

Indian Institutional Repositories: Policies & Practices

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Abstract

The establishment of Institutional Repositories or Institutional Digital Repository (IDR) is a policy issue. There are large number of Research & Development Institutions existing in India largely dependent upon various research councils, ministries and departments for their funding as well as broader policy guidelines. The mandatory policies of these funding agencies are helpful in creating organization wide culture of repositories. The Open Access policy indicatives are being taken by the research organizations like CSIR, ICAR, DBT & DST as well as individual research institutions like NIO, ICRISAT etc. The Open Access Policies are being framed under the directions of International Open Access initiatives like Budapest Open Access Initiative (BOAI), Confederation of Open Access Repositories (COAR), SHERPA and SPARC etc. The authors reporting funded research have to comply with funder's Mandate, Publisher's Copyright and Self-archiving Policies and Organizational/ Institutional Policies. The researchers are expected to deposit metadata and full text of acceptable version of article as soon it is accepted for publication, considering embargo period specified. As the Open Access Movement is gaining momentum, there is no dearth of Open Access Journals and Repositories only the Open Access policies and practices within an organization are crucial for the success of IDRs.

Keywords: Institutional Digital Repository (IDR), Open Access, Open Access Policies, Embargo Period, Self-archiving Policies.

1. Repositories and Policy Requirement

The phenomenon of serial crisis and the emergence of Internet and other enabling technological advancements have led to the development of Institutional Repositories (IRs) or Institutional Digital Repositories (IDRs). IDRs are the most preferred route for achieving Open Access to the institutional scholarly material more specifically the peer reviewed journal articles.

The Budapest Open Access Initiative (BOAI) marks the formal beginning of Open Access Movement in 2002. Reinforcing the importance of Institutional Repositories the BOAI (2012) recommendations regarding Open Access for next 10 years require every institution of higher education to have a repository for archiving peer reviewed research articles.

“Every institution of higher education should have a policy assuring that peer-reviewed versions of all future scholarly articles by faculty members are deposited in the institution's designated repository”

The pressure of the academic community, Open Access initiatives and specially the mandates of research funding agencies for open access to public funded research have further augmented the growth and development of IDRs. In the developing countries like India most

of the research funding is through public funds. The huge amount of public money is spent on research therefore most of the research funding agencies world over whether in private sector or government sector are making it mandatory for the research grant recipients to provide public access or Open Access to the results of public funded research.

Internationally the mandates of US National Institute of Health (NIH) and Wellcome Trust have been quite successful. The BOAI has strongly emphasized in its recommendation 1.3 mentioned below that the research funding agencies whether public or private should have a policy (mandatory policy) for providing Open Access to peer reviewed research articles, reporting funded research through repository.

"Every research funding agency, public or private, should have a policy assuring that peer-reviewed versions of all future scholarly articles reporting funded research are deposited in a suitable repository and made Open Access as soon as practicable."

2. Open Access Policy vs. Mandates

Harnad has strongly suggested that Open Access policies always fail if they are merely recommendations or requests, even if strongly encouraged. Therefore to be successful, Open Access Policy should have mandatory provisions for deposits, not voluntary whether it is research funding agency or an educational and research institution. Confederation of Open Access Repositories (COAR) recommends that

- Policies must be mandatory
- Policies must be monitored for compliance
- Policies must be consistent across agencies

Compliance of mandatory policies is required to be monitored by adopting various ways such as Grant Numbers may be made compulsory for the grantee to be included in the metadata of deposited papers resulting from funded research alternatively progress reports of research projects or any future grant proposals should compulsorily include manuscript submission reference numbers like persistent identifiers such as URN, DOI of the article submitted in any Open Access Repository as in the case of NIH the mention of reference number of PubMed Central (PMC) is pre requisite for grant proposal and progress report of funded research.

3. Indian Policy Initiatives

According to Directory of R & D Institutions (2015) there are 5710 R & D institutions in India. According to this directory in India following are the major scientific R & D agencies.

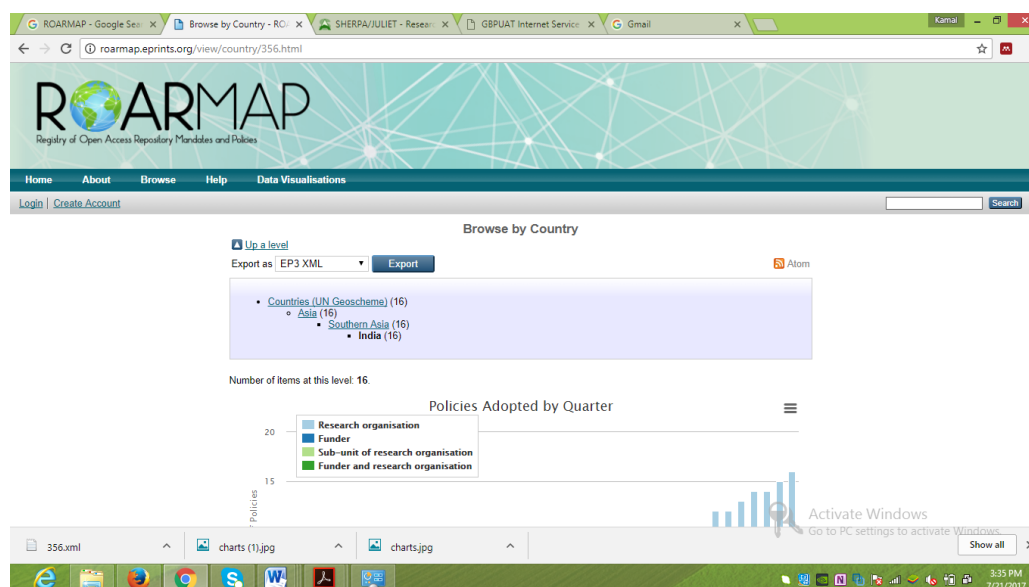
- Defense Research and Development Organization (DRDO)
- Department of Atomic Energy (DAE)
- Department of Space (DOS)
- Indian Council of Agricultural Research (ICAR)
- Indian Council of Medical Research (ICMR)
- Ministry of Communications & Information Technology (MCIT)
 - A - Department of Information Technology (DIT)
- Ministry of Earth Sciences (MES)
- Ministry of Environment and Forests (MEF)
- Ministry of New and Renewable Energy (MNRE)
- Ministry of Science and Technology (MST)

- A - Council of Scientific and Industrial Research (CSIR)
- B - Department of Biotechnology (DBT)
- C - Department of Science and Technology (DST)

These 5710 R & D institutions include 606 institutions in Central Sector, 1066 in State Sector, 538 Universities comprising of Central, State, Deemed, Private Universities and Institutes of National Importance, 477 SIRO, 1756 DSIR Registered institutions, 1091 Unregistered CMIE, 3324 Private Sector institutions comprising of DSIR recognized in-house R&D units, Scientific and Industrial Research Organizations (SIRO) and units from CMIE database performing R & D activities but not recognized by DSIR, 131 Central Public sector institutions, 45 State Public sector institutions, 176 Public Sector (Central & State) industries. The research output of all these institutions especially the public funded research must be made available in open access through institutional repository or a central repository of the organization.

All the research institutions fall under various Government Ministries / Departments / Agencies which fund these institutions and decide their broader objectives and policies of their respective institutions. Therefore wherever these organizations have adopted Open Access principles there is wide spread establishment of repositories within the organization. Since mandatory open access policies play a very important role for the success of IDRs. Therefore both Academic & Research Institutions as well as Research Funding Agencies are required to adopt mandatory policies. The visibility of Indian policy initiatives in various policy registries has been discussed.

3.1 ROARMAP



Source: <http://roarmap.eprints.org/view/country/034.html>

The Registry of Open Access Repository Mandates and Policies (ROARMAP) registers the Open Access Policies and Mandates of research funding agencies, research organizations and research institutions which are practicing principles of Open Access as envisaged in BOAI and Berlin Declarations. ROARMAP database may be browsed for a particular country. The total 876 Mandates and Policies are listed in this database from all over the world out of which 16 Policies and Mandates are listed from India under following types of Institutions.

Research Funder: 5
Research Organization: 9
Sub-unit of Research Organization: 1
Funder and Research Organization: 1

It is apparently required by the Indian research institutions and organizations to formulate appropriate mandatory policies for the success of their repositories. The Indian organizations are gradually taking policy initiatives. It is evident from following details that prominent research funding agencies like CSIR, ICAR and DBT & DST have adopted mandatory open access policies in India which are applicable on all their constituent research institutions and research grantees. The following policies and mandates are listed from India in ROARMAP.

Research Funders

1. CGIAR: <http://www.cgiar.org/resources/open-access/>
2. Council of Scientific and Industrial Research (CSIR) : <http://www.csircentral.net/mandate.pdf>
3. Department of Biotechnology (DBT) and Department of Science & Technology (DST)
4. [http://dst.gov.in/whats_new/whats_new14/APPROVED%20OPEN%20ACCESS%20POLICY-DBT&DST\(12.12.2014\).pdf/](http://dst.gov.in/whats_new/whats_new14/APPROVED%20OPEN%20ACCESS%20POLICY-DBT&DST(12.12.2014).pdf/)
5. Indian Council of Agricultural Research (ICAR): <http://icar.org.in/en/node/6609>
6. National Knowledge Commission: <http://knowledgecommissionarchive.nic.in/>

Research Organizations

1. Bharathidasan University: <http://www.bdu.ac.in/>
2. Council of Scientific and Industrial Research (CSIR): <http://www.csircentral.net/mandate.pdf>
3. Institutional Repository@AIKTC: <http://aiktcdspace.org:8080/jspui/krrc-oai.htm/>
4. International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
<http://openaccess.eprints.org/index.php?archives/579-Indias-3rd-Green-Open-Access-Self-Archiving-Mandate-Planets-82nd.html/>
5. M S University: <http://msubaroda.ac.in/>
6. Madurai Kamaraj University: <http://www.mkuniversity.org/>
7. Mahatma Ghandi University: <https://www.mgu.ac.in/>
8. National Institute of Oceanography, NIO: <http://www.nio.org/>
9. National Institute of Technology (NIT), Rourkela: <https://nitrkl.ac.in/websiteNew/>

Sub-unit of Research Organizations

1. Indian Institute of Technology Hyderabad, IITH
<http://raiith.iith.ac.in/policies.html>

Funders and Research Organizations

1. Indian Institute of Horticultural Research (IIHR), Bengaluru
<http://www.iihr.ernet.in/>

3.2 SHERPA Juliet

SHERPA Juliet is a searchable database providing up-to-date information regarding research funding agencies. The details of the policies and the requirements to be fulfilled by the research grantees on publication of research in open access through journals (open access or hybrid) or through open access archiving, are provided. According to SHERPA Juliet the key ingredients of an ideal Open Access Archiving Policy of a funding agency are:

- Deposit in a repository providing free of charge and unrestricted access.
- Deposit Author's final version (peer-reviewed) or published version.
- Deposit at the time of acceptance of publication.

Under the Data Archiving Policy the funding agencies are increasingly requiring grantees to submit research data for public archiving within certain period of time so that research may be validated. In SHERPA Juliet database search for India retrieves only one result the Indian Council of Agricultural Research (ICAR).

The screenshot shows the SHERPA/JULIET website interface. At the top, there is a navigation bar with links for Home, Search, Funders, Key to symbols, Notify a policy, and About. Below this, the search results for 'India' are displayed, showing one funder found: the Indian Council of Agricultural Research (ICAR). The ICAR entry includes a link to its Open Access Archiving policy. The policy details are as follows:

- Open Access Archiving:**
 - Whether to Archive:** * Requires deposition in Open Access archives
 - What to Archive:** * Peer-reviewed publications, * Author's final version (Required), * Unspecified format
 - When to Archive:** * At the earliest possible opportunity, * Acceptable embargo: up to 12 months after publication, * Metadata must be deposited at the date of publication
 - Where to Archive:** * In appropriate institutional repositories (Required)
 - Archiving Conditions:** * [No information]
- Open Access Publishing:**
 - Whether to Publish:** * No policy for publication in Open Access publications
 - Where to Publish:** * [No information]
 - Publishing Conditions:** * [No information]
- General:**
 - General Conditions:** * Effective for all new projects from 13-Sep-2013, * Applies to all projects funded totally or partly by the Indian Council of Agricultural Research, * Applies to all work conducted using the facilities of the Indian Council of Agricultural Research, * Policy also applies to MSc and PhD thesis and dissertations
 - Policy Links:** * ICAR adopts Open Access Policy

Source: <http://www.sherpa.ac.uk/juliet/index.php>

ICAR has adopted a fairly comprehensive policy on 19th May 2013 with the provisions for open access to all its publication as well as to open access archiving. The policy requires each ICAR institute to setup IRs and also the provision of central harvesting. As a policy ICAR has provided open access to all its journals and the conference proceedings and other literature published with its financial support. As a research funding agency ICAR has strong policy which states

“The authors of the scholarly literature produced from the research funded in whole or part by the ICAR or by other Public Funds at ICAR establishments are required to deposit the final version of the author's peer-reviewed manuscript in the ICAR institute's Open Access Institutional Repository.”

The policy also requires the submission of full text M.Sc. and Ph.D. thesis or dissertations along with their metadata in the ICAR institute's repository with the maximum of one year embargo period. This policy has included most of the necessary provisions for the implementation of Open Access within the organization.

4. Policies of Scholarly Journals

If a scholar wants to self-archive a peer reviewed research paper in a repository he is subjected to the policies of the institution where research was conducted, policies of the research funding agency and peer reviewing agency or the journal publisher managing the peer review process. The publishers of scholarly journals have strong policies to control the copyright and access of these articles. The business model, copyright, access and use policies of these publishers are all set to reap maximum commercial benefits besides the academic

quality control through various peer review mechanisms. In order to ensure the self-archiving or open access to the peer reviewed research articles, it is necessary for both the Research Institutions where research is being conducted and resources are being used and the Research Funding Agencies spending huge public money in public interest to frame strong and mandatory Open Access policies. There should also be a mechanism to ensure compliance of these mandatory policies.

The authors have many choices for ensuring Open Access to the scholarly output of funded research. One is the Open Access Journals of author's choice or a commercial Hybrid Journal with the option of Paid Open Access, where authors have to pay certain Author Charges to meet the expenses of peer review conducted by a prestigious publisher, for ensuring open access in the hybrid journal. The research funding agencies are now making provisions for paying Author Charges from the research grant but the compliance to funder's Mandate is must. Another choice is to select the journals which allow open access in order to accommodate the Mandates of funding agencies. Authors may also select the journals which allow self-archiving to a particular version of the journal article. After Publishing articles in such journals author may ensure open access by depositing the peer-reviewed Author's Final Draft version or published version in appropriate designated repository. List of Journals supporting self-archiving is available in **SHERPA/RoMEO** database. According to **SHERPA/RoMEO** current statistics out of 2386 Journal publishers listed on the site 74% (41% Green and 33% Blue) allow open access to Post-prints while 26% (6% Yellow and 20% White) do not allow open access to any peer reviewed version of research article.

RoMEO colour	Archiving policy	Publishers	%
green	Can archive pre-print and post-print	987	41
blue	Can archive post-print (ie final draft post-refereeing)	777	33
yellow	Can archive pre-print (ie pre-refereeing)	151	6
white	Archiving not formally supported	471	20

Source: <http://www.sherpa.ac.uk/romeo/statistics.php?la=en&fIDnum=|&mode=simple>

5. Choice of Version for Open Access

The research scholars communicating output of research in journal for publication is a long process involving various steps. These steps result in various versions of an article which are closely related in intellectual contents but differ in academic value and significance of copyright. The knowledge of various versions of journal article is also important in the context of policies of journal publishers and funding agencies regarding open access.

A rough draft of research paper intended for publication in the journal put up for discussion is commonly known as working paper or discussion paper after a series of revisions it is finally submitted to the journal for peer review. The version of research article prior to the peer review process of journal is termed as Pre-Print version. During the process of peer review a series of revisions take place between reviewer and author and the final draft of article incorporating all the revisions is submitted by author to publisher and accepted for publication is termed as the Author's Final Draft version which incorporates all the major revisions in the process of peer review. Publisher finally does the required changes in setting, design and formatting etc. to give conventional look of the journal. The final published

version of the article is termed as the Publisher's PDF version. Author's Final Draft version and Publisher's PDF version are intellectually superior to the Pre-print version, as the later one has not gone through the important process of peer review or research validation. Therefore both the peer reviewed versions are referred as Post-prints in contrast to non-peer reviewed version Pre-prints. Some repositories have separate Pre-print collection of research articles as measure of version control. It is the common practice to mention the version of the article if repository is archiving more than one version of an article. Versions Toolkit for authors' researchers and repository staff identifies following various versions of a research article.

- **Draft Version:** Early version circulated as work in progress
- **Submitted Version:** The version that has been submitted to a journal for peer review
- **Accepted Version:** Author-created version incorporating referee comments and is accepted for publication
- **Published Version:** The publisher-created published version
- **Updated Version:** Updated since publication

The repository content policy decides which version of a research article will be acceptable in the repository. The choice of version largely depends upon the copyright policies of the publishers, mandate of the funding agency or negotiation with publishers for securing self-archiving rights through author addendum and other instruments. Most of the publishers including leading publishers like Elsevier and Springer etc. mostly allow Author's Final Draft version of the research article for self-archiving in the repository. Therefore the Author's Final Draft version of the research article is the most preferred version for self-archiving. Authors remain largely unaware that which version of the article may be deposited in the repository. SHERPA/RoMEO and SPARC are two excellent resources may be referred to authors to know which particular version is permitted by a listed publisher for self-archiving.

The Versions Identification Framework provides a set of guidelines on versions of digital objects such as images, text and data etc. to clarify the version status of an object to end user. It is required to provide version information within the object and as well as in the metadata. The repositories may use measures like file with version, ID tag, watermark etc. to keep control over versions.

Authors create various versions of a research article after a series of revisions. It is difficult for them to keep control over various versions specially the Author's Final Draft version or accepted version of article. Keeping in view the significance of Author's Final Draft version extensive advocacy in this regard is required by the repository managers.

6. Time of Deposit and Open Access

The Open Access recommends for the immediate deposit and immediate open access for the scholarly output of the institution in order to ensure immediate access to scholars. In the context of a Journal article immediate accessibility refers to the free online accessibility of a peer reviewed research article as soon as possible after its acceptance for publication by a peer reviewed journal. According to Harnad "*The author's final, peer-reviewed draft (post print) should be deposited in the author's IR immediately upon acceptance for publication*".

BOAI also recommends “*Deposits should be made as early as possible, ideally at the time of acceptance, and no later than the date of formal publication*”. This is an ideal situation but in practice the Immediate Open Access largely depends upon the self-archiving policies of the concerned peer reviewed Journal publisher. According to SHERPA/RoMEO statistics out of 2386 Journal publishers listed on this site 74% (1754 journal publishers) allow self-archiving of Post-prints. But a true Open Access requires Immediate Open Access. According to Harnad most of the journals now endorse immediate Open Access self-archiving. The Journal publishers which do not allow Immediate Open Access may impose certain embargo period, during this period article remains in closed access. “*Immediate Deposit / Optional Access*” ([ID/OA](#)) is one alternative for accessing full text of the article during embargo period. Therefore depending upon how Open Access Policy of the institution address to the publisher’s policies and embargoes regarding Immediate Deposit and Immediate Open Access following three propositions emerge.

- Immediate Deposit and Immediate Open Access to both metadata and full text.
- Immediate Deposit of metadata and full text. Immediate Open Access to meta-data and optional Access to full text.
- Immediate Deposit and Immediate Open Access to meta-data and Optional Deposit and Open Access to full text.

Open Access policies may adopt any of these three options. In order to accommodate certain embargo period most of the policies prefer to adopt second or third option, the immediate access is provided to metadata while access to full text is subjected to specified embargo period. The authors may deposit metadata and full text of the article according to the policy of the funding agency and corresponding permissions from publishers.

7. Embargo Period

The acceptable embargo period in any policy is variable generally between 6 months to 12 months. The acceptable embargo period may be different for different disciplines. e.g The Research Councils, UK recommends an embargo period of 6 months for sciences and 12 months for social sciences. Different embargo periods may be set for different types of contents e.g. for ETD it may be different and for peer-reviewed research articles it may be different. ICAR has recommended an acceptable embargo period of 12 months in its Open Access policy for both peer-reviewed research articles as well as ETD. Any embargo period is counted from the official date of publication of a research article. The embargo period decided by the Open Access policy of any funding agency will super-cede the embargo periods set in the Open Access policy of any institution. e.g. Wellcome Trust has 6 months embargo period and NIH has 12 months embargo period.

Open Access policies to be adopted by the institutions must address to the issue of acceptable embargo period. The minimum requirement of the policy may be to submit meta-data with full text at the time of submission of author’s final draft of accepted research paper to the publisher. The meta-data will be in immediate Open Access upon submission while full text will remain in closed access till the completion of embargo period. The acceptable embargo period may vary from 6 months to 12 months for full-text considering the subject requirements and publisher’s prevalent policies. If the journal publisher does not accepts the embargo period of organization / institutions Open Access policy, authors may negotiate with publishers or may be provided with the option of Author Publication Charges (APC) or waiver option. After immediate deposit of the metadata during the embargo period access to full text of article may be provided through Request a Copy button.

8. Conclusions

The self-archiving or deposit in a repository is a complex issue governed by various policies of the stakeholders like research organizations / institutions, funding agencies and publishers. The researchers conducting funded research in an institution are subjected to all these policies while reporting results of their research in a peer reviewed journal. The ultimate objective is to ensure Open Access to the public funded research for wide visibility and accessibility through search engines and harvesting services. The traditionally strong control of publishers over copyright policies and their commercial interests clash with the principles of Open Access. The greater awareness and policy initiatives of Research Organizations, Research Institutions, Research Funding Agencies, Researchers, Scientists and Open Access Community in India and world over has forced the commercial publishers to accept Open Access through Open Access Journals, Hybrid Journals allowing paid Open Access and Journals supporting self-archiving of Post-prints in any form. The tremendous growth of Open Access is all set to change the commercial journal publishing in time to come.

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