation, data managers and data stewards, research software engineers, technicians managing open research infrastructure, and IT personnel.

12 DORA: https://sfdora.org/; *Agreement on Reforming Research Assessment*: https://www.scienceeurope.org/our-resources/agreement-reforming-research-assessment/; also see the European Commission scoping report *Towards a Reform of the Research Assessment System*: https://data.europa.eu/doi/10.2777/707440

Progress and goals

As detailed in NORF's *National Open Research Landscape Report*, Ireland's progress in establishing a culture of open research has been demonstrated through initiatives to build skills and offer training in open research and encouragement by institutions and funders towards open practices. In the skills area, several Irish institutions offer accredited training as part of research modules and there have been successful communities of practice developed around open research at the local and disciplinary levels. Structures and staffing to support open research vary across institutions and a range of related open research roles have emerged, often based within libraries.

Regarding the incentivisation of open research, there is increasing awareness and encouragement towards open practices, but little demonstrable progress towards the enforcement of reporting or evaluation of open research at a national level. Local initiatives to encourage open practices and consideration of societal impact include awards and research impact positions. More tangible incentives include funder initiatives such as the use of narrative CV formats and reporting on public engagement and dissemination. A number of Irish funders and institutions have signed DORA and have implemented DORA-compliant assessment procedures and practices.[13]

To make further progress in relation to establishing a culture of open research, the following goals have been identified:

Goal	Description	Related actions
G3.1	Strengthen and standardise training on open research, including adopting an agreed framework that defines the required skills-base and encourages a competency-based, consistent approach to training.	A3.1
G3.2	Factor in dedicated open research support roles in institutional staffing plans in order to improve local awareness, community building, and uptake of open practices.	A3.1
G3.3	Address the gap in system-level mandating or incentivisation of open research, including open research-relevant criteria for career progression or hiring.	A3.2, 3.4 & 3.5
G3.4	Further develop commitments to reform research assessment and research evaluation, including the responsible use of research metrics.	A3.3
G3.5	Develop commitments to embed, within Irish RPOs, the engagement of citizens, broad publics and the end users of research across the entire research process.	A3.2

13 DORA signatories in Ireland: https://sfdora.org/signers/?_organization_country=ireland

Actions

Action	Description	Key stakeholders	Timeline
A3.1 Upskill researchers and relevant professional support staff in open research.	A3.1.1 Develop a national open research training programme to enable researchers at all stages of their career, from early to late, as well as postgraduate students, to upskill in open research practices. This will include defining a core curriculum and adapting a standardised framework, such as FOSTER, to national needs.[14] To maximise accessibility and impact, training will be delivered using Open Educational Practices (OEP).	NORF, RPOs, IUA, THEA	2022-24
	A3.1.2 Develop pathways and core curricula for the training of professional support staff such as library professionals, data managers/ stewards (see A5.1), IT personnel, as well as training for policymakers and policy officers.	NORF, RPOs, professional library bodies (e.g. Library Association of Ireland), RFOs	2023-24
	A3.1.3 Establish and ensure accreditation of open research training appropriate to cohort and level.	RPOs, awarding bodies, professional library bodies	Ongoing
	A3.1.4 Establish a national network of open research trainers to promote the exchange of best practices and to develop and share Open Education Resources (OERs) in open research.	NORF, RPOs, research infrastructures	2022-24
	A3.1.5 Linked to A5.1, professionalise, embed and create sustainable career pathways for professional support staff in open research within the national landscape.	RPOs, IUA, THEA, DFHERIS, staff unions	Ongoing

14 FOSTER: https://www.fosteropenscience.eu/

Action	Description	Key stakeholders	Timeline
A3.2 Strengthen the system-wide recognition and reward of open research practices.	A3.2.1 Convene an inclusive group of stakeholders to identify and progress system-level changes required, broad principles and arenas for action (e.g. government policy, funder processes, institutional HR policies), specific proposals for each actor, and any evaluation model. This may include adapting existing models designed to recognise and reward a broad range of research activities such as the Open Science Career Assessment Matrix (OS-CAM) to the national context.[15]	NORF, RPOs, IUA, THEA, DFHERIS, staff unions, RFOs, government agencies	2023-24
	A3.2.2 Continuously monitor the impact of the transition to open research on potentially vulnerable groups such as ECRs and identify support structures.	RPOs, IUA, THEA, RFOs, ECR groups/ young academies, research staff associations	Ongoing
	A3.2.3 Develop a programme to support public engagement with research (engaged research) including consideration of strategic commitments on the part of key sectoral actors, appropriate resourcing, and monitoring and review processes.	NORF, RPOs, IUA, THEA	2023-24

15 National level examples include NOR-CAM in Norway and the Dutch Recognition and Rewards Programme (https://recognitionrewards.nl/). See NORF's policy brief on *System-level Incentivisation of Open Research Practices*: https://doi.org/10.7486/DRI.k069nz78d

Action	Description	Key stakeholders	Timeline
A3.3 Align research assessment with the principles of open research.	A3.3.1 Strongly recommend further Irish research stakeholders sign and enact DORA, the Agreement on Reforming Research Assessment and similar initiatives (e.g. Leiden Manifesto, Hong Kong Principles[16]). Support the implementation of research assessment that is aligned with and inclusive of open research, research integrity, and developing a positive research culture.	RPOs, RFOs, government agencies	Ongoing
	A3.3.2 Develop a national statement on the adoption of responsible research metrics (RRM) by all stakeholders in the Irish research system, including oversight and mechanisms to ensure compliance. Encourage ongoing implementation and embedding of RRM into all relevant processes and policies e.g. recruitment and promotion, quality reviews, strategic planning, career development frameworks, grant applications, peer review etc.[17]	RPOs, IUA, THEA, RFOs, government agencies	2023-24
A3.4 Support institutional and community networks for open research.	A3.4.1 Recognise, encourage and support the creation and development of peer-led and expert networks for open research to stimulate awareness and participation in open research. Such networks include institution-wide open research support units, regional open scholarship communities, and networks fostering reproducibility.[18]	NORF, RPOs, RFOs	Ongoing
A3.5 Encourage initiatives to facilitate open research in funding programmes and awards.	A3.5.1 Recommend funders and institutions support innovative aspects of open research and the uptake of open research practices in funding programmes and awards. Support may be embedded in existing calls or offered through dedicated programmes.[19]	RPOs, RFOs	Ongoing

16 Leiden Manifesto: http://www.leidenmanifesto.org/; Hong Kong Principles: https://www.wcrif.org/guidance/hong-kong-principles. For signatories to the *Agreement on Reforming Research Assessmen*t see: https://coara.eu/agreement/signatories/

17 See NORF's policy brief on *Responsible Research Metrics Policy Development and Alignmen*t: https://doi.org/10.7486/DRI.jw82n294d

18 Examples include Open Scholarship Communities (e.g. https://osc-galway.ie/) and Reproducibility Networks (https://www.ukrn.org/international-networks/)

19 Funder examples include the French National Research Agency's Flash Call Open Science, the Dutch Research Council's Open Science Fund, and Wellcome's Research Enrichment - Open Research (https://wellcome.org/grant-funding/schemes/research-enrichment-open-research). For institutional examples, see the UKRN primer: https://doi.org/10.31219/osf.io/kqgez

4 Achieving 100% open access to research publications

Ireland supports the principle of full and immediate open access to research publications to ensure the widest possible dissemination of research. Making research publications openly and freely accessible contributes to an informed citizenship, the democratisation of knowledge, and maximises the impact of research processes and outputs.

In line with Ireland's *National Framework on the Transition to an Open Research Environment*, we reaffirm the national objective that all Irish scholarly publications resulting from publicly funded research will be openly available by default.[20] Our aim is to implement a sustainable and inclusive course for achieving 100% open access to research publications by 2030.

To progress towards this objective, we support multi-track policies and pathways to open access, enabling both repository-mediated (also known as Green OA) and publisher-mediated (Gold OA) routes, without an embargo period.[21] Open access publications must be accompanied by an open licence. Authors should retain sufficient rights to enable full and immediate open access via the Green or Gold route.[22] For academic books, it is recognised that some stakeholders may permit embargo periods, but these should be as short as possible.[23]

A collaborative approach involving all actors is encouraged in the transition from subscription-based to open access models, particularly for the facilitation of agreements with publishers. While transformative agreements[24] play a role in accelerating open access options with a range of publishers, such agreements should be considered transitional and form part of a broader strategy that encompasses and promotes a diversity of open access publishing models and options. The payment of author-facing open access publishing fees to hybrid journals[25] is not supported, except as a limited part of transformative agreements with a clearly defined timeframe. Monitoring the degree to which these agreements are transformative will be a key indicator of the success of this aspect of the national open access strategy.[26]

In line with the principle of bibliodiversity,[27] we strongly encourage and support local and disciplinary publishing practices, society and academic-led publishing initiatives, non-profit open access publishers, and OA models in which journals or publishers do not charge fees to either authors or readers (also known as Diamond OA).[28] The sustainability of this national strategy must be underpinned by investment in local, national and global scholarly communication infrastructure.

We strongly advocate for every researcher in Ireland to have the rights and the facility to deposit or publish via a suitable open access journal, platform, or repository. To realise an inclusive system of infrastructure and incentives for open access, differences in publication culture between disciplines should be accounted for and supported, with implementation guided by overarching principles of equity and collective benefit. Publications should be enhanced to assist people with disabilities and increase public accessibility and impact of the content.

In the transition to full open access, assessment of research and researchers should move beyond journal-based and particularly impact-factor-based measurement. This helps to diversify the scholarly landscape by recognising the value of diverse publication types and incentivises authors to fully leverage the potential of digital technology.

20 Publicly funded research is research undertaken in whole or in part via publicly funded resourcing or remuneration, e.g. salaries, grants, contracts, etc.
21 For further definitions see https://www.jisc.ac.uk/guides/an-introduction-to-open-access
22 See NORF's policy brief on *Copyright Legislation to Support Rights Retention*: https://doi.org/10.7486/DRI.jd47gm74p
23 As stated in Ireland's *National Framework to an Open Research Environment* and in line with international practice: https://www.coalition-s.org/coalition-s-statement-on-open-access-for-academic-books/
24 Transformative agreement is an umbrella term for several agreement types, such as read and publish/publish and read agreements, transitional agreements and offsetting agreements. See glossary for further definition.
25 Hybrid journals publish both OA and closed/subscription articles. Articles may be made OA on publication on payment of an article processing charge (APC). For why this route is not supported, see: https://www.coalition-s.org/why-hybrid-journals-do-not-lead-to-full-and-immediate-open-access/
26 In the interest of public transparency, such agreements are made available via ESAC: https://esac-initiative.org/
27 Bibliodiversity relates to the diversity of publishing forms and sources at the local, regional, national and international levels. See NORF's policy brief on *Supporting Bibliodiversity in Ireland* https://doi.org/10.7486/DRI.5t3568774
28 Action Plan for Diamond OA: https://doi.org/10.5281/zenodo.6282402

Vision for 2030

By 2030 Ireland will have implemented a sustainable and inclusive course for achieving 100% open access to research publications. Provisions put in place to support a diverse open access publishing ecosystem and the retention of authors' rights will ensure Irish researchers have the freedom to choose from a range of quality options for making their research open access. An interoperable and robust network of repositories will contribute to making Irish research more visible and accessible locally and internationally. Benchmarking, drawing on a transparent national open access monitoring mechanism, will place Ireland amongst the leading countries internationally in terms of achieving 100% open access.

Progress and goals

As detailed in NORF's *National Open Research Landscape Report*, Ireland's progress in the area of open access to research publications has been demonstrated by a steady growth in repository-mediated OA and an increase in publisher-mediated OA from 2015 onwards. Initiatives supporting the growth and uptake of open access have included a growing number of transformative agreements facilitated by IReL,[29] the commencement of Plan S (supported by Science Foundation Ireland and others), the growth of the Health Research Board's Open Research platform, support for local and international open access initiatives, and ongoing developments in the repository landscape.

To make further progress in relation to full and immediate open access, the following goals have been identified:

Goal	Description	Related actions
G4.1	Set clear baselines and appropriate domain targets for open access, including establishing criteria for monitoring open access at the national level. National monitoring will promote transparency, enable progress to be tracked, and allow for the identification of gaps and targeted interventions to ensure equity in terms of access to open access publishing options.	A4.4 & 6.2
G4.2	In relation to repositories, address staff capacity and bring all repositories up to a minimum level to support evolving open access requirements, agree a national standard for quality metadata, and standardise metadata in line with international initiatives.	A3.1 & 4.1
G4.3	Address the need for a coordinated approach to rights retention to support Irish researchers to retain their rights and make their work open access immediately.	A4.2
G4.4	Address equity of choice and access to funds to support open access publishing and further investigate means of supporting varied publishing practices across disciplines.	A4.1, 4.2 & 4.3
G4.5	Address the lack of preservation policies and infrastructure to support sustainable access to scholarly publications.	A4.1
G4.6	Address the lack of alignment between the various funder policies and institutional policies relating to open access.	A4.5

29 IReL provides a number of Irish Higher Education Institutions with access to e-journals and other resources. In addition to subscription access, IReL negotiates to include in agreements that publishing of articles by corresponding authors from member institutions will be on an open access basis and at no additional cost: https://irel.ie/

Actions

Action	Description	Key stakeholders	Timeline
A4.1 Strengthen Ireland's network of open access repositories.	A4.1.1 Conduct a national programme of open access repository assessment and alignment to deliver standardised metadata nationally while building and aligning infrastructure according to international best practice. For example, OpenAIRE guidelines, Plan S requirements, and evolving practice.[30]	NORF, RPOs, RFOs, research infrastructures (e.g. IReL)	2022-24
A4.2 Support rights retention for Irish researchers.	A4.2.1 Conduct a legal assessment of ways to support Irish researchers retain their rights and make their work open access immediately. These may include introducing secondary rights retention into Irish copyright legislation.	NORF, RPOs, RFOs	2023-24

30 See NORF's policy brief on *Coordinated Support for Open Access Repositories*: https://doi.org/10.7486/DRI.j960fq90j

Action	Description	Key stakeholders	Timeline
A4.3 Support bibliodiversity in Ireland.	A4.3.1 Conduct a feasibility study and pilot with a view to establishing a publicly-owned, centralised national platform for Diamond OA publication of journals and books.[31] This action will be aimed at supporting OA models for Irish-based academic journals and publishers.	NORF, RPOs, research infrastructures, publishers, learned societies, editors, libraries	2022-24
	A4.3.2 Expand open access support to a wider range of publication types and encourage publishing innovations. These include, for example, open access monographs and book chapters, preprints, overlay journals, open peer review, and the interlinking of scholarly outputs through open publication platforms.	NORF, RPOs, RFOs, research infrastructures (e.g. IReL), publishers	Ongoing
	A4.3.3 Support the open infrastructure for scholarly communication that underpins bibliodiversity in the international context by funding and establishing connections to initiatives such as the Global Sustainability Coalition for Open Science Services (SCOSS), infrastructures for Diamond OA, and endorsing the Action Plan for Diamond OA.[32]	NORF, RPOs, RFOs, research infrastructures (e.g. IReL)	Ongoing
	A4.3.4 Sign the Helsinki Initiative on Multilingualism in Scholarly Communication,[33] supporting the dissemination of research results for the full benefit of society, the publication of locally relevant research, and language diversity.	NORF, RPOs, RFOs	Ongoing

31 European examples include national platforms in Finland, Croatia, France, the Netherlands and Spain.
32 Global Sustainability Coalition for Open Science Services: https://scoss.org/; Action Plan for Diamond OA: https://scieur.org/diamond-actionplan
33 Helsinki Initiative on Multilingualism in Scholarly Communication: https://www.helsinki-initiative.org/

Action	Description	Key stakeholders	Timeline
A4.4 Invest in Persistent Identifier infrastructure to enable consistent monitoring and improve interoperability.	A4.4.1 Support the Irish ORCID Consortium and encourage further development and adoption of ORCID according to international best practice by researchers and within the systems and processes of publishers, research performing organisations, research funding organisations, and infrastructures.[34]	NORF, RPOs, RFOs, research infrastructures (e.g. IReL)	Ongoing
	A4.4.2 Develop a national roadmap for the adoption of a range of Persistent Identifiers according to international best practice, such as ORCID, DOIs, RAiDs and ROR identifiers. Implement this roadmap to consolidate national coordination and accelerate the uptake and integration of priority identifiers.	NORF, RPOs, RFOs, research infrastructures (e.g. IReL)	2023-27
A4.5 Align policies for open access to publications.	A4.5.1 Strongly recommend all funders and institutions develop and implement open access policies that support the objectives of the National Framework on the Transition to an Open Research Environment and alignment with international approaches such as Plan S.[35] In implementing and monitoring these policies, clear guidance and support should be provided to researchers.	RPOs, RFOs	Ongoing

34 Irish ORCID Consortium: https://irel.ie/orcid-consortium/

35 For an overview of current funder OA policies see Appendix 2 of NORF's *National Open Research Landscape Report*: https://doi.org/10.7486/DRI.5q485c938; Plan S: https://www.coalition-s.org/plan_s_principles/

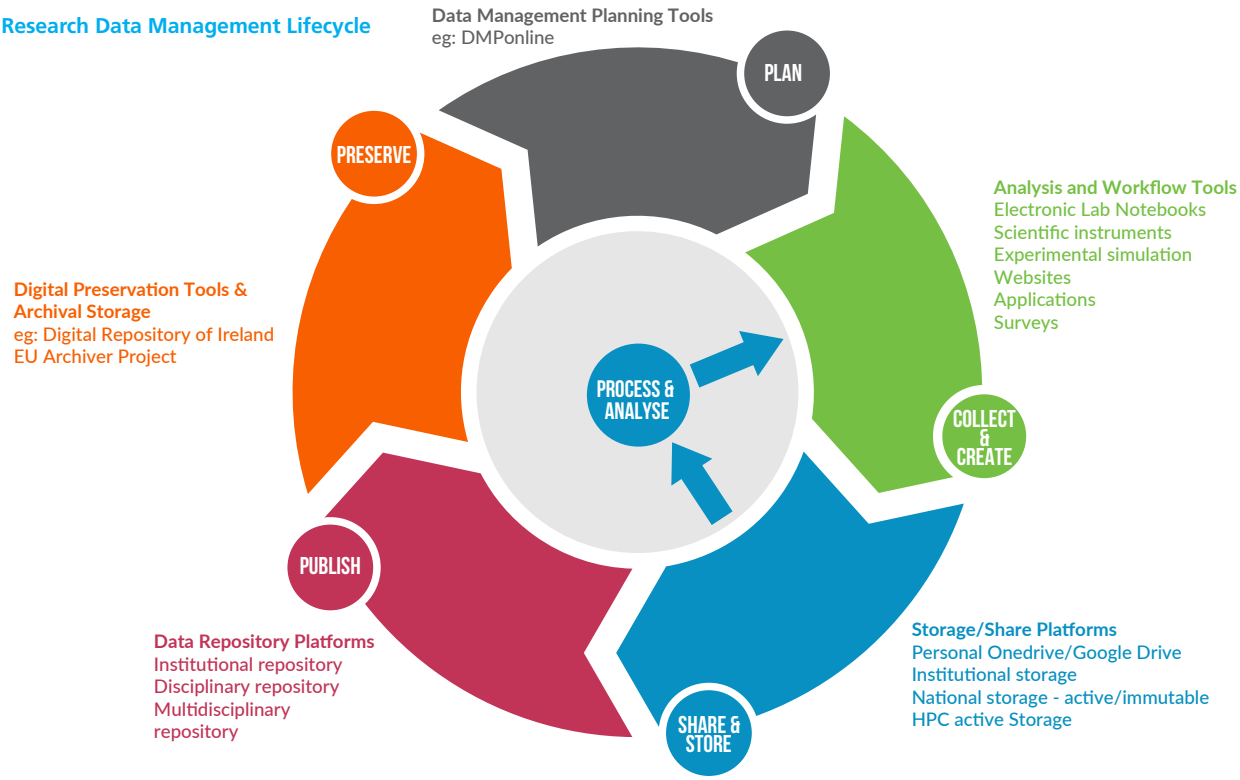
5 Enabling FAIR research data and other outputs

The FAIR (Findable, Accessible, Interoperable and Reusable) principles were formalised in 2016 with respect to scientific research data, but are now more widely applied to all research outputs and across all disciplines. In addition to research data, FAIR can be applied to software code, algorithms and models, tools and instruments, educational materials and other outputs.[36] The aim of the principles is to enhance usefulness and (re)use by humans and machines, therefore increasing the value of the outputs and supporting greater reproducibility and transparency of research. The principles do not require complete openness; rather FAIR outputs are "as open as possible, as closed as necessary." As noted in *Turning FAIR into Reality* (European Commission, 2018, p. 21), "Data can be FAIR or Open, both or neither. The greatest benefits come when data are both FAIR and Open, as the lack of restrictions supports the widest possible reuse, and reuse at scale."

In line with the *National Framework on the Transition to an Open Research Environment*, we reaffirm support for the FAIR principles, the responsible management and open sharing of research data and other outputs by default, and the need for long-term preservation of research outputs to support continued access, reuse and reproducibility. Research data and other outputs should be managed according to the FAIR principles, be made as open as possible with clear licensing, and be deposited in a trustworthy repository for long-term preservation and stewardship.[37] To achieve this, a mature ecosystem of technical and human infrastructure is required.

The Irish landscape of infrastructures to support open research and FAIR data is complex and varied, encompassing networking and computing infrastructures, meta-infrastructures, data infrastructures, and thematic or disciplinary infrastructures. Further, to enable the broadest possible approach to open research, other key data sources should be encouraged and supported towards openness; for example, arts, humanities and social science researchers rely heavily on the holdings of memory institutions or the 'GLAM' sector (Galleries, Libraries, Archives, Museums). Enabling mechanisms for FAIR data include services that support effective management and sharing at each stage of the research data management lifecycle, as shown in Figure 1.

Figure 1 Research Data Management Lifecycle



36 FAIR principles: https://www.go-fair.org/fair-principles/; in addition to FAIR, responsible RDM also encompasses other legal and ethical requirements such as data governance, the General Data Protection Regulation (GDPR) and the CARE principles for indigenous data governance http://doi.org/10.5334/dsj-2020-043

37 As also required by the European Union (Open Data and Re-use of Public Sector Information) Regulations 2021: https://www.irishstatutebook.ie/eli/2021/si/376/made/en/print (see Regulation 12)

Key to integrated and efficient use of data infrastructures, tools and services are the involvement and expertise of professional support staff, such as data stewards and research software engineers. For example, data stewards support the whole research data lifecycle, informing pre-project planning through to post-project preservation.[38] Such roles can also act as a bridge between services and researchers, and serve a coordinating function within and across organisations that can include policy implementation, training provision and specialist advice.

Vision for 2030

By 2030 Ireland will have a mature ecosystem of infrastructures to support the responsible management and sharing of research data and other outputs in line with the FAIR principles. A diverse range of research activities and outputs will be recognised and rewarded in research assessment and evaluation, including data sharing. Data stewardship will be firmly established in the national landscape, with data stewards providing key expertise to assist researchers with research data management needs. Open research infrastructures will be considered and planned for within national roadmaps for research infrastructures. As an outcome of national roadmapping processes, open research infrastructures will receive adequate funding, form part of a coherent and sustainable approach to RIs, and will be benchmarked against other national RIs.

Progress and goals

As detailed in NORF's *National Open Research Landscape Report*, Ireland's progress in the area of enabling FAIR research data and other outputs has been demonstrated by policies for data management and sharing (especially from funders), training initiatives at the local and national level, and infrastructure to support FAIR data provided by institutions, funders and national services.

To make further progress in relation to enabling FAIR, the following goals have been identified:

Goal	Description	Related actions
G5.1	Encourage and foster awareness and adoption of FAIR and open data.	A5.3, 5.5 & 6.3
G5.2	Address the provision of training programs for researchers and support staff on the skills required to create, manage, store and preserve FAIR data.	A3.1 & 5.1
G5.3	Address the under-estimation and under-resourcing of human capital investment needed to operate the necessary infrastructure to support FAIR data, and foster core intermediary expertise to maximise the uptake and use of national and international infrastructures.	A3.1 & 5.1
G5.4	Support open research infrastructures as an integral part of research and innovation strategies, prioritised via a national roadmap for RIs. A coherent and sustainable approach needs to encompass all components that support the research ecosystem, take advantage of economies of scale, and allocate funding for adequate periods to meet the longer term planning goals of research infrastructures.[39]	A5.4 & 5.5

38 For discussion of data stewardship job profiles and competencies see *Professionalising data stewardship in the Netherlands* https://doi.org/10.5281/zenodo.4320504

39 A roadmapping process for research infrastructures should guide future coordinated actions linked to this National Action Plan, helping to develop, evaluate and prioritise investment. See NORF's policy brief on a *Research Infrastructure Roadmapping Process*: https://doi.org/10.7486/DRI.jm21jd42w

Actions

Action	Description	Key stakeholders	Timeline
A5.1 Support the development and professionalisation of research data stewardship nationally.	A5.1.1 Establish a national data stewardship network across research performing organisations, funders, and related research support services and infrastructures to build national capacity and develop a collective voice and pool of expertise.[40]	NORF, RPOs, RFOs, research infrastructures	2022-24
	A5.1.2 Linked to A3.1, professionalise, embed and create sustainable career pathways for the role of the data steward within the national landscape, including fostering links with industry representatives to identify common skillsets.	RPOs, IUA, THEA, DFHERIS, staff unions, RFOs, research infrastructures	Ongoing
	A5.1.3 Linked to A3.1, develop a national approach to data stewardship training informed by best practices internationally which addresses training requirements at all levels.	RPOs, RFOs, research infrastructures	2023-24
A5.2 Support national services for storing, managing, sharing and preserving research data.	A5.2.1 Develop a national shared data storage service for active data, starting with a pilot for a small number of research groups with the aim to grow the service into a national service.[41]	RPOs, RFOs, research infrastructures (e.g. HEAnet, ICHEC)	2022-24
	A5.2.2 Linked to A5.4, identify and support further services to address current gaps in national level support for research data management during active research and post-project preservation and FAIR sharing. For example, services for immutable storage, sensitive data (Safe Havens), services for participation in future ESFRI projects, and European Open Science Cloud (EOSC) services.	RPOs, RFOs, research infrastructures (e.g. HEAnet, ICHEC)	2024-30
	A5.2.3 Strongly recommend widespread certification of data infrastructures using international standards, such as the CoreTrustSeal.[42]	RPOs, RFOs, research infrastructures	Ongoing

40 Models for such a network include the Dutch National Coordination Point Research Data Management: https://www.lcrdm.nl/en. See NORF's policy brief on *Coordinated Support for Data Stewardship*: https://doi.org/10.7486/DRI.js95m610b

41 See NORF's policy brief on *National Shared Data Storage Infrastructure*: https://doi.org/10.7486/DRI.jh34hh58j

42 CoreTrustSeal: https://www.coretrustseal.org/

A5.3 Align policies for the management and sharing of research data and other outputs.	A5.3.1 Linked to A3.2 & 3.3, recognise and reward the documentation and sharing of research data, software and a diverse range of outputs and activities in the assessment and evaluation of research and researchers.	RPOs, RFOs	Ongoing
	A5.3.2 Create a national research data management framework informed by established tools and matrices[43] to include elements such as national reference policy guidelines, methods of versioning and communication changes in research data policies to key stakeholders, and adoption of a framework or criteria for the selection of trustworthy repositories. With respect to data management planning, converge on a Data Management Plan (DMP) template framework with disciplinary guidance as appropriate and establish a national approach to the use and evaluation of DMPs during the research lifecycle.	NORF, RPOs, RFOs	2023-24
A5.4 Contribute to a Research Infrastructure roadmapping strategy.	A5.4.1 Strongly advocate for and contribute to a coherent, transparent Research Infrastructure roadmapping strategy, process, funding model and governance structure, drawing on best practice and lessons learned from comparable EU Member States (as recommended by successive high-level national reports since 2007).	DFHERIS, NORF, RPOs, RFOs, research infrastructures	2022-24
	A5.4.2 Develop a process to operationalise the Principles of Open Scholarly Infrastructure (POSI) in evaluating and monitoring RIs.[44] Similarly, require low-barrier access to RIs by third-party researchers based on scientific merit.	DFHERIS, NORF, RPOs, RFOs, research infrastructures	2023-24

43 For example, see Science Europe's *Practical Guide to Sustainable Research Data: Maturity Matrices* https://doi.org/10.5281/zenodo.4769702 and FAIRsFAIR's *Creating and Sharing Structured Policy Descriptions* https://doi.org/10.5281/zenodo.6281105

44 Principles of Open Scholarly Infrastructure: https://openscholarlyinfrastructure.org/

A5.5 Strengthen connections to international infrastructures supporting open research and research data, including the EOSC.	A5.5.1 Through consultation with national stakeholder groups, promote active engagement with the European Open Science Cloud (EOSC). Support the development of EOSC by contributing Irish infrastructures and datasets to the EOSC platform, promoting EOSC resources, and supporting Irish researchers and institutions to use EOSC's system of federated data and services. As part of national participation, encourage membership of the EOSC Association.[45]	Research infrastructures (e.g. HEAnet), DFHERIS, NORF, RPOs, RFOs	Ongoing
	A5.5.2 Support the work of the Research Data Alliance (RDA)[46] in defining and developing best practices for data sharing, stewardship and reuse through regional membership of the RDA.	DFHERIS, NORF, research infrastructures	Ongoing

45 EOSC Association: https://eosc.eu/
46 RDA: https://www.rd-alliance.org/

Coordination, implementation and monitoring

Implementation of the *National Action Plan for Open Research* will be overseen by Ireland's National Open Research Forum (NORF) within the context of Impact 2030. Funding of €1.725 million has been provided by the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) through the Higher Education Authority (HEA) which will support the delivery of priority actions. This funding has been allocated to the Digital Repository of Ireland (DRI) for management and distribution through an onward allocation process overseen by NORF.[47] These funds will support actions in the plan that commence in 2022, including pilots that are necessary to scope, test and identify future activities and develop national-level services. Beyond this initial commitment, further national and other funding will be sought as part of ongoing coordination activities by DFHERIS and NORF.

The transition to open research is a shared responsibility across the research system, with local efforts required to implement policies, infrastructure and incentives within research performing and research funding organisations. National-level actions are designed to encourage a coordinated approach and complement and connect with efforts at international and local levels. In the implementation of this plan, particularly in terms of infrastructure, actions should be guided by the principles outlined in the *UNESCO Recommendation on Open Science* regarding open science infrastructures, the Budapest Open Access Initiative recommendations regarding open infrastructure, and the widely adopted Principles of Open Scholarly Infrastructure.[48]

Periodic reviews of the National Action Plan will be conducted every three years to review progress made and release updates with further actions. A successor plan will be considered in 2030, in conjunction with future national strategies for research and innovation.

Progress and goals

In relation to the continued coordination of the open research agenda and implementation of the National Action Plan, the following goals have been identified:

Goal	Description	Related actions
G6.1	Monitor, track and assess progress of the National Action Plan. Respond to and support future developments in open research.	A6.1, 6.2 & 6.4
G6.2	Ensure transparency in the allocation of funding and resources.	A6.1
G6.3	Achieve robust coordination and engagement at a national scale for actions through continuous communication and awareness-raising.	A6.1 & 6.3

47 Six projects to progress priority actions have been funded by the NORF 2022 Open Research Fund through an open, competitive, internationally peer-reviewed grants programme (for details see https://norf.ie/index.php/funding/).

48 *UNESCO Recommendation on Open Science*: "Open science infrastructures are often the result of community-building efforts, which are crucial for their long term sustainability and therefore should be not-for-profit and guarantee permanent and unrestricted access to all public to the largest extent possible." (p. 12); Budapest Open Access Initiative 20th Anniversary Recommendations: "We recommend hosting and publishing OA texts, data, metadata, code, and other digital research outputs on open, community-controlled infrastructure" (https://www.budapestopenaccessinitiative.org/boai20/).

Actions

Action	Description	Key stakeholders	Timeline
A6.1 Coordinate Ireland's open research agenda.	A6.1.1 Support the ongoing coordination of the national open research agenda through the National Open Research Forum (NORF). Participate in the Council for National Open Science Coordination (CoNOSC) to share and collaborate with international peers.[49]	DFHERIS, NORF	Ongoing
	A6.1.2 Seek national funding and identify additional sources for the implementation of nationally coordinated actions to progress open research.	DFHERIS, NORF	Ongoing
	A6.1.3 Strengthen links between open research and related agendas and activities including research culture, research integrity, open education and public engagement with research (also referred to as citizen science).	DFHERIS, NORF, NRIF, RPOs, RFOs	Ongoing
A6.2 Establish a national monitoring service for open access and open research more broadly.[50]	A6.2.1 Develop a monitor for open access at the national level, initially through pilot reports and a national dashboard to publish, analyse and track progress towards 100% OA.[51] As part of open access monitoring, agree a national definition of OA and analyse overall costs to the national research system. The monitoring service will be driven by community requirements and draw on open data and tools wherever possible, including institutional sources identified under Action 3.1.[52]	DFHERIS, NORF, HEA, RPOs, RFOs, research infrastructures (e.g. IReL)	2022-24
	A6.2.2 Establish a national, high-level working group to make recommendations on the design and implementation of a national research reporting, monitoring and evaluation system that enshrines open research principles and aligns with international best practice.[53]	DFHERIS, NORF, HEA, RPOs, RFOs	2023-24
	A6.2.3 On the basis of recommendations made, expand the national monitor to encompass further aspects of open research activity and measures relevant to the national context. This may include indicators related to FAIR data, policies and societal impact.	DFHERIS, NORF, HEA, RPOs, RFOs, research infrastructures	2025-27

49 Council for National Open Science Coordination: https://conosc.org/

50 National level monitoring will be aligned with related international monitoring efforts underway via the European Open Science Cloud and the European Research Area (ERA) Policy Agenda.

51 See NORF's policy brief on *National Open Access Monitoring*: https://doi.org/10.7486/DRI.j673dv060

52 Science Europe (2021). *Open Access Monitoring: Guidelines and Recommendations for Research Organisations and Funders*. https://doi.org/10.5281/zenodo.4905554

53 See NORF's policy brief on *National Reporting and Evaluation Supporting the Transition to an Open Research Environment*: https://doi.org/10.7486/DRI.zg657b23t

A6.3 Conduct a national-level survey on open research.	A6.3.1 Initiate a national multi-stakeholder survey on open research awareness, attitudes, skills, needs and policy alignment. Results to be used as a baseline for future reviews (A6.4) as well as informing current and future actions (e.g. A5.1, 5.2 & 5.3).	DFHERIS, NORF	2023-24
A6.4 Conduct periodic reviews and updates of the National Action Plan.	A6.4.1 Conduct periodic reviews and updates of the National Action Plan to report on progress made and specify further actions for 2025-27 and 2028-30, aligned with international developments in open research and Impact 2030: Ireland's Research and Innovation Strategy.	DFHERIS, NORF	2025 & 2028

7 Supporting documents and further references

The following NORF publications have informed the development of this National Action Plan and provide further background and rationale for the actions described.

NORF publications

NORF. (2019). *National Framework on the Transition to an Open Research Environment*. https://doi.org/10.7486/DRI.0287dj04d

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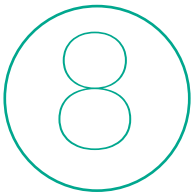

Glossary and acronyms

AAM	Author's Accepted Manuscript. The version of an article that has been through a formal peer-review but does not include publisher's copy-editing, typesetting and formatting.
APC	Article Processing Charge. A fee paid to the publisher to make articles Open Access at the time of publication.
DFHERIS	Department of Further and Higher Education, Research, Innovation and Science
DOI	Digital Object Identifier
DORA	San Francisco Declaration on Research Assessment (also SFDORA)
DMP	Data Management Plan
EOSC	European Open Science Cloud. An initiative to offer researchers a virtual environment with open and seamless services for storage, management, analysis and re-use of research data, across borders and scientific disciplines by federating existing data infrastructures.
EPA	Environmental Protection Agency
FAIR	Findable, Accessible, Interoperable and Reusable. Set of agreed principles applicable to research data.
HEA	Higher Education Authority. The statutory policy-advisory body for higher education in Ireland.
HEAnet	Ireland's National Education and Research Network (NREN)
HEI	Higher Education Institution
HRB	Health Research Board
IRC	Irish Research Council
IReL	IReL is a nationally funded e-resource licensing consortium providing access to leading Science Technology and Medicine (STM) and Humanities and Social Sciences (HSS) resources on behalf of participating Irish publicly funded higher education institutions.
IUA	Irish Universities Association
NORF	Ireland's National Open Research Forum
NRIF	Ireland's National Research Integrity Forum
OA	Open Access
ORCID	ORCID provides a unique persistent digital identifier (an ORCID iD) that distinguishes researchers and a record that supports automatic links among all professional activities.
OSPP	Open Science Policy Platform. High Level Advisory Group established by the Commission in May 2016 to provide advice on the development and implementation of Open Science in Europe.
Plan S	Plan S is an initiative for Open Access publishing that was launched in September 2018. Plan S is supported by cOAlition S, an international consortium of research funding and performing organisations.
RDM	Research Data Management
RFO	Research Funding Organisation: an organisation with significant responsibility for managing public research funding, i.e., which has a responsibility and authority to launch calls for proposals and grant money to scientific research.
RPO	Research Performing Organisation: an organisation receiving public funding for performing scientific research.
SFI	Science Foundation Ireland
TA	Transformative agreement. An umbrella term describing agreements negotiated between institutions (libraries, national and regional consortia) and publishers in which former subscription expenditures are repurposed to support open access publishing of the negotiating institutions' authors.[54] Transformative agreements typically jointly pay for both subscription access to closed content while also allowing affiliated authors to publish works open access without author-facing fees.
THEA	Technological Higher Education Association
VoR	Version of Record. The final typeset and edited version of an article.

54 See https://esac-initiative.org/about/transformative-agreements/

Appendix: Summary and timeline of actions

*Priority actions to be progressed by projects funded by the NORF 2022 Open Research Fund and commissioned expert reports

Summary of action	Short description	2022-2024	2025-2027	2028-2030
A3.1 Upskill researchers and relevant professional support staff in OR	A3.1.1 National OR training programme*			
	A3.1.2 Training of professional support staff			
	A3.1.3 Accreditation			
	A3.1.4 National network of OR trainers*			
	A3.1.5 Career pathways for support staff in OR			
A3.2 System-wide recognition and reward of OR	A3.2.1 Identify and progress system-level changes			
	A3.2.2 Monitor impact on specific groups			
	A3.2.3 Programme for public engagement with research			
A3.3 Align research assessment with the principles of OR	A3.3.1 Sign and enact DORA, RRA Agreement etc.			
	A3.3.2 National statement on the adoption of RRM			
A3.4 Community OR networks	A3.4.1 Support peer-led and expert networks for OR			
A3.5 OR in funding programmes	A3.5.1 OR in funding programmes and awards			
A4.1 Strengthen OA repositories	A4.1.1 OA repository assessment and alignment*			
A4.2 Support rights retention	A4.2.1 Legal assessment of rights retention routes*			
A4.3 Support bibliodiversity	A4.3.1 Feasibility study for Diamond OA platform*			
	A4.3.2 Expand OA support			
	A4.3.3 Support open infrastructure for scholarly comms			
	A4.3.4 Helsinki Initiative on Multilingualism			
A4.4 Invest in Persistent Identifier (PID) infrastructure	A4.4.1 Further adoption of ORCID			
	A4.4.2 National PID roadmap*			
A4.5 Align policies for OA	A4.5.1 Develop and implement OA policies			
A5.1 Support the development and professionalisation of research data stewardship nationally	A5.1.1 Establish a national data stewardship network*			
	A5.1.2 Professionalise the role of the data steward			
	A5.1.3 National approach to data stewardship training*			
A5.2 Support national services for storing, managing, sharing and preserving research data	A5.2.1 National shared data storage service (pilot)*			
	A5.2.2 Identify and support further RDM services			
	A5.2.3 Certification of data infrastructures			
A5.3 Align policies for the management and sharing of research data and other outputs	A5.3.1 Reward documentation and sharing of data etc.			
	A5.3.2 National research data management framework			

Summary of action	Short description	2022-2024	2025-2027	2028-2030
A5.4 Contribute to a Research Infrastructure roadmapping strategy	A5.4.1 Research Infrastructure roadmapping strategy			
	A5.4.2 Principles of Open Scholarly Infrastructure			
A5.5 Strengthen connections to international infrastructures	A5.5.1 Support the European Open Science Cloud			
	A5.5.2 Support the Research Data Alliance			
A6.1 Coordinate Ireland's open research agenda	A6.1.1 Support coordination via NORF			
	A6.1.2 Resourcing of national actions			
	A6.1.3 Strengthen links between OR & related agendas			
A6.2 Establish a national monitoring service for OA and OR more broadly	A6.2.1 Establish a national OA monitor*			
	A6.2.2 Reccs on reporting, monitoring and evaluation			
	A6.2.3 Expand the national monitor			
A6.3 National-level OR survey	A6.3.1 National multi-stakeholder survey on OR*			
A6.4 NAP updates	A6.4.1 Conduct NAP periodic reviews and updates			

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