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MAPPING KNOWLEDGE AND GAPS IN DATA, TRANSPARENCY, AND CAPACITY BUILDING PRACTICES IN THE MEKONG REGION

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ACRONYMS

AIPP	Asia Indigenous People's Pact
CARE	Principles of Collective benefit, Authority to control, Responsibility, and Ethics
CS	Civil Society
CSOs	Civil Society Organizations
FAIR	Findable, Accessible, Interoperable & Reusable
FPIC	Free, Prior and Informed Consent
GIS	Geographic Information System
IDS	Indigenous Data Sovereignty
IKDS	Indigenous Knowledge and Data Sovereignty
KIIs	Key Informant Interviews
INGOs	International Non-governmental Organizations
IP	Indigenous Peoples
Lao PDR	Lao People's Democratic Republic
MFF	Mekong For the Future Project
NGOs	Non-governmental Organizations
ODI	Open Development Initiative
OECD	Organization for Economic Co-operation and Development
PAR	Participatory Action Research
TEK	Traditional Ecological Knowledge
WWF	World Wildlife Fund

EXECUTIVE SUMMARY

USAID Mekong for the Future (MFF) commissioned the East-West Management Institute's Open Development Initiative (ODI) to map the data ecosystem in Cambodia, Lao People's Democratic Republic (Lao PDR), Myanmar, and Thailand—collectively referred to here as the Mekong region—with the purpose of making recommendations to support CSOs in the region to engage with environmental governance and environmental data. Research was conducted from December 2021 – May 2022.

In the diverse Mekong region, environmental governance and advocacy are hindered by limited standards on data for environmental governance and limited accessibility of data, tools, and technology in the region. It is important to define environmental data broadly, so as to be as inclusive as possible.

ODI conducted an online survey, reaching 48 people. 34 key informant interviews were completed, and 21 people attended an online focus group discussion and validation workshop. The research took an iterative approach, meaning that at each stage data was considered in light of additional evidence. With these data in hand, we used our knowledge of the region and subject matter to identify relevant themes, codes, and categories. Data was then divided into four categories (problems/challenges; practices; solutions; and recommendations), six thematic areas (knowledge gaps; data issues; infrastructure/tool issues; diversity and inclusion; gender; and IP), and further coded into 29 key concerns to inform our recommendations.

This process revealed three broad themes and several cross-cutting issues that impact the environmental data ecosystem in the Mekong Region:

- **Persistent knowledge gaps** related to what data are available, where to find it, and how to use it;
- **A lack of diversity and inclusion** in the data ecosystem, including the exclusion of Indigenous and other marginalized communities' knowledge in existing datasets; and
- **Limited access to data** due to gate-keeping, infrastructure and tool limitations, and safety and security challenges.

Cross-cutting issues, including **security and safety** connected to a narrowing civic space, and **institutional barriers**—particularly long-standing systemic issues like **gender inequality and racism**—and a reliance on **top-down methods** of stakeholder engagement impact these areas of concern.

From this process, we have developed the following recommendations addressing the research questions towards civil society, conservation and environmental organizations and the donors supporting this work.

1. What can USAID Mekong for the Future work do to create and generate a stronger data ecosystem?

The Mekong Region's data ecosystem is significantly limited by the exclusion of data from, by, and about local communities and marginalized constituencies—particularly women and IP—stemming from issues around language, jargon, and concepts, as well as by the lack of community-driven research and data mechanisms. Environmental leaders, including WWF and USAID, can strengthen the data ecosystem in the region by taking actions designed to address this underrepresentation of marginalized communities and the impact of persistent gender inequality. To do so, we recommend the following targeted interventions:

- Support co-designed participatory action research; and
- Support the development and dissemination of community-driven, decentralized technology and data mechanisms incorporating visual and storytelling options to ensure accessibility for women and other marginalized groups.

2. How can environmental leaders create an effective network that allows civil society to drive the data ecosystem?

Civil society's impact in the region's data ecosystem is limited by barriers stemming from: a) knowledge gaps around accessing, using, and understanding available data; b) persistent gender discrimination in the data ecosystem; and c) ineffective, unsustainable networks. To address these issues, we recommend that environmental leaders consider taking actions that will:

- Build skills and capacity through context-driven data literacy trainings;
- Encourage perspective shifts on gender in the data ecosystem by engaging in concurrent bottom-up and top-down approaches; and
- Build meaningful engagement through network building.

3. How can civil society enable environmental activists to proactively contribute to the environmental data landscape with increased transparency?

Local environmental activists are limited in their ability to contribute to the environmental data ecosystem by persistent gaps in the availability of and access to data, infrastructure, and tools; restricted data flow; safety and security concerns; and a lack of trust in the data and systems that are available. To address these issues, environmental leaders could usefully take actions to:

- Support responsible data policies to open the flow of data;
- Support community-led development of secure, relevant, and accessible tools; and
- Build greater trust within the network and in the data ecosystem.

4. How can environmental leaders strengthen the ability of CSOs and citizens to understand and engage in environmental governance policy, development, oversight, and advocacy?

In addition to the gaps and barriers detailed in the previous findings, local stakeholders are limited in their ability to engage in environmental governance policy by persistent difficulties accessing, parsing, and trusting the available data due to inclusion gaps and a lack of respect for IP and local communities as knowledge holders. To begin addressing these challenges, we recommend environmental leaders consider taking actions to:

- Strengthen local and IP institutions to support engagement in policy development, oversight, and advocacy;
- Support the development, use, and continuation of open data platforms that include accessible data on environmental governance policy; and
- Increase policy dialogues with stakeholders to open up discussions around environmental data governance and policy reform.

These recommendations are intended to be taken concurrently as a means of sustainably reinforcing, validating, and scaling them—while also strengthening systems, building an effective network, increasing transparency, and improving engagement in decision-making processes. Moreover, overlaps between the recommendations themselves are to be expected, since the component parts of an ecosystem often play multiple roles. We have thus made interlinked recommendations to support civil society in the region—especially women and IP—to participate in the environmental governance data ecosystem as producers, intermediaries, users, and subjects through strengthening local institutions while also encouraging national, regional, and international stakeholders to leverage their strengths to drive change.

INTRODUCTION

USAID Mekong for the Future asked the Open Development Initiative (ODI) to map the environmental data ecosystem in Cambodia, Lao People's Democratic Republic (Lao PDR), Myanmar, and Thailand. For simplicity, we refer to these countries as the "Mekong Region" in this report, though it does not include Vietnam, which is usually considered part of the region. The objective of the research is to provide recommendations to ***"strengthen the ability of civil society organizations (CSOs) in the region to coordinate their activities, improve their ability to advocate for and monitor environmental policies, increase transparency, and improve their use of environmental data."*** Accordingly, we focused on gathering data from CSOs to ensure that the findings would reflect their unique needs; however, it is important to acknowledge that there are other stakeholders active in the region whose needs and experiences may not be fully captured in this report. Our recommendations are targeted towards conservation and environmental organizations working within the sector as well as the donors supporting these initiatives throughout the region, collectively refer to as environmental leaders.

THE MEKONG CONTEXT

The Mekong River ties the five countries of Thailand, Myanmar, Lao PDR, Vietnam, and Cambodia together in an ecosystem. All of these countries depend on the river for social, economic, and cultural benefits. Electricity development, derived from mainstream and tributary dams, is just one competing interest on the river. The Mekong River's unique flow supports agriculture and fisheries, which are major drivers of the region's economy. The countries in the region also host a rich biodiversity that has produced natural resources that are in high demand in the global economy, from teakwood to gemstones. The land on which these resources are produced is extremely valuable for this reason; land is also valuable for infrastructure and other physical structure development. Many of these natural resources are also typically located on traditional indigenous land.[1] Governments, keen to benefit economically but low on accountability, have developed and taken advantage of systems of land tenure that: 1) do not or poorly incorporate customary land rights and therefore exclude Indigenous Peoples (IP); 2) may be difficult for local communities to navigate; 3) primarily benefit men; and 4) are skewed in favor of those already in power. As a result, environmental governance has always been closely tied with advocacy.

Diversity. The Mekong region is home to a remarkably diverse population. This diversity extends beyond the environment and geography. Economic development varies greatly between countries, as well as within. The same goes for other socioeconomic markers, such as access to education and literacy, access to clean water, and poverty. In the Mekong region including Vietnam, there are five national languages, each with their own scripts, and almost 400 other languages are spoken. Ninety-one IP groups have been recognized by Mekong region governments, with many more IP self-identified as such. Each group has unique ways of engaging with the world around them, with variations in spiritual, cultural, agricultural, and other practices. However, the groups are united in their holistic relationships with the environment, as well as in their experience of institutionalized and systemic racism.[2]

1 *Asia Indigenous People's Pact. 2019.* Status of Indigenous Peoples' Lands, Territories and Resources in Asia. *Accessed June 29, 2022.*
2 *Ibid.*

Environmental governance and data. Existing best practice standards for environmental governance in the Mekong Region take a top-down approach.[3] While the latest International Union for Conservation of Nature-developed standard[4] moves in the direction of inclusivity, it does not explicitly discuss data. At the same time, using data as evidence is considered necessary for effective environmental conservation. The mainstream Western scientific approach focuses on understanding the environment through measurement, including data. However, within this understanding, "acceptable" data often excludes the worldviews and traditional knowledge of IP, which are typically characterized as "conservation practice based on anecdote and myth."[5] More broadly, non-Western frameworks are seen as non-factual and thus not evidence based. Called "scientization," this perspective considers an observation more valuable if linked with Western scientific methodologies.[6]

The scientization of environmental governance gives those with access to and influence on the data—governments, international non-governmental organizations (INGOs), and corporations—disproportionate power.[7] This in turn disempowers individual and local-level stakeholders, including local communities, IP, activists, and others in civil society.[8] The challenge, therefore, is to establish a system of evidence-based environmental governance that is not top-down and linear, and that regularly reconsiders what comprises fuller knowledge, how it can be produced, and by whom.[9]

Further, data is not neutral. Data impacts what information is considered valuable, knowable, and actionable. How it is produced, analyzed, and used changes its value and reflects the influence of the actors that have access to it. This, in turn, shapes society.[10] Thus, it is important to understand that the unacknowledged default for collecting environmental data, regardless of sector, has typically been extractive, using so-called "helicopter science:" scientists enter a community, take samples, and leave. The information is then used for scientific papers and environmental assessments about communities, without their knowledge, and in many cases, consent. This approach devalues local communities by ignoring the context in which they and data about them exist, and treats their data as a free resource rather than understanding it with respect to relationships and responsibilities.[11] A counter-approach—such as community-based participatory research and community science projects—takes account of from where and from whom the data comes (provenance), and considers usability, ownership, and privacy.[12]

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3 *Dore, John. ND.* Environmental Governance In The Greater Mekong Sub-Region. *Accessed June 20, 2022.*

4 *Springer, J., Campese, J. & Nakangu, B. 2021.* The Natural Resource Governance Framework. *Accessed June 20, 2022.*

5 *Sutherland, W. J., et.al. 2004.* "The Need for Evidence-based Conservation" *in TRENDS in Ecology and Evolution, 19(6). Accessed June 20, 2022.*

6 *Loring, P.A., et.al. 2021.* "Science, Data, and the Struggle for Standing" *in Environmental Governance, Society & Natural Resources, 34(12). Accessed June 20, 2022.*

7 *Ibid.*

8 *Ibid.*

9 *Ibid.*

10 *Dencik, L., et.al. 2019.* "Exploring data justice: Conceptions, applications and directions" *in Information, Communication & Society, 22(7): 873–881. Accessed June 20, 2022.*

11 *Vera, L.A. et.al. 2020.* "When Data Justice and Environmental Justice Meet" *in Information, Communication and Society, 22(7): 1012-1028. Accessed June 20, 2022.*

12 *Ibid. Shepard, P.M. et al. 2002.* Advancing environmental justice through community-based participatory research *in Environmental Health Perspectives, 110(2): 139. Accessed June 20, 2022.*

The CARE principles of Indigenous Data Sovereignty (IDS)[13] are one framework for understanding the data ecosystem from a non-extractive perspective. Developed by IP representing dominant colonized nations,[14] the CARE principles focus on collective benefit, authority to control, responsibility, and ethics, and are intended to complement the open data movement's FAIR principles.[15] The CARE principles are "people and purpose-oriented, reflecting the crucial role of data in advancing indigenous innovation and self-determination."[16] IDS localization processes have begun in Asia (termed Indigenous Knowledge and Data Sovereignty (IKDS) Asia Framework), supporting unique, Asian perspectives of indigeneity and data sovereignty which may vary from the perspectives of indigenous communities from other locations.

Finally, access impacts the data ecosystem. However, especially in the Mekong region, the concept of "access" needs to be considered broadly. Access refers not only to the existence of data, but also to the ease with which users can find and understand the data, including availability in a variety of formats and languages, and in a format that is usable. In rural and indigenous communities, accessibility also refers to having relevant physical infrastructure—such as electricity, internet, and computers—as well as basic data literacy. These elements are linked.

Environmental data in the Mekong context. For this study, we define "environmental data" as *information, in any form, on the factors, responsibilities, and relationships that interact with, affect, or are likely to affect the environment in any way.* This broad definition, building on the EU perspective,[17] is taken to include indigenous perspectives on the environment, also known as Traditional Ecological Knowledge (TEK). TEK, aside from being valuable in and of itself, has recently been recognized by the international community as necessary in combating climate change.[18]

TEK remains underrepresented in the data ecosystem. Despite recent recognition otherwise, the mainstream view of TEK is to consider it "primitive" or "harmful," while the typical practice is to decontextualize the knowledge in such a way that IP are removed from environmental governance or repositioned to justify mainstream conservation practices.[19]

13 *Referring to Collective benefit, Authority to control, Responsibility, and Ethics.*
14 *i.e., CANZUS, or Canada, Australia, New Zealand, and the United States of America*
15 *Findable, Accessible, Interoperable and Reusable.*
16 *Research Data Alliance International Indigenous Data Sovereignty Interest Group. 2019.* CARE Principles for Indigenous Data Governance*. Accessed June 20, 2022.*
17 *"Information in any form on the state of the environment, on factors, measures or activities affecting or likely to affect the environment or designed to protect it, on cost-benefit and economic analyses used within the framework of such measures or activities and also information on the state of human health and safety, including the contamination of the food chain, conditions of human life, cultural sites and built structures in as much as they are, or may be, affected by any of those matters." See* here*.*
18 *Including, most recently, by the* IPCC*.*
19 *Chung, P. & Chung, M. 2022. "Indigenous rights, new technology and the environment" in The Routledge Handbook of Global Development. Eds. Sims, Kearrin et al. Routledge.*

Narrower definitions of environmental data do not address accessibility of environmental data ecosystems with respect to governance, rights, and justice. Nor do they include TEK. For example, the Organization for Economic Cooperation and Development (OECD) views environmental data as: "Characteristics or information, usually numerical, that are collected through observation"[20] about the "environment," which is limited to the physical environment and policy,[21] without considering the reciprocal relationships of cause and effect upon environmental systems. Our respondents held a range of views on this topic; the broad definition of environmental data used here best reflects this without excluding narrower perspectives.

In the context of this research, the Environmental Data & Governance Initiative's "Environmental data justice" framework is useful. It incorporates "historically marginalized perspectives into the production, stewardship, and dissemination of environmental data."[22] Participatory knowledge making, anti-oppression, intersectionality, and accessibility are valued and emphasized. Data-related capacity building—understood as an adaptable and sustainable process—is thus needed to support long-term changes to this institution.[23]

The Mekong data ecosystem and stakeholders. The term, "data ecosystem" refers to:

- Infrastructure, analytics, and tools used to capture and analyze data;
- The actors along the data value chain;
- The data itself; and
- The flows of interactions between all these elements.

Actors include producers (those who make data available), consumers (those who use data), and intermediaries (those who mediate between producers and consumers, including data aggregators and data processors). One actor may be a data consumer in one context, a producer in another, and an intermediary in another.[24] Additionally, data ecosystems can be open or closed. Openness in the context of data means that "anyone is free to access, use, modify, and share it—subject, at most, to measures that preserve provenance and openness."[25] All elements within a data ecosystem can add, or take away, a degree of openness to a system. For example, the availability of an open-source platform sharing data in machine-readable formats subject only to Creative Commons licensing and supported by metadata has created a haven of openness in Cambodia, an ecosystem that otherwise limits access to any information at all.

20 *OECD.* Glossary of Statistical Terms: Data. *Accessed June 20, 2022.*
21 *OECD.* Data: Environment. *Accessed June 20, 2022.*
22 *Vera, L.A. et.al. 2020.* "When Data Justice and Environmental Justice Meet" *in Information, Communication and Society, 22(7): 012-1028. Accessed June 20, 2022.*
23 *International Development Research Centre. Data for Development. 2022. "Data Capacity Building in the Global South."*
24 *Oliviera, M.I.S. & Loscio, B.F. 2018.* What is a Data Ecosystem? *Accessed June 20, 2022.*
25 *Open Knowledge Foundation.* Open Definition 2.1. *Accessed June 20, 2022.*

Compared to other regions, the data ecosystem in the Mekong region is young and developing. Government institutions such as National Statistics Offices[26] and ministerial level departments[27] are the primary and authoritative data producers and stewards. Donors,[28] international and regional NGOs and coordinating bodies,[29] NGOs,[30] CSOs,[31] academia,[32] think tanks,[33] and the private sector[34] impact data production both formally and informally. These same actors are also frequently the consumers of this data, with some also acting as intermediaries. (Footnoted stakeholder examples are not exhaustive but are intended to demonstrate the diversity of participants in the region.)

However, there is a budding open data community that contributes to citizen verification and oversight.[35] Led by ODI, the Open Development Mekong platforms are regularly named as a source for data in a region where data is hard to access, suggesting a successful approach in opening a closed ecosystem. The ODI network has also been active in developing the data ecosystem through the provision of context-driven data literacy training targeted toward groups of environmental advocates typically underrepresented in the data ecosystem. This award-winning approach has been requested across the region, and hopes to build a civil society network that generates demand for data. This list of environmental data portals details many of the active environmental data projects in the region. These platforms often use and release the same data; however, few are networked or utilize linked open data standards.

The constituency of *data consumers* ranges widely, from journalists to academics, civil servants to students, business analysts to NGOs. However, marginalized peoples, especially women, IP, the elderly, and remote communities, are under-represented throughout the data ecosystem. These communities are regularly underserved and remain invisible; the above-mentioned data literacy trainings have proven successful in supporting advocacy and expanding the constituency of data consumers.

26 *For example, Cambodia's National Institute of Statistics, the Lao National Statistics Bureau, Myanmar's Central Statistical Organization, and the National Statistical Office of Thailand.*

27 *Including but not limited to the Ministries of Health across the region, Cambodia's Ministry of Interior, and the Myanmar Information Management Unit.*

28 *Including Asia Development Bank, Japan International Cooperation Agency, US Agency of International Development, World Bank, although many others are active in the region as well.*

29 *Including but not limited to UN Environment Programme, UN Development Programme, International Union for Conservation of Nature, WWF, Mekong River Commission, UN Economic and Social Commission for Asia and the Pacific, Association of Southeast Asian Nations, SERVIR Mekong, the Open Development Initiative, Mekong Fish Network, Mekong Water Data Initiative, Asia Indigenous People's Pact, International Accountability Project.*

30 *Including but not limited to International Rivers, RECOFTC – The Center for People and Forests, Landesa, Thailand Environmental Institute.*

31 *Including but not limited to Cambodia Indigenous Youth Association, Karen Environmental and Social Action Network, Community Development and Nature Conservation, Cambodia Indigenous Peoples Organization.*

32 *Including but not limited to Chulalongkorn University in Thailand and the National University of Laos.*

33 *Including but not limited to Stimson Center, Stockholm Environment Institute.*

34 *Including but not limited to freelance consultants, as well as Mekong Big Data.*

35 *Led by ODI, with platforms for Cambodia, Lao PDR, Myanmar, Vietnam, Thailand, and the Mekong.*

Infrastructure (including physical, institutional, and legal), analytics, tools, and interactions between all the elements play an equally important role in the Mekong region data ecosystem. Limitations in infrastructure bottleneck the effective and equitable flow of analytics, tools, and interactions within the ecosystem. The region is characterized by great variability in governance structures,[36] further impacting data flow. This particularly impacts women, IP, and other marginalized groups as they are underrepresented in the system due to systemic gaps—such as in literacy and education[37]—as well as cultural biases on appropriate behaviors for men and women.[38]

Also contributing to limits on infrastructure and access in the region is tech and digital colonialism. Premised on equating "technological advances" with Western-developed, industrial technology, tech and digital colonialism refers to the idea that digital technologies can be used as tools of power.[39] The digital revolution developed out of an English-speaking, Western context, with the major original players from the United Kingdom and the United States of America. As a result, English is the primary language of the technological and digital world, limiting accessibility for non-English speakers. Tools are primarily developed in English in a context out of sync with the realities of the Mekong region, let alone IP and local communities. People in the Mekong region wanting to participate in the data ecosystem are therefore fundamentally disadvantaged and are less likely to be able to access and use available data, tools, and technology to participate in environmental governance—a challenge remaining fundamentally unaddressed, except for pockets of exploratory work currently underway.

Thus, the region can be characterized by its constrained information environment,[40] wide variation in levels of development and access to resources,[41] and limited skill and capacity regarding data and information.[42] These aspects are fundamental to envisioning how to actually reach and connect environmental data stakeholders in the Mekong region beyond those already participating. We also note that the COVID-19 pandemic has seriously impacted CSOs in the region.[43] Though historically very active in environmental resource governance, since the start of the pandemic, CSOs have been unable to sustain their work. This has left an additional gap in the ecosystem.

Existing research. With a long history of *environmental governance* in the Mekong region, there is accordingly plentiful research on it as well, both regionally and nationally. Broadening the search to include "water governance" and "land governance" increases the number of resources available. Data is frequently cited as a necessary part of the work.[44]

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36 *Global Data Barometer. 2022.* "Results: Data for Change – Governance – South and East Asia." *Accessed July 1, 2022.*

37 *Open Development Mekong. 2021. "Section 2 – The impact of school closures in the region: Factors adding to vulnerability, gendered cultural norms" in* Education and COVID-19 in the Mekong Region. *Accessed June 29, 2022.*

38 *Chung, M. & Chung, P. 2020.* Mekong Women in Open Data. *Accessed June 29, 2022.*

39 *Arnold, D. 2005.* "Europe, technology and colonialism in the 20th century" *in History and Technology, 21(1). Accessed June 29, 2022.*

40 *Chung, M. 2020.* Covid-19 is an opportunity to open access to information in the Mekong region. *Accessed June 29, 2022.*

41 *Open Development Mekong. 2018.* Social Development. *Accessed June 29, 2022.*

42 *Chung, M. & Chung, P. 2020.* Mekong Women in Open Data. *Accessed June 29, 2022.*

43 *Carroll, S.R. et al. 2021.* "Indigenous peoples' data during COVID-19: From external to internal" *in Frontiers in Sociology. Accessed June 20, 2022.*

44 *See, for example: Regional research (primarily older), including:* Water Environmental Governance in the Mekong River Delta Vietnam; Environmental governance in the Mekong; Forest governance *in the* MRC. *On Lao PDR* here, here *and* here. *In Cambodia,* here. *In Thai land,* here *and* here. *For Myanmar* here.

However, research on *data in the region* is limited. A textbook, *Open Data in Southeast Asia*, was published by Springer in 2016. A regional review on the state of open data was published in 2019 by Open Data for Development. The ODI has been active in developing this area of the research environment, starting in 2018 with research on understanding access to open data for women in the Mekong Region and a piece on Indigenous Data Sovereignty in the Mekong Region. The ODI also co-coordinated South and East Asia regional research on data transparency for the 2022 Global Data Barometer. The GDB assessment highlighted weak political integrity and noticeably low scores for climate data across all countries in the region.[45] With respect to data for environmental governance, one paper considers the Mekong Region in developing guidelines for data exchange in transboundary waters.[46]

Increasing the *accessibility* of the data ecosystem has been considered globally, but limited research has been conducted and released publicly at either the national or regional level in the Mekong Region. A scoping study, led jointly by ODI and International Rivers, was conducted in 2021, identifying requirements for a security-focused platform to support women in river governance in the Mekong region. This research was based on a 2020 paper identifying this need.

Similarly, research focusing specifically on the *environmental data ecosystem* in the region is limited. A book chapter published in 2022 by Routledge titled "Indigenous Rights, New Technology and the Environment" discusses participatory approaches to data in environmental governance in the Region from a pedagogical perspective.[47] An as-yet unpublished book chapter, entitled "Illicit Digital Environments," overviews how new digital infrastructures for environmental monitoring have been used as tools for repression in the context of Southeast Asia.[48] Finally, a recent piece by Faxon and Goldstein considers the impact of adding new data infrastructures on environmental management. They found that adding new digital monitoring tools was not enough to combat "a context where withholding information has long been a source of state power." Institutional and policy shifts toward data sharing are needed, alongside shifts in relationships between individuals, institutions, and the state, since not all communities will want to share data due to concerns about personal safety and economic exploitation."[49] While the scope of Faxon and Goldstein's research paper is limited to Myanmar, its general findings are relevant to this research, and in fact are reflected in our findings.

45 *Global Data Barometer 2022.* https://globaldatabarometer.org/open-data/.

46 *Mukuyu, P., et.al. 2020.* "The devil's in the details: data exchange in transboundary waters" *in Water International. Accessed June 20, 2022.*

47 *Chung, P. & Chung, M. 2022. "Indigenous rights, new technology and the environment" in The Routledge Handbook of Global Development, Eds. Sims, Kearrin et al. Routledge.*

48 *Faxon, H., & Goldstein, J. (upcoming). Illicit Digital Environments: Monitoring and surveillance in Southeast Asia.*

49 *Goldstein, J. & Faxon, H. 2020.* "New data infrastructures for environmental monitoring in Myanmar: Is digital transparency good for governance?" *in Environment and Planning: Nature and Space. Accessed June 20, 2022.*

APPROACH

Research questions. The objective of this study is to provide recommendations to "strengthen the ability of civil society organizations (CSOs) in the region to coordinate their activities, improve their ability to advocate for and monitor environmental policies, increase transparency and improve their use of environmental data." To this end, we asked three research questions:

1. ***Who are the key stakeholders*** in natural resource governance in the Mekong Region?
2. ***Where are they situated*** within the data ecosystem in the Mekong and in each of their country contexts?
3. And, finally, ***what are the current data and technology needs, gaps, and capacities*** of CSO stakeholders in the region? In particular, we focused on: a) what data and technology CSO stakeholders use; b) where they source this from; c) how accessible these data and tools are; and d) what CSO stakeholder capacity is with regard to data management.

Research methodology. Our methodology was chosen to effectively conduct regional research with limited resources. Our analysis was iterative, meaning that we regularly returned to earlier understandings of research results to confirm new findings, informed by participant experience.

First, we conducted a **desk review of online sources**. As detailed in Figure 1 below, we then conducted three stages of primary research targeted toward understanding the CSO experience:

1. A **baseline survey** on Google Forms, available at this link;
2. 34 1-hour long **key informant interviews** (KIIs) via Zoom or Skype; and
3. A 2-hour long **focus group discussion** on Zoom, including asking participants to validate KII results in breakout groups assisted by knowledgeable facilitators based on WWF-identified sectors (climate change adaptation, renewable energy, transboundary investments, and civil space and governance). Participants were also asked what they felt was most important in their work for their sector.

Figure 1: Details on Baseline Survey, KIIs and Focus Group

Consent was requested for note taking and recording. One participant consented only to note taking. Upon completion of this report, all recordings will be deleted. English was the primary language of research, but national languages and translation were also used in 5 interviews and one focus group. Due to technical difficulties, one interview was partially completed via email. KII guidelines and focus group discussion questions are included in Annexes 1 and 2. Given the objective of this research, we focused on reaching CSOs and other representatives of marginalized and local communities on the gender balance basis. Figures 2, 3, and 4 below show the breakdown of contributors.

Figure 2: Primary contributors to the research were respondents from international and local NGOs

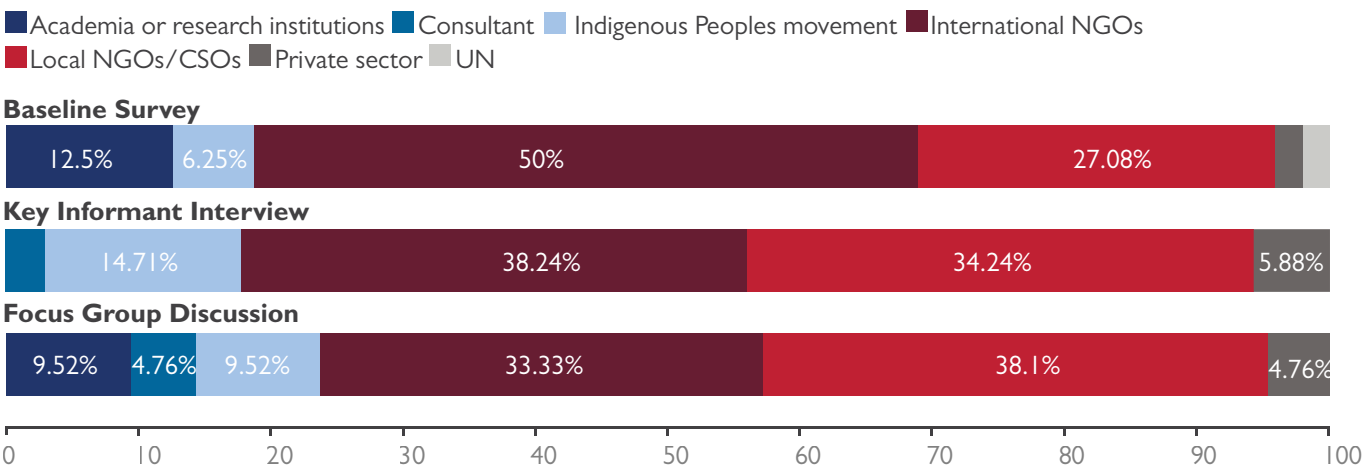


Figure 3: Breakdown of research contributors by gender

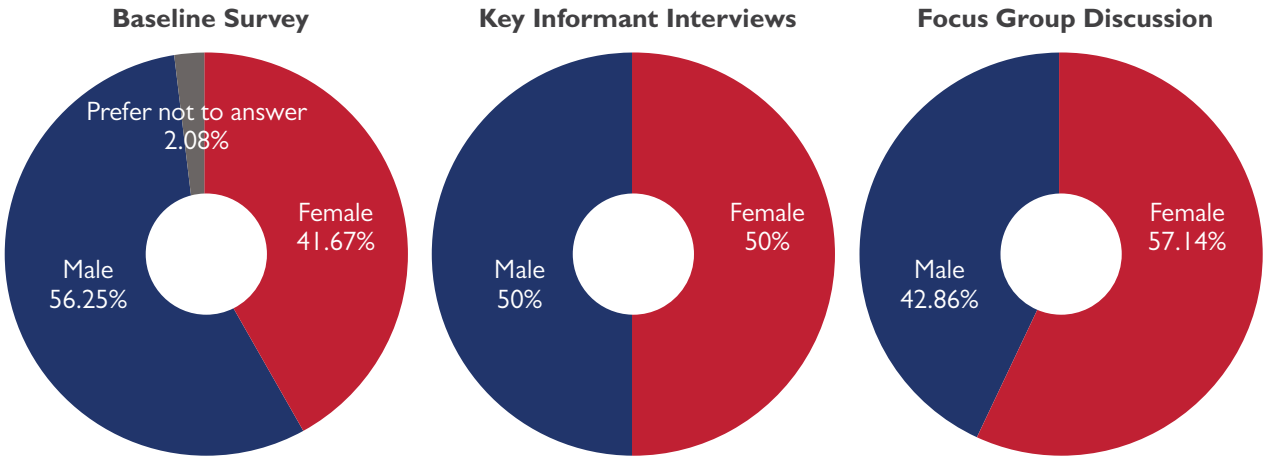
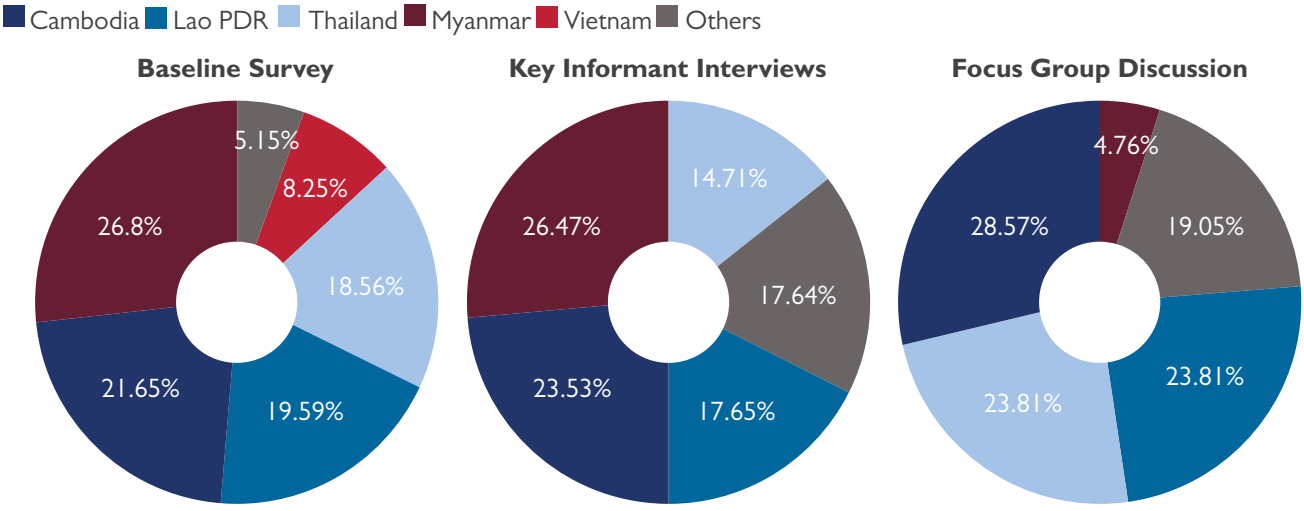


Figure 4: Breakdown of research contributors by country



Analysis. We used our knowledge of the region and subject matter to identify relevant themes, codes, and categories. Data was divided into four categories (problems/challenges, practices, solutions, and recommendations), six thematic areas (knowledge gaps, data issues, infrastructure/tool issues, diversity and inclusion, gender, and IP), and further coded into 29 key concerns to inform our recommendations on:

- What civil society can do as part of their work to create and generate a stronger data ecosystem;
- How environmental leaders can create an effective network (i.e., capacity and skills) that allows civil society to drive the data ecosystem;
- How civil society can enable environmental activists to proactively contribute to the environmental data landscape with increased transparency; and
- How environmental leaders can strengthen the ability of CSOs and citizens to understand and engage in environmental governance policy development, oversight, and advocacy.

Limitations. Our main research limitation was the need to conduct primary research remotely. Travel restrictions due the COVID-19 pandemic only began relaxing while we were midway through our work. Resource limitations were also a factor. A fully online and short-term approach meant that we could not access stakeholders who lacked access to technology or those who might have responded to in-person and slower-paced discussions, a persistent problem in the Mekong region. This disproportionately impacts marginalized populations, especially communities of IP living in rural and remote areas, who have also typically not been included as stakeholders in other work. Thus, this research perpetuates that gap.

Yet, in some ways, the technological barrier for participation was lower than it may have been in previous years. Due to the COVID-19 pandemic, more participants than before were already familiar with tools for meeting online. Thus, despite resource constraints, we were still able to develop a regional snapshot.

As a result of our focus on CSOs and representatives of marginalized and indigenous communities, government and private sector stakeholders are under-represented in our research sample. However, while our recommendations may not be relevant to their needs, they still have a role to play in supporting CSOs in the environmental governance data ecosystem.

Our consideration of gender is primarily focused on a binary view of women/men, and has not considered the broader ramifications of LGBTQIA+ and other gender identities. We recognize that this work conflates gender with biological sex, and results cannot be taken to be representative of the views of the LGBTQIA+ community in the region.

We also acknowledge that our sample size is small, and results cannot be assessed for statistical significance. However, the results are coherent with our pre-existing understanding of the sector. Thus, we suggest that this report can be used as anecdotal evidence of persistent and consistent regional trends on the reality of some civil society stakeholders engaging with environmental governance and the data ecosystem in the Mekong region.

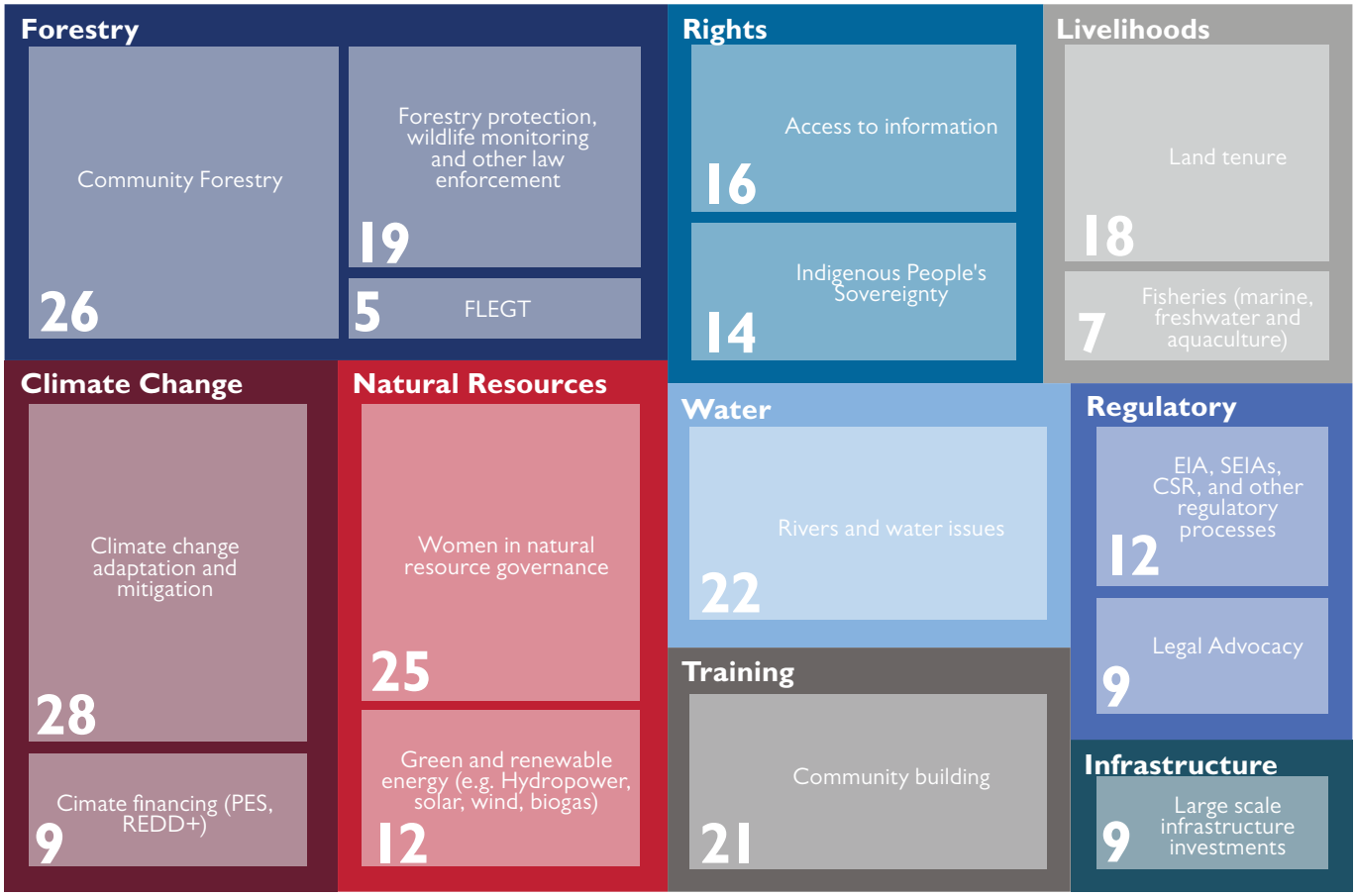
FINDINGS AND RECOMMENDATIONS

BASELINE SURVEY OVERVIEW

Our baseline survey assessed how data and technology are currently used in environmental governance, including what fields our respondents concentrated in, where the data they use come from, how they use available data in their work, and what barriers they encounter in accessing and using data. Respondents were not limited to single responses to allow a full understanding of the dynamics at play. We present these top-line findings below.

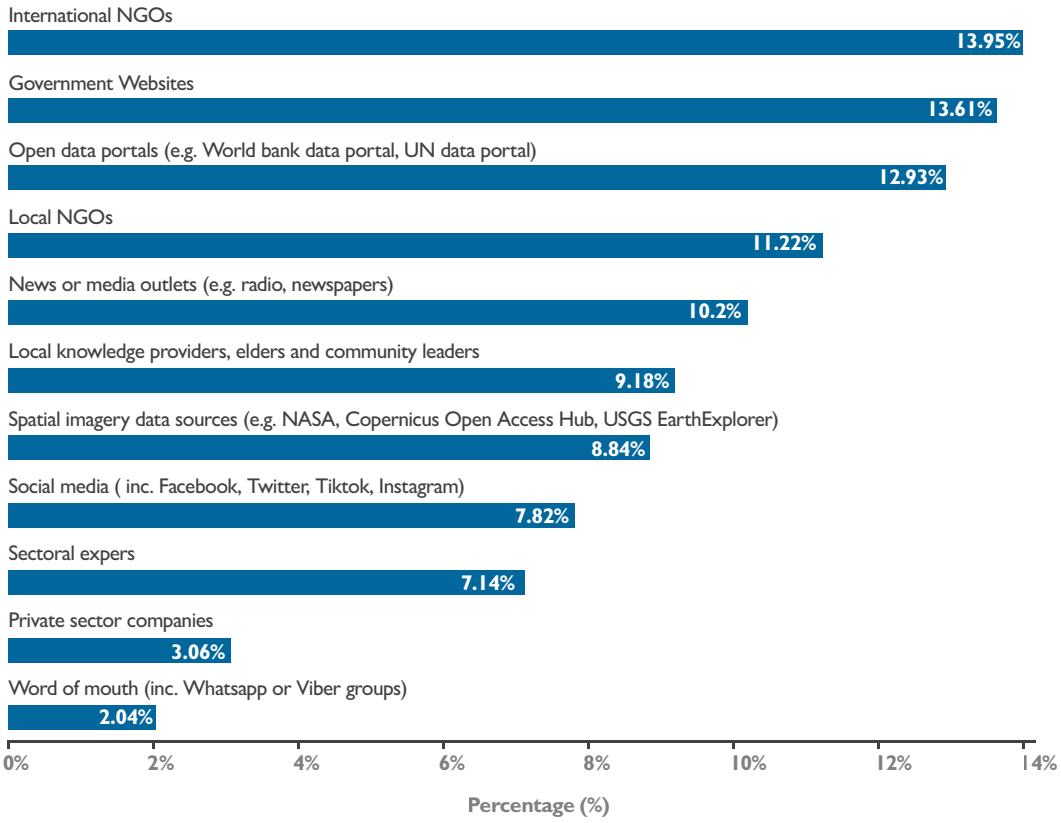
Field of activity. Among the respondents to the survey, many worked across sectors. However, the forestry sector was the focus of the largest cohort of correspondents, as shown in Figure 5.

Figure 5: Survey respondents mainly work in the forestry sector



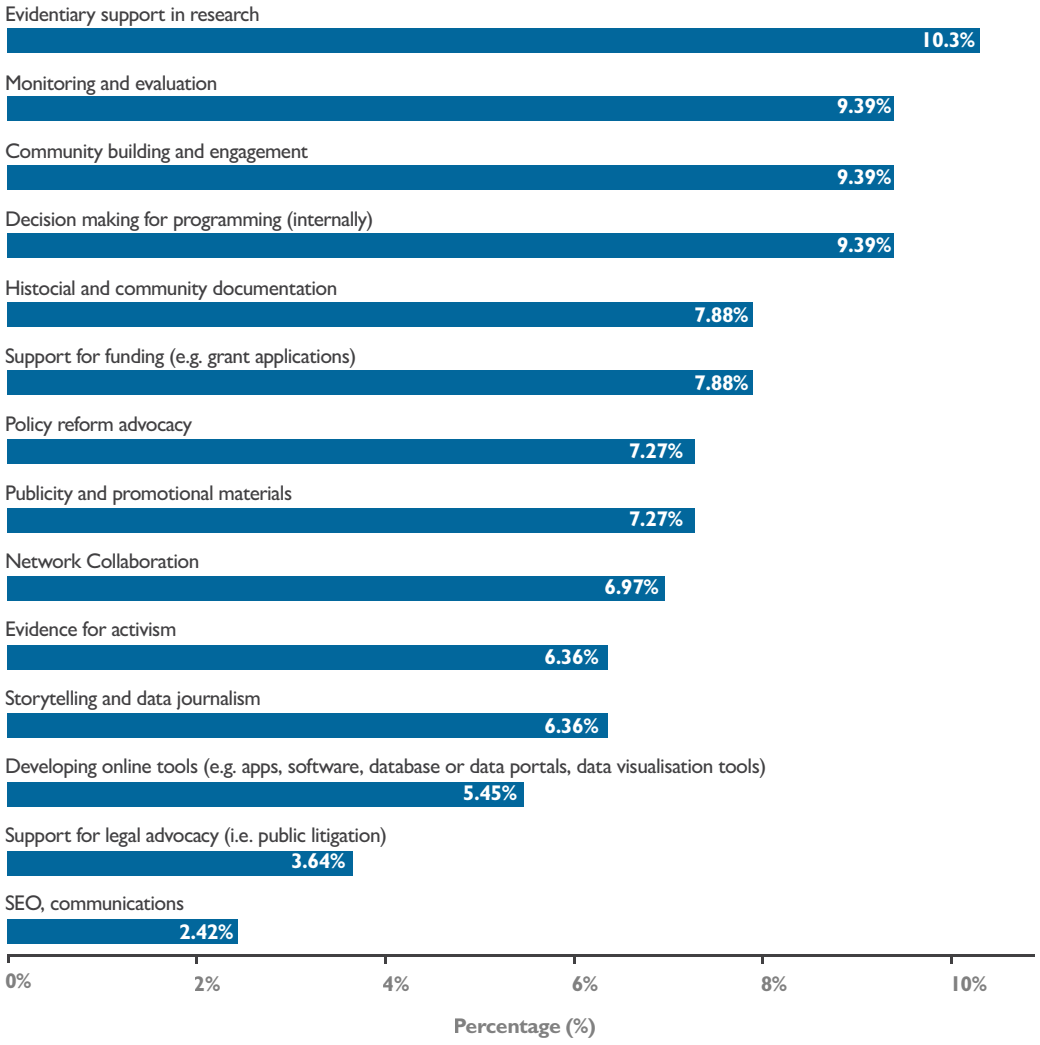
Sources of data. The top 3 sources of data used by survey respondents were INGOs (14%), government websites (14%), and international open data portals (13%), as shown in Figure 6. Of particular note is that just 9% of survey respondents cited "local knowledge providers, elders, and community leaders" as sources of data.

Figure 6: Top 3 environmental data sources are international NGOs, Government websites, and international open data portals



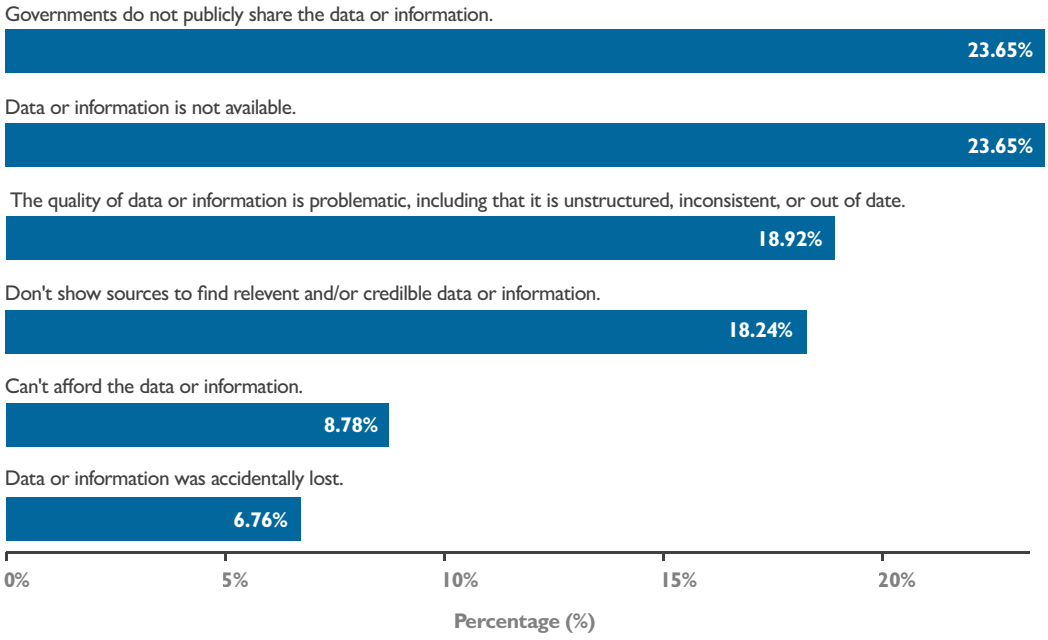
Uses of data. Survey respondents reported a wide variety of uses of environmental data, with the most prominent being evidentiary support in research (10%), as shown in Figure 7. Monitoring and evaluation, community building and engagement, and decision-making followed closely with 9.3% of respondents citing each of these purposes. Strikingly, just 3.6% of respondents reported using environmental data in support of legal advocacy—though a larger 7% cited these data in political reform advocacy efforts, which may overlap.

Figure 7: Majority use the data as evidentiary support in research, M&E, community building and engagement, and decision-making



Barriers to data access. Survey respondents also reported a wide variety of barriers to accessing environmental data, with nearly a quarter citing lack of government data sharing and lack of availability—issues which are likely related—as shown in Figure 8. Furthermore, nearly one fifth of respondents noted that the data which are available are problematic, including issues with structure, consistency, and timeliness. Of particular importance, more than 18% of respondents noted that they simply do not know where to access credible data, and nearly 9% were unable to afford the data that they were able to find.

Figure 8: Barriers are that data is not available and the governments do not share their data



KEY FINDINGS AND RECOMMENDATIONS

Our research revealed three broad themes and several cross-cutting issues that impact the environmental data ecosystem in the Mekong Region:

1. **Persistent knowledge gaps** related to what data are available, where to find it, and how to use it;
2. **A lack of diversity and inclusion** in the available data, including the exclusion of IP and other marginalized communities' knowledge in existing datasets; and
3. **Limited access to data** due to gate-keeping, infrastructure and tool limitations, and safety and security challenges.

Cross-cutting issues include **security and safety** connected to a narrowing civic space, and **institutional barriers**—particularly long-standing systemic issues like **gender inequality and racism**—as well as a reliance on **top-down methods** of stakeholder engagement. These themes are discussed with respect to the research questions.

The Mekong region has strong and effective localized communities of practice, reflecting the diversity of the region. Contextually-driven practices and solutions are used and needed. So, while the data ecosystem across Cambodia, Lao PDR, Myanmar, and Thailand can and should be considered regionally, we also highlight local nuances. Recommendations provided throughout are applied to user profiles in Annex 3.

1. WHAT CAN USAID MEKONG FOR THE FUTURE WORK DO TO CREATE AND GENERATE A STRONGER DATA ECOSYSTEM?

FINDING 1.1: MARGINALIZED COMMUNITIES AND WOMEN ARE UNDERREPRESENTED IN THE DATA ECOSYSTEM

Research respondents described the underrepresentation of women, youth, elders, and IP as data producers, consumers, and intermediaries, as well as in the data itself. This reflects a top-down approach to environmental governance. Communities are not provided with information or involved in data production, with information often being extracted without benefit to communities. Interviewees bemoaned the repeated violation of the right to Free, Prior, and Informed Consent (FPIC). *This perpetuates a lack of trust in the ecosystem.* One person complained of "top-down research" with "no people committed to work on the ground." Another person reflected that "most IP's data are held by others, but IP have no access to these data." IP and other marginalized communities want to be involved, on their own terms.

In terms of better integrating women into the data ecosystem, practices already in use include providing targeted support, which looks different in different contexts. For instance, participants in Lao PDR described including all family members in a training to ensure that everyone, including the women, receives the information, while in Thailand and Cambodia participants described "women only" meetings, so that women feel safe to participate. Interview respondents also described benefiting from targeted support on using smartphones and other tools for data collection, training on using data for advocacy, and cybersecurity, and desired more of the same for future.

FINDING 1.2: LANGUAGE, JARGON, AND DATA-RELATED CONCEPTS ARE A BARRIER

Most interviewees, especially those who are or work with IP, identified translation as a major barrier in the region. Translation here refers to three issues: 1) language (i.e., from national to local language); 2) jargon (i.e., from technical to plain language); and 3) ideas or concepts (i.e., from western scientific worldviews to TEK). Respondents highlighted that, while translation is an often-used workaround, many scientific and technical concepts do not translate into Mekong region languages. At the same time, Western technical concepts need to be contextualized for non-technical users as well as IP points of view. One respondent recounted the three levels of translation when training remote Lao PDR communities on data collection tools: from English to local languages, from technical to plain language, and from mainstream to Indigenous worldviews. Respondents noted that this takes a lot of time and effort, and also requires an intermediary, which removes agency in participation. One interviewee stated explicitly that this is of particular concern for local communities, as they want to ensure their message is not changed in translation. This contributes to a lack of TEK in the data ecosystem—as noted by respondents, communities do not want to divest control of their data, however, requiring a translation intermediary, whether Google Translate or a simultaneous interpreter, runs this risk, especially for information that is only passed verbally. Moreover, the digitization of this data may be difficult if not impossible, especially where local language scripts are not yet digitally standardized or in the case of verbal-only languages. This limits community engagement in environmental governance as it is currently practiced.

This three-pronged issue reflects systemic, colonialistic approaches to both environmental governance and technological development. Environmental governance's Western-driven history means that the *lingua franca* of the sector in the region is English. With Mekong region environmental governance driven by international donors supporting national governments, data, tools, and information are often only available in English and national languages—a fact mentioned by respondents from all countries. Furthermore, technical concepts based in Western scientific worldviews may not translate well. A respondent stated: "It's hard to find the right terminology from English to local languages." Another respondent put it more bluntly: "Translations cannot convey our goal 100%; it will summarize the contents and it is an obstacle in some areas, especially when speaking in Laos and translating into Khamu or Lao Loom." The Mekong region's diversity in language, culture, socioeconomic status, and worldviews has not been explicitly recognized in the work of environmental governance. Thus, not everyone is being included.

Digital development too has its roots in Western concepts, and the process remains greatly biased in this direction. The reality is that technological solutions being used in environmental governance in the Mekong region have not been developed with the region's linguistic and cultural needs in mind, nor are they a substitute for institutional blind spots: technology alone will not change a closed top-down institution and political environments. For example, one interviewee stated that government information on land use demarcations is difficult to find, meaning that communities "have no idea what areas are used for what as demarcated by the Forestry Department." This lack of transparency means that their land rights are subject to government whims, and introducing digital processes here without the necessary government support would be ineffective.

Another person stated that the data they collected using a digital tool might be rejected by the government and that in some cases paper documentation would be used instead. However, because the default language for technological solutions is English, the gap is described as: "IP have a challenge to join [in using data] because of the language," and "searching [online] in English is a challenge and takes time."

Key is that translation is not simply a practice of engaging with words; it should be understood as a relationship between people, with the onus on non-local organizations to understand concepts and contexts from the perspective of local communities. Translation in this broad sense can increase the longevity and transferability of Indigenous Knowledge. The issue should also be understood as a gendered one, as women in IP communities can also be holders of specialized knowledge, particularly around herbs and food. In this sense, the work of translation needs also to be made gender responsive.

Translation work is ongoing around the region. Respondents note that CSOs already translate data, information, and tools into national and local languages, as well as into formats that are more accessible, such as videos, infographics, and drawings. However, this still perpetuates a top-down approach to diversity and inclusion; respondents also spoke of the need for tools for environmental governance to be developed from the ground up. On the positive side, local leaders are regularly engaged—including young IP women leaders tapped to facilitate and translate in training and workshops—as well as in developing indigenous data, understood broadly. For example, a video and photography storytelling project led by IP women was highlighted. There has also been a work to use an image-based tool called Mapeo to support mapping for remote indigenous communities. However, this work must be expanded and systematized to provide more and better entry points to the data ecosystem.

FINDING 1.3: DATA, TOOLS, AND INFRASTRUCTURE ARE OUT OF SYNC WITH MEKONG REGION NEEDS

While data, tools, and digital infrastructure are considered a necessary part of environmental governance, they do not meet the needs of the Mekong region. *Internet connection issues*—a product of remoteness and lack of electrification, as well as political choices—are a frequently cited barrier by research respondents; interviewees elaborated that it especially impacts remote locations and locations where IP reside. Countries in the region face regular electricity blackouts, and government-enforced internet instability is part of the landscape, whether respondents know it is the case, as in Myanmar, or it is not yet confirmed but suspected, as in Cambodia. These issues disproportionately impact IP. For example, even prior to the political instability in Myanmar starting on February 1st, 2021, the government had restricted internet access in Northeastern regions of the country where many ethnic minorities live.[50] Since then, people in Myanmar have seen increased instability of internet access with blocked access to social media, virtual private networks, and other online access points.[51] Furthermore, an interviewee noted that available applications are not compatible with all systems, and another interviewee stated that their computer was of such low quality that they could not design visualizations or practice GIS mapping. A respondent referred to the available "tech gadgets" as "low spec," while another noted that laws are not available on a single, stable platform, and that in the region's closed information environment, there is no guarantee that the link will last for the next ten years. In these cases, users have skills, but their *tools are insufficient for their needs*.

50 *Article 19. 2020.* Myanmar: Immediately lift ban on ethnic news websites. *Accessed June 29, 2022.*
51 *Access Now. 2022.* Update: Internet access, censorship, and the Myanmar coup. *Accessed June 29, 2022.*

Gender plays a role in technical accessibility as well. *Women are more likely to need data, tools, and infrastructure that incorporates their values and perspectives, yet these are currently not available.* This is a result of systemic inequalities impacting access to education and literacy, as well as cultural biases limiting women's access to technology and relevant skills and training. Furthermore, women are not typically included in the technology design process. Research respondents noted that more information should be made available in visual formats, and that different platforms (such as social media) may need to be utilized as these are more accessible to women—even if they are not open or security-focused. One practice noted by a research respondent is the use of small, in-person women-led groups to support technology use; this practice is a relevant reminder that analogue approaches are necessary to support effective networks and inclusivity in the Mekong region data ecosystem.

Another reality for CSOs working in environmental governance in the region is the need for security-focused tools. CS research respondents recounted instances of institutionalized racism, discrimination, and a narrowing civic space. One focus group participant noted that a person they had thought was a reporter in their community had turned out to be a spy; another highlighted that CSOs disclosing information about high-level politicians faced intimidation by police. Gender plays into this as well; as one research respondent working in Thailand noted, women are more likely to be targets of cyberbullying, discrimination, and trolling online.

When asked whether they experienced security concerns, most CS respondents responded affirmatively. They referenced opting for tools with a greater security focus, such as Telegram. Some communities follow strict security protocols when online; however, others noted that they and the communities they work with just avoid going online or divulging their identity, such as when applying for access to data from a government body. Offline and static options are also used as a workaround for poor internet connectivity, security concerns, and low spec tools; posters, infographics, and other image-focused products were repeatedly mentioned as ways to better interact with local communities. However, these analogue systems do not do away with existing issues, and data duplication (or the fact that the same data exists in multiple formats and locations) remains an issue.

RECOMMENDATIONS TO SUPPORT A STRONGER DATA ECOSYSTEM

Recommendation 1a: Support co-designed participatory action research

To create a strong, inclusive data ecosystem, people need to be able to participate, and to participate, they need to be able to identify with the data and information that are being utilized. Participatory action research (PAR) helps to create spaces in the data ecosystem where communities of marginalized peoples feel included and safe to participate. PAR—which in Thai is called "Thai Baan" research—places the locus of control in communities themselves for data production, management, and sharing, reducing concerns about exploitation through top-down data-driven narratives about them. The need, therefore, is to develop research work, including data production, in partnership with local communities, who can identify the data they desire and the research that serves their communities. PAR is best supported by decentralized frameworks for data governance, such as those outlined in the IDS principles. *To support a stronger data ecosystem in the Mekong region, long-term and sustainable funding for such PAR-based research work is essential* (a particular issue regionally, where CSOs are still considered "sensitive") *and the application of IDS principles to the resulting research products*. Together, these actions will increase representation of marginalized peoples in the data ecosystem, strengthening their confidence to participate.

Recommendation 1b: Support the development and dissemination of community-driven and decentralized technology and data mechanisms

Co-creating environmental data management systems from the bottom-up would help to break down language and technical barriers and support the evolution of a data ecosystem that is driven by communities, for communities. The IKDS Asian Framework provides a set of principles promoting a localized approach to data governance, contextualized for the region and for Indigenous Peoples, that reflect a rights-based approach. Through such co-creation and integration of the IKDS Asian Framework principles, communities and those supporting them can facilitate the use of language that is familiar to communities as well as provide the space for communities to direct the innovations that would best suit their needs. *Future projects should be designed with this in mind, and IP-led groups should be engaged from development to implementation to ensure that the work reflects indigenous ways of knowing and respects their sovereignty over their knowledge.* All project-derived data should be compliant with the IKDS Asian Framework or other collectivized governance structures to ensure collective good.

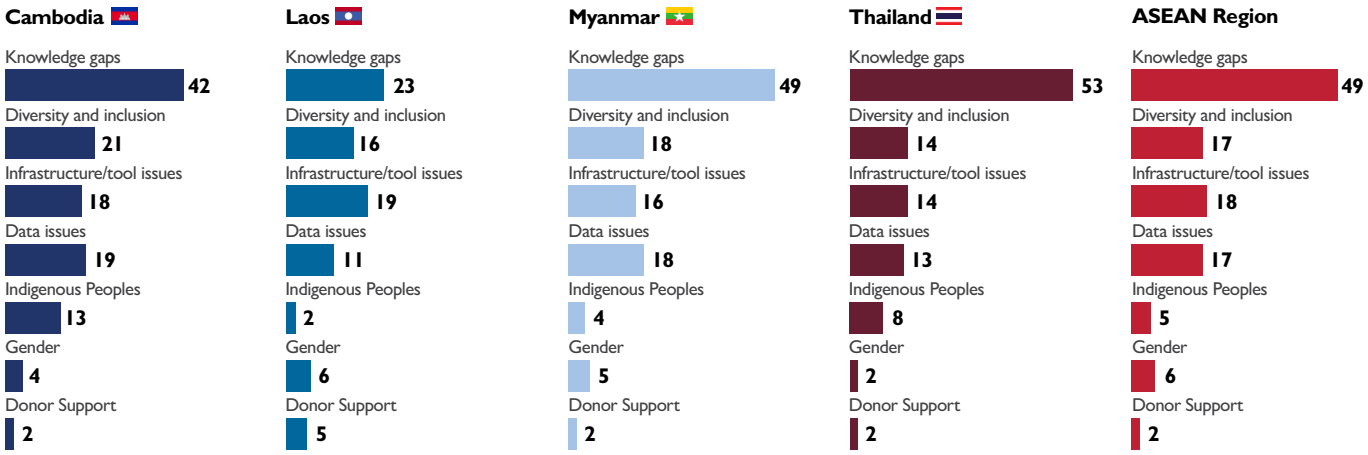
In addition, developing local data governance structures is a best practice for safe-guarding TEK from misuse and abuse. *Existing visually-focused tools—such as Mapeo—can be built upon using rights-based, inclusive approaches that are compliant with localized IDS principles and frameworks, and in so doing, break down barriers of engagement that disproportionately affect women and other marginalized groups by shifting the focus away from written language.* The Raks Thai Foundation have been supported by Open Development Thailand to do this work and can be engaged to discuss lessons learnt and to support scaling of the work in collaboration with other national-level organizations that work closely with communities. Such self-produced and self-governed data systems will allow communities to enter the data ecosystem on a more level playing field, to protect and access their data, and thereby support communities to drive their narratives and contribute to the data ecosystem.

2. HOW CAN ENVIRONMENTAL LEADERS CREATE AN EFFECTIVE NETWORK (I.E., CAPACITY AND SKILLS) THAT ALLOWS CIVIL SOCIETY TO DRIVE THE DATA ECOSYSTEM?

FINDING 2.1: THERE ARE PERSISTENT KNOWLEDGE GAPS IN USING DATA AND TECHNOLOGY

All KII and focus group discussion respondents cited knowledge gaps in using data and technology. In general, people in the region mentioned being *low in data literacy*, including how to understand, process, collect, analyze, and use data, as reflected in Figure 9. We also found that there is only a basic understanding of cybersecurity. In addition, there are *low levels of technical knowledge,* such as in using Geographic Information Systems (GIS), understanding investment flows, and grasp of laws and policies. These gaps are not necessarily limited to a specific demographic; however, marginalized populations—particularly women, the elderly, persons with disabilities, and IP—are disproportionately affected, reflecting cultural biases and institutionalized inequality in access to education, among other things.

Figure 9: Knowledge gaps is the most mentioned theme from the KIIs



Furthermore, paralleling the baseline survey, the stakeholders we spoke to reported that they do not know what data are available or where to find what they want, reflecting both a knowledge gap as well as a lack of transparency and accessibility of data in the ecosystem. *Gender data is particularly lacking, with respondents referring to the issue as "a lack of diverse data relating to gender," as well as noting a lack of socioeconomic data relevant to "gender mainstreaming."*

Even when data can be found, there is *limited skill to apply it in support of advocacy.* For example, it was noted that the ability to "develop a story including stats and key messages to drive policy changes" was lacking. One impact is that communities are taken advantage of, for example in the case of digital art, where one interviewee stated that IP experience the "misuse of information and knowledge." Additionally, *misconceptions remain*, such as on the meaning of "open" in the context of "open data," with respondents often conflating the concept with accessibility or availability. For example, several respondents praised an online platform for being an "open" source for data; however, the data available on this site is not subject to open licensing or principles.

Some communities in the region had received data literacy training, localized for language and advocacy goals. They used these skills in their advocacy, shared knowledge with their community, and requested more opportunities of this sort. For example, one person reported that they shared their training with selected youth in their community, choosing this demographic to maximize knowledge sharing beyond the training. This person considered this approach successful because it had shifted the online behaviors of some students. Another person spoke of a gender inclusive approach, in which they worked with small groups of women to go through data. This had allowed women to remain active in the learning and supported them to voice their learning needs. Others spoke positively on having received training in specific technical tools. For example, one person stated, "Previously, we planned for land use randomly; now, we have knowledge and experience in Integrated Spatial Planning to extend the plan for environmental protection." *Those who had not yet received trainings desired them for their community of practice.* There was also a desire to improve data collection systems and learn how to use GPS and other tools related to agriculture and land rights.

FINDING 2.2: GENDER INEQUALITY PERSISTS IN THE REGION'S DATA ECOSYSTEM

Women are underrepresented in the Mekong region data ecosystem—as stakeholders, in the data, in the technology and in access to tools, and in the policies and frameworks around environmental governance and data collection. Research respondents noted a lack of gender-related and gender-disaggregated data. It was also noted across the region that women are less likely to be in technical positions in environmental governance or have technical skills relevant to data. Some research respondents were able to connect the disparities in women's participation in the data ecosystem with systemic discrimination and cultural biases. For example, one person noted that women are less likely to have technical and technological skills, connecting that with lower access to education. As one respondent shared, it can be more difficult to engage women due to family and household responsibilities, while another noted that women were less likely to access land certificates, and yet another connected this to the systemic issue of the registration process, noting that this contributed to women's invisibility in the data.

At the same time, there is evidence that gender is a relevant and discussed topic in the region, with respondents able to refer to the importance of gender consultations, having gender-inclusive tools, supporting women to be leaders, and making special efforts to ensure the voices of women are heard, such as by conducting home visits. *Yet, regardless of how research respondents understand the issues, the reality of women's underrepresentation in the region's environmental data ecosystem persists.*

Work is ongoing in the region to mainstream gender into programs, and research respondents mentioned gender-responsive approaches—such as developing specific content for women farmers, doing gender sensitive impact monitoring, and working closely with Women's Unions. However, technology developed with women in mind is unavailable, with few research respondents having considered the possibility of shifting this reality. While multiple respondents spoke of having specialized training groups for women or targeting content for women, only one person spoke of using different platforms, devices, and support for women's groups. *The persistence of gender inequality speaks to deeper, systemic issues requiring a shift in perspective to effect change.*

FINDING 2.3: EXISTING NETWORKS TO FACILITATE MEANINGFUL ENGAGEMENT ARE INEFFECTIVE AND UNSUSTAINABLE

Environmental networks throughout the Mekong region exist and have been working towards common goals of conservation for many years. However, many research respondents are part of these networks, and when asked what an effective and sustainable network would look like, participants were unanimous in citing a need for *meaningful engagement and collaboration.* This reiterative finding demonstrates that although networks for environmental governance exist, they perpetually fail in effectively creating sustained civil society participation. In particular, research participants across the different countries recounted instances where communities felt that engagement with project implementation stakeholders was disrespectful of their agency as well as their rights (including FPIC) and expressed a desire for collaborative work involving sharing of data, knowledge, and lessons learnt.

Networks are often spearheaded by large international NGOs and creation of the network is driven by short-term project funding. In addition, civil society stakeholders mentioned that project-related tools and applications, introduced and implemented under the leadership of international partners, remained underutilized after the project lifespan because communities were not able to use the tools effectively, the tools weren't designed with the context of intended users in mind, control of the tool remained in the hands of the INGOs, and no attention was paid to sustainability beyond the project support cycle. These factors have resulted in a network that does not function, with groups willing and desirous to continue the work, but also struggling due to: *1) dependence on external stakeholders; 2) a lack of sustainable financial mechanisms; and 3) a lack of local leaders who are empowered enough to take the initiative forward.*

To function sustainably, networks need direct facilitation supported by dedicated staff, paid or voluntary, to hold the reins of the network together; long-term funding support is critical here. Additionally, many research respondents highlighted the need for accountable and transparent network governance structures, including how the network should function and for what purpose; *linked here are issues of trust*. Indeed, many interviewees and focus group discussants noted a lack of trust within the data ecosystem, primarily resulting from a lack of reliable and accurate data and data sources. This is reflective of the lack of engagement of data creation itself. As noted above, data needs to reflect the constituents that it represents; if datasets generated within a network do not truly represent the network then trust in data—and ultimately the network—is eroded. Respondents also noted concern about the potential harms that arise from using such data, as data is not unbiased. *Using transparency and accountability mechanisms within the network is critical for building a trusted network, both internally and externally.*

RECOMMENDATIONS TO BUILD AN EFFECTIVE NETWORK

Recommendation 2a: Build skills and capacity through context-driven data literacy trainings

Strengthen the Mekong region data ecosystem by supporting the provision of targeted, context-driven trainings on data literacy to bridge knowledge gaps. This provides stakeholders with the capabilities to engage more meaningfully within networks and also to design PAR agendas and execute them. In order to ensure inclusion throughout the process, participants should be identified in collaboration with local NGOs and CSOs. Pre-existing training can be localized with ODI and communities of practice to meet the language, context, and advocacy needs of the participants. The training itself should be delivered by local leaders using a train-the-trainer approach, taking place over 15 days, in person and/or online. Inclusion of a cybersecurity component is crucial to build trust in the data ecosystem. The resulting skills and development of local trainers will support local communities in becoming equal participants in the ecosystem, especially in support of more effectively addressing climate change. Building financially sustainable networks, **Recommendation 2c,** is also critical here.

Recommendation 2b: Engage in concurrent bottom-up and top-down approaches to encourage perspective shifts on gender in the data ecosystem

Systemic issues like gender bias and inequality require cultural and perspective shifts that are difficult to actualize. Concurrent bottom-up and top-down approaches are necessary as gendered views are generalized across the region and are not limited to particular stakeholders. *To address this within the context of the environmental data ecosystem, programs should support regional and national CSO networks to engage with their constituencies to see what bottom-up approaches are welcome,* including:

- Centering women's expertise, including by recognizing women as specialized knowledge holders.
- Ensuring that women are included in participatory processes of designing research, technology, tools, frameworks, and programs.
- Taking into account women's particular needs to increase accessibility of the data ecosystem, such as ensuring trainings do not coincide with family and household responsibilities or providing additional support, so women do not need to worry about these responsibilities.
- Supporting women community leaders to share information and skills with other women in communities, including encouraging smaller group discussions and the use of video and visual formats of information.
- Supporting woman-led development of tools for advocacy, such as a platform for networking and communication focused on storytelling via video, audio, and other non-written formats.
- Supporting data literacy and cybersecurity training with a gender-specific component, localized for the needs of women environmental advocates.

Top-down approaches that can be led by environmental organizations include:

- Advocacy with government stakeholders for policy change towards openness and transparency of gender-relevant information, disaggregating data for gender—including leading the way by opening and disaggregating their own data and information.
- Leading by example by engaging with existing work and gender specialists who are knowledgeable of the local context to critically assess effectiveness and implementation of institutional policies, if any, and implementing recommendations for gender inclusiveness.

Recommendation 2c: Build sustainable networks for meaningful engagement

Developing a network should not be entered into lightly, but there does appear to be a gap in the ability of environmental defenders and activists to share data and information safely and securely. Research respondents highlighted *a need to build a network of practitioners with representation from a variety of stakeholders to facilitate dialogue around using data and information,* including on data trust, data privacy, and data sovereignty. *Programs can support the establishment of a robust network that specifically targets the strengthening of an environmental data ecosystem.* The characteristics of such a network should include:

- A dedicated facilitator to steer the group and shape the network's common goals and objectives.
- Governance structures in line with best practices that are clear, transparent, and accountable.
- Independent and representative governance—i.e., not vested in or belonging to a single entity—to ensure fair representation of all members.
- The ability to share information, data, and knowledge in both digital and non-digital formats.
- A deliberate approach to sharing lessons learnt and approaches for data sharing, governance, and security.
- Membership that is broad-based and not exclusively based upon thematic interests, as data and information can be interoperable between different sectors.
- Mechanisms for network autonomy that can be sustained without reliance on project funding.
- A commitment to meet the needs of constituents, the ability to evolve with changing circumstances and needs, and responsiveness to assessments of what is effective and what is not. This should include network outputs that are tangible for constituents and reflect their objectives.
- A commitment to creating safe spaces within the network for minority and women's voices.
- An overarching dedication to following principles of collective good to drive the agenda.

3. HOW CAN CIVIL SOCIETY ENABLE ENVIRONMENTAL ACTIVISTS TO PROACTIVELY CONTRIBUTE TO THE ENVIRONMENTAL DATA LANDSCAPE WITH INCREASED TRANSPARENCY?

FINDING 3.1: DATA FLOW IS RESTRICTED

The main data producers in the region—government, donors, and regional and international NGOs—are siloed, restricting the flow of data to communities. *Data is frequently compartmentalized thematically and then censored by the main producers, for vague and undefined reasons such as "sensitivity."* Gender data is one such area. Similarly, administrative procedures to approve or access data impact use, as users in the region cannot afford the time or money for these processes and have security concerns. Climate data is notably lacking in the region, and while land use data exists there is a notable gap in gender and inclusion uses of the data.[52]

It is worth noting that *data flow from communities is also restricted*. In this context, CS respondents also spoke of "sensitivity" of data, in relation to limiting access to and sharing of personal and other data related to environmental governance. Research respondents also described security concerns that limit the willingness of communities to engage with the data ecosystem. Indeed, one interviewee drew attention to the fact that local communities have

52 *Global Data Barometer. 2022.* Results – Data for Change – Climate Action and Land – South and East Asia. *Accessed July 1, 2022.*

more to lose than other stakeholders (such as INGO workers), and this prevents them from engaging with mechanisms labelled "safe" and "anonymous," but which they have not developed. As discussed above, communities and individuals, including women, may also not be able to engage due to tools being incompatible with their needs or what other tools and infrastructure they do have access to. Narrow definitions of what constitutes data (i.e., as numerical, and word-focused) further limit what is available and accessible in the data ecosystem. Conversely, CS respondents repeatedly mentioned the importance of video, infographics, and other visual and audio information for local communities and women, as well as the lack thereof. ***Overall, this renders marginalized communities and cohorts, including women, invisible in the data as subjects as well as producers, consumers, and intermediaries.***

FINDING 3.2: GAPS PERSIST IN AVAILABILITY OF AND ACCESS TO DATA, INFRASTRUCTURE, AND TOOLS

Research respondents agreed that good quality, verified data is often unavailable or difficult to access, and named reasons such as *format, cost, language, quality of tools, and quality of infrastructure*. One example given is that raw data might be available but on sites that are not easy to navigate; another is that available raw data is difficult to explore, lacking maps and spatial analysis for easy use. Research participants also noted that available data is negatively impacted by a *lack of standards, inaccurate descriptions, known inaccuracies and inconsistencies in the datasets, low skill level, systemic biases impacting data collection, and limited disaggregation*. Dis- and misinformation are a concern, and stakeholders in the region agree that IP, ethnic minorities, and women are particularly targeted. These same groups are disproportionately impacted by gaps in availability and access, with research respondents noting that both IP and women are less likely to have the skills to navigate this complexity, as detailed above.

Adding to previous research findings that women are less likely to have access to tools and infrastructure[53], gaps in availability of and access to data, infrastructure, and tools was also identified as a gendered issue. Research respondents noted that women experience a unique intersection of barriers. They named cultural biases impacting women's participation such as expectations around childcare and household duties and spoke about women feeling "shy" and "lacking confidence" in participating in an environmental governance sector that respondents noted has little female representation in leadership and technical roles. Data is not disaggregated by gender as frequently as research respondents would like, and respondents also wanted to contribute towards gender indicators to generate more gender-related data.

Some approaches that stakeholders named to bridge this gap included applying skills from data literacy and cybersecurity training (if they are recipients), and many said that they make use of the available open data sources in the region. At the same time, some avoid going online, and others avoid using the data at all. One focus group participant referred to the fact that IP do not see themselves represented in the data that is available, and so automatically do not trust the data as they know it is incomplete. As a result, these communities do not engage with the data ecosystem. Targeted training for women was regularly referenced, as well as targeted information, made available in more accessible visual formats and on platforms that women are more likely to be able to access, including social media.

53 *Chung, Mia and Pyrou Chung. 2020.* Mekong Women in Open Data. *Accessed June 29, 2022.*

FINDING 3.3: SAFETY AND SECURITY CONCERNS BLOCK CIVIL SOCIETY CONTRIBUTION TO THE DATA ECOSYSTEM

Safety and security issues block the flow of data in the ecosystem, create gaps and inaccuracies in the data available, and stifle participation in environmental governance. Respondents indicated awareness that governments in the region have implemented laws and infrastructures increasing surveillance; at the same time, respondents noted that IP and other environmental defenders have long been targeted subjects of surveillance. While one person indicated trust in government frameworks for digital safety and security, no other respondents did, preferring either to avoid or disengage from such frameworks. At the same time, there are *gaps in knowledge about cybersecurity;* as noted by a stakeholder working across the region, fear without a full understanding of risks means that a blanket approach to security is taken, including persistent self-censorship.

This is not to say that security concerns are not real. Focus group participants mentioned disappearances, surveillance, and harassment. The region has also experienced an increase in xenophobia and cyberbullying targeted at IP and marginalized communities. Women are particular targets of cyberbullying, stifling already limited women's voices on issues. Targeted communities mentioned avoiding processes requiring reporting to local authorities, going online, and using social media. They use secure messaging and communication applications where available and are careful not to share confidential information outside of a small circle of people. Respondents stated that p*eople are less likely to engage in advocacy, and communities are unable to network with the diverse communities of practice across the region due to a lack of security-focused tools.* Overall, multiple CS research respondents noted that taking the security concerns of community members seriously helps to build trust.

RECOMMENDATIONS TO INCREASE TRANSPARENCY WITHIN THE ENVIRONMENTAL DATA ECOSYSTEM

Recommendation 3a: Support responsible data policies to open the flow of data

The main data sources of the region—namely INGOs, donors and governments—should *institutionalize policy reforms supporting public disclosure of data and information in accordance with open data standards and ethical data sharing principles.* The leadership of INGOs and donors in this area could encourage national governments toward openness, accountability, and transparency for data sharing. Extra focus can be put on areas with identified gaps, including gender-related and gender-disaggregated data. Transparent and specific definitions for what constitutes data for public good and personal data should be included in the policy to reduce generalizations of "sensitive" data. *To support women's needs, institutional definitions of "data" can be expanded to include visual formats, such as infographics and videos.* Existing open data platforms like Open Development Mekong and others are examples that could be modeled upon. Furthermore, targeted communications campaigns could ensure the reach of data releases to marginalized communities. As major data producers in the region, *international conservation NGOs should make all of their data and information available in accordance with open data standards and support the use of*

existing open data platforms. Use of existing open data platforms is key in this recommendation as they are already known, used, and proven in the region. Linked data formats or frictionless data use increases interoperability of data, making reuse of open data platforms streamlined and reducing data redundancy.

Responsibly opening data requires the main data producers in the region to consider how the rights of marginalized communities, especially IP, are impacted. *To enable the proactive contribution of environmental activists in this context, environmental activists and IP should be consulted, and adherence to international human rights obligations—such as the UN Declaration of the Rights of Indigenous Peoples, which includes FPIC and via the Committee on Economic, Cultural and Social Rights—should remain a priority.* Engaging with regional (AIPP, Tebtebba, Samdhana Institute) and local IP organizations, as well as the Asia Pacific Network of Environment Defenders, is crucial in this context. Marginalized users should be supported in learning the skills to engage with these platforms or to create their own. This recommendation is most effective if taken in conjunction with **Recommendations 1b** above and **3b** below on supporting the development and use of secure, decentralized data mechanisms and technology. Together, these actions will support responsibly opening the flow of information, both to and from communities.

Recommendation 3b: Support community-led development of secure and relevant tools

While caution must be exercised in simply introducing technology or new hardware to the data ecosystem, *a security-focused platform for networking and communication via storytelling has been requested by local communities*. Networking is crucial for ensuring the sustainability and accessibility of the data ecosystem for CSOs; a focus on storytelling opens up what "counts" as "data," allowing IP and local communities to engage in ways they are most comfortable with. *International Rivers and ODI have been leading work to develop such a platform in the region.*

Another repeated request is for the development of an *image-based, security focused tool to support advocacy.* Such a tool should also be able to support multiple languages and offline use. This should be co-designed with the communities who will use it to prevent perpetuating pre-existing barriers and to ensure compatibility with community needs. *Work has already begun, led by Raks Thai and Open Development Thailand, on the regionalization of a decentralized tool called Mapeo to support Mekong region CSOs working in resource monitoring.*

International conservation NGOs and other regional and international donors can provide long-term funding support for further engagement with a pre-existing network of environmental governance practitioners to build, test, and scale these products. By directing much needed funding towards alternative areas of knowledge creation and research that focuses on traditional knowledge systems, such as storytelling, it signifies an important paradigm shift towards evidence-based decision making rooted in local knowledge and practice. The status quo of power imbalances may begin to equalize as a result.

Conducting the ODI-led data literacy and cybersecurity training detailed in **Recommendation 2a** concurrently with product development will feed into a loop wherein tools remain relevant to knowledge, while knowledge evolves for product development. By incorporating IKDS Asia principles into these tools and community contexts and applying responsible data sharing principles, these activities will promote stronger localized data governance structures and lead to sustainability of impact through modeling a community of practice.

Recommendation 3c: Develop and implement collective data governance structures to build greater trust within the network and in the data ecosystem

The complexity of environmental ecosystems is known; it is often difficult to address one concern without exploring all the contributing factors. Take, for instance, reducing greenhouse gas emissions and the need to consider the seemingly divergent issues of forest clearing and industrial pollution, as well as economic alternatives, social implications, and the impacts of seemingly unrelated laws, such as social welfare, on the goal to reduce carbon emissions. *A holistic approach is needed.* Similarly, approaches to governing data ecosystems and the networks that they encompass—where the sub-unit is data—need to consider a broader and collective view.

Frameworks for collectivized data governance structures are the key to building and increasing data trust both institutionally as well as within a network. Fortunately, frameworks for collectivized governance for common resource-sharing data structures do exist and can be applied to tackle specific environmental problems holistically. These systems can be broadly categorized as guilds, commons, collaboratives, and trusts;[54] the models vary widely within these categories and no one model will fit perfectly, which may mean some sub-groups within the network itself are operating on unique governing structures. Trust is built into the system as modalities of decision-making and data sharing are open and transparent within the governing structure. For the Mekong region, in which stakeholders exhibit intensely low trust in institutional and government data, such collectivized approaches build network inclusion for marginalized communities and are needed to enable them to engage in the governance system.

For instance, IP may exercise their right to self-sovereignty over data on traditional knowledge systems and environmental governance structures with respect to the lands and territories in which they reside. In this context, data governance is inextricably and uniquely linked to self-determination. Thus, for IP, asserting data governance increases their control over their own institutions upon which they can start to rebuild their communities. This in turn strengthens their ability to utilize their sovereignty to engage in broader governing systems by contributing to larger frameworks of data governance, potentially including actors such as government, private sector, conservation groups, and others.

A facilitated process is needed to determine the appropriate models of data governance within an environmental data network, first by determining the problem, then the network must agree upon a clearly articulated objective. Ensuring transparency will be key, especially through the choice of a data governance model that ensures that users and members know how decisions are made. Data privacy and data control within the system will be critical to build trust in the data, as the potential for misuse is high. This is because data points in environmental systems are geographically linked, making it possible to, amongst other things, link individuals, households, and other community units to identified issues, or to identify locations of rare, valuable, or endemic species. *Ultimately, generating impacts from the network will be critical to building stakeholder buy-in and trust.*

54 *Dosemagen, S. and Tyson, E. Data Governance Models and the Environmental Context: Part 1. July 29, 2020. Open Environment Data Project.* https://www.openenvironmentaldata.org/research-series/data-governance-models-and-the-environmental-context-part-1#Feature-Section. *Accessed April 20, 2022.*

4. HOW CAN ENVIRONMENTAL LEADERS STRENGTHEN THE ABILITY OF CSOS AND CITIZENS TO UNDERSTAND AND ENGAGE IN ENVIRONMENTAL GOVERNANCE POLICY DEVELOPMENT, OVERSIGHT, AND ADVOCACY?

FINDING 4.1: DATA AND INFORMATION ARE NEITHER REPRESENTATIVE OF COMMUNITIES NOR ACCESSIBLY SHARED

Understanding of environmental governance policy is negatively impacted by a lack of accessibility in the data and information being shared. This is a multi-faceted issue which respondents spoke about throughout the region. For some, particularly IP, *infrastructure* is at the root of the issue—such as having limited and poor internet connectivity, as well as having no or only poor-quality tools and hardware. Others described *data gaps*—such as IP-validated TEK, gender-disaggregated and gender-related data, and climate change data. Respondents also described knowing that some data they desired should be available given the focus of government policy and donor priorities, but that it is *not on easily accessible platforms or in reusable formats*. Some respondents reported being able to find the data but desire *support in understanding it* through the availability of data products such as visualizations, maps, briefs, and videos. There are also concerns about the *accuracy, validity, provenance, and quality of data* available. Still others, especially those respondents working with women and IP, noted that the available *information cannot be understood*, as it is *too technical*, or in a *language* they cannot understand.

CS and IP respondents in particular think that the information available is irrelevant, as it does not reflect themselves or their reality. This is universal across many sectors, as much data that is collected and extrapolated upon to make policy decisions comes from very *small sample sizes* or is *outdated*, as it is derived from decennial census data. Such small sample sizes are often not reflective of broad segments of society and misrepresent communities. National indicators for the SDGs are a good example of this, whereby high-level aggregation renders the data ineffective in terms of identifying nuances and marginalized persons. Beyond the data itself, CS respondents noted that access to information is limited due to *administrative processes* that are difficult to understand, requiring time they do not have, or putting them at risk. They also spoke of *being left out of communications* crucial to their ability to participate in environmental governance decision-making processes, whether regarding new data and information, participatory processes, or new project developments. Respondents were also clear about *knowledge gaps* impacting accessibility, and regularly desired a stronger knowledge base to support their and their communities' understanding of the issues, as detailed above.

FINDING 4.2: PATRONIZING VIEWS DOMINATE ENGAGEMENT WITH IP, WHO ARE OFTEN SILENCED BY RACISM, DISCRIMINATION, AND TOP-DOWN ENGAGEMENT WITH OTHER STAKEHOLDERS AND NOT RESPECTED AS KNOWLEDGE HOLDERS

Interviewees and focus group discussion participants recognize the importance of engaging with IP and local communities. However, *the mainstream, patronizing power dynamic between those knowledgeable in western science and those knowledgeable in TEK was reflected in the data*. For example, one person said that communities have a "knowledge gap" with regards to climate change; when probed further, they clarified that communities had experienced and described changes in the weather but were not able to classify it as climate change. In another interview, the respondent focused only on the gaps in technical training needed by local communities, not mentioning any gaps that non-IP communities might have in knowledge of IP languages or worldviews. Interview respondents suggested that technical training was needed to help to "validate" and "translate" IP observations into western concepts and data points for it to be understandable. This suggests taking a western scientific worldview as the baseline, whether consciously or unconsciously. It also indicates a lack of respect for and recognition of Indigenous knowledge and worldviews, and results in distancing IP from conservation efforts. On the other hand, *IP are cautious to share information,* and have implemented strong FPIC and security protocols to prevent exploitation. Research respondents identified the practical results of this, which are *a gap in TEK in the environmental data ecosystem and an exploitation of TEK for external gains*.

IP also experience engagement with governments, INGOs, and other national and regional level stakeholders as top-down and unidirectional, exacerbated by a lack of IP representation as stakeholders and within leadership positions. In particular, IP and local community research partners are not treated with respect and equality, and their "knowledge and data aren't accepted by governments and researchers. The message undermines community contributions to the data collection." Relatedly, research practices have not always been ethical, with researchers with no requirements for accountability engaging in "information extraction" and returning no benefits to communities—IP are seen only as a data point. This shows that IP knowledge is not valued even as knowledge derived from communities is used, often uncredited or without regard to FPIC. Respondents working with IP also noted that IP communities often feel that they have not been provided with sufficient information in a sufficient timeframe to act on it—reflecting a *minimization of their role as data users*.

Even among our research respondents, we noted this extractive view, with one respondent saying that IP data was useful only to "amplify the brief up by showing the human-interest angle." Work is also often done without IP's FPIC. One person stated, "transboundary information is shared at state-to-state level, but communities are the last to receive the information. By this time communities are affected." Governments do not communicate well with CSOs, and IP are not included in either the data or decision-making. Accordingly, IP are hesitant to participate in the data ecosystem, and since TEK is not included on its own terms, there is a lack of TEK data in the ecosystem.

In addition to seeing their knowledge disregarded or minimized in this way, IP in the Mekong region are often silenced by *racism and discrimination*. They have historically been and currently are targeted for their advocacy

efforts and are now the subject of dis- and misinformation. This means that IP are "not sharing so much data currently; safety is a concern," and that existing data is biased, as it "does not include IP experiences." An interviewee gave an example of a reporting mechanism on environmental changes, which may be useful for the purposes of collecting information but may not be used by local communities for fear of retribution. In this sense, data sharing may be at odds with security. Concerns about safety also limit IP from accessing pre-existing, closed data, as requesting access from government bodies can be a security risk. This hinders them from accessing data about themselves and affects their ability to assert their data sovereignty rights. In these contexts, our research respondents note that communities highly value building relationships on mutual trust and understanding, ensuring safe spaces (as defined by communities) for information sharing, and anonymizing personal identifying information. They also utilize strict organizational security and consent protocols. It should be noted that while these security practices may be effective in addressing community concerns, they also have the effect of *reducing the ability of communities to participate in the data ecosystem in the way they desire, and therefore impact the quality of the ecosystem itself.* In particular, one respondent noted that this means that data is limited, and perhaps inaccurate, because "community members don't want to tell the truths in data collection."

Combined, these factors limit the willingness of local communities to participate in environmental governance policy development, oversight, and advocacy, as well as their contributions as data providers. Interviewees described practices that allowed communities to maintain control over their own data. These include: upholding FPIC; supporting communities desirous to produce their own data by providing the necessary trainings; communicating regularly and transparently in local languages; providing information in print and visual formats; and taking the time to build trusting relationships from the ground up. One person noted a success story: "It took 5 years to understand an IP and have his commitment, through monitoring and coaching." Building this relationship meant that IP in Northeastern Cambodia successfully used their traditional knowledge to negotiate with companies engaging in economic development in their community.

RECOMMENDATIONS TO ENHANCE CITIZEN ENGAGEMENT IN ENVIRONMENTAL POLICY

Recommendation 4a: Strengthen local and IP institutions to support engagement in policy development, oversight, and advocacy

The inequalities impacting local engagement in environmental governance policy development, oversight, and advocacy can be addressed through *directly bolstering the institutions of local communities*. By concurrently supporting the design and implementation of co-designed PAR and data mechanisms (**Recommendations 1a** and **1b**); context-driven data literacy and security trainings (**Recommendation 2a**); and community-led development of secure and relevant tools (**Recommendation 3b**), these communities will be better equipped with the basic skills and tools they need to open the door to increased engagement—both as producers and users—in environmental governance policy. Together, these actions place power in the hands of interested local communities, allowing them to remain in control of the way in which they are engaging, reducing concerns and misgivings they may have about participating in environmental governance processes as they have typically been conducted. *Resources can be directed towards supporting local leaders, CSOs, and local community networks to do this work over the long term, which in turn will help to build relationships of trust and respect. Ultimately, these efforts can*

strengthen engagement in environmental governance in the region and increase the recognition of local communities as legitimate knowledge holders and environmental governance actors.

Countering racism, discrimination, and xenophobia within the environmental conservation sector is not an easy task. The perpetuation of large-scale mis- and disinformation by state actors, the private sector, and mainstream dominant cultures are narratives that have rooted themselves as social norms that should be upheld. However, these social norms and narratives are not necessarily reflective of the truth nor based upon any scientific evidence, but it is challenging to counter what is driven by mass media and popular beliefs. Paradigm shifts of these narratives controlled by those in power can only be countered with an insurgency of counter messaging that is both non-threatening and places emphasis and responsibility upon the average citizen to reject false narratives.

Recommendation 4b: Support the development, use, and continuation of open data platforms that include accessible data on environmental governance policy

In conjunction with **Recommendations 1a** and **1b** on locally driven approaches, **Recommendation 2a** on context-driven data literacy and security trainings, and **Recommendation 3a** on responsible open data policies, another key component to increasing the ability of citizens to engage with environmental policy is ensuring that data platforms include clear, accessible, relevant, and up-to-date information on existing and proposed environmental governance laws and policies, as well as information on how to safely engage in monitoring and advocacy activities. *Programming can usefully support the development, maintenance, and scaling of policy-related information within the context of existing open data platforms to facilitate this access.*

Recommendation 4c: Increase policy dialogues with stakeholders to open up discussions around environmental data governance and policy reform

While the inclusion of data and technology in environmental conservation is not new, our recognition of the potential harms to society and resulting inequalities due to their misuse has been heightened. This particularly relates to social media and the increasing spread of mis- and disinformation. Yet as governments move towards regulating the Industry 4.0 landscape, many of the new laws and regulations in fact hinder innovations and freedoms, whilst singularly promoting neo-capitalist approaches to digital transformation. Currently there is little, if any, discussion on the nexus between digital transformation and environmental conservation—whether in terms of water, climate change, industry, or forestry. There is a real need to bring together experts—civil society, industry, and government—from around the region to openly discuss what regulatory frameworks would be appropriate to aid in improving national level environmental data governance and transboundary environmental issues related to data and information sharing, personal data privacy, and rights.

Support of a facilitated series of high-level seminars with multiple stakeholders from both the digital and environmental sectors to raise concerns and discuss solutions, lessons learnt, and community practices could usefully move the needle on these issues. These forums could be a catalyst for producing policy briefs that civil society institutions and others could leverage to engage in policy development, oversight, and advocacy.

CONCLUSION AND FURTHER RESEARCH

The environmental data ecosystem comprises four broad components—physical technology (the infrastructure), stakeholders (the people), knowledge (the data), and the network (the relationships between components). For the data ecosystem to work, stakeholders need to have equal access to the knowledge and physical technology as well as some authority in the network to control aspects that relate to themselves and their communities. Diversity is reflected in the communities of practice in environmental governance in the Mekong region, but at the same time, these communities suffer from unequal access to some, if not all, of the components of the data ecosystem due to systemic barriers, despite efforts to support their engagement.

CSOs across the region report that these systemic barriers impact their ability to engage with the data ecosystem. These barriers include persistent knowledge gaps, a lack of diversity and inclusion in the ecosystem, and limited access to data. Women and IP are disproportionately impacted. While institutional and systemic issues underlie these themes, change is possible through a concerted effort to support decentralized and localized solutions that center marginalized communities in their development and implementation. Environmental institutions at the national and regional levels can support this work through a number of approaches, including: 1) effecting change in their own organizations and leading by example, including through the use of open data policies, and opening the flow of information through sharing data responsibly; 2) engaging fellow dominant stakeholders in the region to encourage a community of practice toward stronger data governance structures that could break down institutional barriers and silos for data sharing; and 3) supporting contextualized capacity building in data literacy and cybersecurity, the development of data mechanisms in languages and formats that are accessible to everyone, and strengthened networks among stakeholders and activists.

A wide range of environmental networks and data exist in the Mekong region, making the landscape complex. Thus, *the recommendations we have made are intended to be taken concurrently* as a means of sustainably reinforcing, validating, and scaling them, while also strengthening the systems around the data ecosystem, building an effective network, increasing transparency, and improving engagement in decision-making processes. Moreover, overlaps between the recommendations themselves are to be expected, since, as noted in our analysis, the component parts of an ecosystem often play multiple roles. We have made interlinked recommendations to support civil society in the region—especially women and IP who often face unique challenges and barriers—to participate in the environmental governance data ecosystem as producers, intermediaries, users, and subjects through strengthening local institutions and knowledge, while at the same time encouraging national, regional, and international stakeholders to leverage their strengths to drive change.

This report adds to a growing, but still limited, body of research on the issue of data and environmental governance in the Mekong region. Our recommendations focus on the need for locally driven work, and additional research should follow in this vein. At the same time, considerations of how to effect systemic change are needed to drive policy shifts. Thus, in addition to recommending *participatory action research, we suggest research that explores what is needed to support CS in developing trust in data, technology, and other digital systems*. Case studies can help to demonstrate current examples and best practice models within the ecosystem in order to investigate opening up the space for and using open data in constrained environments without the presumption of institutional trust. We also suggest *research on the impact of decentralized systems on the data ecosystem* in the region. Finally, we suggest an e*xploration of data management and data protection frameworks* in existence in the Mekong region, including legal and policy frameworks, as well as the analysis of applying alternative frameworks for the region.

ANNEX 1: INTERVIEW GUIDELINES

Name of interviewee:	
Date/Time of interview:	
Interviewer:	
Notetaker:	

Purpose: We are trying to understand what recommendations to make regarding

a. how to build a stronger **data ecosystem**
b. what **skills and capacity** need to be built
c. how stakeholders can **contribute** to data with greater transparency and
d. how we can improve **engagement** with environmental governance.

Part 1 - 5 minutes	
Introduction to research: Thank you for your help today! We are conducting these interviews as part of the WWF Mekong for the Future project, with the aim of learning what is the best way forward to strengthen environmental data ecosystems in the Mekong Region. Your responses today will help us with the development of recommendations. This project is commissioned by WWF, but we are independent researchers, and our fundamental goal is to find out what will benefit communities and Civil Society working on environmental governance. So your frankness is appreciated so that we can get a true picture of this sector. **Disclaimer and privacy statement:** We appreciate your time and support for our research. We aim to keep the interview under one hour. We will not share your personal and identifying information, and you will not be identified in the research unless you prefer and give us your consent. You may at any time tell us to stop the interview or change your mind about participating. If you agree, we will be taking notes. Also, if you agree, we would like to record the interview.	
Do you consent to doing the interview with us taking notes?	( ) yes ( ) no
Do you consent to being recorded?	( ) yes ( ) no
Part 2: About You - 15 minutes	
1. Tell us about the work you do. a. Can you give us an example of how you produce/consume/or act as an intermediary of data? b. What is your role within the data ecosystem of your organization / within the sector?	Ascertain if you are a: ( ) Data Producer ( ) Data Consumer ( ) Data Intermediary
2. What does "environmental data" or "Data for environment" mean to you and your work? a. What's missing for you to do your work? b. What data/technology would make your work easier? c. Is the data and technology you use important for your work? Why? d. What is the impact?	

3. What are some of the barriers or capacity gaps that hinder your work? Prompt questions: a. **What would be a solution?** Can you give examples? How do you know when it works? b. What systems do you use to organize the data and information that you collect, either primary or secondary? c. Do you feel like you have the skills to do what you want with data? (e.g. analysis, visualizations) d. What more skills would you like? e. How do you prefer to learn data skills? Is this the same as the way you learned? f. Do you feel like you have the support to do what you want with data? What kind of support would you like? g. Do the people/communities you support use data? Is it different from what you use? h. What are the complaints/concerns that they have? i. Do the women you work with, or support have different complaints? ii. Do the IP you work with or support have different complaints? iii. Do the people with disabilities you work with or support have different complaints? Follow up questions: • Do you think they work well? • Is there anything you would change?	
4. If language is a barrier: a. What is the language of operation of your organization? b. What language(s) do you typically work in? c. What language(s) do you find most data or information in? Potential follow up questions: • What language do you wish you could work in? • Does availability of information or tools in a certain language impact your work?	( ) English ( ) Laos ( ) Khmer ( ) Burmese ( ) Thai ( ) _____
5. **How do you currently share data within your network(s) in the sector?** How would you broaden data sharing among this network if you could? a. What approaches would you use? b. What frequency would you like?	

c. What types of engagement are you looking for? d. What do you want them to do as a result of your work? e. Do you have any special outreach to connect (share data) with women, IP or people with disabilities or other marginalized peoples? f. Do you work with women or Indigenous Peoples or people with disabilities? Do you do anything different to share data with them? g. In your opinion what would be the most effective of these approaches to strengthen/contribute the most to the data ecosystem? If they need a prompt: for example, in person events, knowledge dissemination, chat groups, message board, other? Potential follow up questions: a. Is there a method that you already use that you like? If social media is an answer: a. What messaging and social media apps do you use for your work? b. Why have you chosen these apps? (e.g. Reddit, FB, Whatsapp, Viber, Messenger, etc.)	
Part 3: Technology and Capacity - 20 minutes	
7. What technology gaps exist that hinder your work? (prompt questions below): a. What would be a solution? b. Does having technology impact your work? Either positively or negatively? c. Do you know what to do if one of your tools goes wrong? Does this ever impact your work? E.g., wifi doesn't connect on your computer, your organization's website shows an error d. What technology do you wish you had? e. How would you like to learn more about technology (both how to use, and what tools are available)? Prompt if needed: e.g., workshop, tutor, MOOC, other f. Do the people/communities you support use technology? Is it different from what you use? What are the complaints that they have? g. What do you wish you could change? h. What work do you do collaboratively? Do you use technology for this? i. Do you feel like you have the support to do what you need and want with your technology? What would you like more or less of? j. Do the women/IP/people with disabilities that you work with or support have different complaints?	

8. Are you worried about your physical and cybersecurity? What measures do you take and what measures do you wish you could take?	
Part 4: Recommendations - 20 minutes	
9. How can environmental activists proactively contribute to the environmental data landscape with increased transparency with regard to environmental data? a. What does transparency mean/look like to you? b. How do you think your organization could add to the environmental data, tools and community? c. What do you think would make it easier for you and your organization to participate in the environmental governance landscape? d. What does it look like to proactively contribute in your sector?	
10. How can/does your organization contribute to strengthening the ability of CSOs and citizens to understand and engage in environmental governance, policy development, oversight, and advocacy with regard to environmental data? a. How do you assess and evaluate oversight of environmental data? b. What do you think would help citizens to understand/engage in environmental governance? c. How does it contribute? d. Why ? tell me more about what you mean? e. What do you do to get citizens to engage with your work? f. How does your work help citizens/women/IP/people with disabilities engage with environmental governance?	
CLOSING	
11. Do you have any questions or recommendations? Do you have anything else to comment on that we did not yet ask about? Summarize - a solution they highlighted that was most interesting We heard that you believe that ___ is fundamental to the sector. Is that right?	
Thanks for your time and insights to the use of environmental data. We will keep you informed of the Focus Group Discussion that will happen soon.	

ANNEX 2: FOCUS GROUP DISCUSSION GUIDELINES

Participants from across the region were invited to participate in a focus group discussion. Interview findings were shared in a presentation, after which attendees were divided into four small groups and asked the following questions:

1. Do you agree with these themes? What theme do you think is the most relevant in your work (in the sector) and why?
2. Do you agree with these issues? What issue from the list above do you feel are the most relevant in your work and why?
3. Do you agree with these recommendations? What recommendations/aspects from the lists in each of the categories of recommendations above do you feel are the most important in your work and why? Is there anything else you would like to see?

Discussions were recorded and transcribed, and notes were also taken on Google Jamboards.

WWF Myanmar Staff Ko Zin having meeting with members of Lakehlaaii community forest after collecting the data in the forest in Tayatchaung township, Tanintharyi division, Myanmar. © Hkun Lat / WWF-US

ANNEX 3: USER PROFILES AND APPLIED RECOMMENDATIONS

These user profiles and related solutions have been developed based on KII and focus group discussion data; quotes are from our respondents. However, names and stories are fictional.

1. BUILDING A STRONGER DATA ECOSYSTEM IN A NARROWING CIVIC SPACE THROUGH DECENTRALIZED DATA SYSTEMS AND CAPACITY BUILDING - CIVIC SPACE

Strengthening the data ecosystem in a narrowing civic space requires increasing accessibility by localizing and translating information, supporting local community members to learn about data from their perspectives and focusing on issues that particularly concern them, and putting into place decentralized protocols on consent, security, and data management to encourage engagement from stakeholders who have typically been ignored. This supports stakeholders in engaging with environmental advocacy and access civic rights.

Shan Hills in Myanmar. Image by Vyacheslav Argenberg via Wikimedia.

"The threats and violations against communities and rights defenders are very systemic, institutionalized…"

Wai Wai is a female ethnic minority student living in Myanmar. She experiences regular electricity blackouts, and her internet connection is unstable and limited. Her community wants to apply for community forest designation from the government but has only been able to access the website that has the steps on how to do this once. The steps were confusing, and it didn't seem like her community had anything the website was asking for, so she had put the task down to figure it out later. The site has not been available since.

She wants stable, offline information that is in simple language.

Her community has been taking care of the forest in question for as long as anyone can remember, and just like the other women of her age in the community, she gathers special ceremonial herbs that no one else knows the location of. However, when entering the forest the other day, she noticed that some trees had been cut down, and that a truck she had never seen before was parked near the entrance she normally takes. She takes a photo with her phone. When she arrives at the location for the herbs, she sees that there are less than she expects and some are squashed.

She wants to know what she can do with this information, how to keep the herbs safe, and also how she can help her community apply for the forest designation.

"Local communities lack the skills to negotiate with investors and do not have knowledge of the policy and regulations regarding land rights, tenure…"
"People read and cannot understand. And translation into local language to help people to understand what is going on."

A local CSO has **translated and simplified the laws** around the process for community forest designation; the process is **available on an open data platform and can be printed.**

Translation and localization increase the accessibility of the information that is already available, reduces barriers for participation, and thereby opens civic space. Opening data increases transparency in the data ecosystem, and using a pre-existing platform prevents system duplication and can also act as an archival system.

At this organization, Wai Wai also sees a poster for **data literacy training, led by a friend** that works at the organization. She is immediately interested, especially in the part that talks about how she can **focus on her personal safety**.

The focus on personal safety and the fact that a community member leads this training are decentralized ways of supporting participation and building trust relationships. The opportunity for learning at the outset sets a strong basis for sustainable change in the data ecosystem by creating a knowledgeable constituency of stakeholders. With these in place, communities are more likely to actively engage with the data ecosystem.

The poster says that she will **control and can use the products** of this workshop to help with her advocacy; she has never thought about what she knows as "data," and certainly has never thought **videos or stories could be considered data**.

Broadening the concept of data, as well as decentralizing data ownership brings the locus of control to the local level, encouraging local participation on their own terms and thereby allowing the data ecosystem to be strengthened from the ground up.

"It's better if the locals have been educated…"

"CSO staff skills and capacity building are very needed."

"We need to include the members from the community concerned in order to be more inclusive and to tackle the real issue that they are facing"

"We have seen many cases where communities put out their own community protocols, how they want to be consulted…"

"We have developed a program/strategy to popularize data from community itself… Communities are able to own the data they get, to also use the data in their advocacy and contain specially in dealing w engaging, like the local gov, the financiers the companies, they are able to mine this info for their advantage."

"In my work, access to information, and data protection policies are critical for keeping the audience engaged with a database or platform."

In the workshop, Wai Wai is introduced to the idea of owning her data according to the **IDS principles**. She wants to talk to her community about these principles, as they seem useful, especially for documenting their knowledge about plants.

> A collectivized data framework, led and used by community members, is central to systematizing the data ecosystem while providing a framework for increasing the levels of trust in the data ecosystem through decentralized approaches. At the same time, it protects the specialized knowledge of IP from exploitation, which is crucial for supporting IP land tenure claims and participation in addressing climate change.

At the workshop, she also learns that the photo that she took of the truck at the forest entrance is attached to geographical data, which could be used to make a map using a tool called **Mapeo**. This map could be used to support the community forest designation process. She also learns that the **FPIC and security protocols** that her community has been developing could be useful in the context of keeping the information held in these photos.

> Decentralized tools, supported by security-focused framework contextualize engagement at the local level and bring the concerns of communities to the forefront. This allows meaningful relationships, as defined by communities themselves, to be developed and increases levels of trust in the data ecosystem.

2. BUILDING SKILLS AND CAPACITY THROUGH LOCALIZED AND ACCESSIBLE DATA LITERACY TRAINING - RENEWABLE ENERGY

Renewable energy is well known but application of the information is poorly understood by local community stakeholders. Information flow can be improved by supporting community leaders to share knowledge, supporting decentralized data management systems, and taking local community concerns seriously. Opening the flow of information in this way supports CSO engagement in environmental governance on their terms.

Nam Theun 2 Hydroelectric Plant in Lao PDR. Image by Asian Development Bank via Flickr.

"The energy business is big business, and it's controlled by the politicians, government, and also the big companies. So, they don't allow CS or the public to have more knowledge or access the knowledge [...] because they want to sell it."

Rathana is a member of a local community in southern Laos. She remembers when, a few years back, a series of meetings about hydropower development were held in her community. She hadn't been able to attend, because she was taking care of her children and her mother, but the meeting had been for "project affected people" and she did not consider herself one. In any case, her husband went and reported that the meeting had been in Lao language, which she was not that familiar with, so it was good she hadn't gone. However, she has recently watched some videos on Facebook that her friends shared with her, and these videos showed people in Thailand saying that a dam in a place near her home is owned by a Chinese company that does not have the right permits for construction. Her friends aren't sure, but they say that there are CSOs working on making sure their community stays safe even though a dam is built.

She wants to know if this is "fake news", especially since in Lao she knows that the government has to approve everything, but she doesn't really know how to tell, and she feels shy and embarrassed asking for help.

"The problem in our society inclusion is still the problem."

"Need to establish an inclusive and participatory method for the people - Not just at the township level, but at the village level so their voices are incorporated into the development plans."

"Should make the data available and more accessible for local communities, for example through infographics or on different channels like social media, so that local communities can access, not just on the website, because local communities don't know and don't have knowledge how to access information."

"When talking about the training on data literacy, it would be a very different range of knowledge between local community to the civil society."

Rathana sees a flyer for **data literacy training**. At first, she isn't sure that it would be useful, because she doesn't know what data is, but then she sees that **a friend of hers is leading it, supported by the Lao Women's Union**.

Community-driven capacity building reduces barriers to participation as relationships based on trust have already been established between leaders and potential attendees. Contextually driven approaches are necessary, as different communities will need different markers of trust.

The flyer says that **data could be videos and infographics**, and also explains that the workshop will also share information on **how to stay safe online**. The flyer says that the products of the workshop will be **controlled by her** and she can use it for whatever she wants. When she asks, she learns that this workshop will explain how data could help her community stay safe even though a dam is built.

Localization of data through broadening the definition of data, focusing on front-of-mind concerns (such as cybersecurity) and introducing decentralized systems of data management increase the relevance of data for local communities and reduce well-founded fears of exploitation.

3. CONTRIBUTING TO DATA WITH GREATER TRANSPARENCY THROUGH OPEN DATA STANDARDS, DECENTRALIZED DATA SOLUTIONS AND CAPACITY BUILDING - TRANSBOUNDARY INVESTMENT

Information on transboundary investment can be subject to idiosyncratic national or private restrictions, but sharing data using open standards removes top-down barriers to that flow of information. On the other hand, decentralized data solutions such as IDS and participatory action research removes bottom-up barriers to the flow of information. Together with capacity training for all stakeholders, but particularly marginalized communities, this lowers the barrier to contributing to data while increasing transparency in the system. This in turn closes gaps in available data and improves the quality of available data.

Road in Northeastern Cambodia. Image by Lukas Bergstrom via Wikimedia.

"But there's no point of having data unless it is useful"

"Whatever data we have, I think we have to disseminate to the community members"

"Having data is one thing, sharing it is another thing"

"There is the need for facilitator or knowledge broker to support translation"

Socheat is a researcher living in Phnom Penh. He works for an organization supporting IP in the North-eastern provinces of Cambodia. The communities he works with have been introduced to a number of livelihood interventions through an INGO working on climate change adaptation. He usually sources information through

the **Open Development Cambodia platform**, but when searching for "climate change" he notes a research brief, but no datasets. He isn't sure what government ministry to find the data from. It seems hard to find this data online, but he also knows that the international donor for the interventions has been in-country for many years. He knows from Open Development Cambodia that "**open data**" makes data more available, so he wonders why donors haven't done this.

> The existence of an open data platform has created openness in an otherwise barren location as regards access to information. The structure and use of open data standards reveals the gaps in data availability as well. The opening of information in this way creates a consistent approach to data collection and supports greater flow of use and reuse of data in the data ecosystem.

The communities he works with tell him that their growing seasons are shorter, temperatures are hotter, rainy seasons are longer, and the storms random and wild. This is also not online. He wants to connect all these ideas together so that he can advocate for making data available to help his communities. In this way, data from the community coupled with other datasets could more effectively help to provide policy recommendations that reflect his community's circumstances.

"There's already inherent resilience within communities [...] but how do we legitimize these approaches so that they are recognized [...] maybe supporting others…?"

"Would like to see communities be able to share and present what they are doing in their respective ecosystems that contribute to adaptation and mitigation"

"If there can be a stronger, more participatory way of gathering data involving and led by IP communities, that would be good. And also using social media, using digital storytelling and presenting the stories that would also have bigger impact…"

"We experience that there is a clear hesitation from the community to believe in government data. Understandable [...] these communities do not feel that they were consulted to begin with [...] so they feel like the data most of the time is manipulated."

Socheat is introduced to the idea of **IDS**, which he understands as a way to respectfully involve IP communities in managing their own data. He thinks maybe this idea could be useful for the communities he works with to save their knowledge about the environment and other changes in their communities. He knows they've previously had scientists come in and do research for them, but maybe the **communities could themselves do a research project**. He approaches the ODI to talk about bringing IDS to his communities; they suggest that he also take a **data literacy training** that he can later share with the community to support IDS.

> These localized data governance models using decentralized methods, supported by capacity building, encourages the flow of local information into the data ecosystem and fills the gap in CSO participation.

4. IMPROVING ENGAGEMENT WITH ENVIRONMENTAL GOVERNANCE THROUGH SECURITY FOCUSED TOOLS AND DECENTRALIZED DATA SOLUTIONS - CLIMATE CHANGE ADAPTATION

Supporting climate change adaptation requires supporting local solutions. In the context of the data ecosystem, it means focusing on decentralized data solutions that take into account the concerns of local communities from the forefront. This includes involving local communities in the development of relevant tools from the outset and encouraging community-led data production. IDS puts the locus of power of data management in the hands of local producers, while capacity building supports sustainable engagement with the data ecosystem by creating knowledgeable local stakeholders. This allows local communities to participate in environmental governance on their own terms, and builds trust in the data ecosystem itself.

The Mekong River in Northern Thailand. Photo by Wandelende Tak via Wikimedia.

Somrak lives in northern Thailand, and recently has noticed that the river near their home smells terrible. His grandmother tells him that it never used to smell like this. Furthermore, the river water has never been this color before, or run this low. He remembers stories about how much fish the community used to be able to harvest from the river, but now they don't even eat the fish they can find. But the water does not always look or smell like this.

Last month, the waters of the river ran clear. The week following, Somrak helped a team of researchers—some who spoke only English, and others who spoke Thai, but none who spoke his family's language—do some tests on the water. He translates for the English speakers, since he speaks Thai and English in addition to his own language. The researchers have shown him the results of the tests on the water, which show a single digit number. They've explained to him that this means that the water is fine, and that it is safe to eat and drink. He knows this is not the case, and tells them the stories his grandmother has told him. They seem interested but they don't

take any notes, even though the researchers have told him they're looking for data. The researchers leave after a week, and he never hears from them again.

> Data is being extracted, and local knowledge is not taken as equal. At the same time, the most-impacted stakeholders are not provided with all necessary information.

"We are monitored and watched by the national security"

"[Security] is a relevant case, every day people are followed or stalked."

"The barriers [...] access to tech, access to networks, wireless, Access to language [...] that requires translation, the digital literary issue is huge, as well as the complexity of dealing with consent in an appropriate way using accessible security technology. [...] These complexities need to be addressed and it needs to be built from the ground up."

"Would be good to [...] be able to understand the needs of our network and be able to have the data help us in network building and mobilization… What do our colleagues or those working in the same theme as ours, what do they need, and [what] resources/knowledge do [they have that] would also help out these issues…"

Somrak wants his community to document the changes in the river. He is part of a regional network for water governance, and he wants to know whether others have experienced the same thing and what they've done about it. But he is scared to go online, as a friend of his has recently disappeared after posting a comment on Facebook. He recently participated in an online water governance conference where they discussed how to build a network to support the work. He subscribed to their newsletter and recently read of a new scoping study on a **security focused platform** including water defenders in the development. He wants to participate.

> Participation of local communities from the outset of the development of tools means that the tools are more likely to be relevant for them, and they are more likely to be vested in using the tool. Along with security-focused tools, this encourages engagement with environmental governance.

"Behind the storytelling we should be including […] participatory action research…"

"Skills capacity needs to be built…"

As part of participating in this project Somrak attends a 15-day training on **data literacy**. He learns about using **data for storytelling**, as well as **how to stay safe online**. He is also introduced to the idea of **IDS**, which he now understands could be helpful for protecting his community if they decide to share their c**ommunity research data**. He is considering introducing this information to his community and perhaps developing a **protocol**.

> Capacity building and decentralized data frameworks support sustainable engagement by local stakeholders in the data ecosystem and are a way to support local approaches to climate change.

Mahouts bring working elephants from Welma Elephant Camp to the Ayeyarwaddy River for shower in the morning, Bhamo district, Kachin State, Myanmar. © Hkun Lat / WWF-Myanmar