

# Report

## Mapping Repositories and their Institutional Open Science Policies in Asia



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DataCite is a global community that shares a common interest: to ensure that research outputs and resources are openly available and connected so that their reuse can advance knowledge across and between disciplines, now and in the future. As a community, we make research more effective with metadata that connects research outputs and resources—from samples and images to data and preprints. We enable the creation and management of persistent identifiers (PIDs), integrate services to improve research workflows, and facilitate the discovery and reuse of research outputs and resources.

DataCite is registered as a non-profit organization in Hannover, Germany with a team distributed across the globe. For any questions or comments about the report please contact us at: [support@datacite.org](mailto:support@datacite.org).

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# Mapping Repositories and Institutional Open Science Policies in Asia

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## Executive Summary

Persistent Identifiers (PIDs), particularly Digital Object Identifiers (DOIs), are crucial for establishing a robust and globally accessible research infrastructure. In Asia, a diverse array of research outputs and resources are produced and published in repositories. However, a significant number of these repositories, and outputs remain undiscoverable in global registries and aggregators. The adoption of DOIs among many Asian repositories is limited, highlighting a broader lack of awareness regarding the value of open PIDs in enhancing research discoverability. This report explores the current landscape of repository and publishing systems across Asia, alongside existing institutional Open Science policies. It emphasizes the need for collaborative efforts among stakeholders to address gaps in PID adoption and awareness. By promoting integration of Open Research practices, including the adoption of PIDs, institutions, researchers, funders, librarians, and governmental bodies can collectively enhance the visibility and accessibility of Asian research on a global scale. The report represents an initial step towards better understanding how to support local communities in Asia in building a more Open Research Infrastructure and promoting Open Science principles.

# 1. Introduction

## 1.1 Open Science and the Value of Open Infrastructure

In the digital age, the landscape of scientific research and innovation is rapidly evolving, and Open Research has emerged as a transformative paradigm that holds immense promise for the advancement of scholarship and knowledge. Open Research represents a fundamental shift in the way research is conducted, shared, and accessed. At its core, Open Research advocates for the open and transparent dissemination of scientific knowledge, data, and methodologies, transcending traditional barriers and fostering collaboration among researchers, institutions, and the public at large. Central to the success of Open Science is the concept of Open Infrastructure, a critical component that underpins this revolutionary approach to scientific inquiry.

Open Infrastructure includes a wide array of digital tools, platforms, and resources designed to facilitate and support the principles of Open Science. These infrastructure elements encompass repositories, collaborative platforms, and open-source software, among others. They are the technological backbone that enables researchers to seamlessly share their research outputs, collaborate across borders, and harness the collective intelligence of the global scientific community. As such, Open Infrastructure is not only integral to the realization of Open Science goals but also contributes to the democratization of knowledge, accelerating the pace of discovery, and addressing pressing global challenges [1, 2].

## 1.2 Role of PIDs in Building a Trusted Research Infrastructure

PIDs are the backbone of building a trusted and sustainable research infrastructure in today's digital age [3]. They serve as unique, unchanging labels for digital objects, such as research papers, preprints, datasets, and even individual researchers, ensuring their enduring recognition, discoverability, and accessibility. PIDs play a pivotal role in enhancing the credibility and longevity of research assets while fostering transparency and trust within the scholarly ecosystem.

In the context of scholarly communication, PIDs offer numerous advantages. They enable accurate and reliable attribution of research contributions, ensuring that authors receive due credit for their work and allowing for the tracking of scholarly impact over time. PIDs also facilitate effective data management and sharing by

providing a stable reference for datasets, which is crucial for reproducibility and data citation. Also, they could help in saving the research sector money [4] and reducing researchers' wasted time in administrative tasks [5].

Moreover, PIDs enhance the discoverability of research outputs by connecting them across diverse platforms and repositories. This interconnectedness not only aids researchers in finding relevant resources but also promotes interdisciplinary collaboration and knowledge integration. PIDs also contribute to the sustainability of research infrastructure by reducing the risk of link rot and ensuring that valuable research remains accessible for future generations.

PIDs empower researchers to navigate the vast landscape of digital information, promote open science practices, and safeguard the integrity and longevity of scholarly contributions. As research becomes increasingly reliant on digital resources, PIDs will continue to play a pivotal role in shaping the future of scholarly communication and knowledge dissemination.

### **1.3 DataCite Role in Building Sustainable Infrastructure**

DataCite is a global community that shares a common interest: to ensure that research outputs and resources are openly available and connected so that their reuse can advance knowledge across and between disciplines, now and in the future. DataCite plays a vital role in building a sustainable and open research infrastructure by providing DOIs for various research outputs and resources such as datasets, preprints, theses, samples, etc. DOIs ensure the long-term attribution, accessibility, and recognition of outputs, a critical component of open science. We make research more effective by connecting research outputs and resources—from data and preprints to images and samples. We support the creation and management of DOIs and metadata records, enhance research workflows with service integration, and enable the discovery and reuse of research outputs and resources. In line with DataCite's vision of connecting research and advancing knowledge and as part of its multi-year strategic plan [6], we started to focus our efforts on exploring ways to remove access barriers and increase adoption and participation on a global scale.



## 1.4 DataCite Global Access Program

In 2023, DataCite launched a [Global Access Program \(GAP\)](#), an initiative to improve access and enable communities in lesser-represented regions to further benefit from our open infrastructure services [7]. The program has been made possible in part by grant 2022-316573 from the Chan Zuckerberg Initiative. DataCite has taken a comprehensive approach to achieve this goal. The GAP is based on three pillars:

- **Outreach:**

In learning from local community stakeholders, we seek to increase awareness of PID infrastructure, establish a platform of collaborations, and build regional partnerships. Also, increasing our engagement efforts through various outreach activities such as webinars, workshops, and events.

- **Technical Infrastructure:**

By analyzing the infrastructure landscape and use of different platforms per region, we aim to better understand the opportunities and challenges for DataCite infrastructure adoption. We seek to collaborate with service providers on enabling integrations for certain regions and setting up user groups to benefit from each other's expertise and/or reuse code for integrations. Through partnerships with local and international stakeholders, the program will seek to support communities in building technical infrastructure per their needs (and design).

- **Funding:**

In 2023, DataCite launched the [Global Access Fund](#) (GAF) to provide financial support for both outreach activities and infrastructure development to enable organizations in GAP regions (Africa, Asia, Middle East, and Latin America) and communities. The GAF will allocate funding to projects in the scope of outreach and engagement activities, open Infrastructure development and integration, and demonstrators that can make a broader impact on a national or regional level. Around 185 applications have been received from Africa, Asia, Middle East and Latin America and [12 institutions](#) from Lebanon, Mexico, Uganda, India, Argentina, Côte d'Ivoire, Zimbabwe, Indonesia, Georgia, Tunisia, Nigeria, and Brazil have been awarded the fund [8].

## 2. Scope and Methodology

This report, a part of DataCite's Global Access Program's infrastructure pillar, delves into the Asia region's research landscape to gain deeper insights into the underlying research infrastructure. Covering two major aspects, the report focuses on A) Infrastructure landscape analysis and B) Awareness landscape analysis. For each aspect, we detail the scope, methodology, data sources, and relevance to the DataCite Global Access Program. This comprehensive examination aims to illuminate the nuances of infrastructure and awareness levels, shedding light on the prospects and obstacles within the Asian context.

### 2.1 Infrastructure Landscape Analysis

#### Scope and Objectives

PIDs are fundamental for establishing a reliable and globally accessible research infrastructure. In the Asia region, where diverse research outputs contribute significantly to the global knowledge pool. The infrastructure landscape analysis aspect aims to address this gap by:

- Analyzing the current infrastructure landscape of repositories and publishing platforms in the Asia region.
- Assessing the awareness and adoption of PIDs within Asia repositories
- Identifying gaps and challenges in PID adoption and awareness.



- Providing insights to promote open science policies and practices in the Asia region.

### **Methodology and Data Sources**

We gathered data from standardized sources to obtain a comprehensive view of the Asia research infrastructure landscape:

- [Registry of Open Access Repositories \(ROAR\)](#)
- [Directory of Open Access Repositories \(OpenDOAR\)](#)
- [Confederation of Open Access Repositories \(COAR\)](#)
- [Registry of Research Data Repositories \(re3data.org\)](#)
- [Public Knowledge Project \(PKP\) Usage Data](#)
- [Dataverse Installations Data](#)
- [DSpace Installations Data](#)
- [DataCite Fabrica](#)

### **Rationale for Selection**

These sources were chosen for their accuracy and coverage in the scholarly community:

- ROAR and OpenDOAR are known for cataloging open access repositories globally.
- re3data.org provides insights into data-sharing practices.
- Usage data from Public Knowledge Project (PKP) installations offers insights into open access publishing platforms.
- Dataverse and DSpace installations provide information on data repositories.

### **Relevance to DataCite Global Access Program**

The information gathered from these sources informs the DataCite Global Access Program's strategy to foster open and accessible research infrastructure in Asia. By analyzing the landscape and identifying gaps in PID adoption, DataCite aims to:

- Develop targeted initiatives for PID integration in Asia repositories.
- Enhance the global visibility of Asia research outputs.
- Facilitate collaborations among stakeholders to promote open science policies.

## Coverage

Within the infrastructure landscape analysis, we cover the following information and data for 21 countries in Asia:

- Number of repositories per country
- Service Providers (SP) per country
- Asia repositories Aggregators and Networks
- Number of Public Knowledge Project (PKP) installations (OJS, OMP, OPS)
- Current PID Systems in Asia region repositories

## Data Collection

- The data was manually collected by checking each country against the selected sources.
- Raw data sheets were curated to fit report requirements [[10](#)].
- Data was processed and charts were produced to illustrate the infrastructure landscape in Asia.

This report serves as a step towards understanding and addressing challenges in adopting Open Science practices in Asia. By leveraging insights gained from the infrastructure and awareness landscape analysis, DataCite aims to contribute to establishing an interconnected global research community adhering to open and transparent principles, thereby fostering sustainable and accessible research infrastructure worldwide.

## 2.2 Institutional Policies and DataCite Adoption in Asian Repositories

### Scope and Objectives

In this section, we analyze the existing open access mandates adopted by universities, research institutions, and research funders across Asia. Additionally, we gathered information on the current adoption of DataCite DOIs in Asian repositories. The goal is to gain insights into the level of awareness regarding open research

infrastructure and the value of adopting PIDs in research workflows. In the current report, our focus is specifically on the adoption of DataCite DOIs, rather than all types of PIDs, to provide a targeted understanding of their integration in the region.

- Analyzing existing institutional policies among open access repositories across Asia.
- Investigating current DataCite memberships, and usage and participation in the region.
- Providing insights into the current state of awareness regarding PIDs, open research practices, and national open science policies.
- Identifying opportunities to incorporate the outcomes into the DataCite Global Access Program to promote open and accessible research infrastructure.

### **Methodology and Data Sources**

We gathered data from a variety of reputable and standardized sources to ensure a comprehensive overview:

- [Registry of Open Access Repositories MAP \(ROARMAP\)](#): This source provides valuable insights into existing institutional policies among open access repositories.
- DataCite internal data: offers information on current DataCite memberships and adoptions in Asia.
- DataCite Fabrica: Utilizing internal DataCite systems such as Fabrica helps in understanding the DataCite Community in the region.

In addition to these sources, we accessed public information available at [www.datacite.org](http://www.datacite.org). Furthermore, to capture a more nuanced understanding, we conducted manual searches and gathered information through interviews with community members. These interviews provided valuable firsthand insights into the current landscape of awareness regarding PIDs, open research practices, and national open science policies in Asia.

### **Rationale for Selection**

The selected sources were chosen for their ability to provide comprehensive and reliable data:

- ROARMAP: Offers insights into existing institutional policies, a crucial aspect of understanding the adoption of open research practices.
- DataCite Dashboard: Provides data on DataCite memberships and adoptions, essential for assessing the reach and impact of DataCite in Asia.
- DataCite Fabica: Internal systems like Fabica help in understanding the composition and activities of the DataCite Community in the region.
- Manual Searches and Interviews: These methods were employed to gather nuanced and firsthand information, ensuring a holistic view of awareness levels in Asia.

### **Relevance to the DataCite Global Access Program**

The insights gathered from this analysis will play a pivotal role in shaping the strategies of the DataCite Global Access Program for fostering open and accessible research infrastructure in Asia. By understanding the current adoption levels and policies, DataCite aims to:

- Develop targeted initiatives to enhance awareness and promote the adoption of PIDs and open research practices.
- Incorporate findings into the Global Access Program to tailor initiatives that align with the needs and challenges identified.
- Strengthen the DataCite Community in Asia by leveraging the identified opportunities for collaboration and advocacy.

### **Coverage**

Within this landscape analysis, we explore the following points:

- Existing institutional policies among open access repositories across Asia.
- Current DataCite memberships and adoptions in the region.
- The DataCite Community in Asia, including board members and expert groups.

### **Data Collection**

- Data from ROARMAP, DataCite Dashboard, and DataCite Fabica were analyzed to understand institutional policies, memberships, and the DataCite Community.
- Public information from [www.datacite.org](http://www.datacite.org) was utilized.

- Manual searches and interviews with community members provided additional insights.

This report's exploration of the infrastructure awareness landscape in Asia aims to illuminate the current state of awareness regarding institutional policies and levels of DataCite DOIs adoptions among repositories, open research practices. By incorporating these findings into the DataCite Global Access Program, we strive to develop targeted initiatives that promote open and accessible research infrastructure. Through collaboration and advocacy, we aim to foster a community in Asia that embraces open science principles, ultimately contributing to a more interconnected and transparent global research landscape.

Table 1: List of countries in the Asian region.

Afghanistan	Kazakhstan	South Korea
Armenia	Kyrgyzstan	Sri Lanka
Azerbaijan	Laos	Taiwan
Bangladesh	Malaysia	Tajikistan
Bhutan	Maldives	Thailand
Brunei	Mongolia	Timor-Leste
Cambodia	Myanmar	Turkey
China	Nepal	Turkmenistan
Cyprus	North Korea	Uzbekistan
Georgia	Pakistan	Vietnam
India	Philippines	
Indonesia	Russia	
Japan	Singapore	

### 3. Results

## Infrastructure Landscape Analysis in Asia

### 3.1 Existing Repositories & Systems in Asia

We collected and analyzed the information about the numbers of repositories from various data sources, PKP products installations (OJS, OMP, OPS), repository aggregators and networks (COAR), and compared the information from all data sources.

According to ROAR, there are 1168 repositories in Asia. The comparison of the number of repositories by country shows Japan (242), Indonesia (185), Turkey (169), and India (135) are the countries with the highest number of repositories, followed by China (96), Taiwan (83), Russia (66). Also, we can see that almost 52% of Asian countries have low or no repositories at all discoverable within ROAR.

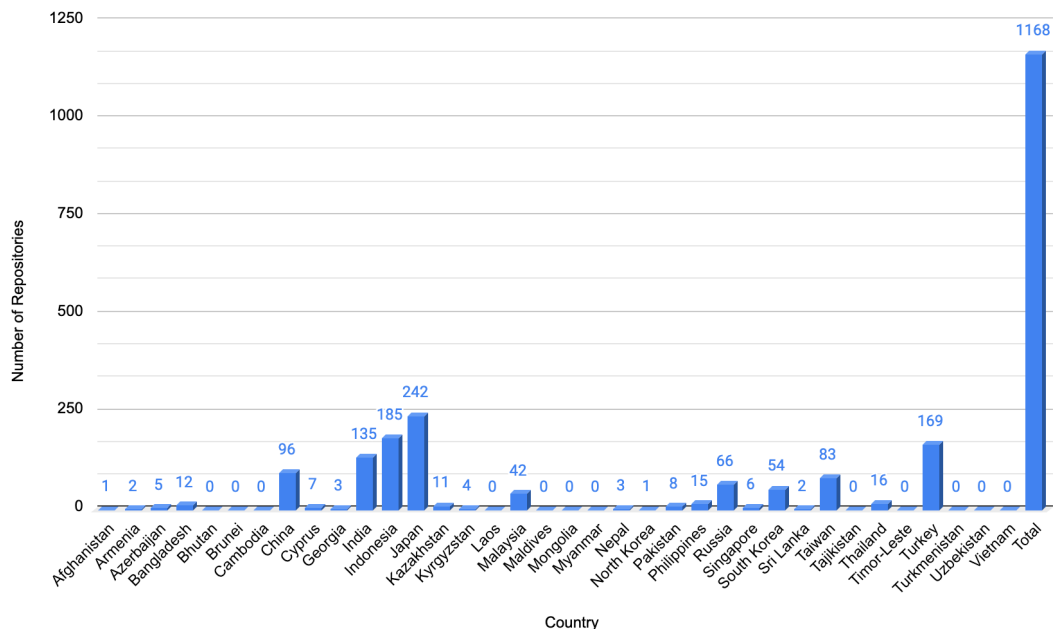


Figure 1: Repositories per Country, ROAR.

According to OpenDOAR there are 1471 repositories in Asia. Japan (654) is the leading country, followed by Indonesia (178) and Turkey (178). Then, we have India (106), China (65), South Korea (51) and Russia (50). Also, we can see that almost 55% of Asian countries have low or no repositories at all discoverable within OpenDOAR.

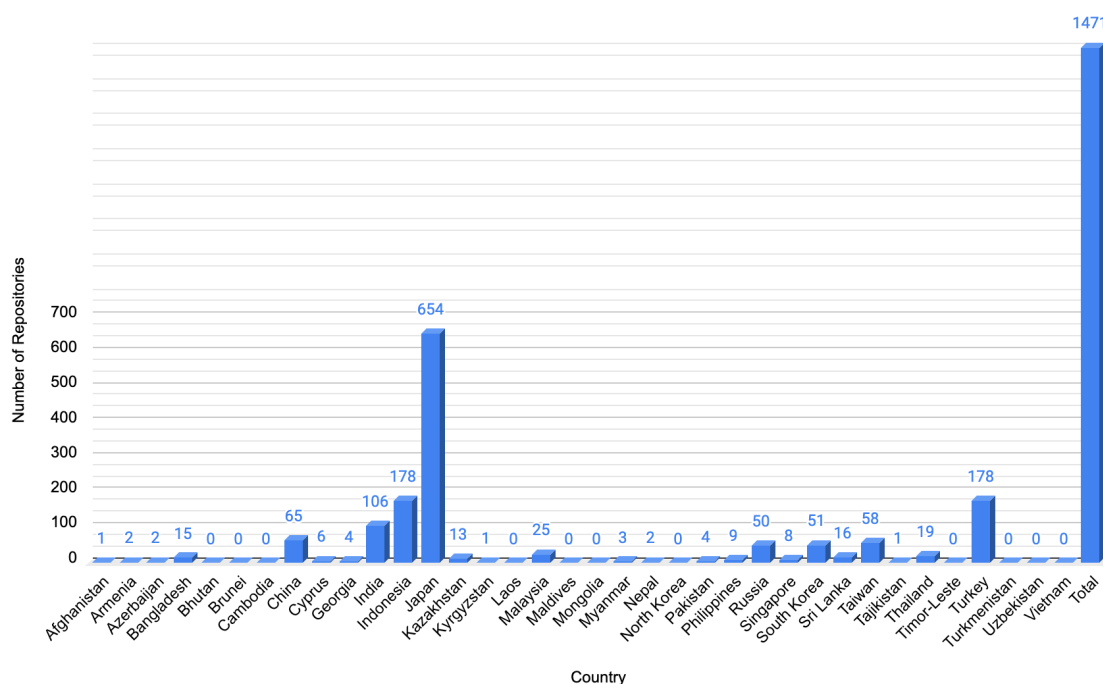


Figure 2: Repositories per Country, OpenDOAR.

Across Asia, we have four local networks of repositories in Russia, South Korea, Japan, and China. These regional networks collectively comprise a total of 496 repositories.

Table 2: List of repositories aggregator networks across Asia (Data Source: Confederation of Open Access Repositories (COAR)).

Country	Name of the Aggregator/Network	Number of Repositories Interoperating	Name of Institution
Russia	National Aggregator of Open Repositories (NORA)	30	NEICON
South Korea	DataOn	22	Korea Institute of

			Science and Technology Information (KISTI)
Japan	Institutional Repository Database (IRDB)	393	National Institute of Informatics
China	Confederation of China Academic Institutional Repositories	51	Higher Education Literature Assurance System

According to re3data there are 282 data repositories in Asia. China (81) is leading followed by Japan (66) and India (51). Also, we can see that almost 70% of Asian countries have low or no data repositories at all discoverable within re3data.

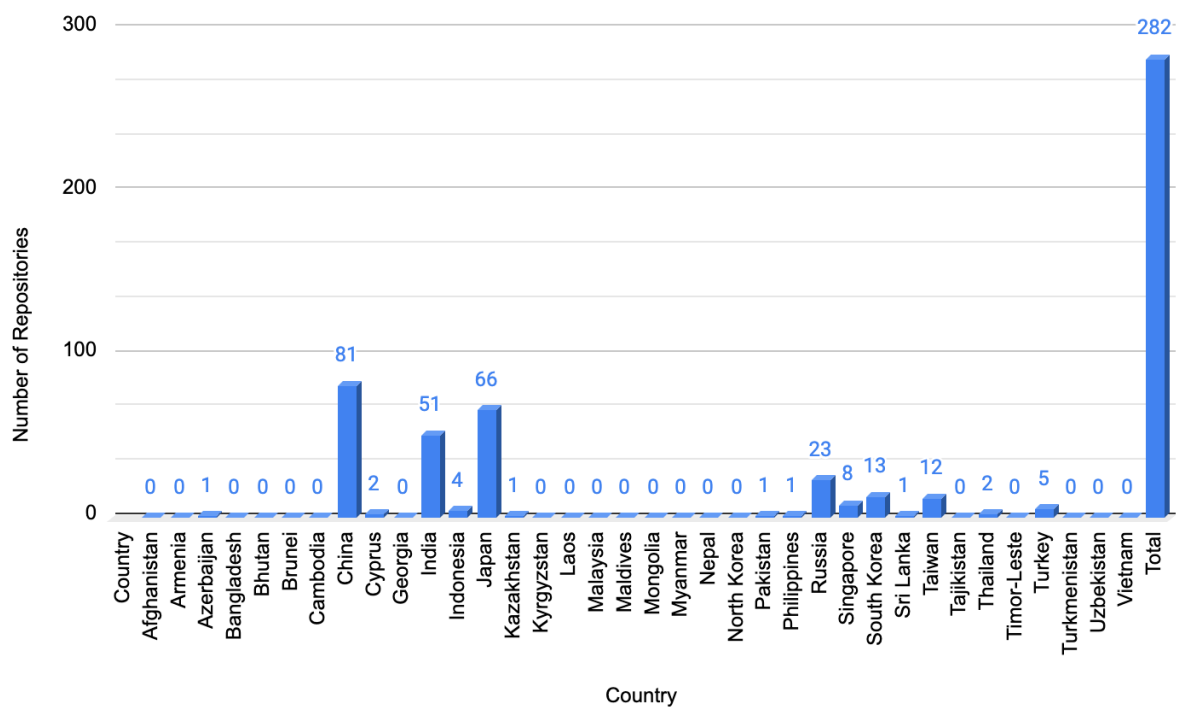


Figure 3: Repositories per Country, re3data.



We have a total of 11 Dataverse installations across Asian countries. China, Indonesia, Singapore, and Hong Kong each have 2 installations. Meanwhile, India, Russia, and Taiwan have 1 installation each.

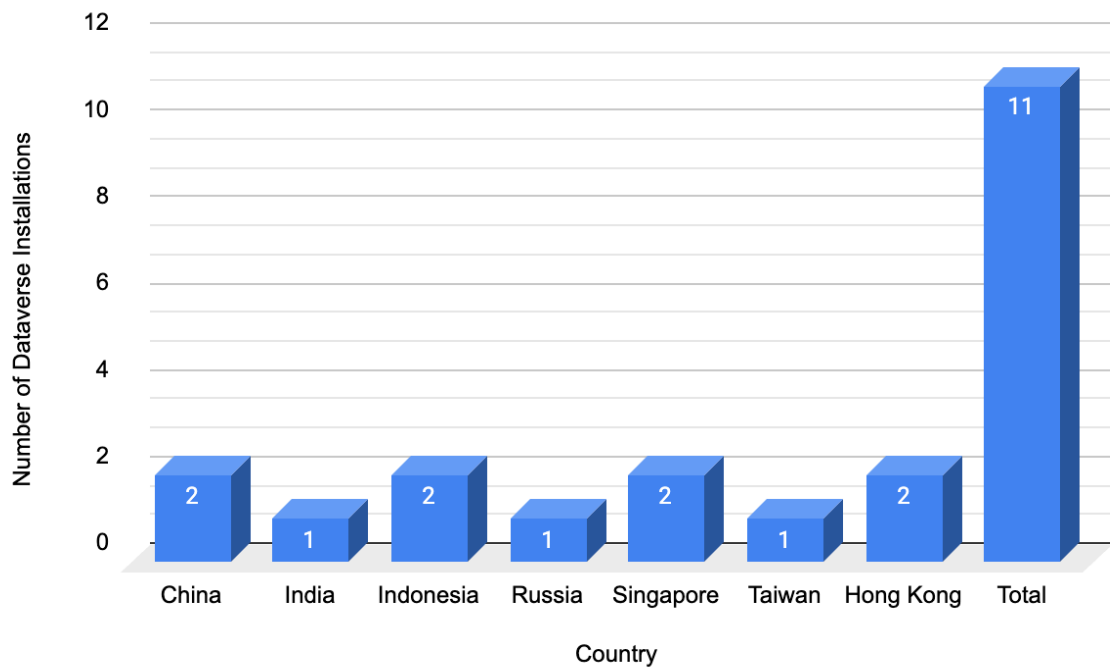


Figure 4: Repositories per Country in Asia, Dataverse.

Overall there are 623 Dspace installations across Asia. India (225) is the leading country, followed by Japan (101), then we have Taiwan (63) and Indonesia (44).

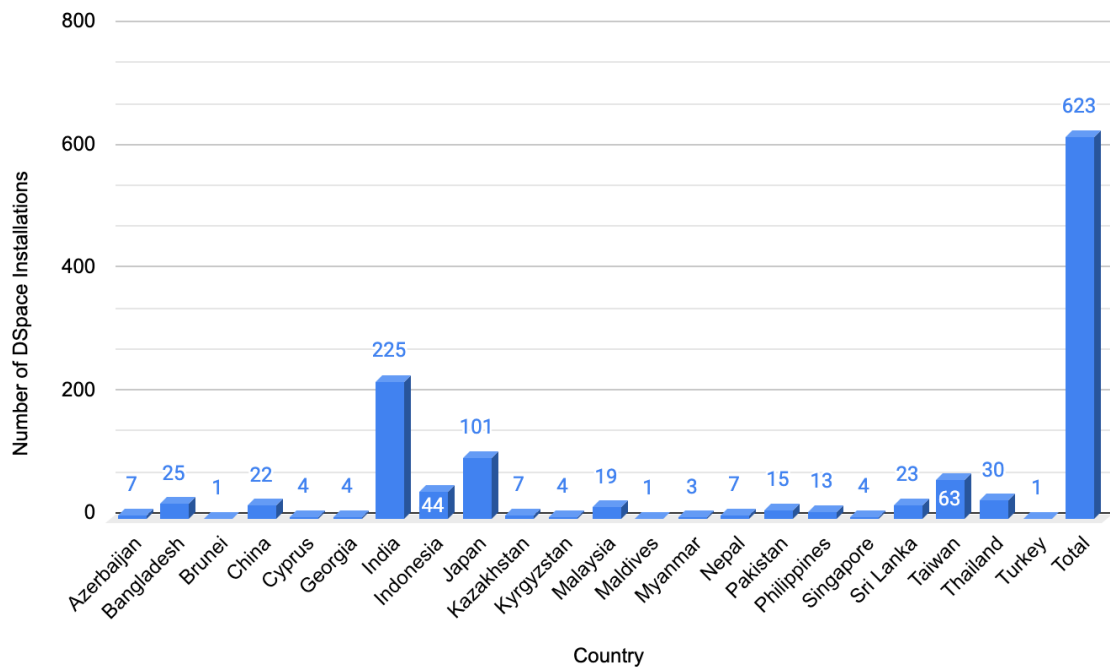


Figure 5: Repositories per Country in Asia, DSpace.

There are 18970 OJS installations across Asia according to PKP data. Indonesia is leading with 14661 installations followed by India (930) and Thailand (783).

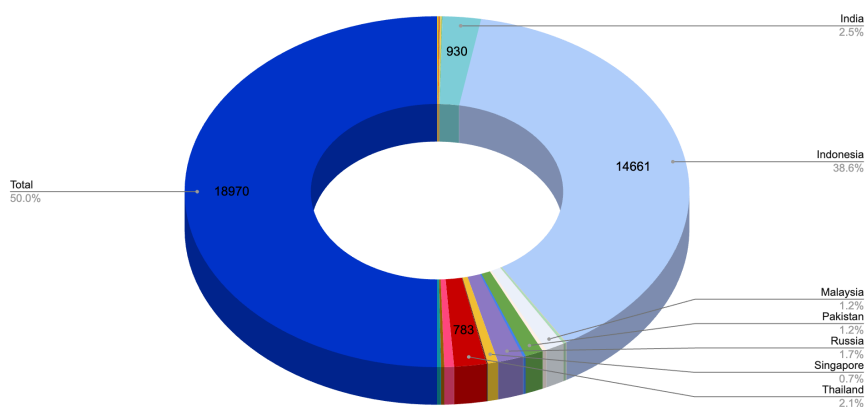


Figure 6: Number of OJS Installations per Country, PKP Beacon Data.

There are 55 OPS installations in Asia according to PKP Data. Indonesia is leading with 31 instances followed by India (10) and Malaysia (6).

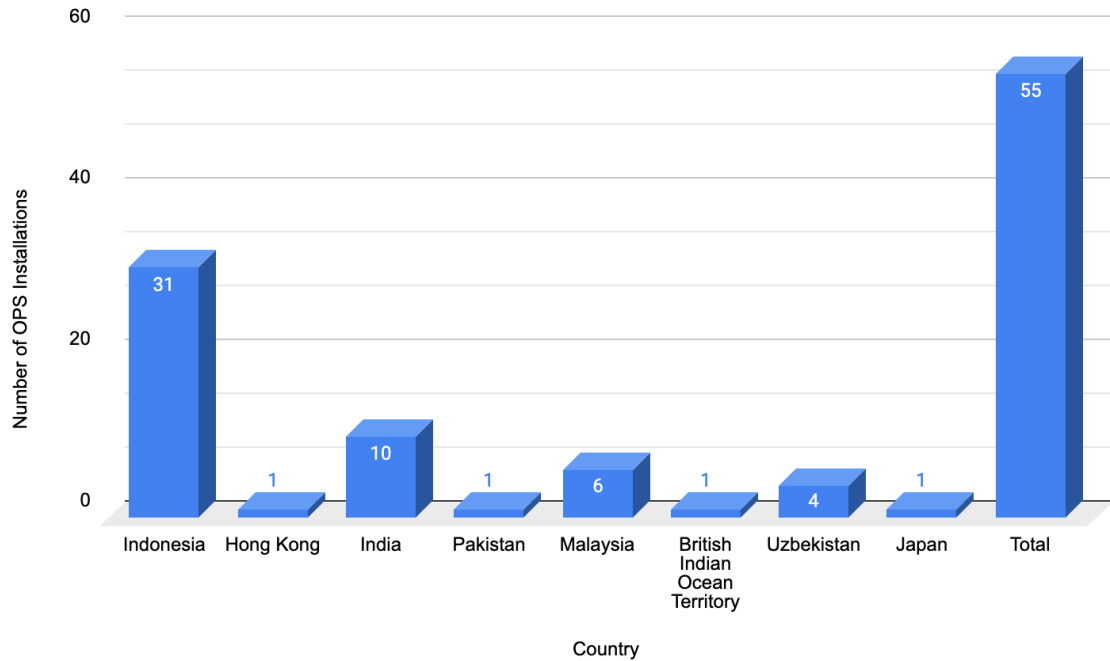


Figure 7: Number of OPS installations per country, PKP Beacon Data.

There are 159 OMP installations in Asia according to PKP Data. Indonesia is leading with 114 instances followed by India (13) and Malaysia (10).

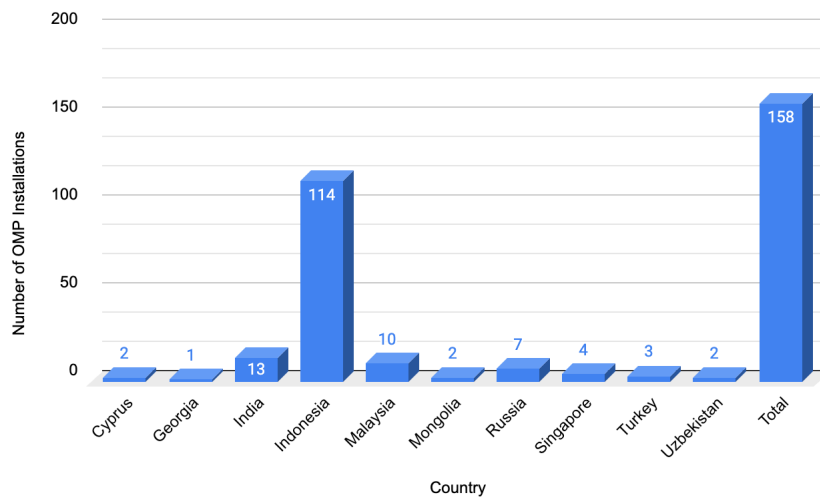


Figure 8: Number of OMP Installations per Country, PKP Beacon Data.

## Comparison between Repository Data Sources

Although there are differences among the different sources for repositories per country in Asia, the comparison highlights some trends. Japan is leading with the highest number of repositories in Asia followed by Indonesia, India, Turkey, and China. Also, the figure shows that almost 70% of Asian countries have very few or no repositories at all that are discoverable in these data sources. These countries might have repositories in place, but they are not aware of how to make them visible and discoverable within these registries.

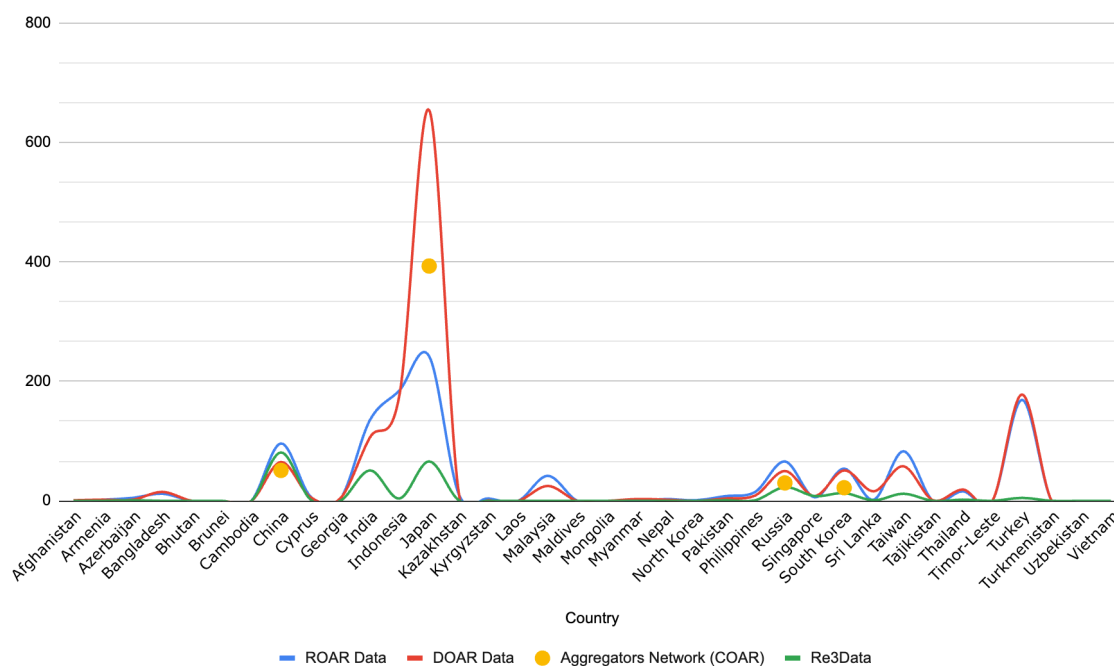


Figure 9: Comparison between Different Repository Data Sources.

### 3.2 Repository Service Providers Landscape in Asia

Figure 10 shows the landscape of repositories service providers in Asia according to ROAR. DSpace is the most used provider with almost 58% followed by EPrints with 21.2%.

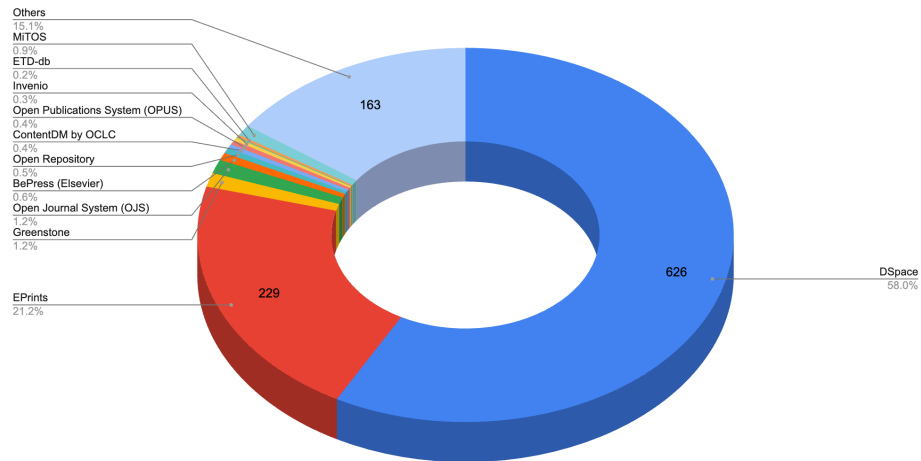


Figure 10: Repositories service providers in Asia, ROAR.

Figure 11 shows the landscape of repository service providers in Asia according to OpenDOAR. As we can see DSpace and WEKO are leading with almost 37% each followed by EPrints with 14%.

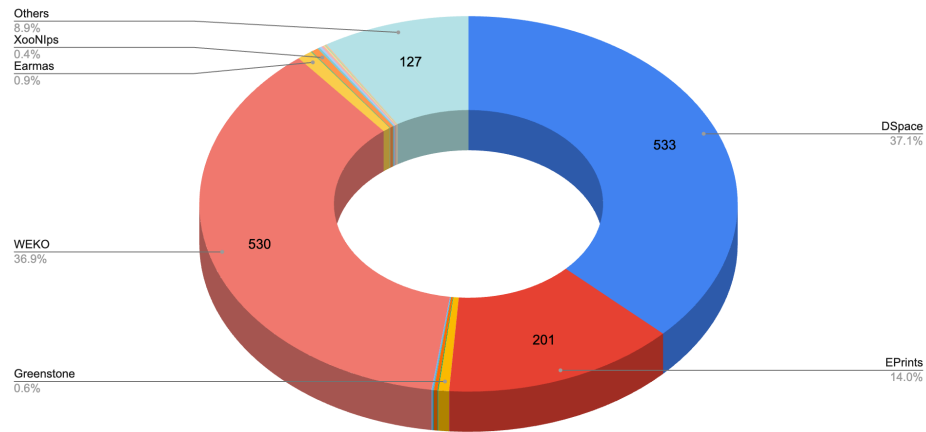


Figure 11: Repositories service providers in Asia, OpenDOAR.

Figure 12 shows the landscape of repository service providers in Asia according to Re3data. Dataverse share is 4.8% followed by DSpace with 3.2%. Interestingly, we have 83.5% using Other software, indicating that some countries may have developed their own custom software solutions to serve as data repositories. This suggests that these repositories may exist locally, but there is uncertainty about their visibility and discoverability within broader registries.

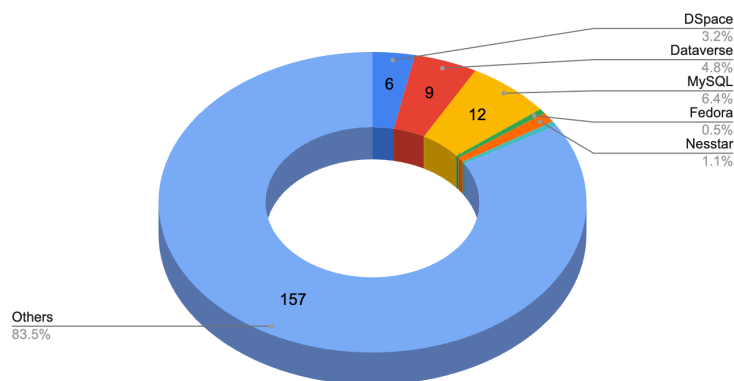


Figure 12: Repositories Service Providers in Asia, re3data.

Most of the repositories registered in re3data registry do not use PIDs or declare using PIDs. Only 23% of Asian repositories that are discoverable in re3data are using DOI and 4.4% are using Handle.

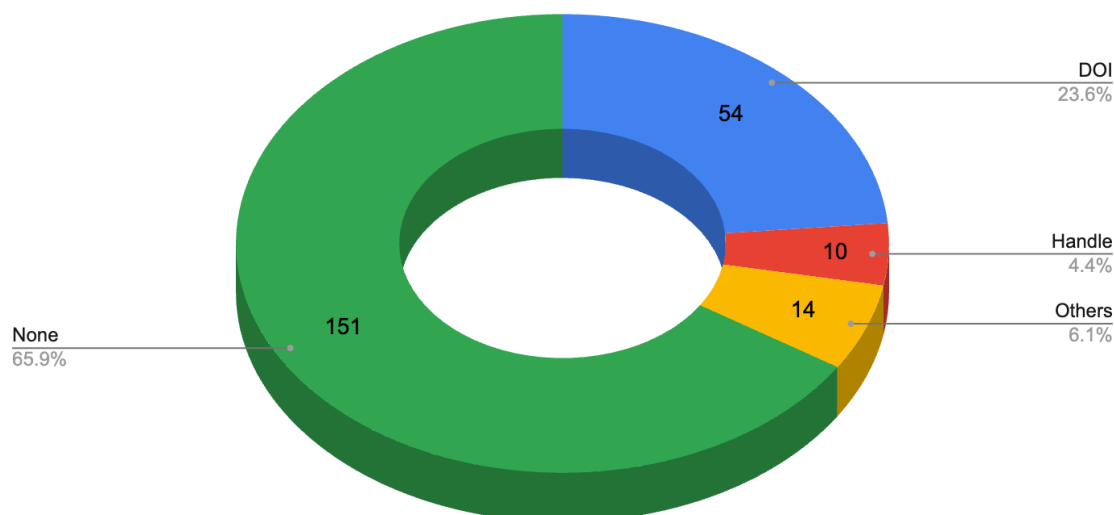


Figure 13: PID Systems in Asia, re3data.

### 3.3 Infrastructure Landscape Discussions

The landscape of repositories across Asia exhibits significant variation in terms of both quantity and visibility, as evidenced by data from multiple registry sources. According to ROAR, there are 1168 repositories spread across the continent, with notable concentrations in Japan (242), Indonesia (185), Turkey (169), and India (135). Comparatively, OpenDOAR lists 1471 repositories, highlighting Japan (654), Indonesia (178), and Turkey (178) as the leading countries. re3data identifies 282 repositories, with China (81), Japan (66), and India (51) at the forefront. These figures underscore a disparity where approximately 52% to 70% of Asian countries have limited to no repositories discoverable within these registries.

Further analysis reveals that four countries only operate regional repository networks, Russia, South Korea, Japan, and China, aggregating a total of 496 repositories.

The prevalence of repository platforms also varies across the region. DSpace emerges as the dominant provider, constituting approximately 58% of the repository landscape according to ROAR, and approximately 37% according to OpenDOAR. Other notable platforms include EPrints which holds significant shares in specific regions.

Despite the presence of diverse repository infrastructure, there remains a critical need to enhance awareness among researchers about their utilization and integration with Persistent Identifiers (PIDs) such as DOIs and Handles. Currently, only a fraction of repositories in Asia utilize PIDs, with approximately 23% employing DOIs and 4.4% utilizing Handles according to re3data. This highlights a substantial opportunity for improvement in visibility and interoperability of research outputs across the continent.

In conclusion, while certain countries like Japan, Indonesia, and India lead in repository numbers, a substantial portion of Asian nations face challenges in establishing and promoting discoverable repositories. Addressing these challenges requires concerted efforts to raise awareness among research communities about the importance of repository usage and the integration of PIDs, thereby fostering a more robust and interconnected research infrastructure across Asia.

## Institutional Policies and DataCite Adoption in Asian Repositories

### 3.4 Landscape of Open Access Repositories Institutional Policies

There are 90 mandatory archiving policies in Asian countries according to data from the Registry of Open Access Repositories Mandatory Archiving Policies (ROARMAP). Indonesia has 22 policies followed by Japan (21) and India (18). Most countries in Asia are lacking these mandatory archiving policies among their Open Access repositories or not registering them in ROARMAP.



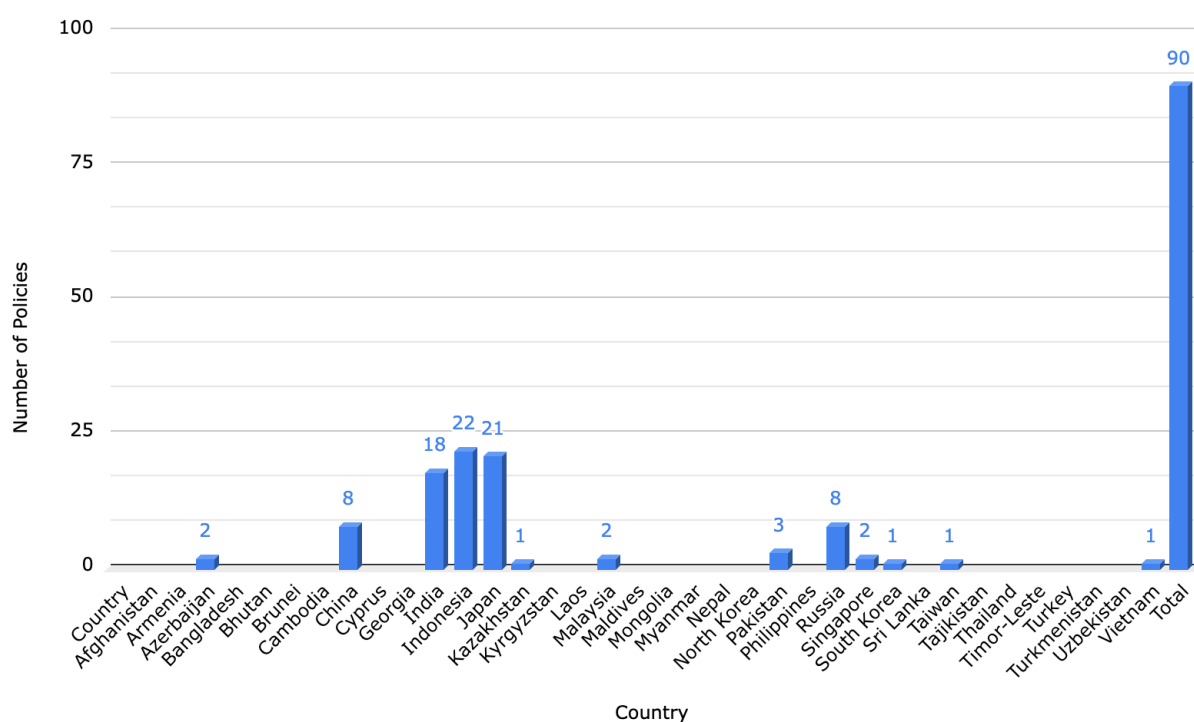


Figure 14: The number of policies per country in Asia, ROARMAP.

Table 3 and Figure 15 show 85 mandatory archiving policies among the open access repositories in Asia according to the Organization Type. Research Organisation is the most mandating type with 66 policies followed by the funder with 9 policies.

Table 3: Number of Policies per Organization Type (Data Source: Registry of Open Access Repositories Mandatory Archiving Policies (ROARMAP) - Up to June 2021 ).

Organisation Type	Number of Policies
Research Organisation	66
Funder	9
Sub-unit of Research Organisation	7
Funder and Research Organisation	3
Multiple Research Organisation	1

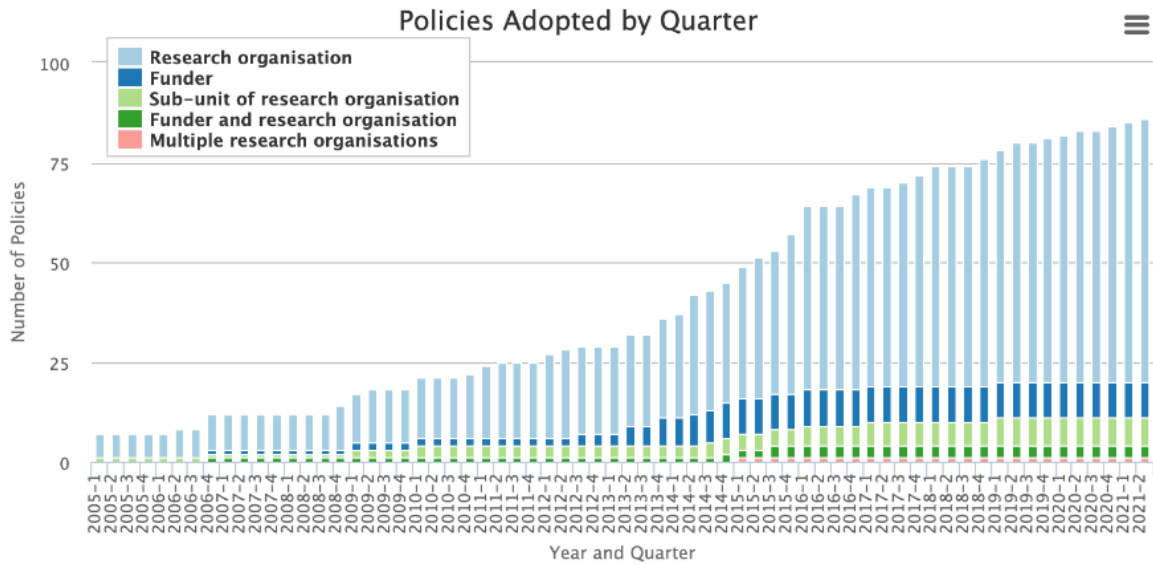


Figure 15: The number of policies per organization type in Asia, ROARMAP.

### 3.5 DataCite Infrastructure Awareness in Asia: Membership and Adoption

To date there are 33 DataCite members and consortium organizations in Asia. Japan (11) and China (10) are leading followed by Singapore (4) and South Korea (2).

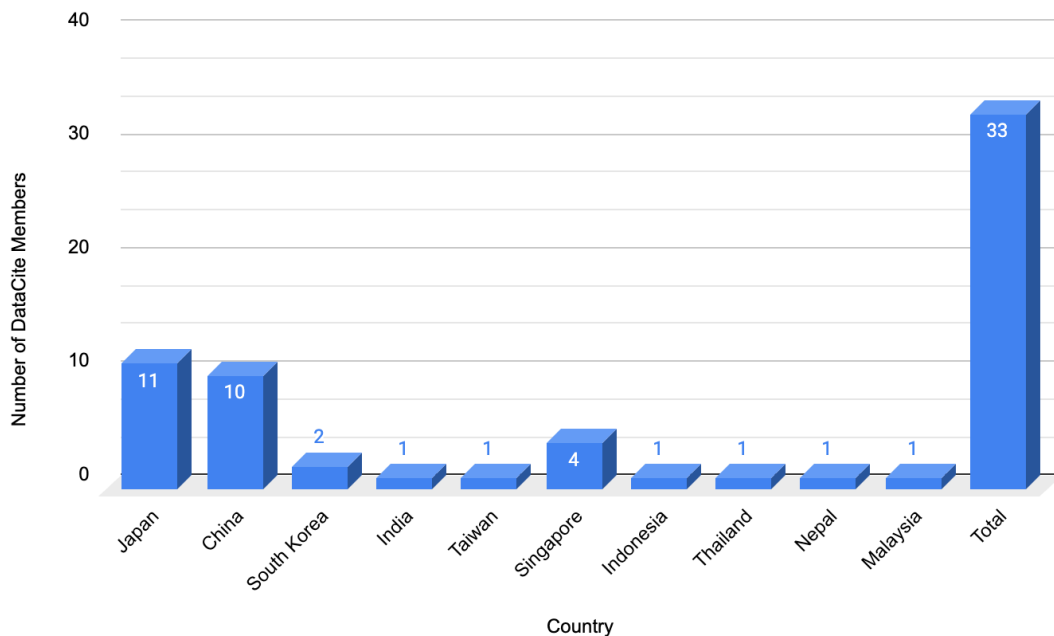


Figure 16: Existing DataCite members in Asia (June 2024).

There are 270101 DOIs as of September 2023 registered by Asian DataCite members. As we can see the National Research Council of Thailand is leading with 218801 DOIs, followed by China (24124). Then, we have Singapore (9800), Japan (8068) and Indonesia (7787).

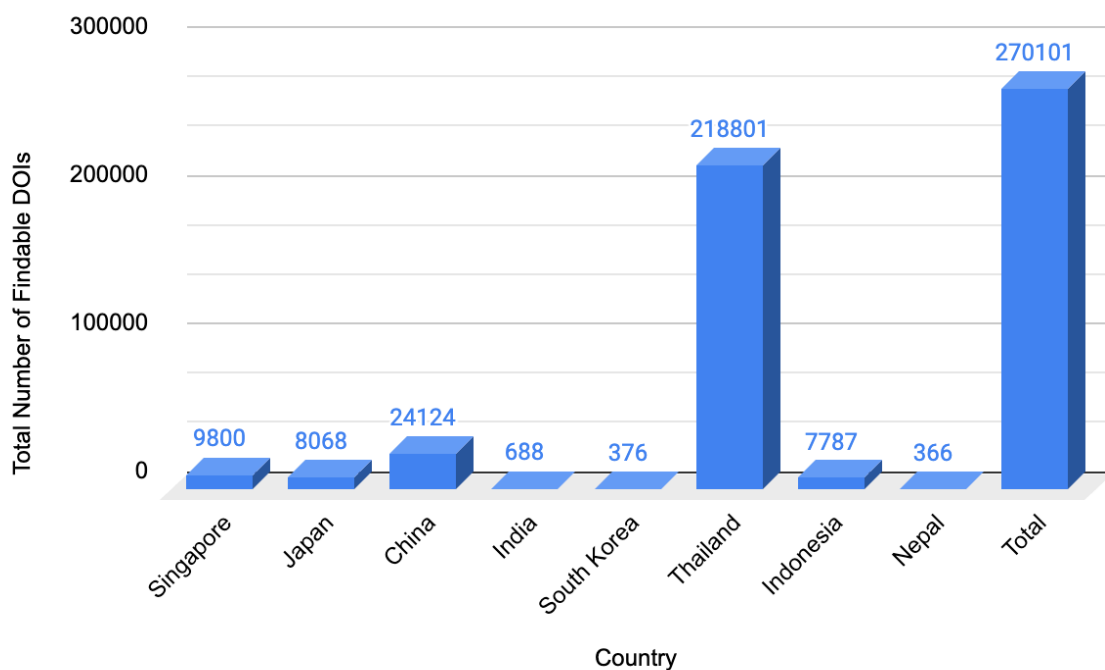


Figure 17: Total number of DataCite Findable DOIs as of September 2023.

### 3.6 Policies and DataCite Adoption Discussions

In our dedication to build a community of practice and promoting collaboration, DataCite collaborates with regional expert panels, including the APAC expert group. These panels comprise individuals from varied backgrounds and deep expertise in persistent identifiers and open infrastructure. They are instrumental in representing and championing the specific needs and interests of their regions. Currently, we have 12 representatives from the Asia community among the APAC Expert Group.

The landscape of awareness and engagement with open science policies and Persistent Identifiers (PIDs) across Asia highlights the necessity for increased collaboration and advocacy efforts. According to ROARMAP, there are currently 90 mandatory archiving policies across Asian countries. Indonesia leads with 22 policies, followed closely by Japan with 21 and India with 18. However, many countries in Asia still lack comprehensive mandatory archiving policies for their Open Access repositories, or these policies are not registered in ROARMAP, indicating potential gaps in policy implementation and awareness.

Table 4 and Figure 15 illustrate that Research Organizations are the primary proponents of mandatory archiving policies in Asia, accounting for 66 out of 85 policies, followed by funders with 9 policies. This highlights the important role of research institutions in driving policy development and implementation within the region.

Furthermore, there are currently 33 DataCite members and consortium organizations in Asia, with Japan and China leading with 11 and 10 institutions respectively, followed by Singapore and South Korea. These members have collectively registered 270,101 DOIs as of September 2023, demonstrating a growing commitment to assigning PIDs to research outputs. Notably, the National Research Council of Thailand leads in DOI registrations with 218,801 DOIs, underscoring significant regional contributions to the scholarly community.

To foster collaboration and advocacy for PIDs and open infrastructure, DataCite engages with regional expert panels like the APAC Expert Group, which includes 12 representatives from the Asian community. These panels play a crucial role in advocating for the integration of DataCite open PID infrastructure in research workflows and advancing open science policies tailored to regional needs.

Despite these initiatives, there remains a substantial need to raise awareness among key stakeholders:

- **Researchers:** It is crucial to emphasize the value of PIDs in enhancing the visibility and impact of research outputs, as well as compliance with open research policies.
- **Librarians and Repository Managers:** There is a need to promote the adoption of institutional open access and data sharing policies, along with the

integration of various types of PIDs into research workflows to facilitate better data management and discovery.

- **Policy Makers:** Efforts should focus on developing robust national open science policies and PID policies that maximize the visibility and accessibility of all research outputs across Asia.

In conclusion, despite the existing policies and PID integration in certain countries, there remains a critical need for concerted efforts to raise awareness and foster collaboration among stakeholders across several Asian nations. This is essential for building a more inclusive and robust research infrastructure that promotes open research, facilitates data sharing, and ensures the enduring visibility of all research outputs and resources throughout the region.

## 4. Conclusion

This report explored the evolving landscape of repository infrastructure and awareness about open research policies and levels of DataCite adoption among Asian repositories, emphasizing the role of Open Infrastructure and Persistent Identifiers (PIDs). PIDs serve as essential tools for uniquely identifying and accessing research outputs, thereby promoting transparency, reproducibility, and collaboration in scholarly communication. Despite their importance, the adoption of PIDs, especially DOIs, across Asia remains uneven, contributing to disparities in repository discoverability and integration within global registries and aggregators.

The disparity in repository visibility across Asia, as highlighted by various registry sources such as ROAR, OpenDOAR, and re3data, reflects both progress and challenges in establishing robust research infrastructures. Countries like Japan, Indonesia, and India lead in repository numbers, yet a significant portion of Asian nations lacks sufficient visibility in global registries. This underscores the need for enhanced awareness and adoption of PIDs among researchers, librarians, and policymakers throughout the region.

To address these challenges effectively, concerted efforts are necessary among diverse stakeholders. Academic institutions, funding agencies, and research communities must collaborate to promote the adoption of open science policies and integrate PIDs into research workflows comprehensively. These efforts will not only

enhance the visibility and impact of Asian research but also contribute to global scientific advancement and collaboration.

In conclusion, by advocating for the widespread adoption of PIDs and fostering a culture of Openness and collaboration, Asia can significantly enhance its position within the global research landscape. Embracing open science principles and leveraging PIDs will empower researchers to address complex challenges and opportunities, ultimately fostering a more inclusive and impactful research ecosystem for the benefit of society at large [9].

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## 7. Appendix: Glossary

PID: Persistent Identifier

DOI: Digital Object Identifier

SP: Service Provider

GAP: Global Access Program

GAF: Global Access Fund

CZI: Chan Zuckerberg Initiative

ROAR: Registry of Open Access Repositories

OpenDOAR: Directory of Open Access Repositories

COAR: Confederation of Open Access Repositories

Re3data: Registry of Research Data Repositories

ROARMAP: Registry of Open Access Repositories Mandatory Archiving Policies

PKP: Public Knowledge Project

OJS: Open Journal Systems  
OMP: Open Monograph Press  
OPS: Open Preprint Systems

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