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Global Trends in Open Science – What Can Asia Lead?

ERASMUS+ OPEN-ASIA: Boosting engagement of HEIs in Open Science in India and Malaysia
GA No: 101128493

Keynote 1
4th Open Science Forum
24th – 25th September 2025
Galeri Azman Hashim, Universiti Malaysia Sabah

Shaliza Ibrahim
Co-Chair, Malaysia Open Science Platform (MOSP)
AAIBE Chair of Renewable Energy, UNITEN
Honorary Professor, IOES, UM

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This presentation

1. Setting the tone - UNESCO Open Science Contextual Implementation
2. Asia’s Ascent in Research – Opportunities & Challenges
3. Scalable initiatives – MOSA, APECOSA, ENGAGE SCIENCE ASIA (network of OS hubs)
4. Success stories – replicable models

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Acknowledgements

KEMENTERIAN SAINS, TEKNOLOGI DAN INOVASI
MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION

AKADEMI SAINS MALAYSIA

open SCIENCE
Malaysia Open Science Platform (MOSP)

1. Open Science: Interconnected, Innovative, Inclusive, Professor Ana María Cetto, Instituto de Física, Universidad Nacional Autónoma de México, & Chair of the UNESCO Global Open Science Steering Committee and President of Latindex, **Virtual Expert Session Workshop for the APEC Open Science Alliance 20 June 2024**
2. Malaysia Open Science Platform (MOSP)
3. Asia Pacific Economic Corporation Open Science (APECOSA)
4. FAIR Data Stewardship for Biodiversity Project
5. Libraries Empowering SDGs through Citizen Science Project
6. Pew Fellowship Project on Seagrass Restoration
7. **Nexus Action for Mangroves in Selangor, Malaysia** Protection Through Value Creation for Community-Public-Private Partnerships
8. Harmful Algal Bloom Project
9. Open Metereological Data
10. The Tagal System – Pacos Trust
11. Prof Abrizah Abdullah, Honorary Professor, Universiti Malaya

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UNESCO Recommendation on Open Science

1. Promote a shared understanding of open science and set out diverse paths to achieving it
2. Develop an enabling policy environment for open science
3. Invest in infrastructure and activities that contribute to open science
4. Invest in training, education, digital literacy and capacity-building to support open science
5. Foster a culture of open science and align incentives to support it
6. Promote innovative approaches for open science at all stages of the scientific process
7. Encourage international and multi-stakeholder cooperation in the context of open science to reduce gaps in technology and knowledge

UNESCO Recommendation on Open Science

Source: UNESCO Recommendation on Open Science (https://doi.org/10.54677/MNMH8546)

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Insights on UNESCO Open Science Recommendation

What is Open Science?

OS is a set of principles and practices

- that aim to make scientific research from all fields accessible to everyone
- for the benefits of scientists and society as a whole. …
- OS is about making sure not only that scientific *knowledge* is accessible
- but also that the *production of that knowledge* itself is inclusive, equitable and sustainable.

Ref: Open Science: Interconnected, Innovative, Inclusive

Professor Ana María Cetto, *Instituto de Física, Universidad Nacional Autónoma de México, & Chair of the UNESCO Global Open Science Steering Committee and President of Latindex*

Insights on UNESCO Open Science: Contextual implementation of universal principles

Open Science requires a shift in the culture of science guided by the common values

Competition >>> Cooperation

Science as a Product >>> Science as a Process

Science for a Selected Few >>> Science for All

Ref: Open Science: Interconnected, Innovative, Inclusive
Professor Ana María Cetto, Instituto de Física, Universidad Nacional Autónoma de México, & Chair of the UNESCO Global Open Science Steering Committee and President of Latindex

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UNESCO Four Pillars of Open Science

OPEN ACCESS TO SCIENTIFIC KNOWLEDGE

timely, free and affordable access to:
i) scientific publication,
ii) open research data,
iii) open-source software and source code,
and iv) open hardware

OPEN DIALOGUE WITH OTHER KNOWLEDGE SYSTEMS

dialogue between different knowledge holders, that recognizes the richness of diverse knowledge systems and epistemologies and diversity of knowledge producers

OPEN SCIENCE INFRASTRUCTURES

shared research infrastructures (including major scientific equipment or sets of instruments, knowledge-based resources, open computational infrastructures that enable data analysis and digital infrastructures) that are needed to support Open Science and serve the needs of different communities.

OPEN ENGAGEMENT OF SOCIETAL ACTORS

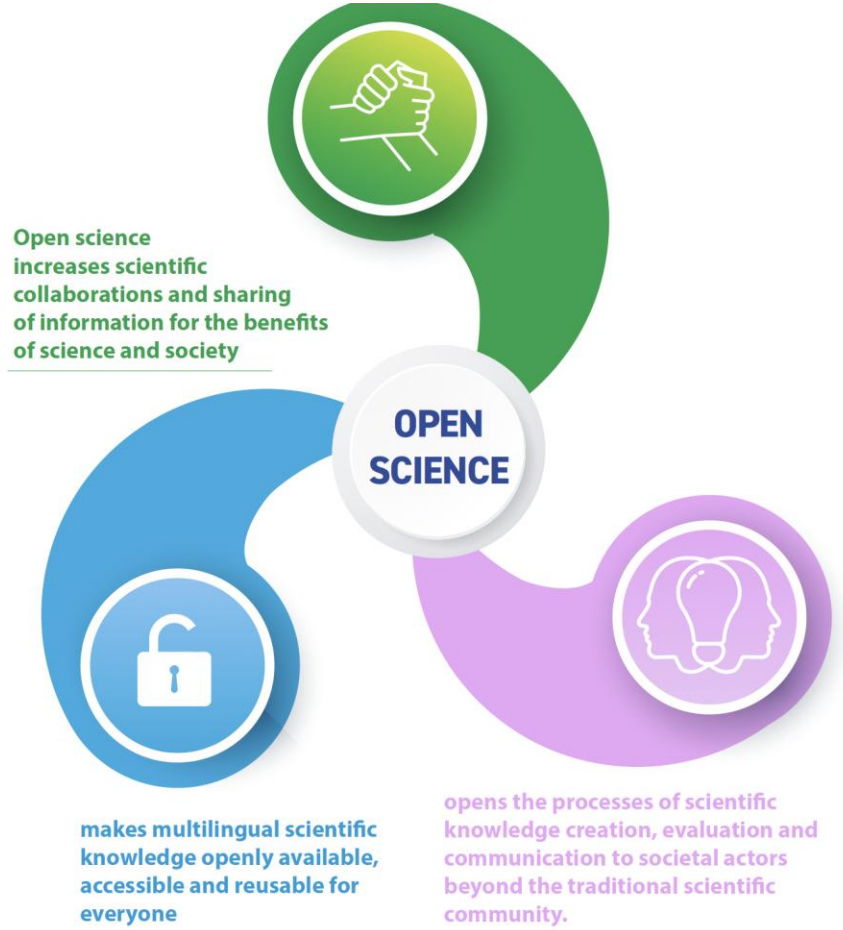
extended collaboration between scientists and societal actors beyond the scientific community, by opening up practices and tools that are part of the research cycle and by making the scientific process more inclusive and accessible to the broader inquiring society.

Source: UNESCO Recommendation on Open Science (https://doi.org/10.54677/MNMH8546)

UNESCO Open Science: Contextual implementation of universal principles

- Quality and integrity
- Collective benefit
- Equity and fairness
- Diversity and inclusiveness

The core values of OS



Some benefits of OS

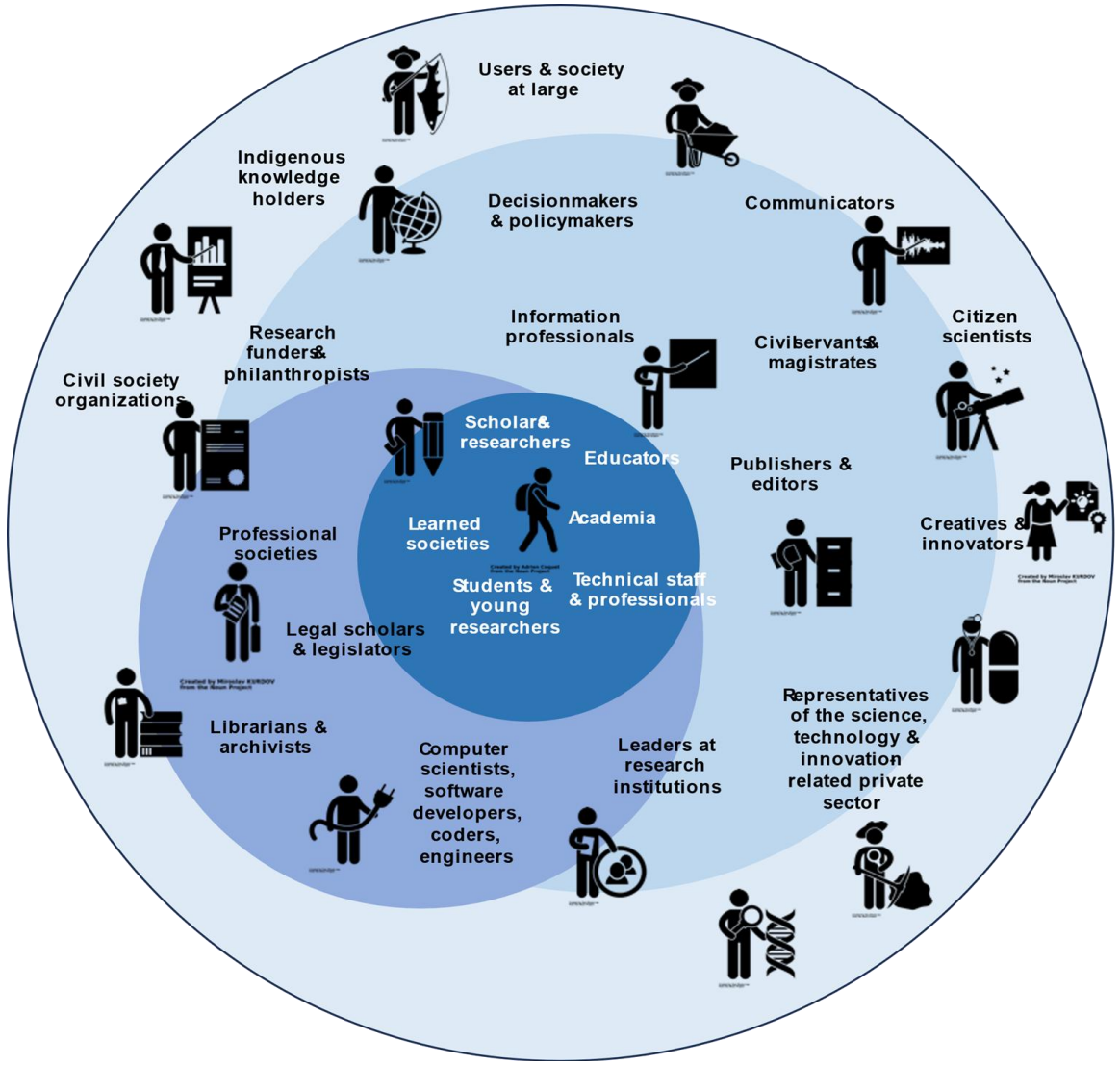
Ref: Open Science: Interconnected, Innovative, Inclusive
Professor Ana María Cetto, Instituto de Física, Universidad Nacional Autónoma de México, & Chair of the UNESCO Global Open Science Steering Committee and President of Latindex

Leverage on

Open Science Actors

Each has a role to play in the operationalization of OS —

as well as benefits to gain.



UNESCO OS Outlook (2023)

Ref: Open Science: Interconnected, Innovative, Inclusive
Professor Ana María Cetto, Instituto de Física, Universidad Nacional Autónoma de México, & Chair of the UNESCO Global Open Science Steering Committee and President of Latindex

Implementing the Recommendations

✓ Significant – albeit uneven – progress in policy adoption and creation of OA and OS infrastructures.

Main challenges identified by the five working groups:

- ❑ Changing the conventional scientific culture
- ❑ Building the necessary human and institutional capacities
- ❑ Having adequate OS infrastructures in place, including connectivity
- ❑ Reviewing the criteria for assessing scientific quality
- ❑ Addressing negative or unintended consequences of OS practices.

➡ ***Moving away from for-profit business models that exacerbate inequities and run counter to UNESCO's OS principles and values.***

Ref: Open Science: Interconnected, Innovative, Inclusive
Professor Ana María Cetto, Instituto de Física, Universidad Nacional Autónoma de México, & Chair of the UNESCO Global Open Science Steering Committee and President of Latindex

Open Science Initiatives

(response to question on initiatives in Mexico, similar situation in Asia)

- Institutionally-supported open research infrastructures and services, such as OA repositories, online journal collections, and platforms for research collaboration
- Government supported projects that enable participation of specific communities, including expert and non-expert publics, to address local and global challenges
- However, overarching OS policies are not yet in place
- And the conventional scientific culture is slow to change.

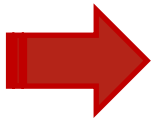
Ref: Open Science: Interconnected, Innovative, Inclusive
Professor Ana María Cetto, Instituto de Física, Universidad Nacional Autónoma de México, & Chair of the UNESCO Global Open Science Steering Committee and President of Latindex

The opening of science, the way forward

OS is not an end in itself,

- but a means towards fairer, more diverse and inclusive research systems,
- better geared towards the production, dissemination and use of scientific knowledge,
- that helps address societal challenges with benefits for all.

Existing community partnerships could be re-framed to encompass a wider definition of research and to include a broader range of actors and activities.



The path towards a true Open-Science ecosystem..

Ref: Open Science: Interconnected, Innovative, Inclusive
Professor Ana María Cetto, Instituto de Física, Universidad Nacional Autónoma de México, & Chair of the UNESCO Global Open Science Steering Committee and President of Latindex

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Research Advancement in Asia

- - Rapid **growth in publications indexed in global databases** (Scopus, WoS)
- - Significant data from **climate change, biodiversity, pandemics, renewable energy**
- - Richness of **diversity, culture, indigenous and traditional knowledge**
- - More **informed societies** participating in **citizen science**
- - **Research evolved**: curiosity-driven → economic contribution → policy impact
- - Multiple funding bodies demand **transparency, accountability, openness**

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Country/territory benchmarking

Share Count **Position**

The positions shown in the tables below are based on the Share of a country's or territory's research output overall and in each subject area.

Overall

Institution	2020	2021	2022	2023	2024
China	2	2	2	1	1
India	13	11	11	9	9
Japan	5	5	5	5	5
Malaysia	58	62	63	53	60
Singapore	17	17	18	18	16
United States of America (USA)	1	1	1	2	2

- The Nature Index includes only primary research articles published in the 145 selected journals tracked by the Nature Index.
- 185 countries / 19635 institutions.
- Asia's ascent in global research is justified based on Nature index.
- China - strong increase in research output and tops the global list, with many Asian institutions rising in prominence. Japan, South Korea and India are in the top 10, with the latter two countries increasing their adjusted share from 2023.
- Meanwhile, Singapore saw a higher rank within the top 20 list.
- Many countries have initiated Open Science. China Open Science

https://www.nature.com/nature-index/country-territory-research-output?type=share&list=China%3BUnited+States+of+America+%28USA%29%3BSingapore%3BJapan

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OPEN SCIENCE INITIATIVES GLOBALLY

Canada
Federated Research Data Repository (FRDR)

European Union
Amsterdam Call for Action on Open Science
Vienna Declaration on European Open Science Cloud (EOSC)
European Data Portal

China (3)
The Chinese Academy of Sciences published Open Access policy (2014).
The Measures for Managing Scientific Data (2018),
The Peking University Open Research Data Platform (2019)

Japan (2)
Open Science in 5th S&T Basic Plan (2016) JST Policy on Open Access to Research Publications and Research Data Management 2017

France
National Plan for Open Science (2018)

Korea
Addendum to Regulations on Management of National Research and Development under the Framework Act on S&T (2019)
Open Research Data Strategy (2018)

USA
Memorandum on Ensuring Free, Immediate, and Equitable Access to Federally Funded Research (2022)

India
National Data Sharing and Accessibility Policy (NDSAP)

Singapore
3 Open Access Repositories registered in the Registry of Open Access Repositories (ROARMAP).

Brazil
Mandatory Data Management Plan

Indonesia
Presidential Regulation Satu Data Indonesia (2016)

Malaysia
Malaysia Open Science Platform (MOSP) Initiative

Africa
Africa Open Science Platform
Initiated in 2016

Australia
ARC Policy on Open Access (2013)
Australia Research Data Commons

Thailand (1)
Thai National Research Repository
National Research Management System

New Zealand (1)
DigitalNZ (digital collections of New Zealand)

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How can these regional information systems contribute to the Asian Open Science?

Full geographical, linguistic and disciplinary coverage – **leaving no one behind**

Built on the tradition of knowledge as a public good – **everyone has access.**

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Open Scientific Knowledge

- *Focus: Publications, data, software, educational resources made openly accessible.*

Asia can lead by:

- **Mandating open access publishing**: Build on existing policies (e.g., MyJurnal, institutional repositories) and scale them regionally through ASEAN/Asia-wide repositories, connect globally.
- **Regional Open Data Commons**: Create Asia's equivalent of *European Open Science Cloud* for climate, biodiversity, health, and energy data.
- **Support multilingual dissemination**: Publish scientific outputs in English + local languages (Bahasa Malaysia, Mandarin, Hindi, etc.) to broaden access.
- **Promote open educational resources (OERs)**: Strengthen platforms like *MyOER* and collaborate with UNESCO Asia-Pacific networks to democratize learning.

Source: UNESCO Recommendation on Open Science (https://doi.org/10.54677/MNMH8546)

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Asia can lead in terms of Open Access

- not only to foster growth of Asian Open Access journals,
- but also to combat predatory journals / work
- South East Asia could work closely with China and India to establish centralized authoritative whitelist, so that we do not depend on Bealls and Cabell (paywalled), developed by the West

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Policy, Guidelines and Capacity Building are aspects that Asia can lead,

where **there are still gaps.**

Infrastructure is quite established, although smaller Asian countries may need support

Capacity Building for a Sustainable Open Science Ecosystem.

Establish regional " Open Science Hubs " in leading universities across South and Southeast Asia (e.g., in Malaysia, Singapore, Thailand, India, Vietnam) with China, South Korea and Japan Taiwan. These hubs would not be physical buildings but networked teams of experts.

- One of the outcome of the Open Asia project

Create funded fellowship programs specifically for the exchange of Open Science expertise within Asia and the Global South.

Even set up Chair of Open Science by various Academy of Sciences in Asia (eg Chinese Academy of Sciences

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Asia can lead through integrated policy and capacity-building initiatives. through collaboration - MOSP experience, may be replicated for South-east Asia

Eg for policy:

National Mandates for Openness: Policy Action

Governments (e.g., India, Indonesia, Malaysia, Philippines) can enact / collaborate on national policies mandating that all publicly funded research outputs—publications, data, and code—must be openly licensed and shared in accordance with FAIR principles.

ASIA leadership is not just in producing science, but in shaping HOW science is done - through the core 4 pillars

Source: UNESCO Recommendation on Open Science (https://doi.org/10.54677/MNMH8546)

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Open Science Infrastructures

- *Focus: Digital platforms, repositories, high-performance computing, tools.*

Asia can lead by:

- **ASEAN/Asian federated repositories**: Connect national repositories (Malaysia's MyJurnal, India's Shodhganga, Japan's J-STAGE, etc.) into an interoperable system.
- **Low-cost & scalable digital infrastructure**: Invest in cloud-based, open-source solutions to make access equitable for developing countries.
- **Regional HPC networks**: Use shared supercomputing facilities for climate modelling, genomics, and renewable energy research.
- **Standards & interoperability**: Develop Asian protocols aligned with FAIR data principles (Findable, Accessible, Interoperable, Reusable).

Source: UNESCO Recommendation on Open Science (https://doi.org/10.54677/MNMH8546)

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Challenges in data sharing

"**Trust** in at least some of the data is relatively low, and outstanding issues include the lack of specific **standards**, **co-ordination** and **interoperability**, as well as data quality and interpretation."

- All data is not sufficiently findable, accessible, interoperable and reusable
- Providing access to personal health record sharing needs to be readily accessible, pending the patient's consent.
- The interpretation of data where terms treated differently in different countries
- The transparency of the statistics may have guided governments

Source: UNESCO Recommendation on Open Science (https://doi.org/10.54677/MNMH8546)

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Open Engagement of Societal Actors

- *Focus: Citizen science, co-creation with industry, NGOs, communities.*

Asia can lead by:

- **Scaling citizen science projects**: Mobilize communities in biodiversity monitoring (e.g., mangrove health, coral reef mapping, air quality apps).
- **Inclusive participation**: Engage indigenous and rural communities in knowledge generation, especially in agriculture and marine sciences.
- **Academia–industry–government nexus**: As an example Malaysia's *Quadruple Helix* innovation or similar models can be adopted and expanded regionally to strengthen open innovation ecosystems.
- **Science communication & literacy**: Invest in local science media and outreach in diverse Asian languages to make science accessible beyond academia.

Source: UNESCO Recommendation on Open Science (https://doi.org/10.54677/MNMH8546)

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Open Dialogue with Other Knowledge Systems

- *Focus: Recognizing value of indigenous, traditional, local knowledge systems.*

Asia can lead by:

- **Integrating indigenous knowledge**: Use indigenous communities' (such as Orang Asli, Dayak, and others) ecological knowledge in biodiversity conservation and renewable energy solutions.
- **Regional platforms for dialogue**: Create ASEAN-led forums that blend scientific research with traditional practices (e.g., herbal medicine, coastal resource management).
- **Legal & ethical frameworks**: Protect indigenous intellectual property rights while ensuring fair benefit-sharing from research collaborations.
- **Education reforms**: Incorporate local wisdom and traditional sustainability practices into formal science curricula, (see Indonesia)

Source: UNESCO Recommendation on Open Science (https://doi.org/10.54677/MNMH8546)

the value of research data increases with use

minimally restrictive and voluntary common-use license

address the “divide in scientific production”

The Beijing Declaration on Research Data

The Beijing Declaration supports international efforts to make research data as open as possible and only as closed as necessary. It seeks to make data and metadata Findable, Accessible, Interoperable, and Reusable (FAIR)[iii] on a global basis and, wherever possible, automatically processable by machines. Although this Declaration is relevant mostly for research data that are generated through public funding, there are also instances in which privately funded data are made broadly available, in which case these principles would also apply. In addition, data not initially generated for research may be used in research at a later stage. The Beijing Declaration endorses many existing research data policies and management practices that have been promoted by previous declarations and statements, and they are included as references in the Appendix. The participants in the September 2019 policy meeting have produced the following set of ten principles:

1. **Research is increasingly driven by data** that are beyond human processing alone. Researchers therefore should have access to diverse, trustworthy, and reusable sources of data that are readily available and machine actionable. Data stewardship capacity building and comprehensive policies that enable the creation, dissemination, preservation, and above all the **global reuse of data and information** are essential, including sustained support for the required infrastructure and expertise.
2. **Research data have global public good characteristics.** A pure public good cannot be depleted by use (also called non-rivalrous) and cannot be excluded from use. Research data cannot be depleted, but can be restricted in use, although exclusion of reuse by others can be very inefficient and controversial, especially if the data are generated by public funding. **The value of research data increases with use.**
3. Publicly funded research data should be **findable** online to build an **international data commons**. Findable data require comprehensive metadata descriptions and persistent identifier tags, because data that cannot be easily located by potential users—whether by humans or machines—are of limited value. Together, principles three to seven result in **“FAIR” data** (data that are Findable, Accessible, Interoperable, and Reusable)—both for machines and humans.
4. Publicly funded research data are, by default, **in the public interest and should be accessible to the greatest extent possible for international reuse**. They were created or collected on behalf of the public that paid for them, and thus should be **as open as possible and only as closed as necessary**. This is even more important in cases where the data relate to issues covered by the UN landmark agreements.
5. Publicly funded research data should be **interoperable, and preferably without further manipulation or conversion,** to facilitate their broad reuse in scientific research.[iv] Software, instruments, and data formats should be well-documented and should not impose any proprietary lock-in that restricts reuse. Data should be described with rich metadata and should use community-recognized terminologies to maximize interoperability and reuse.
6. Despite strong reasons for making research data as open as possible, there are **legitimate reasons to restrict access to and reuse of data**, including interests of national security, law enforcement, privacy, confidentiality, intellectual property, and indigenous data governance, among others. Restrictions should have an express justification and research data **otherwise should be open by default on a global basis**. If the data need to be closed, an effort should be made to provide responsible and proportionately controlled access.
7. **National legislation** that exempts research data from copyright or other intellectual property (IP) protections is one way to enable and support reuse of public data. Another way is for researchers to choose a minimally restrictive and **voluntary common-use license**[v].
8. Funders of academic and applied research should require the **submission of adequate data stewardship plans**, including clear guidelines for the provision of long-term availability, accessibility, and conditions for reuse. Open data policies should be accompanied by commensurate penalties for noncompliance as well as appropriate incentives.
9. **Activities that address the “divide in scientific production”** between less economically advanced regions and those economies with advanced research infrastructures should include access to publicly funded research data and related information. The wider deployment and access to advanced technical research infrastructures is a necessary, but not sufficient, condition to reduce the divide.
10. **Research data policies should promote the principles in this Declaration and be coordinated internationally.** They should be implemented with clear policy wording and guidelines, specific funding, and a commitment to monitor their impact with the overall objective of building a global FAIR data commons.

as open as possible
as closed as necessary

should be open by default on a global basis

data stewardship plans

Source: The Beijing Declaration on Research Data (https://doi.org/10.5281/zenodo.3552330)

Malaysia Open Science Platform

MOSP

Malaysia Research Landscape

GERD (0.95%)
RM13,483 million
(2020)

30,457 journals indexed by Scopus or WoS in 2020.

39,700 Researchers (19,107 Full time equivalent) from public and private institute of higher learning

7,092 Researchers (2,635 Full time equivalent) from government research institutes / agencies

234,765 research papers indexed by Scopus with more than 1.7 million citations (2001 - 2017)

Source:
National Survey of Research and Development (R&D), 2021
National Bibliometric Study 2001 - 2017, 2020

Malaysia Open Science Platform

Objective

To gather and consolidate research data in Malaysia onto ONE platform that allow access and sharing of research data aligned with the FAIR principle.

Launched on 16 May 2023, by the Deputy Prime Minister YAB Dato' Sri Haji Fadillah Haji Yusof

10
Repositories

2,564
Datasets

10
Research Fields

30,531
Visitors

www.mosp.gov.my

Research Fields

Medical and Health Sciences

139 Research Datasets

Climate, Environment and Biodiversity

183 Research Datasets

Energy

42 Research Datasets

Physics, Engineering and Material Science

563 Research Datasets

Computer Science, Information Technology and Telecommunications

155 Research Datasets

Agricultural, Veterinary and Food Sciences

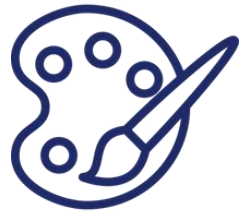
100 Research Datasets

Biological, Chemical and Mathematical Sciences

452 Research Datasets

Language and Education

91 Research Datasets



Arts and Social Sciences

162 Research Datasets

Business, Finance and Economics

677 Research Datasets

Aligned with National Policy

National Policy on Science, Technology and Innovation (2021-2030)

Strategy D: Encouraging open data sharing

Data sharing by various parties invloved in R&D&C&I activities should be enouraged to drive national innovation. The collaborations will create stakeholder cooperation, prevent duplication in the implementation of R&D and facilitate the management of the STI ecosystem.

Initiative D1: Malaysia Open Science Platform

MOSP data-sharing platform aims to encourage the public sector, industry, researchers and the community in data sharing and use to stimulate innovation. The collection of data from IHLs and PRIs includes research data, expertise, facilities and equipment available at the institution that can benefit various parties.

Malaysia Open Science Alliance

Ministries and Agencies

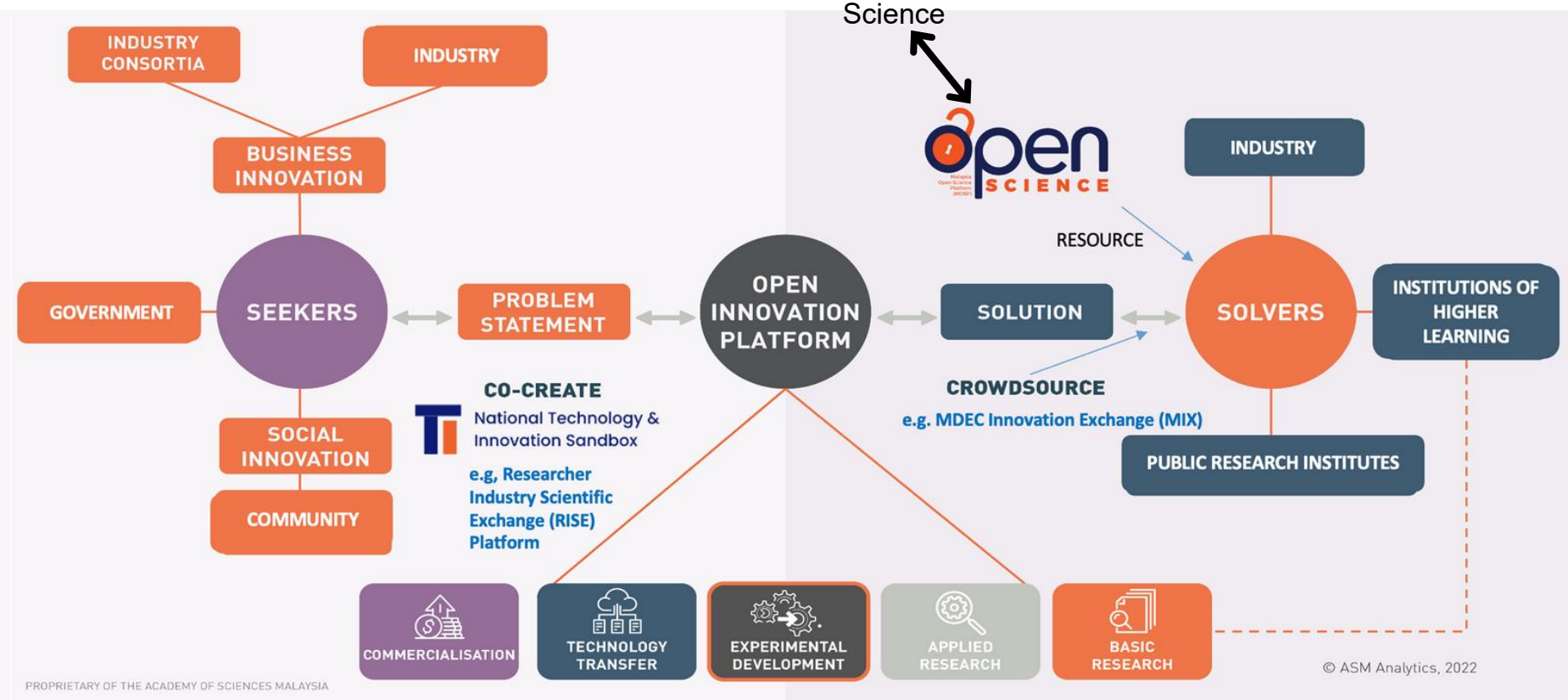
1. Academy of Sciences Malaysia
2. Universiti Kebangsaan Ministry of Science, Technology and Innovation
3. Ministry of Higher Education
4. Department of Higher Education
5. Ministry of Natural Resources and Environment Sustainability
6. Ministry of Economy
7. Ministry of Health
8. National Digital Department
9. National Institutes of Health
10. National Water Research Institute of Malaysia (NAHRIM)
11. Forest Research Institute Malaysia (FRIM)
12. National Institutes of Biotechnology Malaysia

Institutes of Higher Learning

1. Universiti Malaya
2. Universiti Sains Malaysia
3. Universiti Teknologi Malaysia
4. Universiti Malaysia Terengganu
5. Universiti Malaysia Sarawak
6. Universiti Malaysia Sarawak
7. Universiti Tun Hussein Onn Malaysia
8. Universiti Putra Malaysia
9. Universiti Kebangsaan Malaysia
10. Universiti Malaysia Sabah
11. Universiti Malaysia Kelantan
12. Sunway University
13. UCSI University

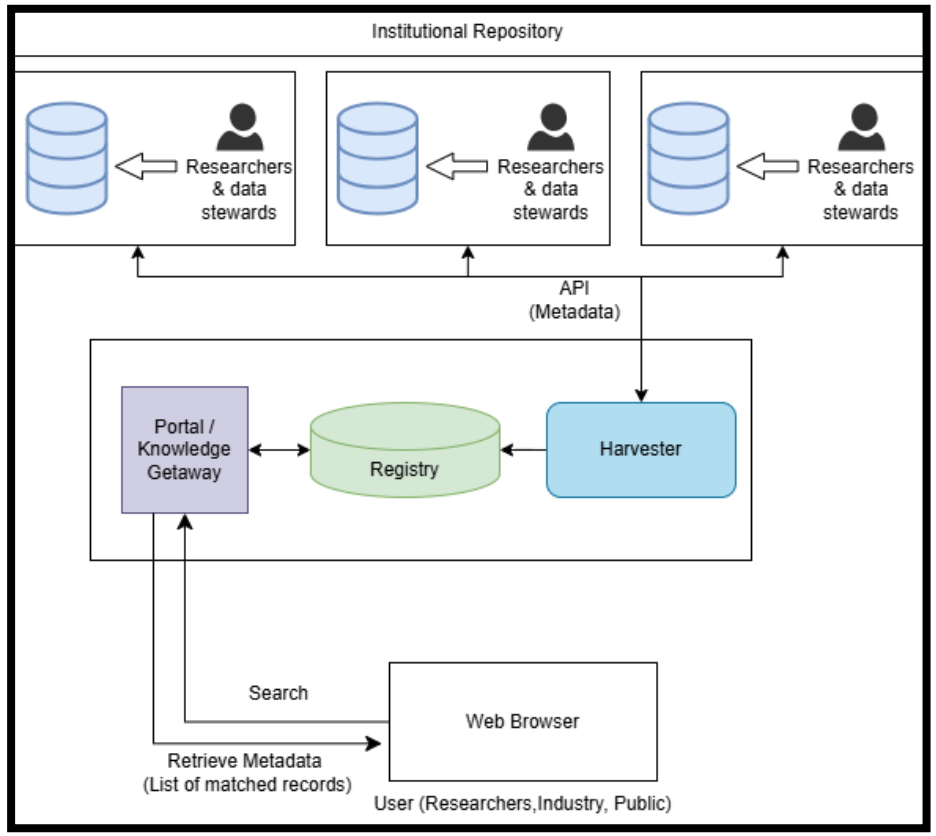
Open Innovation

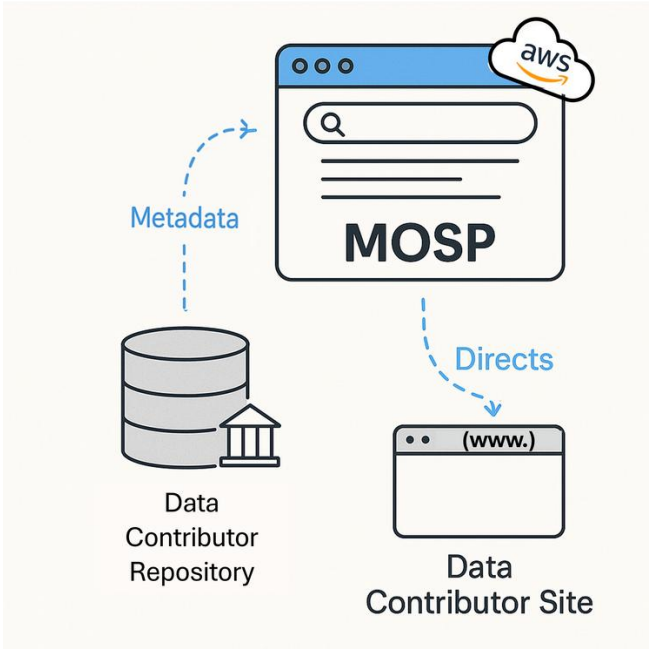
APEC Open Science



Proprietary of the Academy of Sciences Malaysia

MOSP Architecture





MOSP harvest the metadata from the institutional repository.
NO research data will be deposited in MOSP.

MOSP Outputs

Focus Areas

- Guidelines & Landscape
- Capacity Building & Awareness
- Infrastructure

- 1 National Guidelines on Open Science in Public Funded Research
  Accepted as subset of National Data Sharing Policy (NDSP) under the Ministry of Communications and Digital
- 1 landscape study on open science in Malaysia
- Training program for Data Stewardship on Open Science – 363 data stewards trained
- Social media and website postings, podcasts and roadshows
- Integrated database on ONE platform – 10 repositories connected

Background of Open Science in Malaysia

2016

Academy of Sciences Malaysia (ASM) participates in Asia Pacific Economies Cooperation (APEC) meeting discussing on open Science

2019

Launching of **Malaysia Open Science Platform initiative**, aiming to connect five (5) research universities on one platform for research data sharing

2024

- 1 Guideline and 3 Manuals on FAIR Data Stewardship on Biodiversity published
- Continuous training of new data stewards
- Connecting to more national repository
- Landscape Study and proposal of APEC Open Science Alliance

2015 - 2018

Project funded by Newton-Ungku Omar fund (NUOF) for Professional Development and Engagement Programs:

1. Professional Research Management
2. **Research data repository**
3. Research Impact
4. Full Economic Costing

2019-2023

Implementation of MOSP Pilot Project

- More than 300 trained data stewards
- 1 Landscape Report on Open Science in Malaysia published
- 1 National Guidelines on Open Science in Malaysia published
- The platform was launched on 16 May 2023 connecting nine repositories from 5 research universities and 3 government agencies

Values
of Open Science

RESPONSIBLE SCIENCE

- Reinforces open scientific inquiry
- Promotes research quality and integrity through reproducibility, transparency and accountability for verification and avoid fraud

DEMOCRATISE SCIENCE

- Publicly funded researchers are accountable to society
- Increases the return on public investments in scientific research
- Promotes equitable use of data and enables citizen science participation
- Business enterprises benefit in producing new products and services through open innovation
- Science-informed policy-making

SCIENTIFIC PROGRESS

- Finding solution to local and global challenges through Big Data Analytics
- Fostering collaborations and research beyond disciplinary boundary
- Internationalising our local research

RESEARCH MANAGEMENT

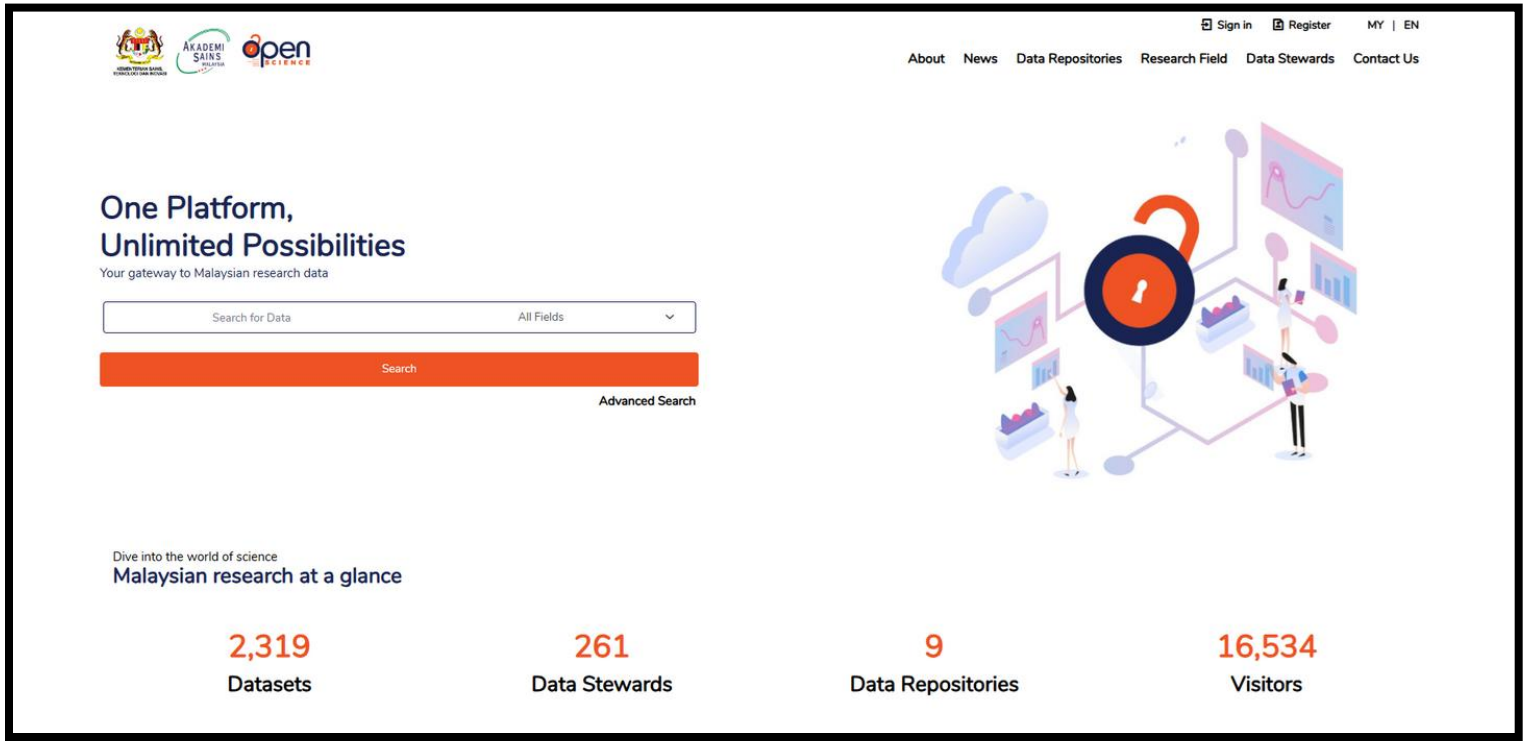
- Maximise data utility
- Minimise costs of unnecessary duplication of research
- Better planning in research management and funding

Guidelines on Open Science in Public Funded Research

Scan for a copy

The Platform

www.mosp.gov.my



Launched on 16 May 2023

By the

Deputy Prime Minister, YAB Dato’

Sri Haji Fadillah Haji Yusof

Engagement of MOSP with International Agencies working on Open Science

Open Science Forum for Asia and The Pacific, 13 Feb 2020

Dialogue on Open Science, 14 Feb 2020

MOSP has been in consultation with other open science initiatives globally such as Australia's ANDS, OECD, ISC-CODATA, and Japan's RCOS to learn best practices of Open Science and to get their support to materialise MOSP.

MOSP is also a member of international open science networks such as the

- Global Open Science Cloud (GOSC), CODATA
- UNESCO Open Science Advisory Committee

Moving on

- Research Impact evaluated based on data availability and citation
- Case studies for demonstration and providing exemplars for MOSP, including climate and oceanography
- Bringing more institutions into MOSP, to embark on Open Science
- Adding Data services and Open Infrastructure to serve the region

One Platform, Unlimited Possibilities

Your gateway to Malaysian research data

https://mosp.gov.my/

Connecting Beyond

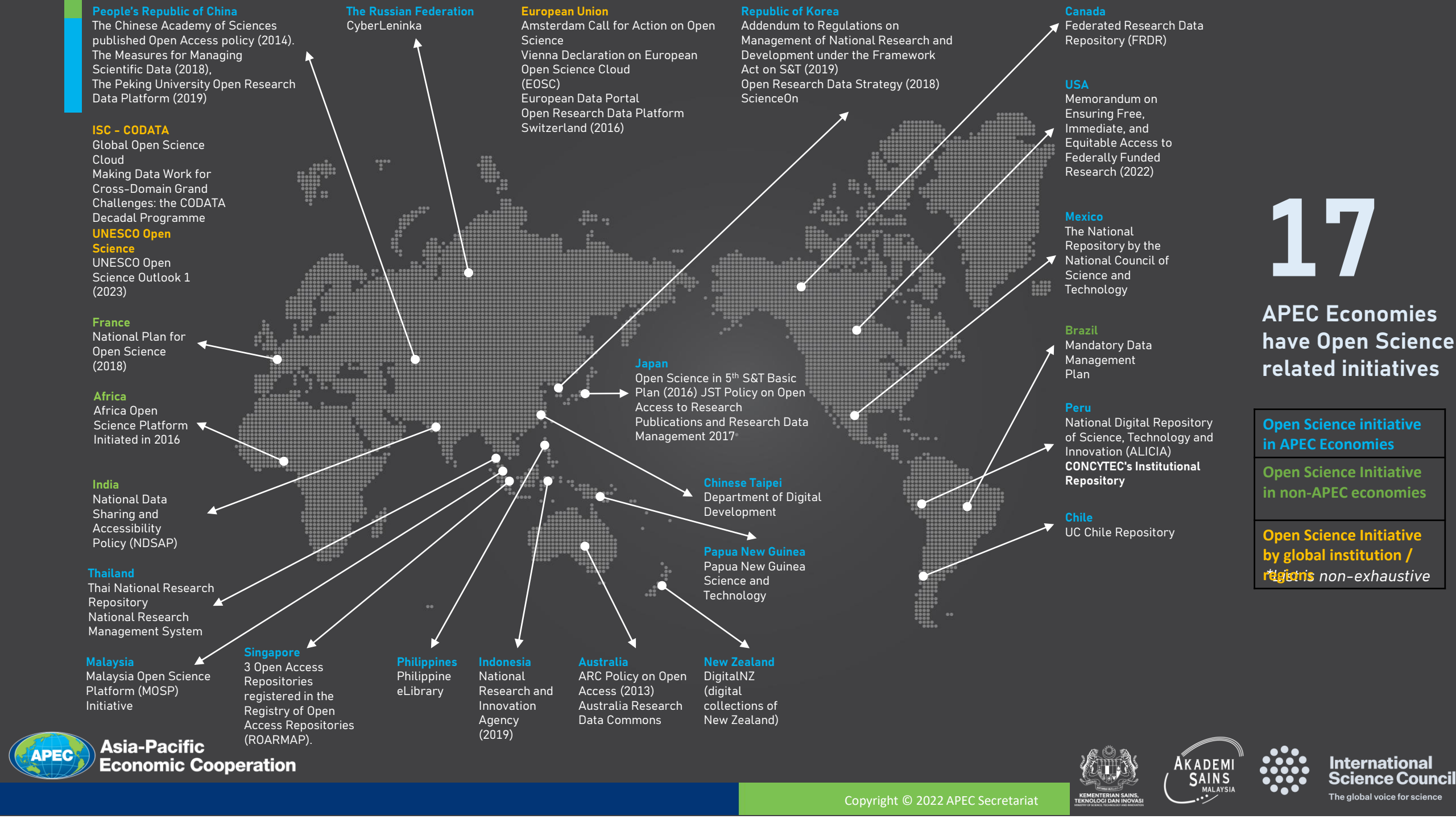
In efforts to replicate the success of MOSA in encouraging shared responsibility between stakeholders towards implementing open science at the national level, Malaysia has proposed the APECOSA to promote data sharing at the regional level.

To date, there are 17 out of 21 APEC economies that have open science related initiatives.

In 2025, APEC's Policy Partnership for Science, Technology and Innovation (PPSTI) has endorsed the formation of APECOSA. The Alliance will promote the sharing of best practices on data sharing and move towards integrating available open science platforms in the APEC region.

Malaysia Open Science Alliance (MOSA)

APEC Open Science Alliance (APECOSA)



17

APEC Economies have Open Science related initiatives

Open Science initiative in APEC Economies
Open Science Initiative in non-APEC economies
Open Science Initiative by global institution / regions

*Listing is non-exhaustive

Asia-Pacific Economic Cooperation

KEMENTERIAN SAINS, TEKNOLOGI DAN INOVASI

AKADEMI SAINS MALAYSIA

International Science Council
The global voice for science

Total Participation of APECOSA Workshops

16

Speakers & moderators

- Australia
- Canada
- Indonesia
- Malaysia
- Mexico
- Peru
- Republic of Korea
- United States of America
- Republic of Colombia

8

APEC Economies

1

non-APEC Economy

76

Participants (Workshops and Survey)

18

APEC Economies

2

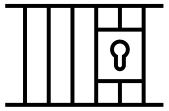
non-APEC Economies

- Australia
- Brunei
- Canada
- Chile
- Peoples's Republic of China
- Indonesia
- Japan
- Republic of Korea
- Malaysia
- New Zealand
- Papua New Guinea
- Peru
- The Philippines
- The Russian Federation
- Singapore
- Chinese Taipei
- Thailand
- United States of America
- Argentina
- Germany

Asia-Pacific Economic Cooperation

International Science Council
The global voice for science

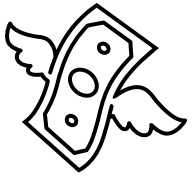
Governance challenges



Legal and governance barriers

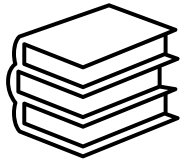
Inter-governmental data sharing issues

Balancing open access and ethical standards



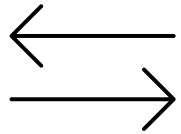
Sustainability of open science funding

Definition of open science across sectors



Lack of open science policy and guideline

Privacy and IP concerns

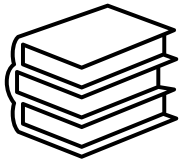


Varying degrees of openness in data sharing

Source: APECOSA Workshop, Survey, Desktop Research

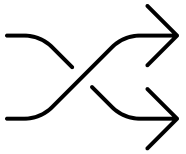
Research Data Management Challenges

Lack of persistent identifiers (PID) to promote accessibility, traceability and transparency

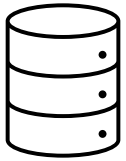


Insufficient standard guidelines and manuals on implementing open science (how-to)

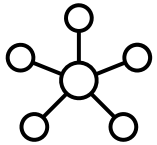
Importance of metadata for the research datasets or scholarly articles is not highlighted



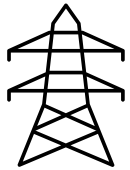
A need for a diversified approach to enhance research data management



Low awareness on implementing FAIR and CARE data principles



Platforms and data format are not interoperable and fragmented efforts for open science and data sharing.



Infrastructure and connectivity to facilitate sharing is not enough, especially in the rural areas.

Low awareness among researchers and society on the benefits of Open Science making research data more accessible.

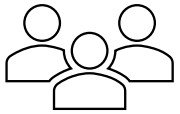
Asia-Pacific Economic Cooperation

International Science Council
The global voice for science

Source: APECOSA Workshop, Survey, Desktop Research

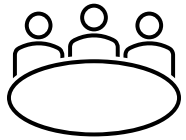
Capacity Building Challenges

A need to foster collaboration and support to move scientific knowledge forward

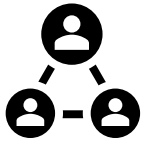


Low trust within scientific data in the repository amongst the community

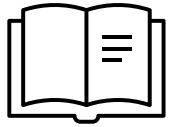
Inclusiveness when sharing data and making policies surrounding open science



Lack of drive on implementing a holistic approach for open science (everyone has a role to play in open science)



Awareness and changing the mindset and framework (including incentive and reward) to create an open science ecosystem.



Need to enhance capacity and increase number of training programs to develop data curators and stewards to manage the research data in each APEC economy repository to ensure data quality

Source: APECOSA Workshop, Survey, Desktop Research

Asia-Pacific Economic Cooperation

International Science Council
The global voice for science

Open science initiatives in APEC Economies

- List is not exhaustive

Economy	Initiative	Responsible Party
Australia	OS: Australian Research Data Commons Policy: Open Access Policy in 2013	Australian Research Council; Commonwealth Scientific and Industrial Research Organisation
Canada	OS: Federal Open Science Repository of Canada Policy: Open Science Action Plan (2021-2026) Roadmap for Open Science (2020)	Federal Science Libraries Network hosted by National Research Council of Canada Environment and Climate Change Canada Office of Chief Science Advisor
Chile	OS: National Digital Repository of Science, Technology and Innovation Policy: Open Access Policy to Scientific Information and Research Data, Current Research Information System (CRIS)	The National Commission for Scientific and Technological Research, CONICYT Chilean National Agency for Research and Development (ANID)
People's Republic of China	OS: Science Data Repository (ScienceDB), Open Science International Cooperation initiative	The Chinese Academy of Sciences
Indonesia	OS/Policy: One Data policy, Indonesia's National System of Science and Technology Law	National Research and Innovation Agency (BRIN)
Japan	Policy: JST Policy on Open Access to Research Publications and Research Data Management	Ministry of Education, Culture, Sports, Science, and Technology (MEXT) Japan Science and Technology Agency

Source: APECOSA Workshop, Survey, Desktop Research

Economy	Initiative	Responsible Party
Republic of Korea	OS: ScienceOn, DataON Policy: Data Management Act and the Framework Act of Science and Technology	Korea Institute of Science and Technology Information (KISTI)
Malaysia	OS: Malaysia Open Science Platform (MOSP), Malaysia Open Science Alliance (MOSA), Data Stewardship on Open Science Training Policy: National Science, Technolgy and Innovation Policy, National Guidelines on Open Science	Ministry of Science, Technology and Innovation Academy of Sciences Malaysia
Mexico	OA: Open Journal Systems (OJS) Latin America, Caribbean Journals Online (CAMJOL), the Ibero-American Network for Innovation and Knowledge Dissemination (REDIB), Bibliographic Database of Latin American Scholarly Journals (BIBLAT)	National Council on Science and Technology (CONACYT)
New Zealand	Policy: Kaupapahere Rangahau Tuwhera (Open research Policy)	Ministry of Business, Innovation & Employment

Source: APECOSA Workshop, Survey, Desktop Research

Economy	Initiative	Responsible Party
Peru	OS: National Digital Repository of Science, Technology and Innovation (ALICIA), La Referencia, PeruCRIS, National Research and Education Network Policy: Kaw of the National Science, Technology and Innovation System	National Council of Science, Technology and Technological Innovation (CONCYTEC)
The Philippines	OS: Philippine eLibrary, DOST Project Management Information System, Science.PH platform, Philippine Traditional Knowledge Digital Library on Health Policy: Philippine National Health Research System Act 2013, Phillippine Technology Transfer Act 2009	Department of Science and Technology (DOST)
The Russian Federation	OS: Cyberleninka	Non-government organisation
Chinese Taipei	Open government data platform	Department of Digital Development
Thailand	Repository: Thai National Research Repository, National Research Management System	Ministry of Higher Education, Science, Research and Innovation
United States of America	OS: 2023 Year of Open Science, NASA Open Science 101 Curriculum, PubMed Central, White house Open Science Recognition Challenge Policy: 2022 Public Access Memo for Open Access	White House Office of Science and Technology Policy, National Institutes of Health

Source: APECOSA Workshop, Survey, Desktop Research

WAY FORWARD FOR APECOSA - SUGGESTIONS

APECOSA as a platform for sharing on open science initiatives among APEC Economies

Capacity building

- Capacity-building and sharing of best practices among APEC economies
- Eg: Malaysia and China have data stewardship training

Policies and guidelines on open science

- APEC economies can share their respective existing policies on open science
  - e.g. Malaysian Guideline on Open Science; Canada's Open Science Action Plan; ROK's Data Management Act and the Framework Act of Science and Technology; Australia's Open Access Policy
  - Specific subject matter guidelines such as Malaysia's Guidelines for Open Science in Biodiversity; Philippine Traditional Knowledge Digital Library on Health Policy

Sharing of resources such as data and infrastructure

- Open science and infrastructure will encourage collaboration among researchers in APEC economies for mission-oriented research to solve similar challenges faced by each economy such as food security and health security
- Optimise output of research through data sharing across APEC economies (cost-effective) while respecting each economies policy
- Example: International Nucleotide Sequence Database Collaboration (INSDC). This global collaboration, which includes repositories in Europe and Japan, has facilitated the exchange of nucleotide sequence data for over 40 years.

Asia-Pacific Economic Cooperation

International Science Council
The global voice for science

Data Stewardship for Biodiversity

Laying the foundation for Open Science Journey in Malaysia

Project Overview

1. **Project title**: FAIR Data Stewardship Guidelines for Reproducibility in Biodiversity Research (Phase I)
2. **Project duration**: 1 year; from 01.10.2021 until 30.09.2022.
3. **Funder**: ISC ROAP/Academy of Sciences Malaysia
4. **Implementer / Secretariat**: Universiti Malaya

Snapshots from engagements organized between September 2021 to March 2022

(Malaysia)

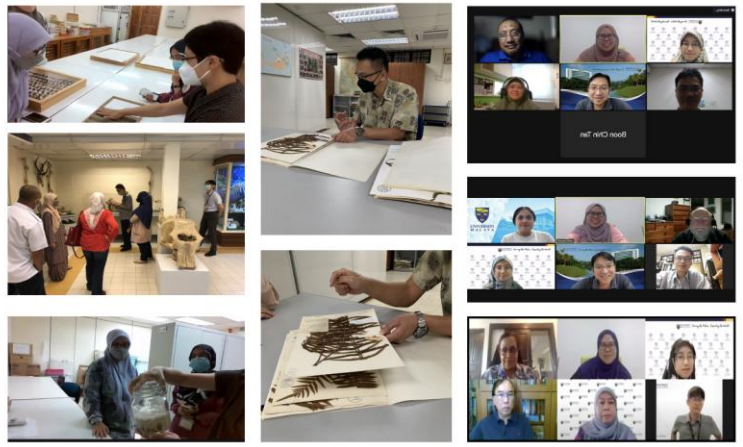
1. Seven Collection Centres & Museums in Malaysia
2. FRIM
3. MyBIS (KeTSA)
4. Universiti Malaya
5. Universiti Kebangsaan Malaysia
6. Universiti Malaysia Sabah
7. Universiti Malaysia Sarawak
8. Sabah Biodiversity Centre
9. Precision BioD Task Force (ASM)

(Overseas)

1. Singapore's Lee Kong Chian Natural History Museum
2. Australian Biodiversity Information Services

(Presentation & Participation)

1. Naming Nature 2
2. CODATA/Global Open Science Cloud
3. TropSc 2021
4. GBIF Asia Virtual Summit 2021
5. STIPAC Presentations
6. Special Seminar on Biodiversity Conservation and Museum Management



Findings from the Data Gap-Need Analysis

1. Biodiversity data management processes and workflows are not standardised

2. Lack of active taxonomists and expertise in digital and physical curation

CURRENT STATE

3. There are nomenclature, taxonomic and spatial errors in data entry.

4. Lack of proper guidance for all stakeholders in the data sharing ecosystem.

Overview of the Guideline

Deliverable	**FAIR Data Stewardship Guidelines**		
Domains	**Biodiversity (*Specimen*) Data Management**	**Digitisation**	**Quality Control**
Scopes	1. Cataloguing 2. Labelling 3. Curating and Storing 4. Retrieving and Analysing 5. Disseminating	1. Specimen Preparation 2. Specimen Image Capture 3. Specimen Image Processing	1. Data Quality Assessment 2. Data Cleaning
Key elements	**Roles & Responsibilities**	**Workflows**	**Tools**	**Software**
Outcomes	1. Standardised biodiversity data management & digitisation processes and workflows. 2. High quality and fitness-for-use of biodiversity data 3. Clear roles and responsibilities for data custodians, data aggregators and data in the data sharing ecosystem for biodiversity			

Way Forward

Phase I: Lay the Foundation

Phase II: Digitisation

Phase III: Connect & Share

Open Science Journey

FAIR BioD Stewardship Guidelines (A one-year project)

Oct 2021 – Oct 2022

Training for Biodiversity Data Stewards

June 2022 - Sept 2022

Digitisation of biodiversity collection

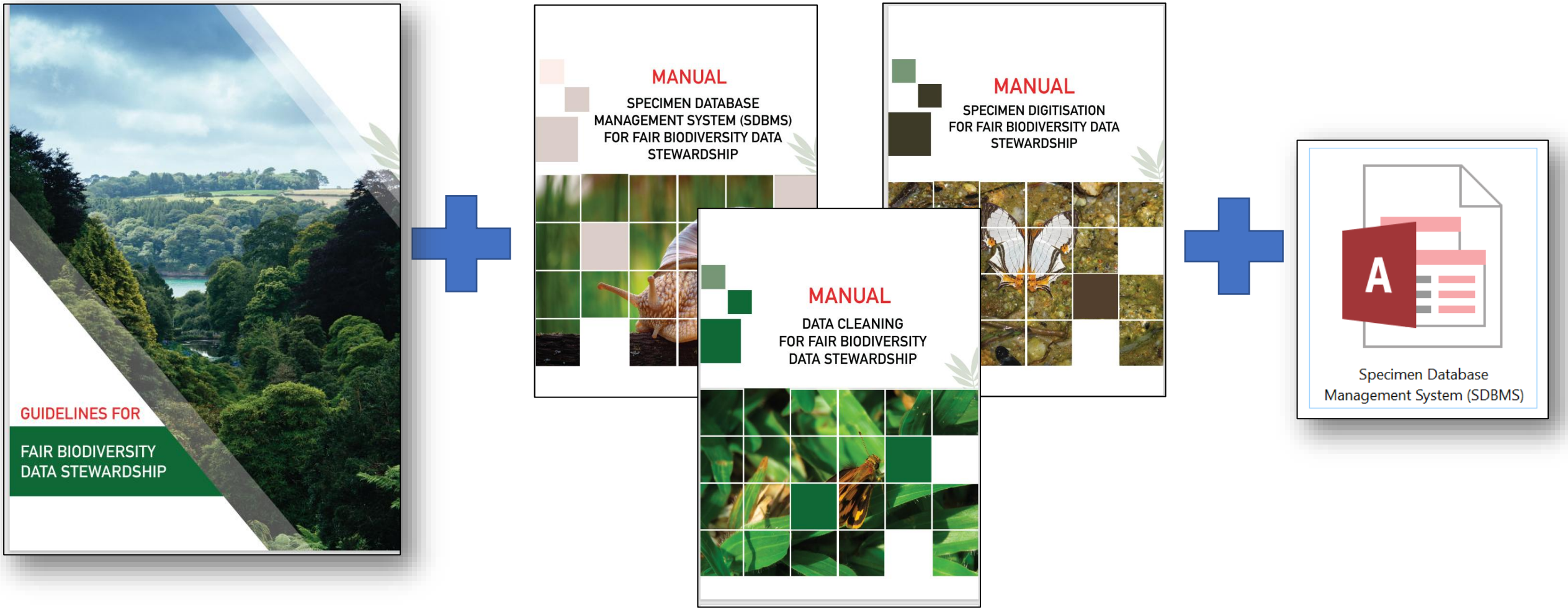
Nov 2022 – 2025 (Under KeTSA)

Development of e-curation platform

Data Aggregator, e.g. MyBIS

The **digitisation training module will be useful for digitisation of biodiversity collection under the KeTSA's initiative*

Fair Data Stewardship Guidelines for Biodiversity Research



FAIR Biodiversity Data Stewardship Guidelines focuses on “What” and “Why”, while the Manual focuses on “How”.

Co-funded by
the European Union

OPEN ASIA
UNIFYING SCIENCE, EMPOWERING INNOVATION

- If all Biodiversity collection centres are empowered with appropriate funding, manpower and similar references, using consistent metadata aligning to global standard, then we can empower biodiversity work across the region

CONSAL XIX MALAYSIA 2025

LIBRARIES EMPOWERING SDG THROUGH CITIZEN SCIENCE:

Insights From THE BORNEO ADVENTURES PROGRAM

Nurfarawahidah, B., Universiti Teknologi MARA (UiTM) Pahang
Mohd Faizal Hamzah, Universiti Malaya (UM)
Cik Ramlah Che Jaafar, Universiti Sains Malaysia (USM); UiTM
Muniratul Husna Mohamad Zaki, Universiti Teknologi MARA (UiTM) Pahang
Zawawi Tiyunin, Universiti Malaysia Sabah (UMS)

Borneo Adventures

CITIZEN SCIENCE IN ACTION

Calling For Nature

10

300 PARTICIPANTS | 5 PUBLIC LIBRARIES |
4 SPEAKERS | 3 TRAINERS | 2 LEAD FACILITATORS | 25 FACILITATORS

DAYS

ABOUT THIS STUDY

- Libraries are increasingly seen as vital contributors to community development, playing key roles in education, health, and sustainability through proactive outreach and strategic collaborations.

- This study examines the Borneo Adventures: Citizen Science in Action programme and analyses participants' experiences, the personal impacts of their involvement, and their recommendations for scaling library-led CS initiatives in Malaysia.

METHODOLOGY

BORNEO ADVENTURES
Citizen Science in Action

01 5 Districts

- Kuching
- Sibu
- Miri
- Kota Kinabalu
- Keningau

02 Data Collection

- 20 informants
- Semi-Structured Interviews (45–60 minutes)

03 Data Analysis

- Thematic Analysis Matrix (TAM)
- Atlas.ti software

KEY FINDINGS - THEME 1

Citizen Science Empowerment:

01 Recognition of Citizen Scientist Identity

02 Personal Development and Motivation

KEY FINDINGS - THEME 2

Environmental Awareness and Biodiversity Appreciation

01 Understanding Environmental Importance

02 Contribution to biodiversity conservation efforts

03 Local Biodiversity Discovery

KEY FINDINGS - THEME 3

Educational Impact and Knowledge Transfer

01 Practical scientific & digital skills

02 Community Knowledge Transfer

03 Inspiration and Enthusiasm for Science

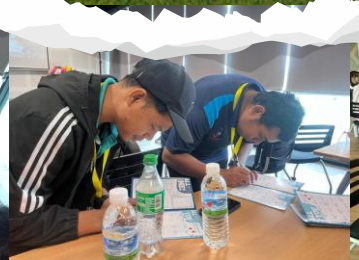
KEY FINDINGS - THEME 4

Tools & Research Support:

01 Utilisation of Digital Technology

02 Practical Application of Scientific Tools

03 Research Collaboration and Resource Support




4 QUALITY EDUCATION
SDG 4
QUALITY EDUCATION
6 CLEAN WATER AND SANITATION
SDG 6
CLEAN
WATER
SUSTAINABLE DEVELOPMENT GOALS
SUSTAINABLE DEVELOPMENT GOALS (SDG)
15 LIFE ON LAND
SDG 15
LIFE ON
LAND
17 PARTNERSHIPS FOR THE GOALS
SDG 17
PARTNERSHIPS FOR THE GOALS

BEFORE & AFTER

“Not all scientists wear lab coats... we too can be citizen scientists.”

“Science is not just reading books, but explor our environment.”

“I hope we can collaborate in the future together with NGOs and the library”

RECOMMENDATIONS

BORNEO ADVENTURES
Citizen Science in Action

- Need for longer and advanced modules
- Encourage youth via gamified tools
- Increase researcher-NGO-library collaboration
- Localize content for wider inclusion

Conclusion

- Libraries = Enablers of citizen science
- Foster environmental literacy & civic engagement
- Translate global SDGs into local action
- Model replicable for Global South

Build Seagrass Restoration Success...

by Focusing on

Local Ecological Knowledge

How to anchor seagrass transplants?

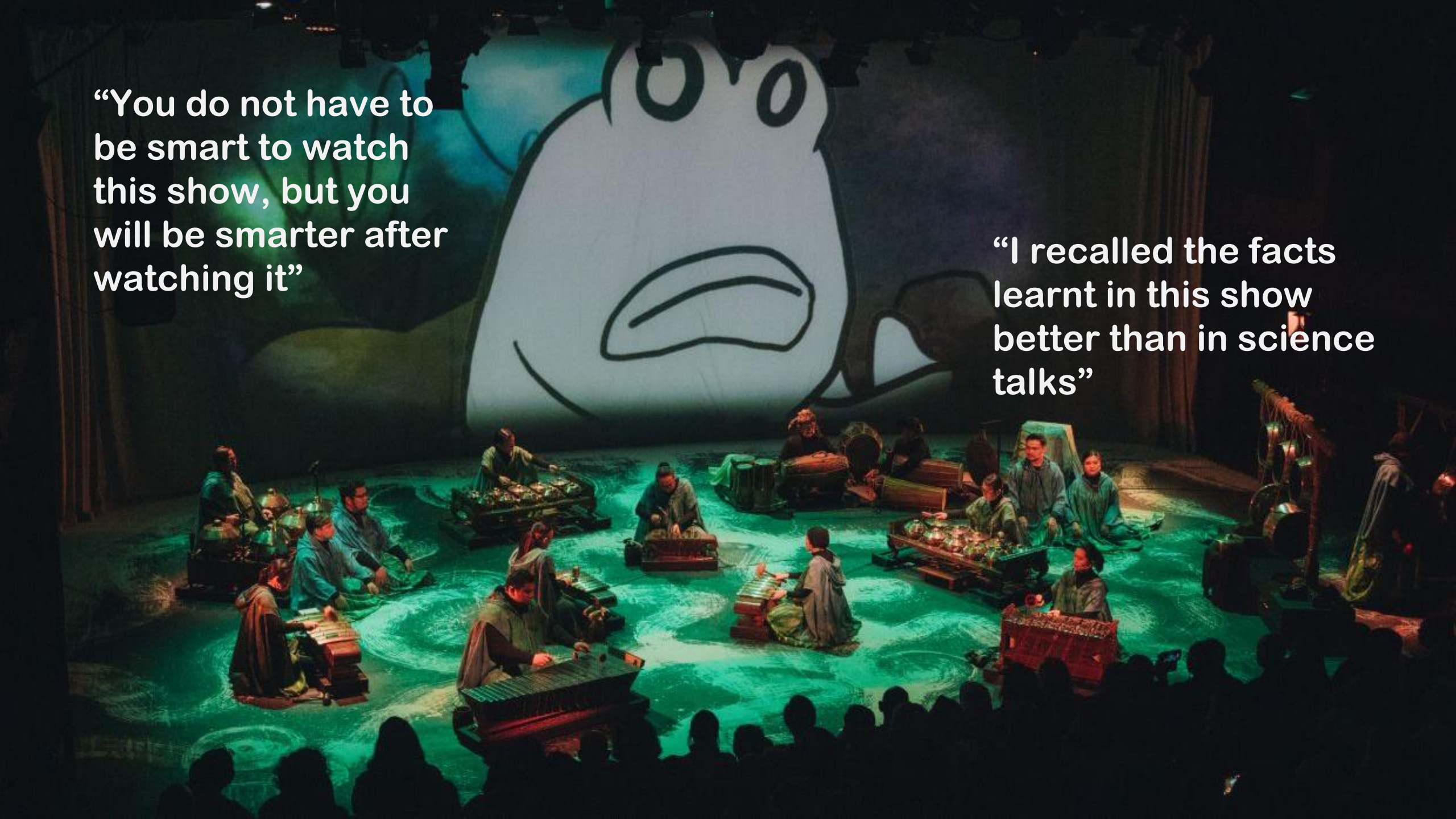
Serina Rahman

SERUAN SETU

Secret Gardens of the Sea

24 – 27 August 2023, KL Performing Arts Centre

Rhythm in Bronze Gamelan Ensemble


“You do not have to be smart to watch this show, but you will be smarter after watching it”
“I recalled the facts learnt in this show better than in science talks”

NexAMS

Home | About | Team | Key Activities | Resources | Partnering Projects | More

Nexus Action for Mangroves in Selangor, Malaysia

Protection Through Value Creation for Community-Public-Private Partnerships

Nexus Action for Mangroves in Selangor, Malaysia

Protection Through Value Creation for Community-Public-Private Partnerships

About NexAMS

Background

Mangroves contribute to businesses and communities through multiple ecosystem services, yet are undervalued and under-protected in Malaysia and globally. Using outputs and lessons learnt from **NetComFish** (Newton-Ungku Omar Fund project), capacity building and co-creation, NexAMS aims to advance policy and business initiatives for improved, inclusive mangrove protection through sustainable use and build public-private-community partnerships, focusing on the state of Selangor.

Objectives

1. Catalyse change in mangrove-relevant policies through engagement of government, private sector and community stakeholders in co-creation workshops and targeted communication along the policy pathway.
2. Work with business champions (local, national) to apply the mangrove business case including achievable actions to minimise business impacts on mangroves and connecting businesses with coastal communities for mangrove livelihood development.
3. Provide a platform for community voices to facilitate greater participation of local communities in sustainable mangrove management. Capacity building and effective communication (direct engagement and multiple media) cross-cuts the above.

Nexus Action for Mangroves in Selangor, Malaysia

Protection Through Value Creation for Community-Public-Private Partnerships

Objectives

1. Catalyse change in mangrove-relevant policies through engagement of government, private sector and community stakeholders in co-creation workshops and targeted communication along the policy pathway.
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3. Provide a platform for community voices to facilitate greater participation of local communities in sustainable mangrove management. Capacity building and effective communication (direct engagement and multiple media) cross-cuts the above.

Executions

Using stakeholder engagement, desk work and knowledge exchange, these aims will be achieved through:

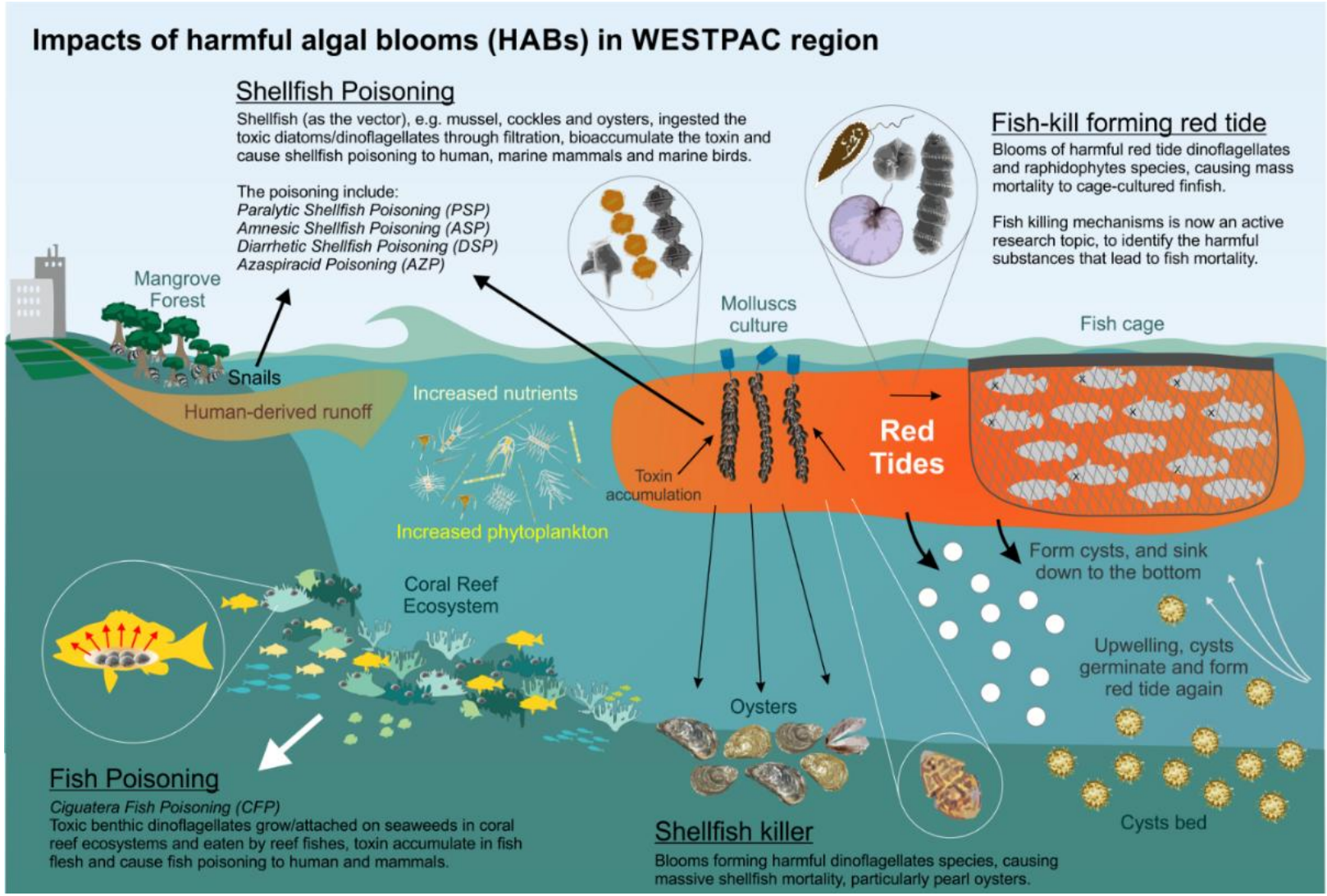
- analysis of local, state, federal and international plans, policies and commitments to identify gaps and learn lessons on how existing initiatives impact mangroves and can be modified to support sustainable development with mangroves;
- assessment of past, present and potential future social, economic and environmental threats to mangroves to identify mitigating actions targeted at public and private sectors;
- identify achievable actions for businesses to minimise their impact on mangroves, support mangrove restoration and contribute to coastal community development;
- community engagement to identify optimum areas for mangrove protection for sustainable use and facilitation of business-community linkages;
- outreach, engagement and targeted communication along the policy pathway and among business networks.

Open Science initiative: Global Harmful Algal Blooms Status Report

In general, HABs are defined as proliferation of certain microalgae that can produce biotoxins that bioaccumulate in seafood, causing massive fish kills or marine life mortality, and ecological damage through the development of hypoxia/anoxia and other ecosystem health degradation.

Public health

Socio-economy



Open Science initiative: Global Harmful Algal Blooms Status Report

A success example of an Open Science is the completion of a **Global Harmful Algal Blooms Status Report**.

Through the coordination of UNESCO IOC GlobalHAB and Intergovernmental Panel on HAB (IPHAB), ISSHA, and IAEA, researchers from various regions have contributed actively to the Harmful Algae Event Database (HAEDAT or HAIS) to allow systematic review of regional and global trends of HAB incidences at both global and regional levels.

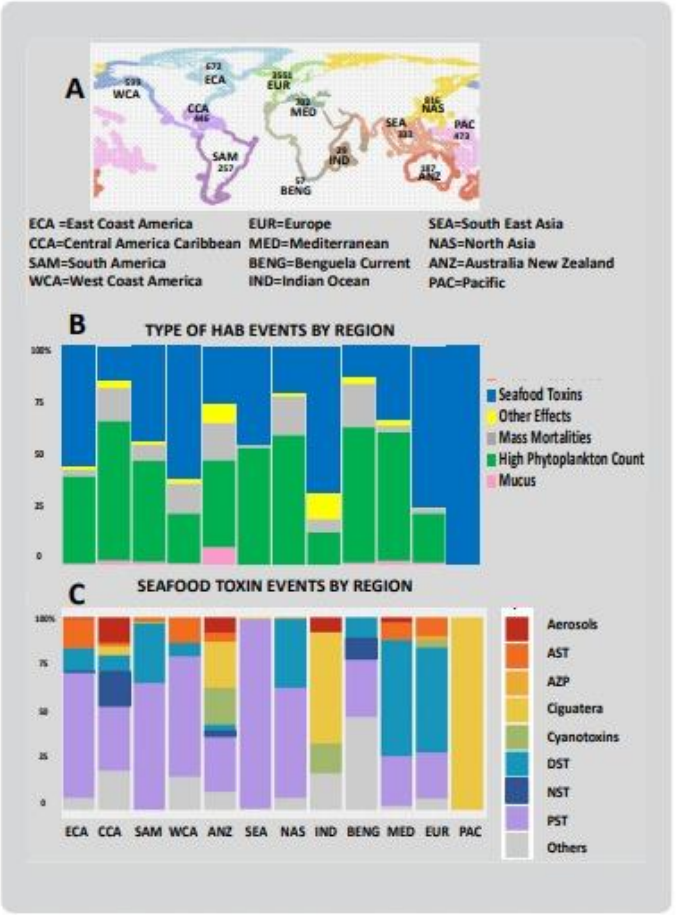


Fig.2. A: Total number of recorded HAB events in each of twelve geographic regions. B: Relative abundance of different types of harmful algal phenomena; and C. Seafood toxin syndromes. Paralytic Shellfish Toxins were dominant in East Coast America (ECA), South America (SAM), West Coast America (WCA), South East Asia (SEA) and North East Asia (NAS), Diarrhetic Shellfish Toxins were prevalent in the Mediterranean (MED) and Europe (EUR), and Ciguatera was predominant in the Indian Ocean (IND) and tropical Pacific (PAC). Australia/New Zealand (ANZ) and Central America/Caribbean (CCA) displayed mixtures of events, while Benguela (BENG) had a large proportion of other syndromes.

Global Harmful Algal Blooms Status Report


Harmful Algae 102 (2021) 101776

Contents lists available at ScienceDirect

Harmful Algae

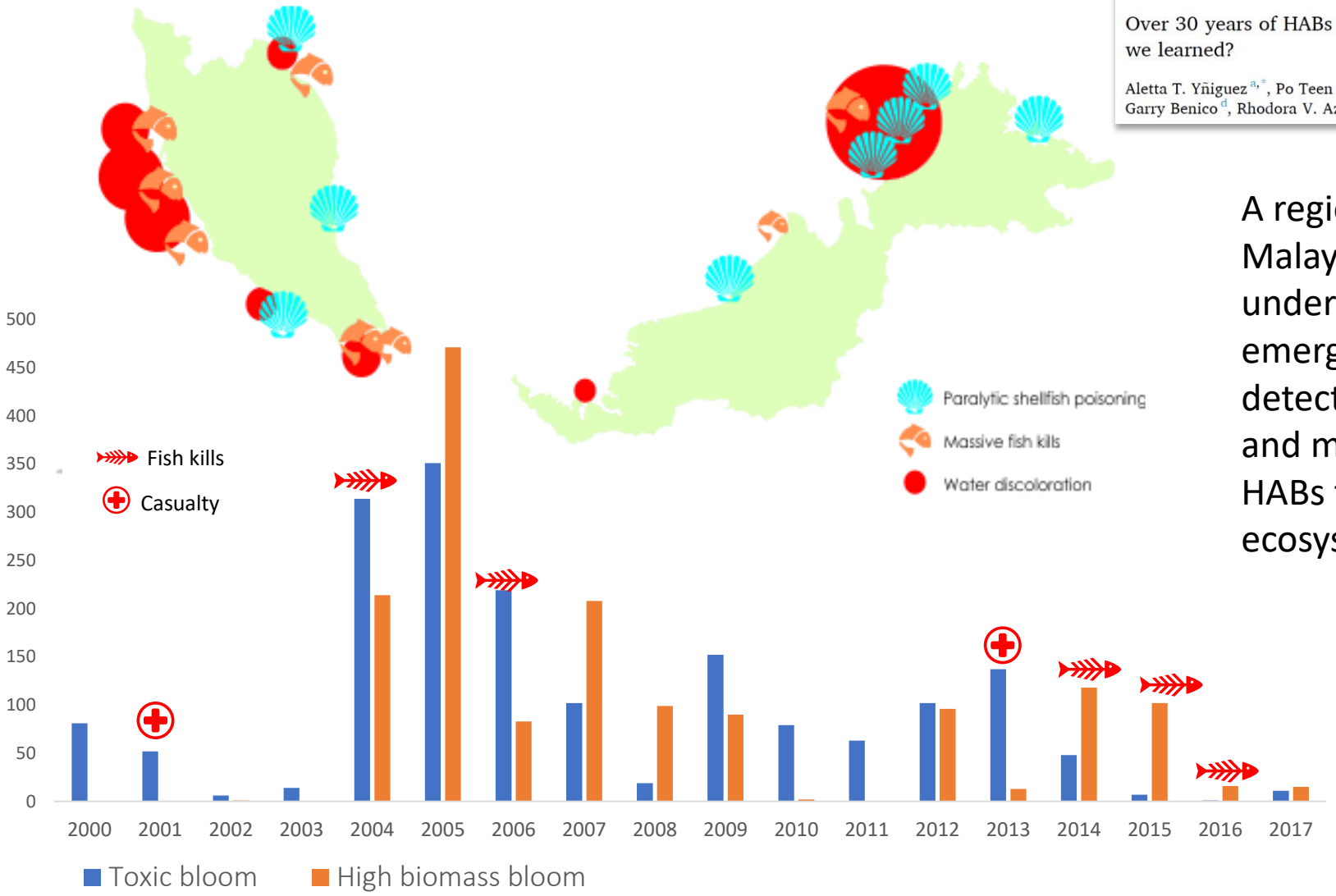
journal homepage: www.elsevier.com/locate/hal

ELSEVIER

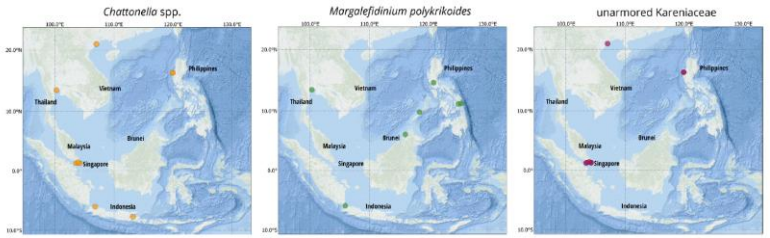
HARMFUL ALGAE

Over 30 years of HABs in the Philippines and Malaysia: What have we learned?

Aletta T. Yñiguez [a,*], Po Teen Lim [b], Chui Pin Leaw [b], Steffiana J. Jipanin [c], Mitsunori Iwataki [d], Garry Benico [d], Rhodora V. Azanza [a]

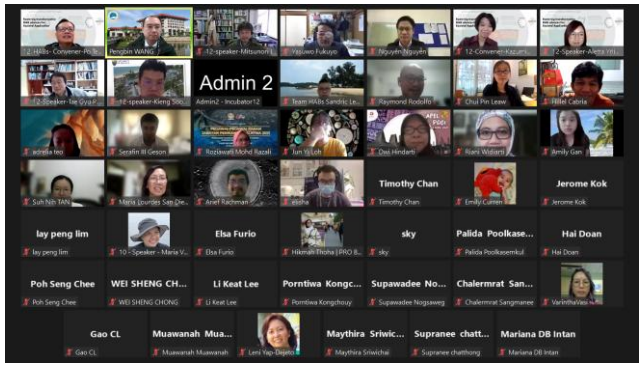


A regional status report was published from Malaysia and Philippines to allow better understanding of HAB incidences, trends and emerging events, and advocate improve HAB detection and more holistic management and mitigation solution on the threats of HABs to food safety, security and ecosystem health.



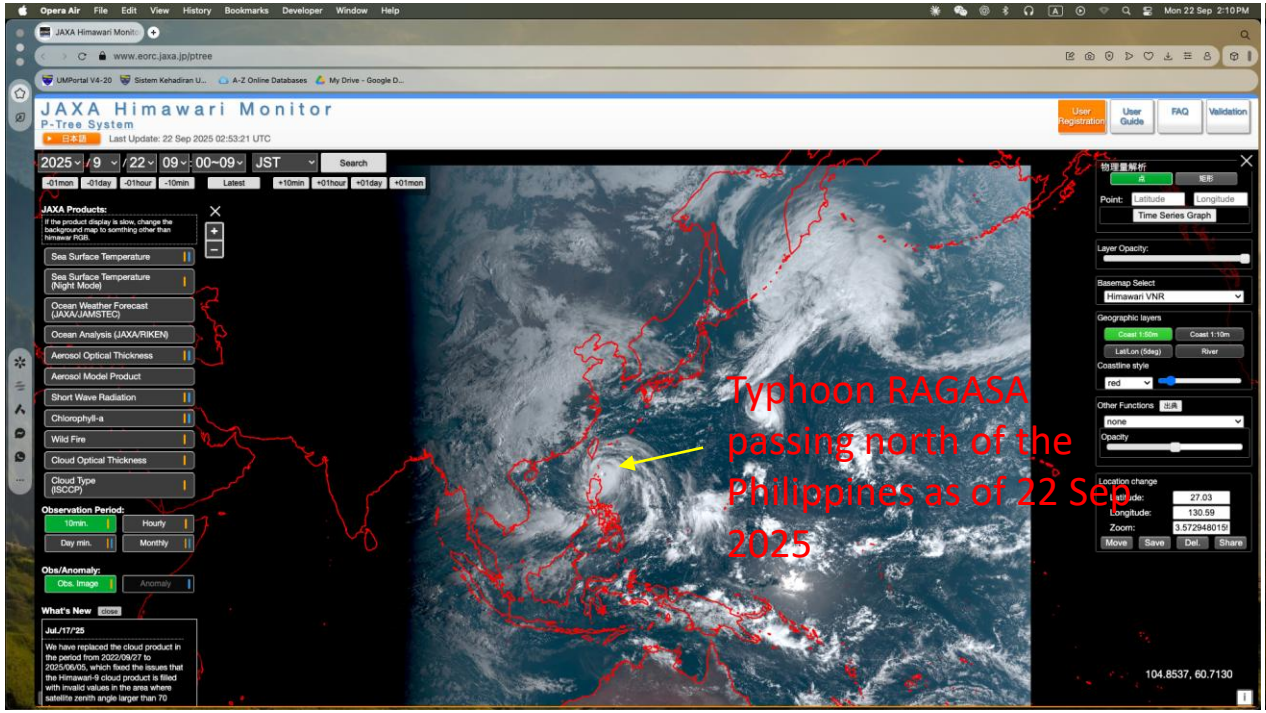
UNESCO IOC WESTPAC HAB program: Contributing to regional capacity building

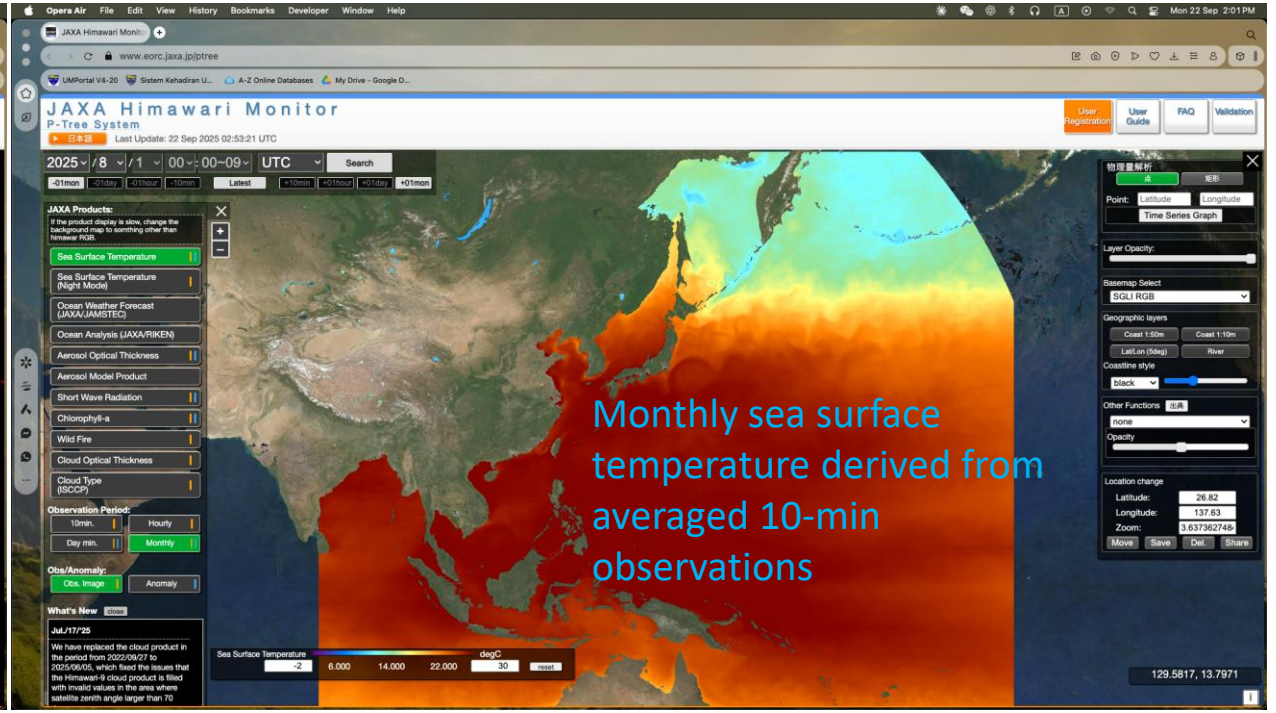
Through UNESCO IOC WESTPAC HAB program, that currently co-led by Malaysia and Japan, a series of capacity building activities since 2016 including training workshops, courses and webinars, both online and on site, these have been successfully co-organized with different related research and monitoring agencies in the region, with hundreds benefited. This effort has benefited young and early career scientists, contributing to the capacity building in HAB research and development in the region.



The UN Decade Action Kick-off Conference for WESTPAC and adjacent areas “Fostering transformative HAB science for society application, 25-26 Nov 2021.”

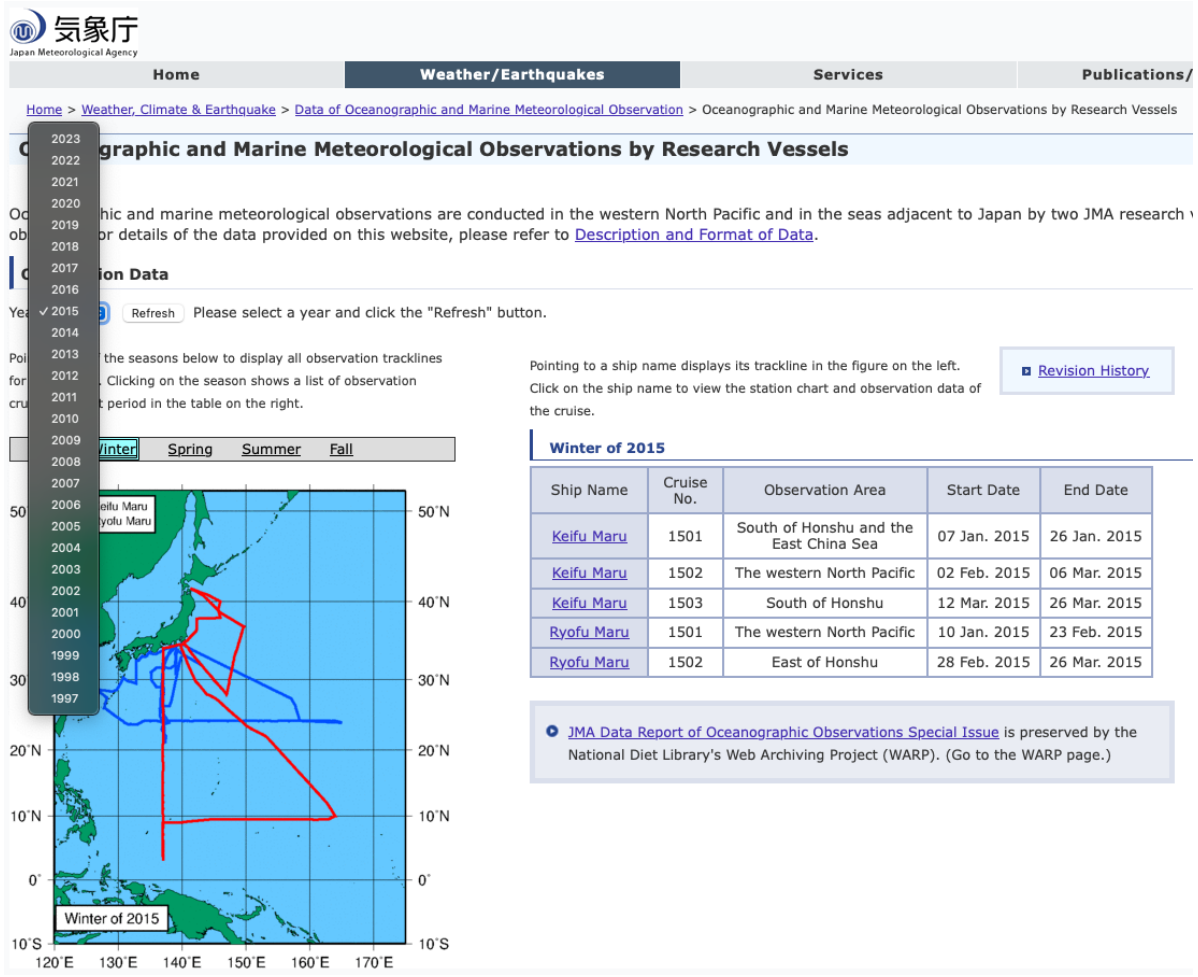
Open data from Japan Aerospace Exploration Agency (JAXA)





- Open-access data obtained by the Himawari Geostationary Satellite at every 10 mins
- Website: https://www.eorc.jaxa.jp/ptree
- The data cover most of east Asia region

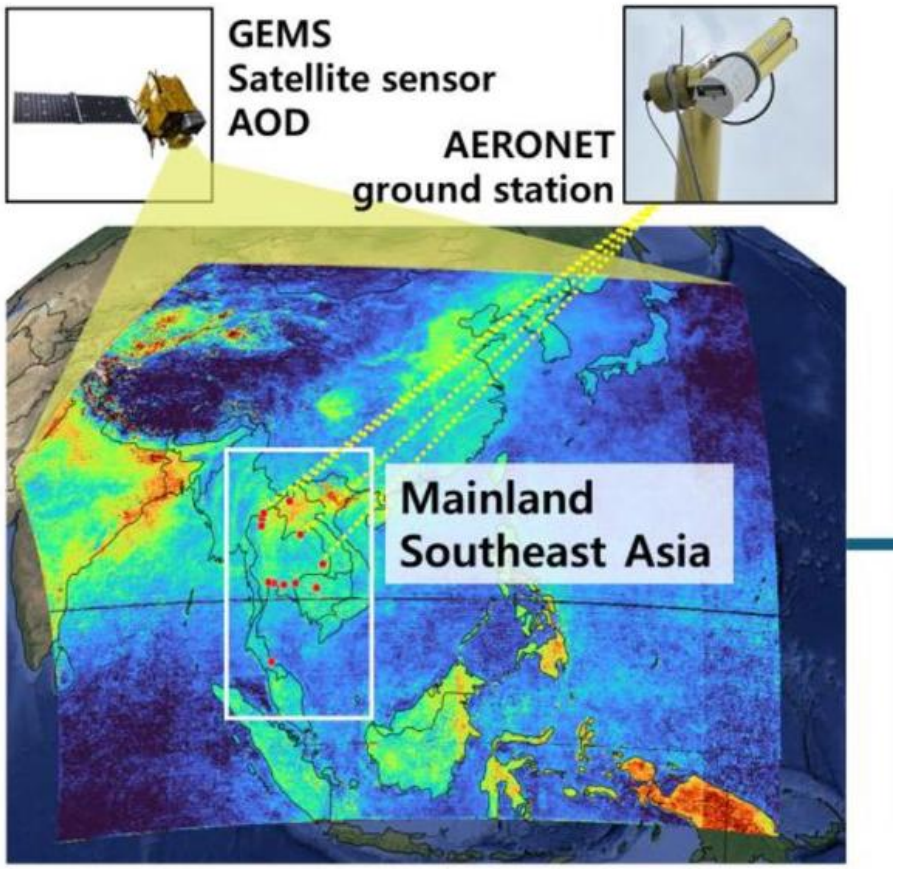
Open data from Japan Meteorological Agency (JMA)



- Open-access field observations from research cruises in the Pacific Ocean since 1997
- Field data from research cruises are scarce and valuable as daily vessel cost can reach up to USD30,000.
- These data have been used worldwide to advance understanding of ocean warming, carbon fluxes, El Nino and typhoon prediction.

Website of JMA where data can be freely downloaded from this URL:
https://www.data.jma.go.jp/kaiyou/db/vessel_obs/data-report/html/index_e.html

Open data from National Institute of Environmental Research, South Korea



- Open-access hourly data of major air pollutants obtained by Geostationary Environmental Monitoring Satellite (GEMS) since 2020
- Website: https://nesc.nier.go.kr/en/html/index.do
- Data cover most of East and South Asia region
- Allow hourly monitoring of air quality and early warning system

Source: Jang et al., 2025 AAQR

The Tagal System

- The “Tagal” System is an umbrella term used by the Sabah state government to refre to a community-led indigenous water resource management practice used by indigenous communities in Sabah for generations.
- The practice involves the conservation & protection of waterways and water sources located in indigenous territories to ensure their water remains clean and unpolluted.

- Safe for minor differences with each community's local circumstances, the Tagal system operates by designating rivers within a community’s territory into zones.
- These zones are usually identified by a committee set up in the village. The Tagal zones become non-fishing zones until the Tagal committee allows it for a limited time, for example, a few days of fishing every two years.

- These periods are usually decided communally and often coincide with indigenous celebrations like harvest festivals or times of need such as indigenous customs requiring specific consumption of fish (e.g. pregnant mothers).

- Example of Tagal zones:
  1. Red: fishing or other activity is entirely banned
  2. Yellow: prohibit fishing except for exceptional circumstances; Eg: Pregnant woman or elderly
  3. Green: Fishing is prohibited except for *"buka tagal"* fishing session usually for one-two days every one or two years.

- Often, especially for indigenous communities in the hills, these Tagal protection zones cover all waterways in the territory, including springs in catchment areas as these are acknowledged as tributaries to the downstream river.
- This practice has especially benefited these communities that rely on surface water through gravity fed systems, as it has led to a direct improvement to the quality and consistency of the water supply drawn from these sources.

- Any breaches by either community members or outsiders are heavily fined, often requiring a customary fine of livestock like a whole pig together with monetary fines.
- These fines are then used to support the community in managing their river resources; if the fine is monetary, it usually used as operating funds for the Tagal committee. If the fine is livestock, then it is distributed to every household in the community.

- In 2017, damage to a community Tagal became one of the grounds for a civil suit by an indigenous community against the private enterprise involved and State government for their inaction. This case was later settled out of court in favour of the community.

Moyog Tagal system at risk

PENAMPANG: The Tagal system along Moyog River is in dire straits and in danger after landowners have stubbornly continued to cut the surrounding land hill area for development, bringing mud into the river.

Moyog assemblyman Terrence Siambun claimed the landowners have breached the Stop Work Order imposed by the authority.

The tagal system entails zoning certain sections of the river, which would then remain off-limits to fishing activities for a certain period to allow the resources to flourish before being harvested jointly by the villagers involved.

Encroachers would be penalised with a fine under the Sabah Inland Fisheries and Aquaculture Enactment 2003.

Siambun urged the government, particularly Tourism, Culture and Environment Minister Datuk Seri Masidi Manjun to seriously look into the problems.

"It actually involves various ministries not only Masidi's. However, I am emphasising this issue more on to Masidi who had frequently voiced out his concern in protecting the environment but yet to take serious actions to work along with other ministries to save the Moyog River.

"The Moyog river debacle falls onto Masidi's ministry as the culture and environment are badly effected due to the pollution.

"Furthermore, tourism operators also complained that business had slowed as tourists refused to buy their products. The muddy river had prevented tourists to enjoy the beauty of Moyog River since last year," told Siambun.

More than 600 Tagal Zones in nearly 200 rivers in 17 districts have been implemented statewide since 2000 costing millions of ringgit.

The Water Department had also voiced their concerns on the impact of the non-stop pollution in Moyog River. The pollution due to hill cutting activities had disrupted water supplies not only in Penampang but also in Kota Kinabalu and Putatan.

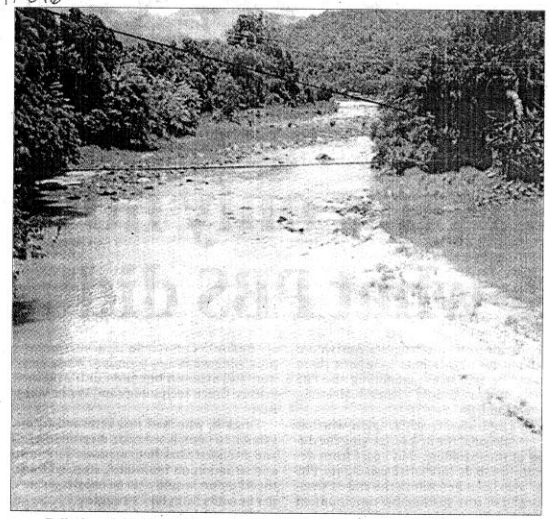
Its deputy director Teo Chee Kong had said that the Kasigui Water Treatment Plant had to be shut down on many occasions as the Nephelometric Turbidity Units (NTU) readings were above the maximum 1,000 NTU set by the World Health Organisation (WHO) for a treatment plant to run efficiently.

"Penampang people are worried about the pollution. The city residents may not realise this but the pollution in Moyog River is alarming. Moyog River is the sole water source to all of us. Soon we are going to have a major water supply issue not due to the river not having enough water but caused by the murky water which actually can be controlled if the government of the day looks at this issue seriously.

"It kept me wondering, despite all the evidence, the landowners still carry out their activities. Why is there no action taken against them? Are the owners immune from any legal actions?" he asked.

He also urged Masidi to be more responsible and sensitive when making statements on environmental impact in Penampang and go to the ground to look into the issue instead of simply assuming everything is still under control.

At the same time, Siambun asked the State government to fulfil its promises to utilise some of the RM390 million approved grants to solve the Moyog River problems.



Pollution of the Moyog River due to hill cutting activities had disrupted water supplies not only in Penampang but also in Kota Kinabalu and Putatan.

- The effective results produced by communities who practised the system convinced the state fisheries department to endorse and support communities implementing the Tagal System officially.
- The State department provides fisheries management advice and even monetary support for committees wishing to erect signposts warning outsiders of Tagal Zones. The department also actively encourages communities with rivers to practice the Tagal system if they do not have traditional management practices.

- In 2003, the State Government legislated the Tagal system into the Sabah Inland Fisheries and Aquaculture Enactment, defining them as “Community Fisheries Management Zones”. The Tagal system is now replicated in many more communities with riverine systems due to state endorsement and encouragement.

Declaration of a Community Fisheries Management Zone.

35. (1) If the Director considers that it is expedient or necessary to involve members of a village or local community in the management and conservation of the fisheries resources or the fishery of an area or part of an area in riverine waters, he may place a proposal before the Minister recommending that such an area be declared a Community Fisheries Management Zone.

(2) The declaration of the Community Fisheries Management Zone shall be made by the Minister by notification in the *Gazette*, which shall state the date upon which the declaration shall come into effect.

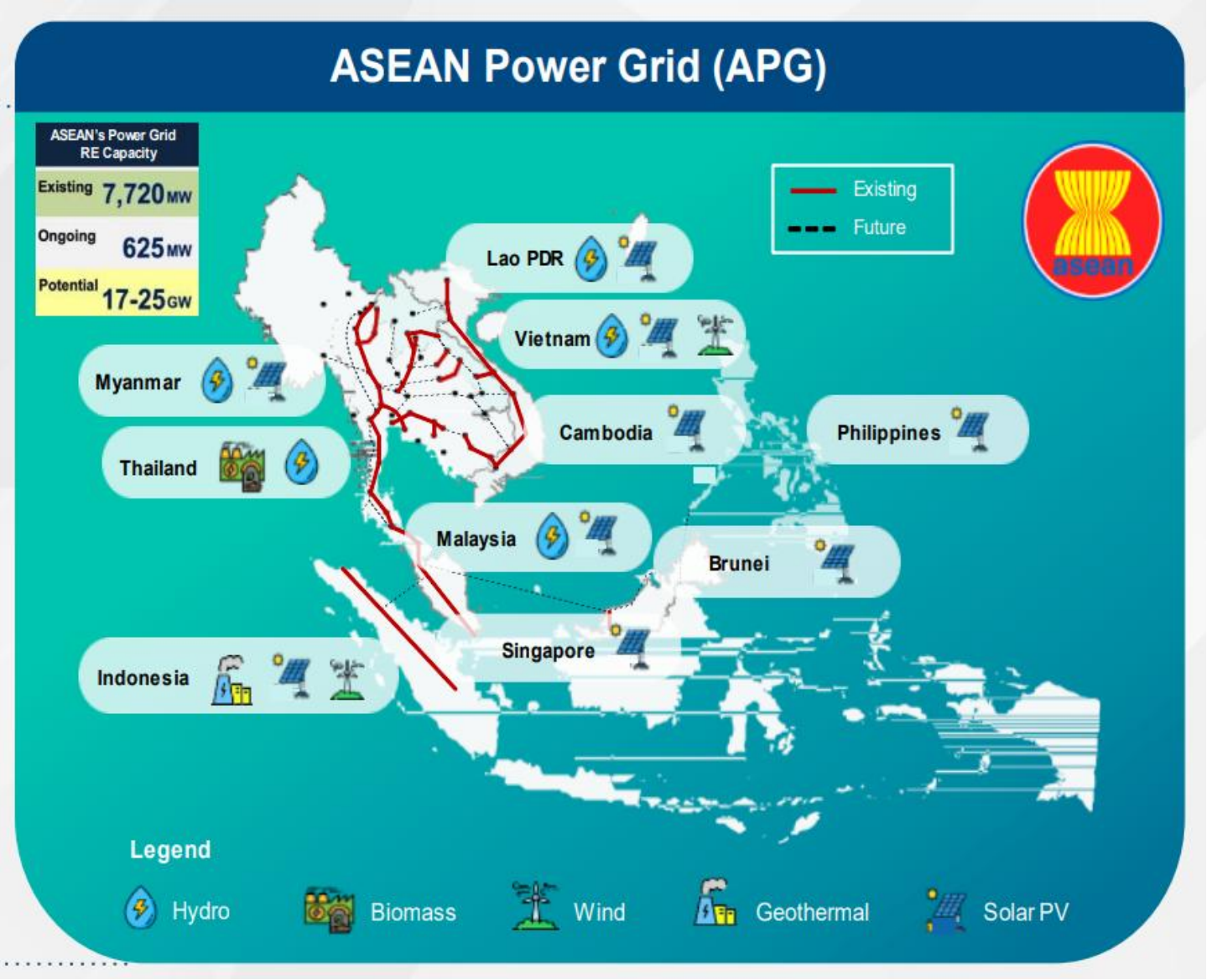
Committee to administer a Community Fisheries Management Zone.

36. The Director may appoint authorised officers or members of the village or local community in the Community Fisheries Management Zone, to form a Community Fisheries Management Zone Committee to administer and undertake the management and conservation of the fisheries resources or the fisheries of the said Community Fisheries Management Zone.

Offences in the Community Fisheries Management Zone.

37. Any person who contravenes the regulations made under this Enactment for the purpose of the Community Fisheries Management Zone shall be guilty of an offence and shall be liable on conviction to a fine not exceeding fifty thousand ringgit.

The ASEAN Power Grid (APG)



Southeast Asian countries have the potential to share as much as 25 gigawatts of power via the Asean Power Grid

Source:
TNB Analyst Briefing, 3QFY2024, November 2024

GRID SYSTEM OPERATOR

6th Floor, NLDC Building,
No. 129, Jalan Bangsar,
59200 Kuala Lumpur

admin@gso.org.my

Grid System Operator

GSO is primarily responsible for the day-to-day real time operation and the management of the Peninsular grid system together with the short and medium term planning.

18,327 MW
Saturday,
20 Sep 2025 @ 21:40
Current Grid Demand

18,327 MW
Saturday,
20 Sep 2025 @ 21:40
Current System Demand

21,049 MW
Wednesday,
28 May 2025 @ 20:30
Highest Grid Demand Recorded

442,167 MWh
Wednesday,
28 May 2025
Highest Energy Recorded

0 MW
Saturday,
20 Sep 2025 @ 21:40
Current Solar Generation
Solar Profile

30 MW
Saturday,
20 Sep 2025 @ 21:30
Cross-Border Power Exchange
CBPE Profile

ASEAN Power Grid & Open Science

Shared Data Infrastructure: 📊 Cross-border energy, renewables, grid stability

Research Collaboration: 🔬 Joint studies on optimization, forecasting, efficiency

Capacity Building: 🎓 Training, open educational resources, regional workshops

Policy & Governance: ⚖️ ASEAN Centre for Energy adopting open science principles

Citizen Engagement: 🌍 Public dashboards, transparency, SDG tracking

➞ The ASEAN Power Grid isn't just an engineering project – it's a knowledge project.
Its success depends on open data, shared research, and collaboration.
If we apply Open Science principles, ASEAN not only lights our homes –
it lights the way for how science and infrastructure can work hand in hand.

Sustaining the Open Science Initiatives

Policy, Guideline & Governance

Policy defines **what** is the scope commitment to
Open Science, the **Guideline** defines **how** are we going to do it, and the **Governance** manages the way we do it

- Research Data Management (RDM) Policy that ensure the research output are FAIRly organised
- RDM system to guide the execution of the policy

Platform

Platform comprises both human and IT support to facilitate the Open Science activities

- The helpdesk and curation services operated by data stewards
- The data repository and support team handled by the NIH data custodians

People & Leadership

People & the management are the main drivers for the Open Science initiative that determines its success

- Our researchers – who produce the data
- Our data steward – who manage and curate the data
- Our data custodian – who safeguard the data
- The data user – who will be benefit from the wealth of the data been shared by NIH researchers
- Institutional Engagement, community engagement
- Training and curriculum
- **Professional research managers**

Sustainability

- The initiative must be **sustainable and should continue after the end of the project funding to increase the impact.**
- Very important to foresee a **Sustainability Plan from** the start of the initiative
- Underline the measures taken to ensure sustainability in progress reports
- **Enablers: Research Evaluation & Full Research Costing**

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UNIFYING SCIENCE, EMPOWERING INNOVATION

"The whole is greater than the sum of its parts."

Thank you