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ANNEX 3: EXISTING CAPACITY AND CONSTRAINTS TO UNDERTAKE WILDLIFE-FRIENDLY LINEAR INFRASTRUCTURE IN ASIA

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ACRONYMS

ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
ASEAN	Association of Southeast Asian Nations
BRI	Belt and Road Initiative
BRIGC	BRI's Green Development Coalition
CBA	Cost-Benefit Analysis
CBD	Convention on Biological Diversity
CIDCA	China International Development Cooperation Agency
CITES	Convention on Trade in Endangered Species
CMS	Convention on Migratory Species
EBRD	European Bank for Reconstruction and Development
EHS	Environmental Safety and Health
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
IFC	International Finance Corporation
IFI	International Financial Institution
IPPC	International Plant Protection Convention
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	International Union for the Conservation of Nature
JICA	Japan International Cooperation Agency
KBA	Key Biodiversity Area
LI	Linear Infrastructure

LISA	Linear Infrastructure Safeguards for Asia
MDB	Multilateral Development Bank
MEA	Multilateral Environmental Agreement
MEE	Ministry of Ecology and Environment
NDB	New Development Bank
NGO	Nongovernmental Organization
OECD	Organization for Economic Cooperation and Development (OECD)
PS	Performance Standard
Ramsar	Ramsar Convention on Wetlands of International Importance
SDG	Sustainable Development Goal
SEA	Strategic Environmental Assessment
TAL	Terai Arc Landscape
UIC	International Union of Railways
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
USAID	United States Agency for International Development
WARPA	Wildlife Conservation and Protection Act
WB	World Bank
WFLI	Wildlife-Friendly Linear Infrastructure
WHC	World Heritage Convention

INTRODUCTION

In the first quarter of the 21st century, Asia has embarked on a substantial effort to increase its economic and social development and interconnect its cities, nations, and regions through a series of international infrastructure initiatives and ambitious national programs. By 2030, nearly 60 percent of global economic growth is projected to come from Asia as 2.4 billion new "middle class" members—90 percent of the world's total—enter the global economy (Yendamuri & Ingilizian, 2019). While Asia has made significant progress over the last few decades, it still grapples with development challenges; despite the fact that Asia's gross domestic product (GDP) exceeds the rest of the world, nearly half a billion people live in extreme poverty as income inequality increases (Yendamuri & Ingilizian, 2019).

An Asian Development Bank (ADB) report estimates that over US $880 billion is invested annually in developing infrastructure across the continent (Asian Development Bank, 2017). ADB also estimates the region will need to invest US $22.6 trillion in infrastructure between 2016 and 2030 to maintain current rates of economic growth. To address climate mitigation and adaptation, an additional US $4 trillion will be needed annually. Of these totals, the power (52 percent) and transport (32 percent) sectors will receive the majority of the infrastructure investments to support the expansion of roads, rails, and power lines across Asia.

Improved or new infrastructure systems can support community development, increase trade, reduce poverty, and improve people's lives. However, if not adequately addressed, the expansion of infrastructure can have consequential impacts on Asia's wildlife, critical habitats, ecosystems, and other natural capital. To conserve wildlife in the face of rapid development, Asian countries must have the capacity to safeguard wildlife from the impacts of linear infrastructure (LI) such as roads, rails, and power lines.

It has become increasingly apparent that the maintenance of biodiverse, resilient ecosystems has tangible benefits for human well-being—notably by buffering infectious zoonotic disease outbreaks (Cunningham et al., 2017) and improving the quality of life (Srinivasu, 2013). To mitigate the impacts of LI on wildlife and ecosystem function, international financial institutions (IFIs) that fund LI development and governments are increasingly focused on safeguards for wildlife while continuing to invest in development within ecologically and socially vulnerable countries. However, many Asian countries also see widespread corruption that affects the equitable and efficient distribution of development investments, which in turn impacts the effectiveness of wildlife safeguards (Coca, 2020). In this context, identifying both the successes and the challenges in the funding, planning, and implementation of wildlife safeguards is an important first step to building capacity for implementing wildlife-friendly linear infrastructure (WFLI) in Asia.

This Annex examines capacity across four primary constituent groups engaged with LI: IFIs, government agencies, industry (planners, engineers, and related consultants), and environmental nongovernmental organizations (NGOs). It focuses on three modes of LI: roads, rails, and power lines. This assessment recognizes that Asia is a large and diverse continent. While international commitments and globally mandated environmental safeguards are active at the continental scale and indicate levels of awareness of wildlife concerns when building LI, the implementation of wildlife safeguards only occurs at the national level where LI projects are planned and developed. To address the large geographic extent and diversity of Asia, capacity is evaluated at two scales: a coarse, Asia-wide perspective of 28 of its

countries; and an in-depth national-level appraisal in five representative countries—Bangladesh, India, Mongolia, Nepal, and Thailand.

Part 1 of this Annex briefly reviews select examples of existing capacity-building efforts for WFLI to provide context on the work that is already happening in developing Asia.

Part 2 explains the selection of representative countries and describes the methods for assessing capacity at both the Asia-wide and national levels.

Part 3 presents the results of the Asia-wide analysis and describes the policy environment supporting or impeding the development of WFLI. It discusses broad patterns of knowledge, interest, and best practice for deploying wildlife safeguards as they align or vary across the four constituent groups and Asian geographies. It also identifies bottlenecks and the challenges that lie ahead to implement effective safeguards for wildlife adequately.

Part 4 of this Annex presents the results of the national-level capacity assessment, covering the four constituent groups within Bangladesh, India, Mongolia, Nepal, and Thailand. These countries represent many different aspects of Asia's diverse socio-ecological landscape, and a survey was used to examine barriers to the implementation of WFLI safeguards, and future needs for each constituent group within and across the five countries.

Part 5 examines each of the five countries independently by providing a country profile to assess various societal and economic conditions that may facilitate, or conversely, create challenges to, implementing wildlife safeguards for LI. It includes a granular evaluation of the legal capacity—laws and regulations—of each country to provide direction or requirements for safeguards.

Finally, parts 6 and 7 provide key findings from the capacity assessment of Asia and make recommendations for capacity building in the future.

The main objectives of the capacity assessment for LI safeguards for Asia are as follows:

1. Assess the current capacity of Asian countries to safeguard wildlife while developing LI (roads, rails, and power lines).
2. Identify bottlenecks for implementing effective wildlife safeguards when developing LI.

CONTEXTUAL BRIEF: PRIOR CAPACITY BUILDING IN ASIA

Considering recent global recognition that the built environment must now align with conservation actions (Group of Seven, 2021; United Nations General Assembly, 2021), efforts to build capacity for WFLI in Asia have gained momentum. Multiple constituent groups—governments, financiers, industry, and NGO organizations—have begun producing guidance documents, workshops, and conferences to improve existing Asian capacities to implement WFLI safeguards.

To date, most of the capacity building that has occurred for WFLI—workshops, field trips, workforce trainings, technical transfer webinars, and delegation trips between Asian and North American or European countries—remains undocumented. Members of the Perez Team have participated in many of these activities with LI personnel from China, India, Japan, Malaysia, Mongolia, Myanmar, Nepal, South Korea, Thailand, Turkmenistan, and unnamed others. The ADB, Chinese Academy of Transportation Sciences, Global Tiger Forum, Wildlife Institute of India, US Fish and Wildlife Service, and many other organizations and agencies have sponsored or co-sponsored such capacity-building efforts along with private philanthropy. These fruitful beginnings will need to be built upon as LI development expands across the continent.

To better understand existing capacities, we focus this contextual brief on the following five examples of existing documented capacity-building efforts, which support the incorporation of WFLI safeguards during planning and construction:

1. Government of India. (2016, February 23-25). *Green Roads: Infrastructure in Natural Habitats. Capacity Building Workshop.*
2. The World Bank et al. (2010). *Smart Green Infrastructure in Tiger Range Countries: A Multi-Level Approach.*
3. Olson, K. (2013). *Saiga Crossing Options: Guidelines and Recommendations to Mitigate Barrier Effects of Border Fencing and Railroad Corridors on Saiga Antelope in Kazakhstan.*
4. UNEP/CMS. (2015). *Guidelines on Mitigating the Impact of Linear Infrastructure and Related Disturbance on Mammals in Central Asia.*
5. Wildlife Institute of India. (2016). *Eco-friendly Measures to Mitigate Impacts of Linear Infrastructure on Wildlife.*

This brief selection of guidelines, guidance, and a workshop offer only a sample of the recent additions to safeguard capacity-building activities in the region. Many capacity-building efforts lack formal documentation, such as workshop reports, and as such a systematic review of previous capacity-building activities would fail to capture the state of knowledge adequately. We offer these five documents as just a sample of efforts to build capacity for safeguard implementation and recognize that they certainly are not an exhaustive summary of Asia's WFLI capacity-building effort to date.

CAPACITY-BUILDING COMMONALITIES

In these documents, devoted explicitly to capacity for WFLI in Asia, several commonalities emerge, regardless of their scale or species focus. Prominent in all is the key importance of application of the mitigation hierarchy. Early use of the mitigation hierarchy—at the landscape development planning stage—emerges as an important factor in reducing impacts, as is its application throughout all phases of project planning, design implementation, and operation. Under best practices, biodiversity assessments are required at a regional scale prior to project planning. However, given that fine-scale biodiversity

assessments are often not available, a study of ecological connectivity in the area where a project is anticipated is suggested as a critical first step. Avoidance, the first step of the mitigation hierarchy, is the most cost-effective means to conserve wildlife corridors, as retrofitting options to maintain ecological connectivity in the built environment is always more expensive. For example, in India, the cost of developing necessary wildlife corridor information and consideration of wildlife corridors for a key species, the wild ass (*Equus hemionus khur*), added just 1-2 percent to the total cost of work on the Gujarat State Highway, a minor amount compared with the anticipated cost of later inclusion (Government of India, 2016). Similarly, at an estimated 2 percent of total construction costs, initial feasibility studies and planning to avoid migratory routes for critically endangered Saiga antelope (*Saiga tatarica*) during railway expansion in Kazakhstan would be "a worthwhile cost to ensure minimal impact to another valuable renewable resource," (Marsh, n.d.).

Another commonality is the need to incorporate wildlife considerations at all stages of LI project planning and by each of the constituent groups involved. The reports emphasize that government policy and land use planning set the stage for development of WFLI. Formal commitments for maintaining intact habitat and the identification of key corridors as part of regional land use planning efforts create a supportive environment. Under optimal circumstances, a commitment to "no net loss" or even "nature-positive" actions exist, along with inter-agency coordination to examine the means to eliminate or reduce potential impacts. Within this framework, each of the public and private entities responsible for project planning, financing, design, construction, and operations has a role in protecting wildlife at increasingly detailed scales of project implementation. In addition, public consultation and stakeholder/community-level engagement are consistently noted to improve outcomes.

Finally, three of the documents describe common reasons that LI planning and development processes often fail to account adequately for wildlife and biodiversity concerns. These begin with a lack of awareness of potential mitigation measures and better understanding of biodiversity offsets to counterbalance impacts. The latter may be beneficial to some degree as mitigation efforts, but do not solve issues at their source, which may be critical to save the last refuges for wildlife in heavily populated areas of Asia. Even public commitments to green infrastructure often miss ecological connectivity as a primary consideration. As few countries or regions have biodiversity planning or strategic environmental assessments (SEAs) that include wildlife corridors or requirements for their identification, mitigation options are often incorporated only at the project level. In such cases, measures may be added after routes have been identified or construction plans approved. As a result, the measures are often insufficient to achieve no net loss or nature-positive goals.

EMPHASIS ON LANDSCAPE-LEVEL, TRANSBOUNDARY-APPROACHES

Three of the capacity-building documents are devoted to highly visible species or species assemblages of concern in key regions (for example, tigers (*Panthera tigris*) and Central Asian mammals) and arose from the apparent need to develop landscape-scale visions for survival of threatened species (Olson, 2013; Quintero et al., 2010; UNEP/CMS, 2015). The landscape approach of these documents provides a critical lens to consider infrastructure from the perspective of species' needs alongside development plans for a region, rather than fitting conservation into development requirements. Toward this end, two of the assessments led to production of the *Central Asian Mammals Migration and Linear Infrastructure Atlas*, intended for "decision makers, development banks and other stakeholders" as an overview that provides "a visual representation of where current and potential future conflicts lie between the mammals of Central Asia and the development of linear infrastructure," (UNEP/CMS, 2019). Given the

need for Central Asian mammals to move across extensive landscapes that sometimes cross borders, the atlas underscores that a less-than-landscape-level perspective is likely to be insufficient. In the case of tigers, protected areas embedded in human-dominated landscapes where loss of forest cover and linear infrastructure development are accelerating indicate the value of concurrent examination of linear infrastructure and conservation goals.

Of the five selected capacity-building documents, three focus on India; one of these includes other tiger range countries. In addition to being home to the largest remaining populations of Bengal tigers and Asian elephants (*Elephas maximus*), India also boasts the second largest road and third largest railway networks in the world. With in-depth analysis of the current status of policy and practices to develop WFLI, and group-specific recommendations for mammals, birds, reptiles, amphibians and invertebrates, *Ecofriendly Measures to Mitigate the Impacts of Linear Infrastructure on Wildlife* emphasizes that biodiversity considerations must be mainstreamed into LI development to meet social and environmental goals in a cost-effective manner capable of achieving triple-bottom-line (environmental, social, and financial) performance (Wildlife Institute of India, 2016). In many cases, mitigation measures for wildlife improve human safety by reducing wildlife-vehicle collisions. They can also improve the resilience of infrastructure to the increasing frequency of extreme weather events. Further, by maintaining ecological connectivity, WFLI helps to maintain ecosystem services.

In addition to detailing the impacts of roads and rails on large, medium, and small mammals, and providing a framework through which to consider specific mitigation options, *Ecofriendly Measures to Mitigate the Impacts of Linear Infrastructure on Wildlife* (2016) describes ways to promote amphibian and reptile passage. As with mitigation measures for larger species, species-specific adaptations to culverts or other structures are needed, along with optimal location for success. This publication is also the only guidance for Asia we encountered with significant attention to power lines. As with roads and rails, avoidance of flyways and Important Bird Areas is a preferred strategy, with power line burial recommended where avoidance cannot be achieved. While mitigation measures exist to reduce the electrocution and direct mortality risk to avian species posed by power lines, such measures are more difficult to implement and less successful than avoidance through sound planning.

Developed in response to the fragility of endangered species survival under current development approaches, *Smart Green Infrastructure in Tiger Range Countries: a Multi-Sectoral Approach* includes an extensive review of policy options, project-level recommendations, and case studies for transportation infrastructure (primarily roads), along with hydropower dams and mines (The World Bank et al., 2010). This publication emphasizes the need for SEAs, which can examine options to avoid habitat fragmentation on a regional level and/or identify the cumulative effects of overarching road or other infrastructure investment strategies on wildlife. SEAs are put together prior to project-level decision making; and, along with policy, set the stage for "nature positive" and "no net loss" decision making. In the same vein, the report of the 2016 Capacity-Building Workshop, *Green Roads: Infrastructure in Natural Habitats*, held in Assam, India, and attended by officials from Bangladesh, Nepal, and India, upholds that "as the current project-by-project approach of addressing impacts falls short, a different…'multilevel approach' where impacts based on the principles of the Mitigation Hierarchy are addressed at the national, sectoral and project level [is needed]," (Government of India, 2016).

The remainder of the guidelines reviewed focus on Central Asia and are outcomes from the Convention on Migratory Species (CMS) and supporting agencies. Nearly encyclopedic in its coverage, *Guidelines on*

Mitigating the Impact of Linear infrastructure and Related Disturbance on Mammals in Central Asia describes species' needs and legal frameworks and offers guidelines and principles for planning and design, assessment, construction, and monitoring and evaluation to mitigate the impact of roads, rails, and oil and gas pipelines (UNEP/CMS, 2015). The document builds upon earlier work encapsulated in *Saiga Crossing Options: Guidelines and Recommendations to Mitigate Barrier Effects of Border Fencing and Railroad Corridors on Saiga Antelope in Kazakhstan* (Olson, 2013). In addition to underscoring the importance of applying an appropriate scale for the species and landscapes under consideration, the Central Asian guidelines highlight the need for transboundary perspectives that may cross national borders. Of the countries considered, Kazakhstan alone has a national legislative framework that requires the assessment of impacts on migratory species in relation to LI design and construction. Further, despite its well-described impact to animal movement, fencing does not yet require an assessment in any of the countries of the region.

SUMMARY

Collectively, the policies and projects described in the five prior capacity-building documents indicate pathways to facilitate WFLI development. Four of the five documents emphasize roads, with secondary emphases on rails (Table 1). Only one document covered power lines, a key focus of this project. Other types of infrastructure, such as oil and gas pipelines and mines, are each considered in a single document, with two reports providing some information on hydropower and fencing.

Table 1: Summary of capacity-building documents reviewed

TABLE 1: SUMMARY OF CAPACITY-BUILDING DOCUMENTS REVIEWED

DOCUMENT TITLE	YEAR	SPECIES/GROUP	INFRASTRUCTURE TYPE					
			ROADS	RAILS	FENCES	HYDROPOWER /POWER LINES	OIL & GAS	MINES
India and Tiger Range Countries								
Ecofriendly Measures to Mitigate the Impacts of Linear Infrastructure on Wildlife	2016	Mammals, Birds, Reptiles, Amphibians, Invertebrates	X	X		X		
Green Roads: Infrastructure in Natural Habitats	2016	Multi-species	X					
Smart Green Infrastructure in Tiger Range Countries: A Multi-Sectoral Approach	2010	Tigers and Other Large Mammals	X	X		X		X
Central Asia								
Guidelines on Mitigating the Impact of Linear infrastructure and Related Disturbance on Mammals in Central Asia	2014	Central Asian Mammals	X	X	X	X	X	
Saiga Crossing Options: Guidelines and Recommendations to Mitigate Barrier Effects of Border Fencing and Railroad Corridors on Saiga Antelope in Kazakhstan	2013	Saiga Antelope		X	X			

By looking across landscapes, a range of strategies were identified from defining species-specific needs, such as "no go areas" in remaining tiger core habitat or distinct mitigation measures for canopy dwellers like gibbons (*Hoolock spp.*), to policy recommendations that affect all stages of project development from pre-planning to post-construction monitoring. SEAs and national nature-positive initiatives emerge as foundational to project-level success. All five documents draw upon examples of WFLI development from across the globe and describe projects seeking to make infrastructure more wildlife friendly in Nepal, Indonesia, Malaysia, Vietnam, India, and the Central Asia region.

METHODS

To assess existing capacity for implementing wildlife safeguards for roads, rails, and power lines, we examined capacity at two spatial scales: 1) Asia-wide for all 28 countries, and 2) at the national to local or project-level scale in five representative countries. This twofold approach allows this assessment to capture different aspects of capacity from international agreements that commit countries to conserve wildlife; to national policies guiding federal transportation, energy, and conservation agencies to protect wildlife; to LI plans and project-level implementation. Since different actors are responsible for different aspects of LI development, from conception to selection, financing, planning, design, and implementation, we collected information for four major constituent groups: IFIs, government agencies, industry, and NGOs.

For the Asia-wide assessment, we used web-based searches to gather information on existing laws, regulations, guidelines, and industry standards. At the Asia-wide scale, we also conducted interviews with Asia program leaders of international conservation NGOs and sent an electronic survey to national conservation groups. To assess IFI's involvement at the continental scale, we reviewed their websites and conducted and an electronic survey.

At the national level, we designed an electronic survey distributed to national government agency personnel, IFI members, LI industry representatives, and NGO staff in the five representative countries (Bangladesh, India, Mongolia, Nepal, and Thailand). We also conducted interviews with IFI leaders in headquarters or regional offices. To assess national laws and regulations, we reviewed a legal internet database and solicited expert reviews of the findings from legal or related professionals in the five representative countries.

For this assessment, we selected the methods that best aligned with the relatively short timeframe (13 months) and scope of this project and ones that could gather information for analyses during the COVID-19 pandemic. COVID-19 restricted the ability to travel, convene stakeholder groups, and meet with leaders and opinion makers. Thus, we relied on internet searches to collect background information and verified the findings with experts to rapidly assess region-wide policies and capacity. Electronic surveys were chosen as the prime instrument to gather data in the five representative countries to reach the targeted audiences effectively and to achieve reasonable response rates from members of the four different constituent groups. To facilitate robust comparisons from the surveys, multiple-choice or yes-no questions were selected over open-ended questions.

ASIA-WIDE CAPACITY ASSESSMENT

At the Asia-wide level, we undertook a desk review to assess the capacity of the 28 countries to develop WFLI. We relied on open access, verifiable information that was available online regarding existing laws and guidelines. Where pertinent, we solicited expert opinion to further explore the norms within each constituent group. Additional methods varied by constituent group based on the information that was available online; these are described below.

GOVERNMENT AND AGENCIES

International Agreements: We identified seven pertinent international multilateral environmental agreements (MEAs), including protocols and ancillary agreements that seek to conserve terrestrial and

freshwater environments. We examined the respective website of each MEA to track which of the 28 Asian countries were signatories.

National Agencies: We conducted an internet search to identify in each of the 28 countries the ministries and agencies of transport, energy, and conservation that are responsible for upholding the biodiversity provisions in their laws and those with responsibilities to safeguard wildlife during LI development. Then, we searched the websites of the identified national ministries and agencies for laws governing LI project development in each of the Asian countries. We used ECOLEX, an environmental law database, to address data gaps, particularly of information not available on the national ministry and agency websites (Appendix A). We determined that a separate validation process for this legal information was not needed, since it was collected at government websites, which are established as the direct source for the laws and guidelines for agencies involved with providing LI safeguards.

INTERNATIONAL FINANCIAL INSTITUTIONS (IFIS)

We identified 10 major IFIs that actively invest in LI projects within Asia and reviewed their current safeguards that are relevant for biodiversity (Table 2). Instead of selecting every infrastructure investor in Asia, these specific IFIs enable a contextual and Asia-wide overview.

Table 2: IFIs and other funders of LI

TABLE 2: IFIS AND OTHER FUNDERS OF LI
Asian Development Bank (ADB)
Asian Infrastructure Investment Bank (AIIB)
Association of Southeast Asian Nations (ASEAN)
China International Development Cooperation Agency (CIDCA)
European Bank for Reconstruction and Development (EBRD)
European Investment Bank (EIB)
International Finance Corporation (IFC)
Japan International Cooperation Agency (JICA)
New Development Bank (NDB)
World Bank (WB)

We sourced information on safeguards mainly from the IFIs' websites and their documents available online. Additionally, information gaps were filled via an internet search for relevant articles and reports written by experts that review IFI policies and performance. To clarify and confirm IFI safeguards policies, we contacted experts at several of these 10 IFIs as well as relevant think tank personnel and other individuals, and interviewed them to supplement, as well as confirm, the internet findings.

INDUSTRY ASSOCIATIONS

With the help of transport and energy sector experts and their professional networks, we identified more than 30 professional associations representing road, rail, energy transmission, and civil engineering in Asia. We included regional partnerships, multilateral economic development cooperatives, and other initiatives across Asia focused on the three modes of LI for this project.

Based on information published on the websites of these associations, we evaluated the capacity of each association to provide professional information and training to the private sector on wildlife safeguards as well as general environmental protections. The evaluation covered four delivery mechanisms of safeguard capacity building: workforce training (virtual vs. in-person), webinars, publications, and other technical resources.

NONGOVERNMENTAL ORGANIZATIONS (NGOS)

International NGOs: We identified 13 large international environmental NGOs active in wildlife conservation in multiple countries across Asia (Table 3). We contacted the head of the Asia program, or a similar leader, for each NGO, and conducted a 30-minute interview to determine their current and future desired capacity to safeguard wildlife from LI development. We secured 11 interviews that focused around seven questions, six of which were multiple choice with additional explanations encouraged; the final question was open-ended (Appendix B).

Table 3: The 11 large international environmental NGOs that were interviewed, given their conservation work in multiple locations across Asia

TABLE 3: ELEVEN IDENTIFIED LARGE INTERNATIONAL ENVIRONMENTAL NGOS INTERVIEWED, GIVEN THEIR CONSERVATION WORK IN MULTIPLE LOCATIONS ACROSS ASIA
BirdLife International
Flora and Fauna International
Frankfurt Zoological Society
Global Wildlife Conservation
International Crane Foundation
International Fund for Animal Welfare
Panthera
The Nature Conservancy
The Zoological Society of London
Wildlife Conservation Society
World Wildlife Fund

National NGOs: We used the International Union for the Conservation of Nature's (IUCN's) membership list to identify NGOs working on conservation in Asia. We found 239 NGOs working in 24

of 28 of the project's focal countries. We then compiled the email addresses of primary contacts for each organization from the IUCN's Union Portal, coupled with visits to the NGOs' websites. We emailed each identified NGO contact with a request to complete a 16-question electronic survey (Appendix C). We contacted 14 additional NGOs (non-IUCN members) at the recommendation of their colleagues with a request to participate in the electronic survey delivered by email. We used R, a free statistical software program, to analyze the electronic survey responses. In all, 54 national NGOs responded to the survey.

NATIONAL-LEVEL CAPACITY ASSESSMENTS

SELECTION OF REPRESENTATIVE COUNTRIES

After conducting the Asia-wide capacity assessment, we conducted an in-depth assessment of safeguard capacity in five representative countries. To choose these countries, we compiled a list of the 19 Asian countries in which USAID has or is currently investing resources. We ranked these countries relative to one another in 15 categories, representing various facets of biodiversity, LI development, and investment as listed below:

1. Biodiversity values. In combination, categorical rankings of biodiversity values, provided a granular overview of each country:
    a. Species richness,
    b. Extent of critical habitat,
    c. Proportion of country in critical habitat,
    d. Biodiversity intactness,
    e. Percentage of country in protected area status, and
    f. Percentage of country in forest.
2. Measures of potential LI development:
    a. Projected Belt and Road Initiative (BRI) rail length to be constructed,
    b. Projected resulting rail density from BRI additions,
    c. Projected BRI road length to be constructed,
    d. Projected resulting road density from BRI additions,
    e. Percent of population that has access to electricity (lower % = higher demand for future power lines), and
    f. Tree cover loss.
3. Level of investment by three Asia-wide investors:
    a. AIIB,
    b. ADB, and
    c. USAID, total obligations.

After reviewing the relative rankings among the 19 countries, no single country or group of countries emerged at the top of the ranking across all three categories. Instead, several emerged among many of the categories. In general, biodiversity is greatest in the equatorial regions of Asia and decreases in a northerly direction. Thus, if biodiversity were the only value applied to representative country selection, only tropical countries would be chosen. Instead, we selected countries based on their rankings in three regions of Asia: South Asia, Southeast Asia, and Central-east Asia. As a result of this evaluation, USAID chose to conduct an in-depth capacity assessment in five countries: Bangladesh, India, Mongolia, Nepal, and Thailand.

DEVELOPMENT OF SURVEY

We used an online survey, delivered through SurveyMonkey™, to conduct the capacity assessment. We relied on the UN Development Programme (UNDP) framework for capacity assessment as a starting point in developing the questionnaire, to understand standard practice for capacity assessments (UNDP, 2008). The questionnaire was developed to collect information in five key areas:

1. Perceptions of existing WFLI and its importance;
2. Current capacity for implementing WFLI safeguards;
3. Barriers to implementing WFLI safeguards;
4. Constituent group involvement in various phases of the LI project development process; and
5. Needs and preferences to build future WFLI capacity.

Information regarding building future capacity was of special interest to USAID, both in terms of the type of capacity needed and the method of delivery, and how this may vary for a given constituent group or country.

The final survey consisted of 88 questions, although any individual respondent would only see and be asked a subset of these (Appendix D). The first part of the survey consisted of up to 25 questions targeted at respondents from all four constituent groups; some questions were dependent on answers to previous questions, so certain respondents answered fewer questions. The second part of the survey differed depending on which constituent group the respondent self-identified; the government agency constituent group had up to 10 additional questions, as did industry; IFIs had up to 16; and NGOs had up to seven.

IDENTIFICATION OF SURVEY PARTICIPANTS

As with the Asia-wide assessment, the survey targeted individuals representing one of four constituent groups: IFIs, industry, government, and NGOs. To ensure that the survey reached its intended respondents, a framework was created to identify key stakeholders involved in the LI project development process in each representative country (Appendix E). We hired experts (our national liaisons) in each of the five representative countries to assist with the assessment. With assistance from the national liaisons and the country's USAID Mission, we compiled contact information for the following types of stakeholders within each constituent group:

1. IFIs: Officers in charge of environmental and social impact assessments (ESIAs) or monitoring & evaluation reports for LI projects. These officers were located either in the representative countries or in regional Asian headquarters of multilateral development banks.
2. Government: Environmental, infrastructure, or energy agency/ministerial personnel and those involved in environmental permitting. Others were responsible for their government's adherence to globally recognized international agreements that include provisions for wildlife conservation within national development agendas.
3. Industry: Infrastructure planners, engineers, and construction company representatives as well as ESIA consultants.
4. NGOs: Organizations whose programmatic work focused on addressing impacts from LI on wildlife and/or national EIA third-party reviews, and those with the intention to involve their conservation program staff in these themes. This category also included academics from nongovernmental research centers and universities as well as those aligned with social development in local communities and/or policy work related to wildlife and LI.

Across all five countries, 840 targeted participants were identified (Table 4). We also identified additional IFI contacts in regional headquarters outside of the five representative countries. All targeted participants were invited to share the national survey with others in their institutions who worked on safeguards or were relevant experts; therefore, it is difficult to know the exact number of individuals that received the survey.

Table 4: The total number of targeted participants for the electronic survey, identified by constituent group and country

TABLE 4: THE TOTAL NUMBER OF TARGETED RESPONDENTS FOR THE ELECTRONIC SURVEY THAT WERE IDENTIFIED BY CONSTITUENT GROUPS AND COUNTRY

Representative countries Constituent groups	India	Nepal	Bangladesh	Thailand	Mongolia	Total
IFIs and domestic funders	27	18	-*	-*	6	51
Industry associations	40	59	21	32	30	182
Government and agencies	71	173	58	91	59	452
NGOs	15	59	21	41	19	155
Total	153	309	100	164	114	840

*No relevant IFI representatives were identified in Bangladesh or Thailand

SURVEY DISSEMINATION

To achieve the best possible response rate, we planned to disseminate the survey to all identified contacts according to a rank system as detailed below:

1. Contacts that the country's USAID Mission, national liaison, or project staff were familiar with would receive a formal email request to complete the survey.
2. Contacts somewhat familiar to the USAID Mission, national liaison, or project staff received the survey via a formal email and an introductory phone call by the national liaison.
3. Contacts in government and industry leadership positions would receive the survey via a formal email request to complete the survey, and an introductory phone call from national liaison with an offer for a phone interview to complete the survey.
4. Contacts in leadership positions requiring access through the USAID Mission in that country, would receive the request to complete the survey via formal introduction from USAID, along with a follow-up email or phone interview, as needed, by the national liaison.

The planned dissemination date for the survey clashed with the second wave of the COVID-19 pandemic across many countries in Asia, including the five representative countries. Accordingly, the plans were reassessed for extensive survey dissemination by working closely with the national liaisons and the USAID Missions in each country. We thus tailored the survey distribution to the situational environment caused by COVID-19, with the understanding that local circumstance might impede survey responses or the ability to contact targeted survey respondents. In addition to daily updates on the situation in each of the five countries, the national liaisons identified the top 30 contacts to survey in

each country; this list was used to determine where follow-up was most necessary due to reduced capacities across the affected countries and widespread country-wide lockdowns.

Following are details on the final dissemination of this capacity assessment survey in each representative country:

1. India: Survey dissemination was severely delayed and access to government was sought but due to the prevailing pandemic, the response from government was especially low. The response level across all constituent groups was also low when compared to some other countries.
2. Bangladesh: Survey dissemination was completed as planned but required extensive phone follow-up to gather responses. The response from industry was especially low.
3. Mongolia: Survey dissemination was delayed due to lockdown, but still completed as planned. Survey questions were also translated into Mongolian and sent alongside the online survey for easier data collection.
4. Nepal: The survey was disseminated to most of the intended targets prior to the pandemic wave in Nepal, leading to a higher number of responses.
5. Thailand: Survey dissemination was delayed but completed as planned. Survey questions were also translated into Thai and sent alongside the online survey for easier data collection.

All survey respondents were informed that their answers would remain anonymous. Survey recipients were allowed to forward the survey to their colleagues, with the recognition that the contact list may be missing certain knowledgeable individuals. The survey was left open for approximately three weeks. Each contact was sent two emails during the three-week period to remind them to take the survey. The survey closed on June 26, 2021. We used R, a free statistical software program, to compile and analyze the responses.

MULTILATERAL ENVIRONMENTAL AGREEMENTS (MEAS) AND RELATED NATIONAL LAWS

To better understand how signatory countries to each specific MEA implement the agreement, we undertook additional research on national legislation, policies, and regulations related to the conservation of species, ecosystems, biodiversity, and WFLI in the five representative countries. Using the ECOLEX Database, we identified the most recently documented and applicable national legal mechanisms related to the conservation of species, ecosystems, biodiversity, and WFLI. The resulting lists were conveyed to legal experts in each representative country to review, verify, and supplement the identified information collected for the assessment to ensure a high level of accuracy (Appendix A).

ASIA-WIDE RESULTS AND DISCUSSION

GOVERNMENTS AND AGENCIES

INTERNATIONAL AGREEMENTS

Seven international MEAs, addressing various facets of wildlife conservation, were reviewed for the project. They include the Convention on Biological Diversity (CBD), World Heritage Convention (WHC), Convention on Trade in Endangered Species (CITES), Convention on Migratory Species (CMS), International Plant Protection Convention (IPPC), International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), and Ramsar Convention on Wetlands of International Importance (Ramsar). In part, being a signatory to these MEAs indicates a country's commitment to the international community that it will safeguard wildlife, although additional work must be done within each country to convert these international commitments into more precise laws, regulations, and policies like national strategies, action plans, and programs that have greater potential for enforcement and monitoring at the national level (Mitchell, 2003). All 28 Asian countries identified for this study are parties to CBD and WHC (Table 5). Except for CMS, which features only 12 countries, the other four MEAs are also well represented Asia-wide.

Seven countries (Bangladesh, India, Kyrgyzstan, Mongolia, Pakistan, Philippines, and Sri Lanka) are Parties to all seven MEAs, including the CMS and some of its ancillary agreements. Only two countries (Brunei and Timor-Leste) are represented in three or fewer of the agreements.

Table 5: Country-wide representation in seven key international MEAs

TABLE 5: COUNTRY-WIDE REPRESENTATION IN SEVEN KEY INTERNATIONAL MEAS

INTERNATIONAL MEAs	CBD	WHC	CITES	CMS	IPPC	ITPGRFA	Ramsar
Afghanistan	X	X	X	X	X	X	
Bangladesh	X	X	X	X	X	X	X
Bhutan	X	X	X		X	X	X
Brunei	X	X	X				
Cambodia	X	X	X		X	X	X
China	X	X	X		X		X
India	X	X	X	X	X	X	X
Indonesia	X	X	X		X	X	X
Japan	X	X	X		X	X	X
Kazakhstan	X	X	X	X	X		X
Kyrgyzstan	X	X	X	X	X	X	X
Lao PDR	X	X	X		X	X	X
Malaysia	X	X	X		X	X	X
Mongolia	X	X	X	X	X	X	X
Myanmar	X	X	X		X	X	X
Nepal	X	X	X		X	X	X
North Korea	X	X			X	X	X
Pakistan	X	X	X	X	X	X	X

TABLE 5: COUNTRY-WIDE REPRESENTATION IN SEVEN KEY INTERNATIONAL MEAS

INTERNATIONAL MEAs	CBD	WHC	CITES	CMS	IPPC	ITPGRFA	Ramsar
Philippines	X	X	X	X	X	X	X
South Korea	X	X	X		X	X	X
Singapore	X	X	X		X		
Sri Lanka	X	X	X	X	X	X	X
Tajikistan	X	X	X	X	X		X
Thailand	X	X	X		X	X	X
Timor-Leste	X	X					
Turkmenistan	X	X		X			X
Uzbekistan	X	X	X	X	X		X
Vietnam	X	X	X		X		X

Cells with an "**X**" indicate representation of the country in the corresponding international MEA

It is important to note that WFLI measures in specific countries and across the region could be better coordinated and more successful if more countries participated in the CMS than the current 12 Parties identified. The CMS is the only global convention specializing in the conservation of migratory species, their habitats, and migration routes. Countries that are signatories to the CMS could enhance their national legal mechanisms for the protection of many wide-ranging species, including the areas where they move and stop throughout their life cycles, while also addressing barriers and other threats to their movement, such as LI.

NATIONAL AGENCIES

Each of the 28 Asian countries were evaluated to determine whether they had laws and/or guidelines to safeguard wildlife from each of the three modes of LI (roads, railways, and power lines) and for environmental impact assessments (EIAs), a key LI plan or project process that can identify needs and provide wildlife safeguards. For roads, railways, and EIAs, the number of countries with laws that include provisions to safeguard wildlife marginally exceeds the number of countries with prevalent guidelines, while an equal number of countries have relevant laws and guidelines for power lines (Table 6).

Table 6: Country-wide scorecard based on the prevalence of national laws and guidelines pertinent to LI modes and EIA

TABLE 6: COUNTRY-WIDE SCORECARD BASED ON THE PREVALENCE OF NATIONAL LAWS AND GUIDELINES PERTINENT TO LI MODES AND EIA

+1 Included	+0.5 Likely Included	0 Not Included	0 Unavailable Information

	EIA		ROAD		RAILWAY		POWER LINE		SCORE
Country↓	Laws	Guidelines	Laws	Guidelines	Laws	Guidelines	Laws	Guidelines	
India									8
Japan									8
Mongolia									8
South Korea									8
Tajikistan									8
Bangladesh									8
Malaysia									8
Timor-Leste									8
Turkmenistan									7
Nepal									7
China									6
Uzbekistan									6
Bhutan									5
Afghanistan									5
Kazakhstan									5
Brunei									4
Sri Lanka									4
Pakistan									4
Thailand									4
Cambodia									2
Indonesia									2
Vietnam									1
Singapore									1
Myanmar									0
Laos									0
Kyrgyzstan									0
North Korea									0
Philippines									0
Total	**19**	**18**	**18**	**17**	**15**	**14**	**12**	**12**	

Out of the 28 countries, eight (Bangladesh, India, Japan, Malaysia, Mongolia, South Korea, Tajikistan, and Timor-Leste) have both laws and guidelines regarding the protection of biodiversity for roads, railways, and power lines and in EIAs. Our results suggest that many countries have at least an overarching EIA law, providing an important starting point for future provisions that specifically focus on safeguarding wildlife from the impacts of LI.

Among the three LI modes, the road sector has the highest representation of protective measures in Asia in terms of both laws (18 countries) and guidelines (17 countries), while the power line sector is the least represented (12 countries for both laws and guidelines). Laws and guidelines to protect biodiversity within EIA processes are the most represented—19 countries for laws and 18 for guidelines. However, additional research is needed regarding certain countries' legal frameworks for supporting WFLI, since some information was not easily available online. In cases where we could not find information, it should not be interpreted that those countries do not have legal provisions.

INTERNATIONAL FINANCIAL INSTITUTIONS (IFIS) AND OTHER FUNDERS OF LI

In our review, we examined both IFIs and regional economic bodies funding LI exclusively in Asia (Table 2). The respective environmental and social safeguard systems of each institution are generally aligned both with those of other institutions and with the World Bank Group (WB) International Finance Corporation's (IFC) Performance Standards (PS).

Box 1: IFC PS 6—Biodiversity Conservation and Sustainable Management of Living Natural Resources

Performance Standard (PS) 6 recognizes the relevance of biodiversity, ecosystem services, and living natural resources in sustainable development. It is applicable in the environmental and social risk and impact identification process. The requirements are applied to projects in modified, natural, and critical habitats; or with potential impact or dependence on ecosystem services under the client's management or influence; or include living natural resource production (agriculture, animal husbandry, fisheries, forestry).

The coordination of performance standards is primarily accomplished through the role of the Organization for Economic Cooperation and Development (OECD) and its Development Assistance Committee. Almost all the IFIs' environmental and social safeguard systems include a standard addressing biodiversity and sustainable natural resource management (Table 7), often based on IFC's PS 6 (Box 1). However, the Asian Development Bank (ADB) and Asian Infrastructure Investment Bank (AIIB) have consolidated the eight IFC PSs into three or four of their own standards, which compress all environmental-related standards into a single comprehensive standard, with several analogous subparts. Our analysis did not attempt to capture any potentially significant differences in safeguard terminology among the IFIs, given the large size of the PS documents. Instead, we document the provision, or likely provision, for the various types of safeguards for each IFI or funding institution. We also note where the provision is either not relevant to the mission of the development bank or agency, or it is not likely that they include the provision, categorized as "provision not relevant/included" (see Table 7).

There was no evidence from this evaluation that the IFIs have developed formal wildlife safeguard standards specific to the three LI modes of roads, railways, or power lines, although they have developed voluntary guidance documents for infrastructure. Instead of having modal wildlife safeguard standards, the IFIs often refer to the WB's Environmental, Health, and Safety (EHS) Guidelines, which are a large collection of voluntary, industry, and infrastructure-specific guidelines addressing toll roads, railways, and powerlines. ADB has also developed a guidance manual (Asian Development Bank, 2019) for wildlife and transport infrastructure, and as previously reported, WB supported the Wildlife Institute of India to develop a guidance manual for wildlife and infrastructure (Wildlife Institute of India, 2016). The EHS Guidelines focus on environmental issues such as source releases of pollutants and their recommended controls, which are common to almost all infrastructure construction activities in each

category. However, the EHS Guidelines do not discuss the ecological factors of the site and its vicinity, which would be pertinent for wildlife.

Table 7: Asia-wide IFI's provisions of safeguards for wildlife prevalent in literature reviewed

TABLE 7: ASIA-WIDE IFIS' PROVISIONS OF SAFEGUARDS FOR WILDLIFE PREVALENT IN LITERATURE REVIEWED

Asia-wide IFIs ↓	SAFEGUARDS															
	Environmental Safeguards							Environmental and Social Impact Assessment	Regional Plans	Capacity Building	Country Safeguards Harmonization Programs	Strategy Plans	Sector Plans & Program		Case Study and Pilot Project Suggestions	Infrastructure Investment
				Linear Infrastructure												
	General	Climate Change	Wildlife & Biodiversity	General	Roads	Railways	Power Lines						Energy	Transport		
ADB																
AIIB																
ASEAN																
CIDCA*																
EBRD																
EIB																
IFC																
JICA*																
NDB																
WB																

KEY: Green: Provision Included; Yellow: Provision Likely Included; Gray: Provision Not Relevant/Included

* CIDCA and JICA invest a lot in LI projects, however, not much information could be obtained in the research

This evaluation found that virtually all IFIs explicitly require borrowers to comply with either their own or the recipient country's safeguard policy. However, the larger, well-established IFIs (e.g., WB, ADB) typically reinforce safeguard compliance through grants, technical assistance, training, and knowledge management tools. They make efforts to align the recipient country's safeguard policies with their own. Some of the newer IFIs are just beginning to provide these value-added services and tools, having in the past relied more on the borrower to provide the capacity to implement relevant safeguard policies.

Most multilateral development banks fund appropriate broader-scale ESIAs, which include strategic, programmatic, regional, sectoral, and cumulative impact assessments. Such instruments are more holistic and address sustainability, resilience, biodiversity, and other ecological concerns at the appropriate scale to provide context for individual projects.

Here we include a brief overview of the environmental governance of China-financed LI in Asia. Information was gathered from online research and expert interviews (Box 2).

BOX 2: DEVELOPMENT AID ENVIRONMENTAL GOVERNANCE IN CHINA – CAPACITY FOR WILDLIFE FRIENDLY LINEAR INFRASTRUCTURE

INTRODUCTION

A major investor in infrastructure, China is expanding its economic influence worldwide and having profound impacts on what, where, and how LI is built in numerous countries. China's Belt and Road Initiative (BRI), launched in 2013 and one of the larger global infrastructure initiatives, seeks to build a vast network of land and sea travel corridors stretching across Asia and connecting the continent with Africa, Europe, and Latin America. BRI projects include railways, energy pipelines, highways, border crossings, and ports. From BRI's launch in 2013 through June 2020, China invested around US $755 billion in the form of loans, development aid, and the construction of projects in BRI-recipient countries, with just under 50 percent of those investments in Asia **(C. WANG, 2020)**. These and future BRI projects have the potential to affect biodiversity adversely in many Asian nations. We evaluated several of China's key financial institutions' ability to provide WFLI safeguards alongside their investments in infrastructure development across Asia. We explored safeguard policies and practices related to the protection of the environment, ecosystems, wildlife, and biodiversity by China's foreign aid agency, the China International Development Cooperation Agency (CIDCA), two China-led multilateral development banks—the AIIB and the New Development Bank (NDB)—as well as its most important international infrastructure initiative, the BRI, represented by the China Ministry of Ecology and Environment and BRI's Green Development Coalition (BRIGC). While China is also host to a number of bilateral development banks (e.g., China Development Bank, Export-Import Bank of China, etc. [Liu et al., 2020]), each with its own safeguard policies (or lack thereof), these were beyond the scope of this evaluation.

We used the following methods in our research to assess China's capacity to safeguard wildlife: (1) researching the websites of the target initiative and institutions, including their relevant policies, guidelines, and press releases; (2) collecting and reviewing six relevant scholarly articles and reports; and (3) conducting personalized follow-up with phone calls and emails with 13 specialists representing the Chinese financial institutions and coalition, three think tanks, and three individual consultants.

CHINESE ENVIRONMENTAL POLICY AND GOVERNANCE

To evaluate environmental governance involving Chinese government aid and investments, it is important to understand the institutional framework and procedures of China's foreign development programs. There are four existing policies and guidelines that govern Chinese bilateral aid that are most relevant and specific to BRI. The first is the "Belt and Road Ecological and Environmental Cooperation Plan," a high-level, strategic document outlining policies, plans, programs, and projects relating to sustainable, green, and ecologically friendly infrastructure development. While it stresses green development as an underlying theme, it does not specifically address safeguards (MEE, 2017b).

The second is the "Green Investment Principles (GIP) for Belt and Road Development," which provides a set of principles for greening investment in the BRI, with 39 signatories and 11 supporters from 14 countries and regions as of June 2021. They aim to "create common standards for what constitutes a green project, embed principles of sustainable development across all phases of projects, and require financial institutions to conduct environmental impact assessments for their BRI investments" (Hillman & Sacks, 2021). Given that all known BRI-specific and BRI-related environmental rules are not legally binding, such standards could be an important first step in the implementation of safeguards that goes beyond reliance on host country enforcement.

China's Ministry of Ecology and Environment (MEE) has a third BRI policy titled, "Guidance on Promoting Green Belt and Road," which contains key provisions related to LI. One provision calls for the identification of environmentally sensitive areas followed by an EIA, and another requires participating entities to adopt voluntary environmental risk management. Further, the guidance states that China will "...actively facilitate the implementation of green industrial development and eco-environmental protection projects...and develop an environmental protection cooperation platform to provide all-round support and service" (MEE, 2017a). However, the required coordination and most of the compliance and safeguards are to be developed, mandated, and implemented by the recipient country.

In July 2021, the MEE and China's Ministry of Commerce issued an additional policy titled, "Green Development

Guidelines for Foreign Investment and Cooperation," which is relevant to both BRI development and all other overseas investment. As with the above policies, these guidelines are voluntary, and apply "only to activities related to green development of Chinese businesses in outbound investment and cooperation" (Wang & Tang, 2021). The guidelines call for compliance with borrowing country environmental laws and regulations, but also put specific emphasis on adherence to "international green rules and standards" in cases where these are stricter than those of the borrowing country. This means that international agreements such as the CBD and the Sustainable Development Goals (SDGs) may become increasingly utilized.

Another key agency is CIDCA, which was founded in 2018 to make China's foreign aid process more transparent and to oversee strategy, policy, and project approval (Lynch, 2020). This makes CIDCA an important governance body in terms of formalizing China's approach to environmental safeguard policies and procedures, since they see and approve all project ideas and feasibility studies. In a white paper, CIDCA does have a clause specifically regarding the protection of biodiversity (PRC State Council Information Office, 2021); however, currently, they provide only high-level guidance related to environmental safeguards without reference to specific Chinese or international standards (CIDCA, 2020). The emphasis appears to be on providing maximum flexibility to local project proponents and regulators in what safeguard standards to apply. Additionally, given that other Chinese agencies are responsible for actually delivering the projects, it is uncertain whether CIDCA will simply default to the environmental policies of these agencies (Tjønneland, 2020).

CHINESE MULTILATERAL DEVELOPMENT BANKS

We assessed the role of AIIB and NDB in establishing safeguards as they provide loans for LI development across Asia. While these two multilateral development banks (MDBs) are not entirely China-owned and funded, they are headquartered in China, receive significant Chinese investment, and are influenced by Chinese policy; AIIB is based in Beijing, and NDB is based in Shanghai. Both MDBs have ESIA policies, and both banks also address biodiversity in their Environmental and Social Framework (ESF) documents (AIIB, 2016b; NDB, 2016).

Both banks indicate that they provide extra support for recipient countries to carry out their own environmental assessments and build that capacity if it is insufficient. While these two banks allow for projects to include capacity-building components that address potential environmental impacts, the expense to evaluate impacts to biodiversity and habitat and to develop and implement wildlife safeguards for LI is paid for by the recipient country.

When AIIB co-finances a project with another major MDB, which occurs with 60-70 percent of their projects, they will adhere to the safeguards systems of the other bank (Stephen Lintner, personal communication). Some of the major MDBs such as the ADB and the WB have similar policies encouraging borrowers to take full responsibility for environmental due diligence, and these banks often will spend significant amounts of money to ensure safeguard compliance through capacity building and technical assistance grants for the borrowers. AIIB's Project Preparation Special Fund provides some support for capacity building for the development of projects, including ESIAs (AIIB, 2016a). It has supported the preparation of 10 projects since it was established. AIIB also makes use of the Integrated Biodiversity Assessment Tool (IBAT) in the screening of projects that have the potential to impact biodiversity adversely.

CHINA'S BELT AND ROAD INITIATIVE

The BRI was established in 2013 and is supported by several Chinese government agencies, policy banks, and AIIB. Most Chinese investment and construction outside its borders are now framed as BRI related (Coenen et al., 2021). Most recipients of BRI financial support are located in developed countries, and the BRI functions more for trade and investment as opposed to development aid (Lynch, 2020). The economic imperative of the BRI is to provide transport connectivity to facilitate China's exports, trade, and international relationships as well as diplomacy with other countries—notably many of Asia's developing countries. China is making significant strides in domestic environmental protection but certain critiques of China's policies overseas suggest that impacts from the BRI could include (1) export of old, polluting technology, e.g., cement kilns, refineries and chemical plants, and coal-fired power plants (noting that within the energy sector, most of the investment is in fossil fuel power generation); and (2) a failure to implement wildlife safeguards due to China's policy of non-interference and leaving environmental safeguards to the jurisdiction of BRI-receiving countries (Coenen et al., 2021). These criticisms, however, must be evaluated alongside recent progress in planning and implementing BRI green development policies and initiatives through the recently formed BRIGC.

BELT AND ROAD INITIATIVE GREEN DEVELOPMENT COALITION

BRIGC is a network of Chinese and international NGOs and policymakers led by China's MEE. The coalition is intended to serve as a platform for policy dialogue, environmental knowledge, and green technology with the goal of integrating sustainable development into the BRI. This relatively new body is just now getting organized, although the COVID epidemic has slowed progress. BRIGC includes participation from environment ministries in 26 BRI countries and 120 organizations, including NGOs.

BRIGC has established the Belt and Road Green Development International Research Institute to provide support to the Coalition with an international team as a "think-tank" and vehicle for building inclusive international cooperation to boost green development of BRI. In 2020, they released several research reports including the BRI Green Development Case Study Report (BRIGC, 2020a) and the Green Development Guidance for BRI Projects Baseline Research Report (BRIGC, 2020b), which lay out the institute's vision for green development and offer important guidance, but do not address compliance. Also in 2020, BRIGC introduced a BRI Project Environmental Classification System as China's approval process for overseas projects. BRI currently lacks an environmental risk control protocol (You, 2020). In the report, BRIGC suggests rating investments as green, yellow, or red based on their potential environmental impact and urged Chinese authorities to reward "green" projects with better financial support and strengthen oversight of "red" projects.

BRIGC's work is divided into 10 thematic working groups led by both Chinese and international partners. Each working group is reportedly preparing work plans, developing draft guidelines for all BRI projects, and planning the launch of pilot projects. We contacted five representatives of international NGOs who sit on different BRIGC thematic groups to request information on the nature and status of BRIGC's work, and two responded. Our conversations revealed differing progress among the various working groups. One NGO representative participated in activities such as 1) conducting joint research with local partners, 2) co-organizing workshops, and 3) contributing to green-development guidance reports. At least one working group, Biodiversity and Ecosystem Management, appears to involve partners in information-sharing and advising roles but is more of a network than an actual entity. Thematic group work plans are underway but are not available to the public.

One representative indicated that the work of the BRIGC appears to have stalled somewhat due to the COVID-19 pandemic, and the role or status of BRIGC's development or application of safeguards or mitigation measures related to WFLI is not clear to partners. Despite these setbacks in organizing the coalition, it appears the BRIGC, as an independent body, might eventually be tasked with enhancing capacities for WFLI related to the BRI.

CONCLUSIONS

China has domestic biodiversity protection policies that apply to domestic infrastructure projects; however, the costs to implement wildlife safeguards for LI in China's overseas development investments are typically made the responsibility of the receiving countries. This is apparent in the implementation of the BRI as well; in terms of compliance, BRI's LI project financing encourages voluntary green development and provides some limited resources and guidance for implementing safeguards, but the burden of cost, training, follow-through, and monitoring falls to the host country.

The BRI is an initiative encompassing an extremely large scope of loosely related investments and initiatives organized or directed by central and provincial levels of state-owned enterprises. Information on environmental safeguards, monitoring, or impacts is not made public, thus it is difficult to evaluate the current capacity to safeguard wildlife from the impacts of LI. Currently, China's MEE framework offers a collection of high-level, aspirational pledges and policies, so far unsupported by specific and detailed processes, procedures, or criteria, which would still need to be fully vetted by the BRIGC.

The framework guidelines appear to be aimed more at encouraging those involved in BRI projects—including both Chinese and host country government agencies and private firms—to voluntarily develop and follow their own environmental policies, procedures, safeguards, and management systems in planning and implementing their BRI-related investment projects. These findings and conclusions are well aligned with those of other authors addressing BRI environmental governance issues (Coenen et al., 2021; Foggin et al., 2021; Hillman & Sacks, 2021).

The capacity for implementing wildlife safeguards will be realized as countries try to meet UN SDGs and Paris Agreement targets, but Chinese influence will need to support borrowing countries by putting funds and expertise toward providing training and enhancing WFLI capacities. Another capacity-building opportunity is to encourage the involvement of advocacy networks and nongovernmental/civil society organizations in BRI host countries to hold companies accountable to voluntary commitments (Coenen et al., 2021). Finally, given the above findings across multiple Chinese agencies, institutions, and MDBs, it is clear that capacity in the form of effective environmental governance, such as requiring the preparation of comprehensive EIAs, must also be built in developing countries receiving high levels of BRI funding for LI projects.

INDUSTRY ASSOCIATIONS

To understand industry's capacity to safeguard wildlife, we evaluated 23 industry associations representing the road (5), rail (4), and power line (14) modes, along with engineering associations (8) to capture industry professionals working across modes (Table 8).

Table 8: Industry associations by mode

TABLE 8: INDUSTRY ASSOCIATIONS BY MODE

ROAD	RAILWAY	POWER LINE	ENGINEERING (CROSS-MODE)
International Road Foundation	Asia Pacific Rail	ASEAN Center for Energy	Asian Civil Engineering Coordinating Council
International Road Transport Union	Asian Railway Operators Association	CASA-1000 Electricity Transmission and Trade System	Federation of Engineering Institutions of Asia and the Pacific
Institute of Transport Engineers	International Union of Railways	SAARC Energy Center	Federation of Engineering Institutions of Asia and the Pacific
Road Engineering Association of Asia and Australasia	Organization for Cooperation Between Railways	SASEC Energy	Institution of Civil Engineers
United national Economic and Social Commission for Asia and the Pacific (UNESCAP) Committee on Transport		Asia Pacific Urban Energy Association	International Association for Bridge and Structural Engineering
		Association of Electricity Supply Industry of East Asia and the Western Pacific	International Federation of Consulting Engineers
		Central Asia Energy Utility Partnership	International Structure Engineering and Construction Society
		East Asia & Pacific Infrastructure Regulatory Forum	World Federation of Engineering Organizations
		Energy Procurement Supply Association	
		Energy Regulators Regional Association	
		Japan-US Mekong Power Partnership	
		South Asia Forum of Infrastructure Regulators	
		TUTAP Power Interconnection Project	
		UNESCAP Committee on Energy	

The reach of these professional associations ranges from global, with a significant representation in Asia, to Asia-wide, to select Asian countries (Figure 1). It should be noted that power line transmission is just one focus of the energy sector associations we evaluated; half of the energy sector associations represent regional intergovernmental partnerships set within cooperative economic development programs to increase energy generation and transmission across Asian countries.

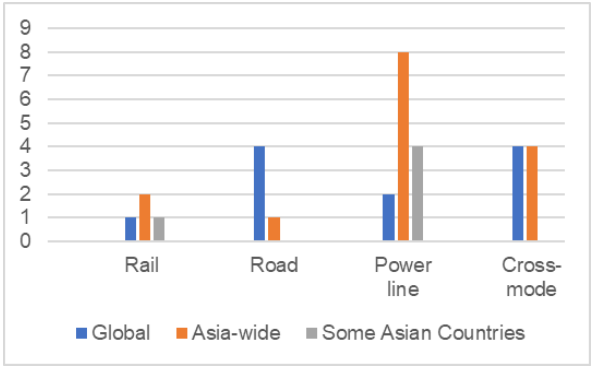


Figure 1: Geographic Reach of Industry Associations

Based upon the websites of these associations, we assessed their capacity-building activities such as workforce training (virtual or in-person), webinars, publications, and other technical resources for information on wildlife safeguards. We also noted their policy statements and hosted conferences, when possible. Conferences, especially, are a potential source of knowledge-sharing on safeguards. While some associations have highly informative websites, others are less well developed. Nevertheless, we were able to understand general trends related to wildlife safeguards, and more broadly, conservation concerns:

- *Wildlife Safeguards:* Across the modes, we were not able to identify any existing publications on wildlife safeguards. Rather, the International Union of Railways (UIC) hosts the sole project we found specific to wildlife. From 2020-2023, the goal of *REVERSE: Ecological Effects of Railways on Wildlife*, is to "develop a Biodiversity Action Plan and international guidance for railway operators and infrastructure managers to support, protect and enhance our natural heritage" (UIC, 2021).
- *Publications:* One rail association, along with two in engineering (cross-mode) associations, have publications specifically related to water conservation, climate adaptation, and resilience. We were not able to locate similar publications on the websites of other associations. However, general technical publications, journals, bulletins, and white papers are available on seven engineering (cross-mode) association websites and three road association websites, along with one railway association, providing another potential avenue to disseminate information on wildlife safeguards, although this topic is not yet covered yet. We did not find technical publications on any power line association websites.
- *Workforce Training:* Workforce training in the form of courses, workshops, certifications, and webinars is offered, sometimes in person and sometimes online, by one railway association and four road associations. Moreover, broader environmental topics are among the training subjects offered by one railway association, one road association, and two engineering associations. Workforce training is also offered by four of the power line associations and two engineering associations.
- *Conferences:* Conferences offer another avenue for capacity building. Across all

Figure 2: Distribution of conferences by mode

modes, we found that industry associations host a considerable number of regional conferences (Figure 2). In fact, we found 18 conferences specific to Asia, divided among engineering (7), road (4), power line (4), and railway associations (3). The associations examined also host 11 additional conferences with global reach.

Finally, to gain a sense of the conservation mission and activities of each association, we examined their policy statements, when available. Of the 16 associations (rail [2], road [5], engineering [2], energy [7]) within our sample with policy statements accessible from their websites, none were related to wildlife. However, railway and power line associations had policy statements related to other environmental concerns, including climate change and the minimization of pollution.

Industry associations have considerable potential to serve as a source of information and training on wildlife safeguards for professionals working within the road, rail, and power line modes. Throughout Asia, there are both active sections and chapters of global bodies, along with Asia-specific associations geared to serve industry professionals by region. These associations offer established forums to disseminate information to the professionals they serve. However, at present only one of the websites examined describes wildlife as an active area of concern. Through conferences, publications, and training platforms, industry associations have the reach to inform their members about practices to achieve WFLI.

NONGOVERNMENTAL ORGANIZATIONS

INTERNATIONAL NGOS

Based on interviews with the largest international NGOs in Asia, it was determined that their conservation programs are active across the entire continent, working in all but one of our study area countries (Brunei, see Figure 3). Engagement with LI projects and plans is high, occurring in 22 of the 28 countries. Out of the 11 large NGOs interviewed, nine considered LI among their top-10 priority issues for conservation and all of the large NGOs have some capacity to address LI. However, addressing LI plans or projects is not commonly institutionalized, as only two NGOs interviewed have dedicated LI programs; six others address LI in other programs.

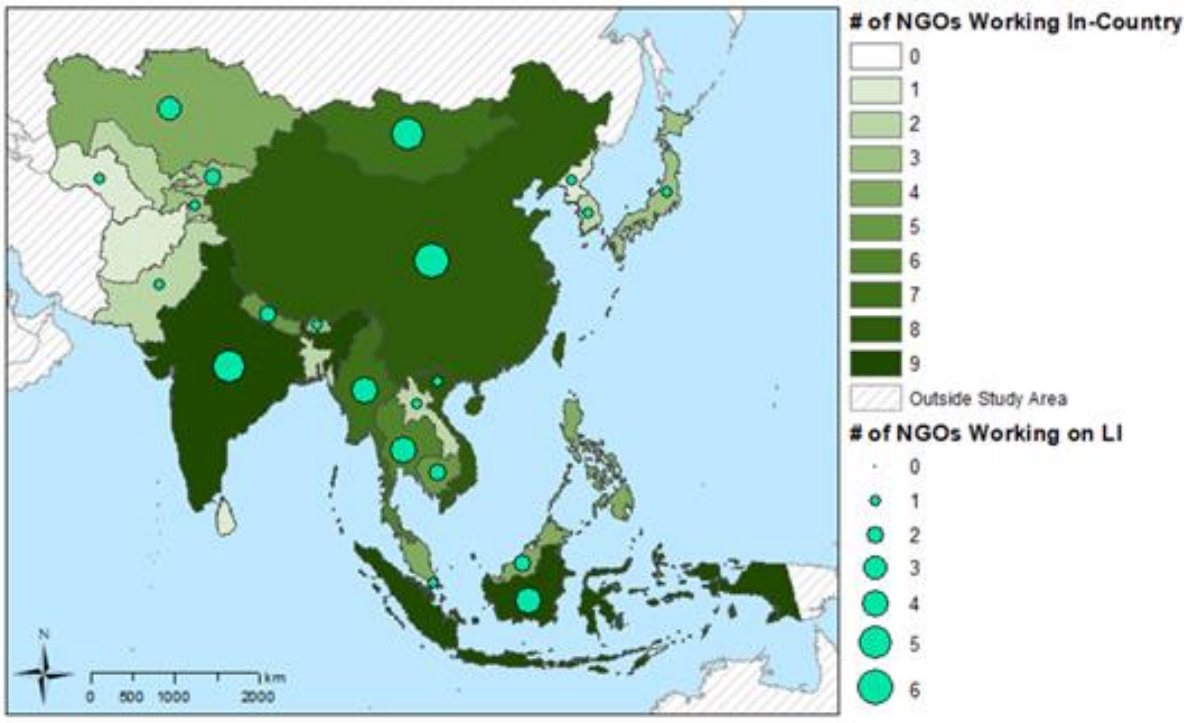


Figure 3: Geographic distribution of conservation and LI work by NGO survey respondents

When confronted with LI as an issue, these organizations rely on both internal and external capacity for creating conservation solutions (Figure 4: Capacity building options for LI issues pursued by NGOs a) Internal Capacity and (b) External Capacity.). Internally, these NGOs tend to rely on existing expertise both inside and outside of their Asia program. They also encourage existing staff to build expertise, as opposed to hiring new experts or developing a new program (Figure 4 (a)). Externally, NGOs rely on partnerships with outside entities, especially other NGOs, as opposed to hiring temporary consultants with LI expertise (Figure 4 (b)).

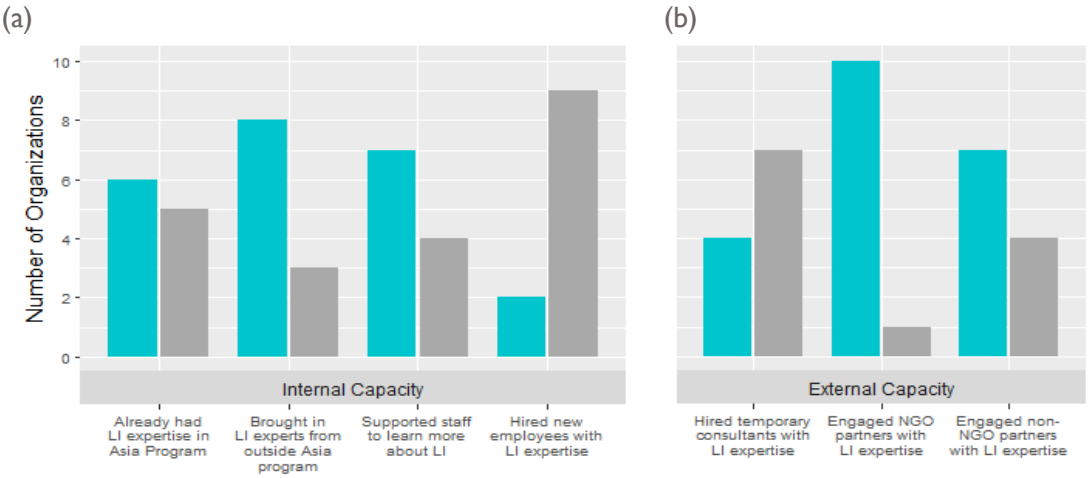


Figure 4: Capacity building options for LI issues pursued by NGOs a) Internal Capacity and (b) External Capacity. (Blue bars show 'yes' responses. Grey bars show 'no' responses.)

International NGOs identify three main needs for building internal capacity:

- Increased organizational awareness of the existing body of work on LI safeguards for wildlife;
- A strategy for quickly filtering through available information when LI projects arise; and
- Context-sensitive information, or guidance on how to apply general information in local contexts with complicated social, political, and ecological conditions.

Currently, a common Li project phase that NGOs participate in is pre-construction data collection, which can be crucial in estimating the potential impact of new LI development. This information can identify areas and/or species and their habitats at highest risk, and may apply to connectivity conservation needs or restoration work. Most of the NGOs recognize that effective LI mitigation requires increased engagement among agencies, funders, and communities throughout a project's life cycle. To facilitate long-term engagement with LI proponents and developers, NGOs indicate the need for targeted funding, which will allow them to invest time in building their expertise as knowledgeable stakeholders.

To build additional capacity, international NGOs are particularly interested in workshops (73 percent), a central information clearinghouse (64 percent), and handbooks or guidelines (64 percent). Workshops provide an opportunity for various partners to come together in a specific landscape; handbooks or guidelines ensure that everyone is operating at the same information. A central clearinghouse creates a space where all stakeholders can easily and quickly filter and find the information most relevant to their landscape context.

While these NGOs are concerned about the direct impacts of LI, such as wildlife-vehicle collisions and habitat fragmentation, many are also concerned about the access created by new LI. New intrusions can lead to additional threats to wildlife, facilitating human access for poaching or illegal deforestation, which are priority issues for many of the NGOs. One NGO also mentioned that they were careful not to refer to LI only as a threat, with the recognition that the value of roads or railways to certain communities can outweigh the threats to wildlife. NGOs acknowledge that a nuanced view of LI expansion is crucial to effective partnerships.

NATIONAL NGOS

Fifty-four NGOs responded to the electronic survey, representing 15 of the 28 countries in the study area. Most of the responses came from Southern Asia, specifically India, Pakistan, and Nepal (Figure 5), somewhat reflecting the geographic bias introduced by the IUCN member list. Over 90 percent of the NGOs believe that LI is a threat to wildlife in their country, and 38 out of 54 consider working to mitigate the impacts of LI on wildlife to be a priority for their organization. However, certain countries had a greater percentage of organizations with an organization priority for working on LI and wildlife.

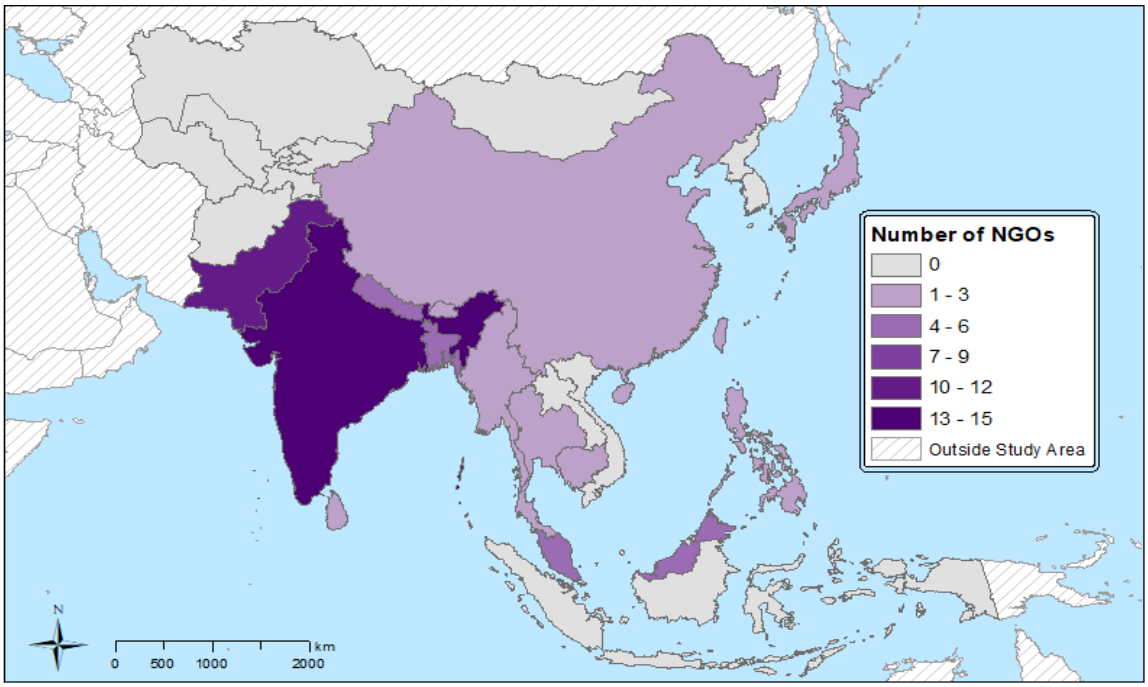


Figure 5: Geographic distribution of NGO survey respondents

Over two-thirds of the organizations that consider LI to be a priority have dedicated full-time or part-time staff for LI work, indicating both a commitment to the issue and the capacity to address LI plans and projects (Figure 6). Most of the capacity appears focused on roads (25 NGOs), although rails (12 NGOs) and transmission lines (11 NGOs) also receive attention, with many organizations working on multiple modes.

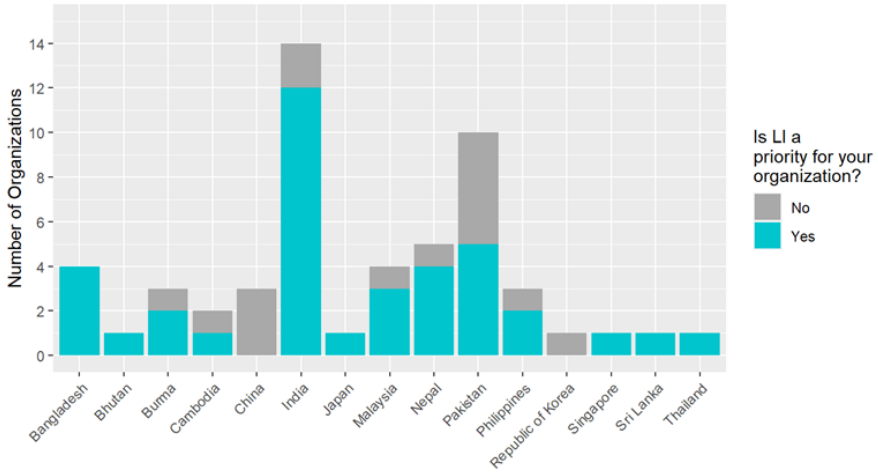


Figure 6: Organizational LI priority by country

Over three-quarters of the national NGOs consider lack of funding to be a barrier to addressing the impacts of LI on wildlife, a sentiment which the bigger international NGOs also echoed. National NGOs thus need assistance in finding LI-specific funding sources, especially as they seek to build capacity. Related to funding, many of these NGOs feel that inadequate staffing is a significant barrier; smaller NGOs often have limited resources and without additional funding, staff may not have the capacity to address LI issues as they arise. Multiple NGOs also feel inhibited by their national political environment, citing, "lack of government will," "lack of institutional endorsement and legal jurisprudence," and "lack of proper guidelines to create awareness among policymakers" as barriers, among other responses. These responses point to a clear need for training on how to engage and influence government officials, as well as a greater collective movement around WFLI. Finally, like the international NGOs, the national NGOs consider the lack of knowledge on effective safeguards and their design and implementation a barrier, signifying the need for additional training.

National NGOs are eager to learn more about safeguards for wildlife, with 53 out of 54 indicating an interest in training on LI. Training in policy and planning garnered the most interest, which indicates that these NGOs may be most engaged before LI is built, both in the development of general policy around LI and planning for where new LI will be located. While some of the NGOs responded with interesting design, mitigation, and monitoring, these topics may be less relevant to all NGOs. While a few NGOs were also specifically interested in the economics of LI, most were keen on encouraging transparent accountability across planning and development in LI construction. NGOs called for enhanced accountability from donors to government to engineering and construction companies in implementing the safeguards for LI projects.

NATIONAL-LEVEL RESULTS AND DISCUSSION

LISA SURVEY RESPONSES SUMMARY

Out of the 840 target respondents (plus those who were forwarded the survey by colleagues), the electronic survey collected 321 responses. Of these, 89 respondents identified themselves as part of government agencies, 27 as belonging to IFIs, 46 as part of Industry, and 120 from NGOs (including private academic institutions). Respondents who identified as "other," 39 in total, tended to identify as retired government officials or civil-society experts. In our analyses, we include these respondents within the constituent group that most closely matched their expertise and past occupations. Our capacity survey at the national level across the five representative countries coincided with the second wave of the COVID-19 pandemic, leading to an overall lower response rate. Thus, in the following sections, we infer results based on the available data, but do not overextend the significance of inferences with respect to missing or very low numbers of responses.

Due to the timing of several COVID-19 outbreaks and government shutdowns across Asia, we received varying response rates at the country level: 56 responses from Bangladesh, 46 from India, 45 from Mongolia, 100 from Nepal, and 54 from Thailand. There were also respondents to the survey who worked across multiple countries (n = 16) or worked in none of the chosen five countries but worked on LI in Asia (n = 4). Respondents of our survey worked on various LI modes: 146 on roads, 76 on rails, 91 on power lines. Additionally, 61 respondents reported that they did not work exclusively on any specific LI mode while 102 respondents reported that working on specific LI modes was not applicable to them. Those who answered "not applicable" were primarily from the government and NGO constituent groups; it is possible that while their work may have considered LI in a general sense (e.g., how roads fragment wildlife habitat), they may not have worked directly on LI plans or projects.

In our graphical representations of the survey results we utilize lines to connect frequencies of responses, by a specific constituent group or country, to differentiate patterns of consensus and divergence more easily. However, the responses themselves are independent variables.

PRIORITIES AND PERCEPTIONS FOR THE NEED TO SAFEGUARD WILDLIFE FROM LI IMPACTS

Overall, safeguarding wildlife was a priority; 67 percent of all respondents agreed that reducing impacts from LI was a priority for their institution (strongly agree = 119, ~ 38 percent; agree = 93, ~ 29 percent; somewhat agree = 50, ~ 16 percent). Respondents also suggested that implementing wildlife safeguards for LI projects is a challenge; discounting respondents who chose "not applicable," 48 percent of respondents indicated that applying LI safeguards was difficult, with 12 percent indicating that it was very difficult. Only 13 percent indicated it was easy (10.6 percent) or very easy (2.4 percent). Across all survey respondents, it is clear that providing WFLI safeguards is a priority but is difficult to realize.

Respondents indicated that their institution chose to address the impacts of LI on wildlife for a variety of reasons (Figure 7). Across constituent groups, the desire to meet best practices and increase human safety were reported in similar frequencies. However, NGOs are most invested in addressing LI impacts for the purpose of promoting sustainable landscapes and wildlife protection, followed by government agencies. Unsurprisingly, legal mandates to reduce LI impacts on wildlife mattered most to respondents from government agencies and industry. Institutional reputation was often cited as a reason by IFIs to

address LI impacts on wildlife. These preliminary findings suggest that across constituent groups there are varying underlying reasons for constituent groups to engage in deploying WFLI safeguards.

An interesting finding from the survey was that respondents did not often cite "reducing project delays" as a reason to address LI impacts on wildlife (Figure 7). We posit many reasons for this finding: such as the respondent's institution may not be affected by project delays (for example - NGOs); in the five representative countries and regional IFI pool there may be little evidence or acknowledgement that not considering LI impacts on wildlife delays projects; and finally, in some cases, the lack of LI safeguard deployments may not affect certain project timelines at all. We delve into some of these nuances in the following sections on assessing capacity and implementation of LI in our five country analyses.

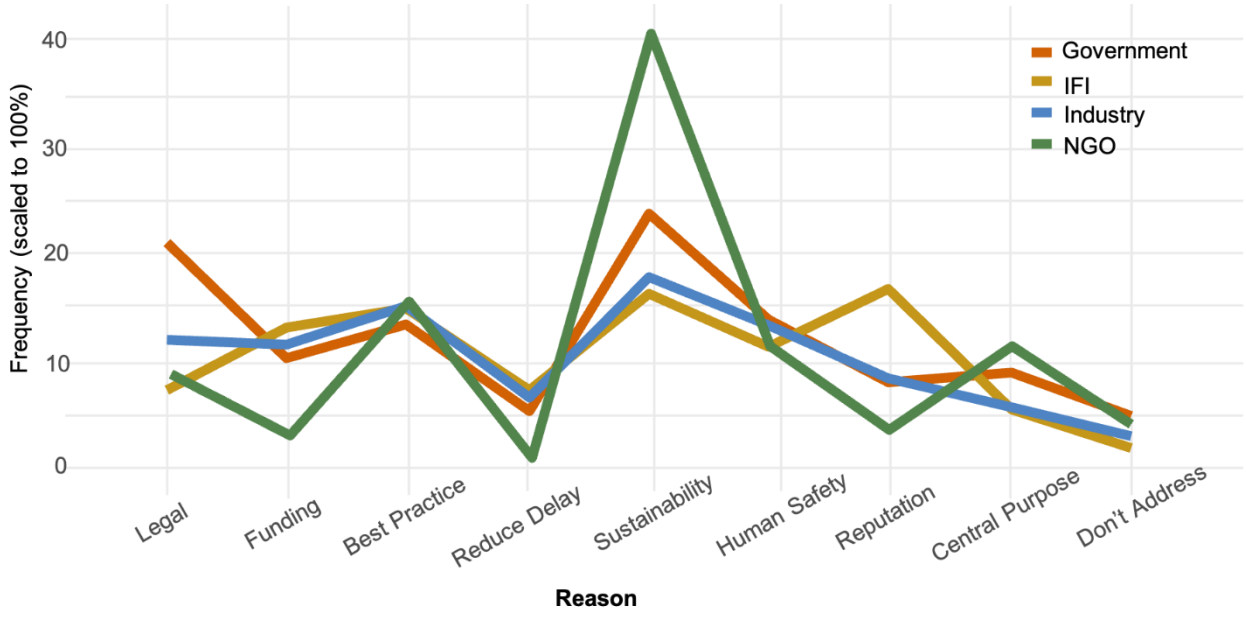


Figure 7: The reasons given by respondents from all four constituent groups for addressing LI impacts to wildlife

EXISTING CAPACITY AND PERCEPTION OF THE SAME

Approximately 48 percent of all respondents reported that their institutions did not have dedicated staff to safeguard wildlife from LI impacts, 41 percent reported that their institutions did have such dedicated staff, and 11 percent were not sure. Within constituent groups there followed a similar split, close to half and half. We infer that staffing structures dedicated to WFLI might be more apparent at a finer scale than we could capture in our survey and might differ between departments within a given institution or constituent group.

More than half (>50 percent) of the respondents suggest that gaps remain in their institution's capacity to realize wildlife safeguards for linear infrastructure; 31 percent of respondents indicated that their institutions had only some capacity, and 17 percent indicated that their institutions lacked capacity. Only 38 percent of respondents agreed that their institutions had capacity, suggesting that there is a baseline level of capacity within some institutions to address LI impacts on wildlife or respondents from key institutions mandated to safeguard wildlife felt compelled to respond that they had capacity even in cases where this may not be true.

We were also interested in understanding the level of coordination among constituent groups when considering safeguards for wildlife during the LI project process. We found that all constituent groups work with one another, although some partner with each other more often than others (Figure 8). Responses indicated that funders (domestic and international) are sought in the lowest frequency as partners during work on an LI project with regard to safeguards. This may be due to the limited understanding of the role of funders as partners through the whole project process. Constituent groups may require greater clarity of the roles in capacity training to identify partners that remain less sought due to misconceptions of their overarching roles in LI development and in safeguarding wildlife. Government agencies tend to seek partners most often within government and NGOs, while IFIs work with industry and NGO partners the most. Industry works with partners within industry and NGOs. Interestingly, in our survey responses all four constituent groups reported working with local communities, an indication of the mainstreaming of vulnerable communities' concerns during the project process. Finally, we find that NGOs partner the most with other NGOs, a limitation that points to siloed functioning due to:

1) Limited opportunities to engage with other partners,
2) Low funding to engage in LI projects as compared to other themes of NGO work, and
3) Traditional comfort zones that are difficult to move outside of.

However, while NGOs indicated that they worked the most with other NGOs, other constituent groups indicated that they also work with NGOs more often than other constituent groups (aside from IFIs and industry). This indicates that NGOs have an important role when it comes to forming the bridges between all constituent groups.

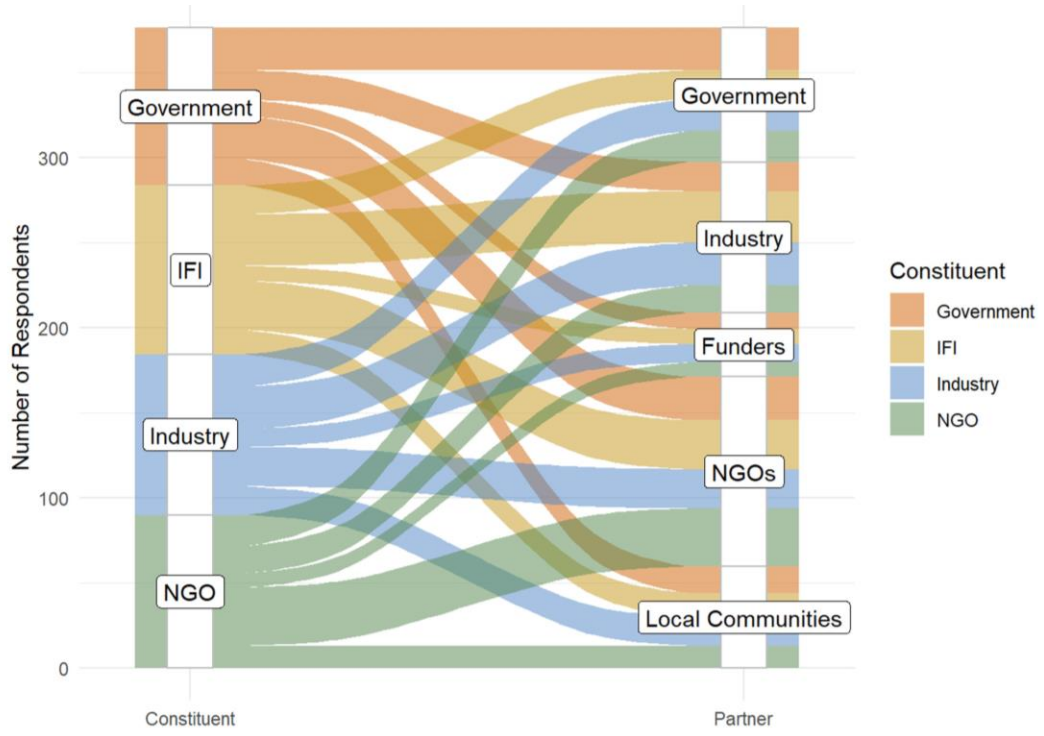


Figure 8: The number of respondents from each constituent group (left) that report working with each type of partner (right)

Another reason for NGOs partnering with other NGOs might be their collective perception of the low capacity of other constituent groups (including themselves) to safeguard wildlife during the LI project process. In our query seeking to understand how one constituent group views the level of capacity to realize WFLI in other constituent groups, we find that all constituent groups rank EIA consultants and NGOs to have higher capacity than other constituent groups—often including themselves (Figure 9). However, all other groups perceive NGOs to have higher capacity than the NGOs perceive in themselves. Overall, industry (excluding EIA consultants) and LI planners are perceived as having the lowest capacities to evaluate or provide WFLI safeguards, with government and IFIs ranking in the middle.

However, NGOs ranked all partners to have low capacities at this time, including themselves and EIA consultants – pointing to a disparity within constituents on who currently has the expertise to effectively safeguard wildlife from LI impacts.

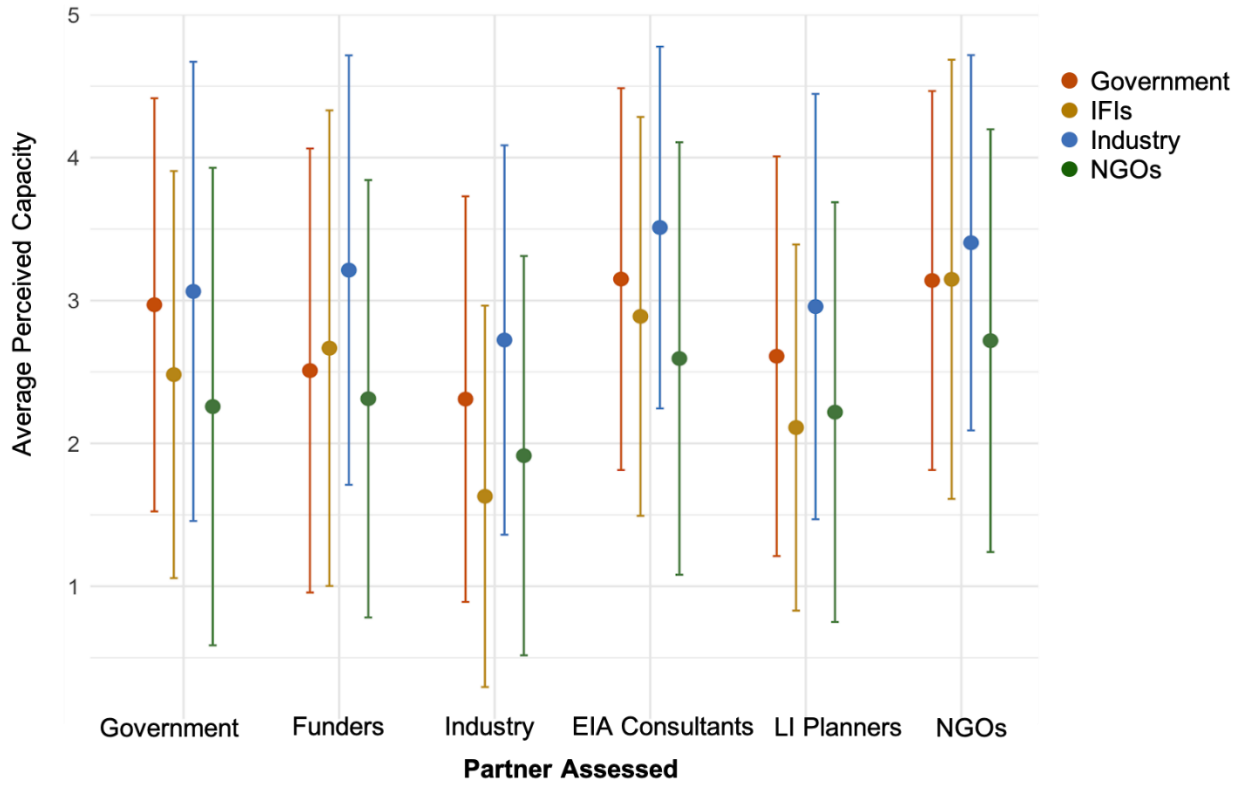


Figure 9: The average capacity of partners to implement wildlife safeguards as assessed by the four constituent groups Government = red, IFI = yellow, industry = blue, NGO = green. Capacity is ranked on a scale from 0 (no capacity) to 5 (highest capacity). Dots represent the average capacity, and the lines represent one standard deviation.

Across most constituent groups, there is the perception that NGOs have some capacity to implement WFLI. However, the NGOs' lower perception of their own capacity indicated that there is room for additional capacity building and streamlining throughout the project process. The low average rank for perceived capacity of industry and LI planners is cause for concern and marks an important sub-group for capacity trainings or enhancing their coordination with those that have adequate capacity to evaluate and/or implement WFLI safeguards.

CAPACITY AND COORDINATION DURING THE PROJECT DEVELOPMENT PROCESS

To better understand existing capacity, the survey queried constituent groups about their involvement in the project development process. The project development process spans the lifetime of a project, from inception to completion and post-construction monitoring of safeguard effectiveness. Here, the project development process is defined with different phases: selection, funding, planning, design, permitting, construction, and post-construction. Accountability is also considered as both an overarching and long-term phase.

Of the seven phases, respondents indicated that their greatest level of involvement is in the planning phase (Figure 10). Interestingly, IFIs were reported to have the highest frequency of involvement among the four constituent groups in all seven phases of the project development process. Conversely, NGOs had the lowest frequency of involvement of the four constituent groups in all seven phases, with over 40 percent of NGO respondents explicitly stating that they did not participate in the project development process.

As expected, IFIs were identified to be very involved in funding, but also continued to participate in most other phases, though less so in permitting and post-construction monitoring. Both are important phases to ensure adequate safeguards, such as mitigation measures, are provided by the project and later evaluated for their effectiveness. Government respondents reported that their involvement is highest during the middle phases of the project development process, from planning to permitting, while industry respondents indicated that they are very involved in planning, and then less so in design, permitting, and construction. This surprising pattern from industry needs further scrutiny. While industry would typically be expected to be very involved with both design and construction, it is possible that the survey did not reach the firms that provide those particular services and largely captured the involvement of EIA consultants who participate most in project planning.

As previously reported, NGO respondents had the lowest frequencies of involvement of the four constituency groups in all seven phases of the project development process. When they did engage, it was with the highest frequency during the planning phase. We explain this pattern of NGO involvement as NGOs are not usually formal partners in LI planning or permitting phases but are solicited for expert assessments at either the planning phase or permitting phase, when EIAs may occur. The actual planning and permitting decisions can choose to include or exclude NGO inputs. Finally, it is interesting that no constituent group considers the selection phase to be their primary phase for involvement, leading to questions of who is responsible for deciding where projects should be sited with respect to wildlife needs or if wildlife needs are considered alongside other landscape-wide attributes.

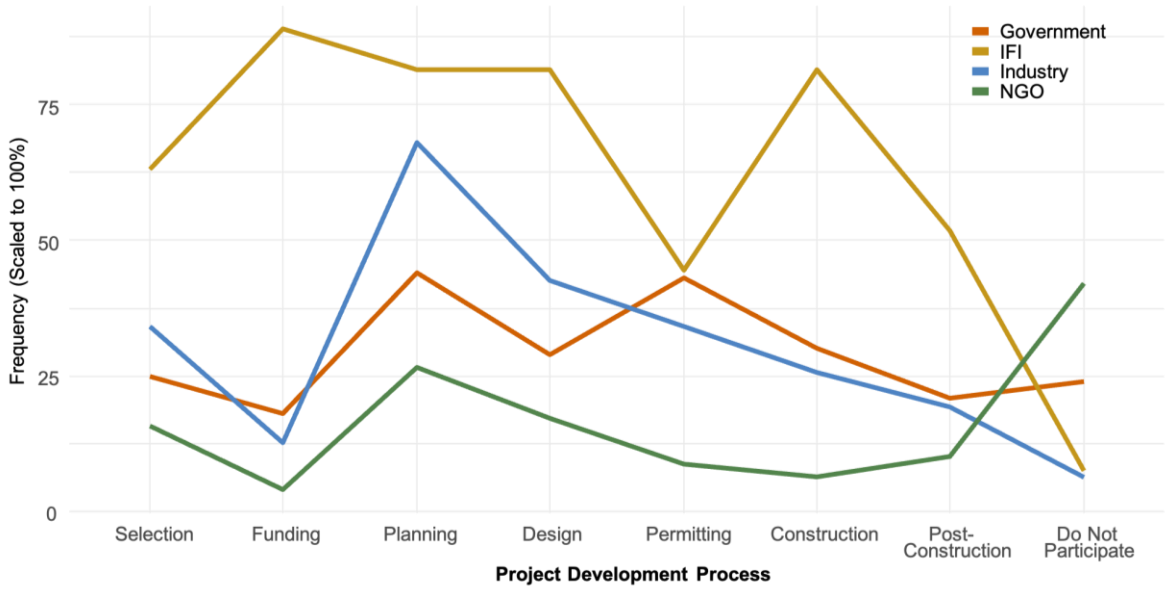


Figure 10: The percent frequency that respondents, by constituent group, participate in the each of the seven phases of an LI project's development process

There was general agreement among respondents from all four constituent groups that wildlife safeguard decisions are most often made during the planning phase (Figure 11), which is also when the highest number of overall respondents indicated their highest percent frequency of involvement (Figure 10). The design phase was also seen by all constituent groups as an opportunity to make commitments to implement safeguards (Figure 11). However, fewer respondents from all constituent groups suggested that wildlife safeguards were developed during the selection phase, indicating there may be some difficulty in getting consideration for, and a commitment to, providing adequate wildlife safeguards early on in a project development. If early phases of the project development process do not consider wildlife safeguards, it may be difficult to realize avoidance as a first mitigation strategy to safeguard wildlife. During the funding phase, less than 50 percent of IFI respondents address safeguards, indicating a potential key intervention point from a regulatory perspective or a point of interpretation of our survey question to discuss during training or future capacity-building work. IFIs also indicated that they implemented safeguards during the construction phase, although no other constituent group saw this as a key intervention point for their institutions. Interestingly, respondents from IFIs and to some extent Industry felt that general accountability throughout the project process leads to the implementation of safeguards, but NGOs, which are often considered important for keeping accountability, did not.

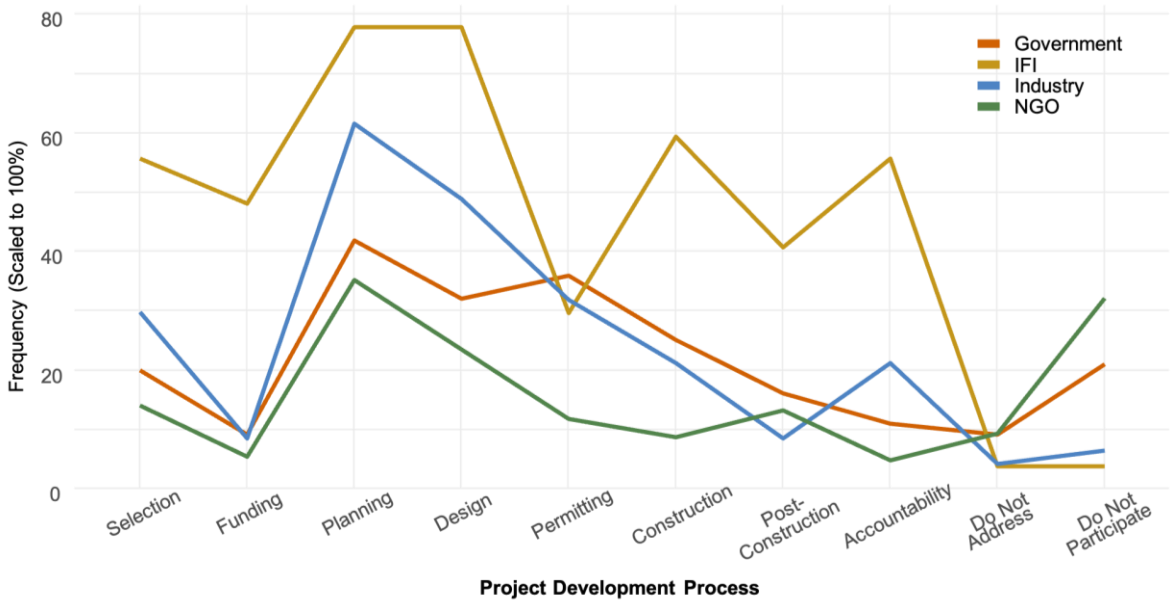


Figure 11: The percent frequency that respondents, by constituent group, indicate that wildlife safeguards are currently implemented during each of the seven phases of the LI project process, as well as due to accountability throughout the entire process. "Do not address" indicates that respondents do not address wildlife safeguards at all in their work, while "do not participate" indicated that respondents do not participate in the project development process.

Respondents agreed that barriers to implementing wildlife safeguards for LI arise most often in the planning, construction, and design phases, indicating three potential areas for the focus of future training (Figure 12). Industry respondents also felt that permitting was more of a barrier than all other constituent groups, and almost every IFI respondent felt that design was the key barrier. Permitting as a barrier may signify the lack of clarity in what constitutes adequate safeguard measures leading to long and complicated permitting processes where industry could be better served with clear guidelines and mandated requirements to follow. Respondents from both NGOs and industry also noted that accountability was a barrier to safeguard implementation, potentially indicating a lack of perceived accountability by the other two constituent groups.

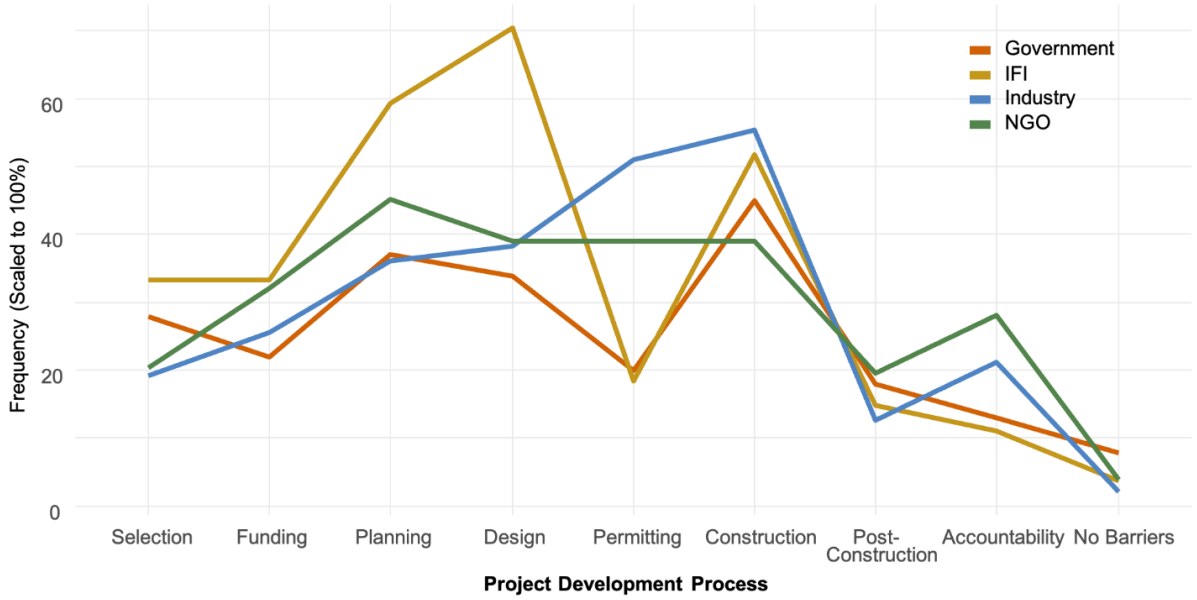


Figure 12: The percent frequency that respondents, by constituent group, suggest in which phases of the LI project process there are barriers to the implementation of wildlife safeguards

BARRIERS TO WFLI

In addition to indicating where barriers typically arise during the project development process, respondents also provided insight into what these key barriers are. The most often-cited barrier to implementing WFLI is the lack of funding for wildlife safeguards, as reported by respondents from government agencies and NGOs, as well as in a lower frequency by those in industry (Figure 13). IFIs do not concur on this point, suggesting there might be a disconnect between lenders and recipients on the use of funds for wildlife safeguards. NGOs also cite the lack of opportunities to engage with the LI process as a key barrier and do so in the highest frequency across any barriers identified by any constituent group.

Other areas of greatest concern expressed by the constituent groups include the lack of political will as a barrier to WFLI in near equal frequency among the groups (Figure 13). Government agencies, industry, and NGOs identified wildlife-specific expertise as lacking, as was effective monitoring and evaluation post-construction of WFLI mitigation measures. Government agencies and industry also highlight the lack of institutional support to realize WFLI safeguards as a barrier on par with the lack of political will, expertise, and monitoring or evaluation post-construction. NGOs and IFIs do not suffer from the lack of institutional support quite as much. Finally, IFIs cite the lack of public support for WFLI and lack of public pressure to implement more safeguards as a barrier more than any other constituent group, while typically citing other barriers in fewer frequencies than other constituent groups. The lack of political will for non-economic goals or institutional support for WFLI is commonplace in the developing world and is likely to continue to be a barrier unless governments and national agendas pivot to encouraging green infrastructure as the norm to meet multiple developmental and wildlife commitments; this in turn can enhance public support for WFLI.

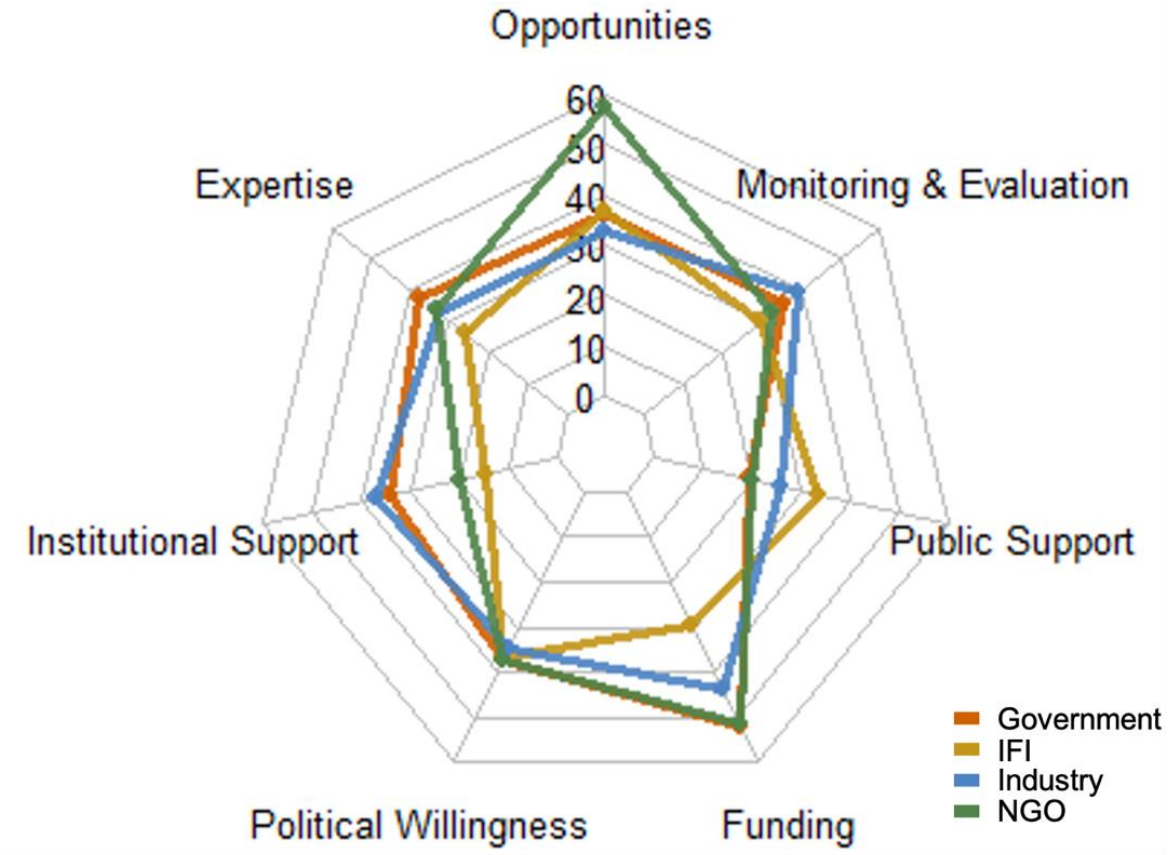


Figure 13: A radar graph presenting the percent of responses by each of four constituent groups, that agree that each type of barrier prevents implementation of wildlife safeguards for LI projects. For the lack of public support, lack of funding, and lack of political willingness, the percentage of government responses exactly matched those of NGOs, so the line (orange) is not visible in some portions of the graph.

Constituent groups identified funding, political will, institutional support, and the lack of expertise as the greatest barriers to implementing wildlife safeguards. The survey also found that NGOs currently lack the opportunity to engage in the project development process.

THE CAPACITY TOOLKIT

The survey also explored additional tools and expertise that constituent groups require, in some measure, to engage knowledgeably in the project development process to implement wildlife safeguards successfully. The greatest number of respondents indicated that information on cost-benefit analysis (CBA) was lacking, followed by best practices for designing mitigation measures, best practices for collecting wildlife data, and finally, details of proposed projects and alternative routes (avoidance). We explore a couple of these information themes one by one below:

COST-BENEFIT ANALYSES

Response levels from IFIs (>60 percent) and industry (>50 percent) respondents indicate that these two constituent groups believe that CBAs are being regularly conducted for wildlife safeguards in LI projects. Government and NGO responses were much lower, in the mid-30 percent range (Figure 14). These responses show that CBAs of wildlife safeguards are not yet standard practice in LI projects. The higher

level of response levels by IFI and industry may be a result of their engagement in funding and conducting the CBAs, while government and NGOs only use or review their results.

This indicates a possible detrimental gap in coordination capacities where often government agencies and NGOs partner to create landscape-level plans for human development and wildlife conservation but the role to understand trade-offs between LI development and wildlife conservation is largely within the working of industry and IFIs. The creation of formalized mechanisms for conducting CBAs that bring together multiple constituent groups during the project approval and planning process could ultimately lead to more cost-effective projects and better wildlife safeguards.

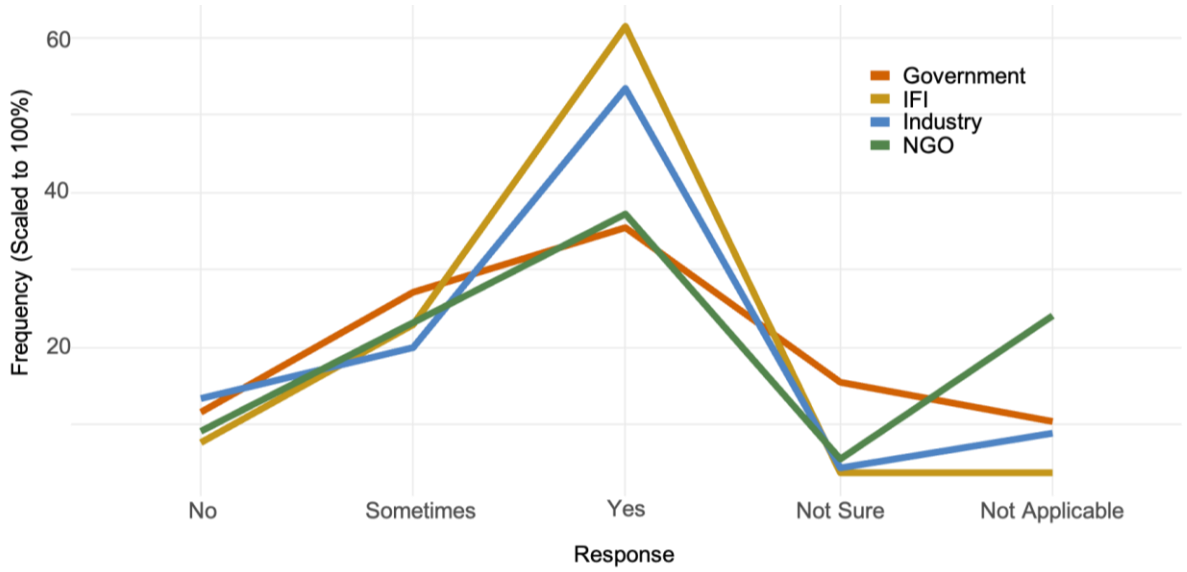


Figure 14: Percent frequency responses by the four constituent groups as to whether cost-benefit analyses are conducted for wildlife safeguards during the project development process.

PRE-CONSTRUCTION WILDLIFE DATA & KNOWLEDGE PLATFORMS

Approximately 56 percent of the respondents from all constituent groups reported that their organizations use pre-construction wildlife data for new LI projects; however, only approximately 13 percent of respondents reported that such wildlife data was readily available. Notably, none of the respondents from IFIs felt that pre-construction wildlife data was readily available. These survey results on pre-construction wildlife data availability suggest a clear need for centralized, publicly accessible wildlife and habitat data platforms for existing data and a need for LI developers to fund more robust pre-construction wildlife surveys, other related data collection, and biological assessments.

When asked about the sources currently used to gather information on safeguards for wildlife, constituent groups reported using all sources offered in the survey, to varying degrees (Figure 15). Overall, there was minimal difference between which sources of information the four constituent groups relied upon. A few trends that were evident in the responses align with constituent group mandates: government agencies and IFIs utilize internal training and external workshops most often to source wildlife safeguard information, while IFIs and industry utilize consultants more often. Web searches, handbooks, academic studies, and working with partners to source wildlife safeguard information are common across all four constituent groups. A centralized platform for wildlife safeguard information could benefit all constituent groups by providing a hub to access data, the latest information on

safeguard applications and effectiveness, and other pertinent material on best practices, standards, and guidelines for LI projects.

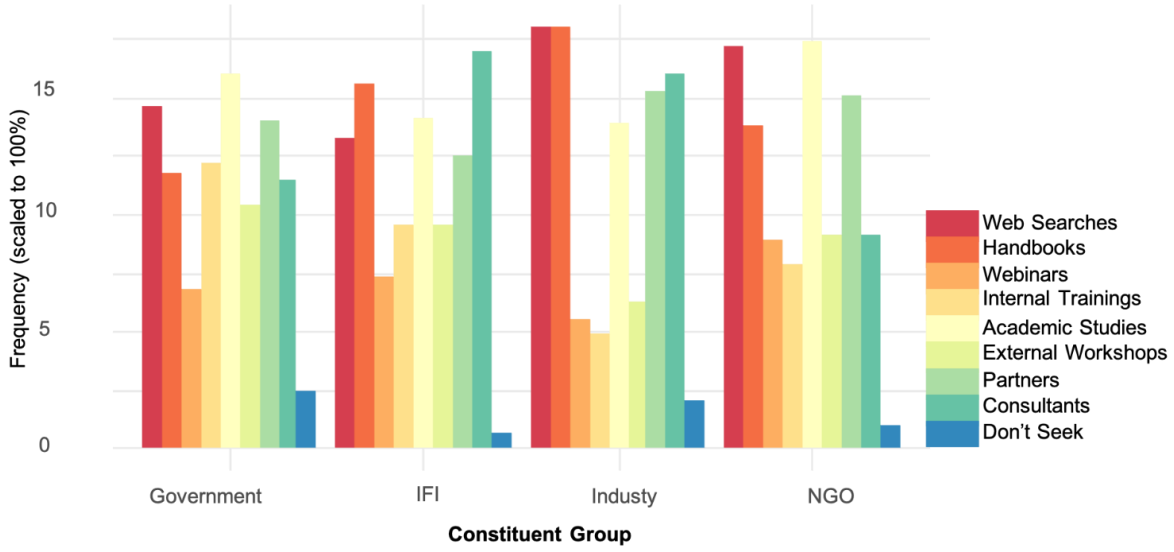


Figure 15: Percent frequency response by the four constituent groups regarding their use of various types and sources of wildlife safeguard information

TRAINING NEEDS AND INDICATED TOPICS

Regardless of constituent group, respondents are overwhelmingly interested in training opportunities for safeguarding wildlife from LI impacts (86 percent). From the above assessment, some themes recur as capacity needs across constituent groups. We specifically asked about the information and kind of training that constituent groups would like to build capacity to realize wildlife safeguards for LI (Figure 16 (a)). IFIs and NGOs have a high acceptability of training webinars (short 1-hour online training) and workshops (multi-day training). However, when combined with field trips, workshops are preferred more often by government agencies and NGOs. IFIs and NGOs also see the most merit in the existence of a central clearinghouse of information (online library, case studies, design guidelines, etc.—indicated as "knowledge platform" in the figure below) and guidelines for wildlife safeguard designs and specifications (e.g., wildlife crossing dimensions). All four constituent groups ranked online university-level courses (with continuing education credits or certificates) in the lowest frequencies in their preference.

Regarding training topics, survey respondents from all constituent groups were highly interested in all provided options, which included policy, planning, design, mitigation, and monitoring (Figure 16 (b)). NGOs and industry are aligned in their needs and seek training on planning and design for WFLI. NGOs are also aligned with government agencies in their needs and seek training on policy, monitoring and mitigation. IFI respondents desired training with the highest frequency of all constituent groups, suggesting that within IFIs, training is prioritized for the implementation of WFLI. Overall, our results suggest that effective capacity training could include similar topics across constituent groups with delivery sometimes tailored to a certain constituent group. Given that previous results indicate room for improvement in how constituent groups work together during the project development process, trainings could provide important opportunities to bring different stakeholders into the same room.

Furthermore, by providing the same general knowledge base to all constituent groups through standardized training, future collaborations may go more smoothly.

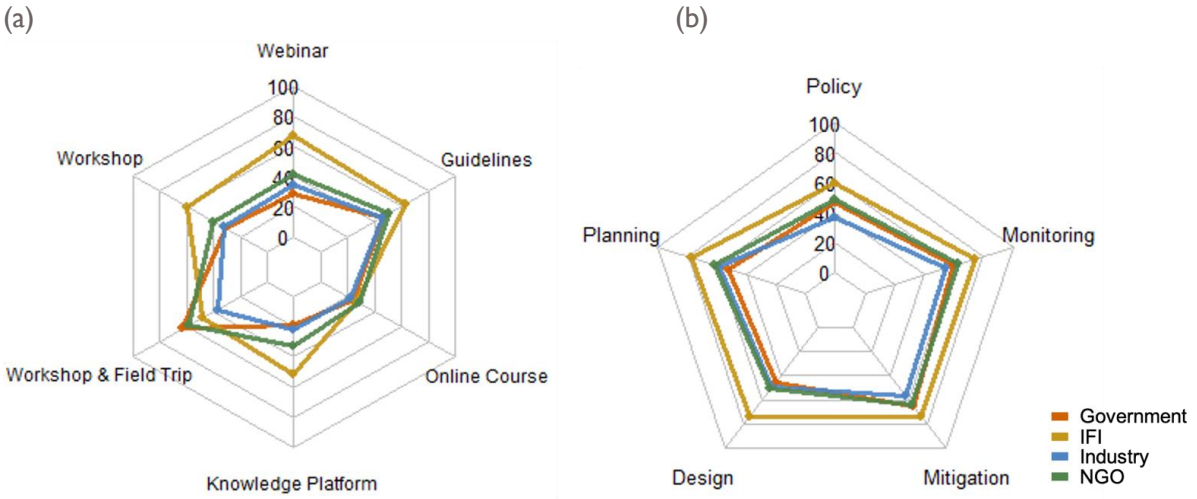


Figure 16: Radar graphs of the percent frequency response by the four constituent groups regarding, (a) preferred mechanisms for wildlife safeguard training; and b) preferred themes or subject matter for instruction.

CAPACITY INFERENCES FOR SPECIFIC CONSTITUENT GROUPS

The preceding section considered the survey responses as a whole or compared responses across the four constituent groups. This next section provides constituent group-specific insights that might help tailor more in-depth capacity needs assessments and orient training activities to be more effective in mainstreaming wildlife safeguards.

GOVERNMENT

Governments must balance their international commitments with their many national goals for conserving biodiversity. Thus, they often create national policies and programs to conform to, and help achieve, their international obligations. The survey sought to determine the capacities of agency personnel to be informed of, and act upon, their nation's conservation-focused responsibilities and duties.

Government respondents were overwhelmingly aware of the seven MEAs identified in the survey that are related to wildlife conservation, and more generally to biodiversity, migration, natural heritage, and wetlands. The majority of these respondents confirmed that their institutions had formal (official) systems (n = 44 out of the total 91 responses) and/or informal systems (n = 17 out of the total 91 responses) for sharing information internally to their employees about international commitments regarding wildlife conservation. Government staff responsible for monitoring international commitments regarding wildlife and informing the establishment of national activities to affirm the agreements appeared to be present in some government agencies, and lacking in others (present = 46, not present = 37, not sure = 10).

Some respondents confirmed that their agencies did provide staff with access to resources regarding required actions for upholding MEAs, although this was not always the case (provided access = 48, did

not provide access = 20, unsure = 24). The survey did not seek to capture the diversity of government agencies addressing wildlife protection in finer detail. Therefore, further study will be required to assess if government agencies working on international wildlife commitments are aligned with and integrated into domestic LI agencies and the projects they develop where wildlife safeguards are required. However, the survey did capture that at the national level, government agencies do provide some types of formalized stems and institutional access to enhance the capacity of staff engaged with international commitments related to wildlife. When they do, the most common capacity-building efforts are in the form of workshops and training courses which significantly outnumber printed guidance and certification programs (Figure 17).

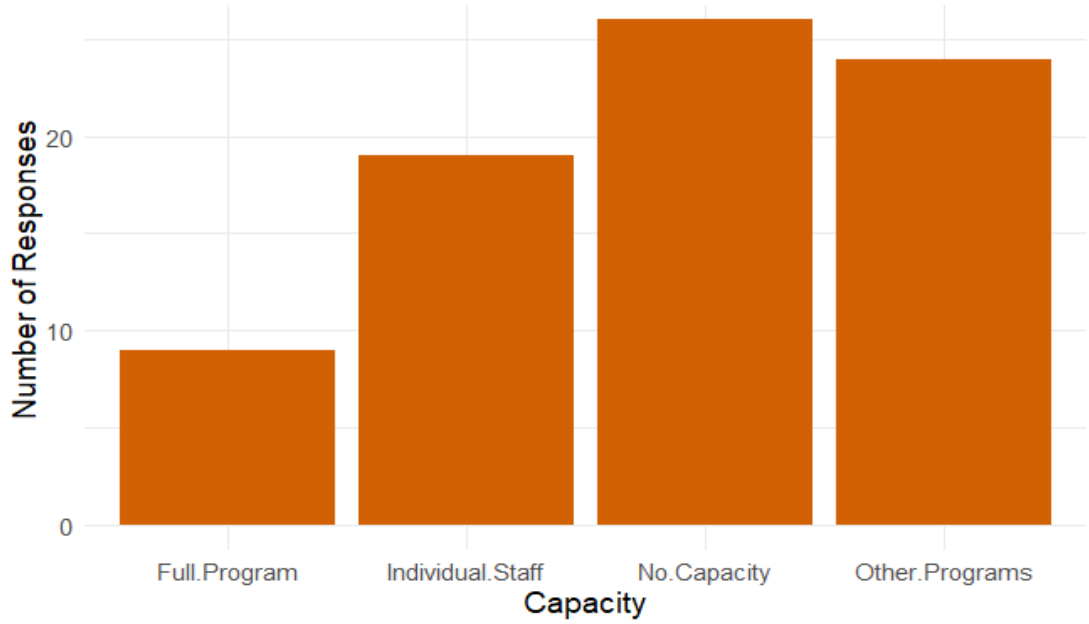
Figure 17: Number of respondents of the government constituent group that identified different types of capacity building methods that are available to their agency personnel to learn about their government's commitments to MEAs

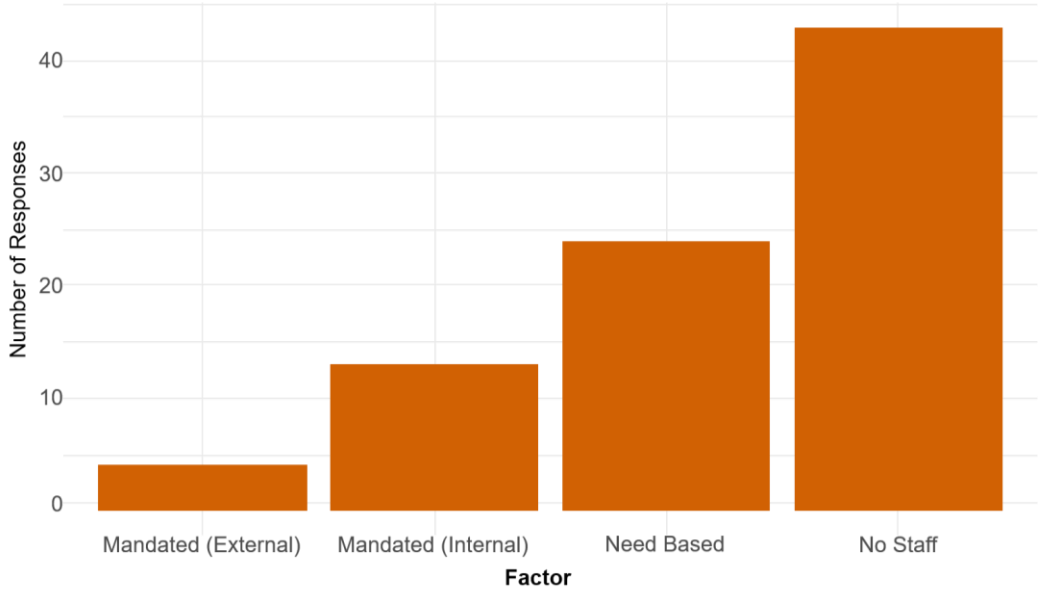
A majority of respondents (58 out of 93) indicated that staff at their government agency received training specific to providing wildlife safeguards for LI. Of those that did receive training, nearly half were instructed by their own agency (n = 18) and a little over half by another organization (n = 20). Government respondents identified the primary rationale for the training was due to donor or funder mandate (n = 35), to a lesser degree mandated by law (n = 25), or as a prerequisite for MEAs (n = 28). Wildlife safeguard training covered all three LI modes evaluated by our project (roads = 46, rails = 25, power lines = 28) and planning (n = 33).

Respondents also highlighted the lack of capacity within their agencies to address LI impacts on wildlife with 50 of 88 reporting they have no capacity (n = 26) or that wildlife impacts are addressed within other programs, but no LI experts are tasked with this mandate (n = 24) (Figure 18 (a)). However, 19 respondents indicated the existence of individual staff with expertise in wildlife safeguards and nine respondents indicated that their agency had dedicated a full program to addressing LI wildlife safeguards. One reason for such varied responses from the pool of government respondents might be the diversity of mandates within government departments related to wildlife, roads, rails, power lines, and planning.

Government respondents also noted that when there is capacity for working on WFLI in terms of staff, this generally occurs as needed for individual projects, as opposed to through internal or external mandates. However, the majority of respondents noted that there is never any staff dedicated to this work (Figure 18 (b)).

(a)





(b)

Figure 18: Number of respondents of the government constituent group that identified, (a) their agency's current staffing capacity to address LI wildlife safeguards, and (b) the rationale for why LI wildlife safeguard capacity is needed.

The survey targeted respondents in government agencies responsible for wildlife, roads, rails, power lines, and planning. The responses to the various government agency capacity questions regarding LI wildlife safeguard requirements/mandates, expertise, and staffing levels indicate the increased need for capacity across modes and agencies in all five countries surveyed. We next focused on the EIA, a crucial

phase in the LI development process to incorporate wildlife safeguards. We sought to evaluate the perceptions of those in government regarding the responsibilities of the various constituent groups in the development of the EIA.

During the project development process, government agencies remain the primary actor responsible for coordinating the development of EIAs, a key requirement that seeks to understand the impacts of LI development on wildlife more fully, and recommending the necessary safeguards. Survey respondents from government agencies indicated that both government-funded and privately funded LI projects require EIAs, and that different constituent groups including government, funders—including domestic funders, and private industry developers—all play varied roles in the EIA process (Figure 19). The responses show that government agencies play a clear role in both requiring the EIA, and then ultimately approving the EIA. During the EIA process, government agencies work with industry and funders. Government agencies perceive industry developers and funders as the constituent groups that most often pay for the EIAs and perceive it to be the industry developers' role to prepare the EIA. Perception of roles often indicate capacity bottlenecks. For example, in the case of an EIA's development without high levels of transparency, coordination, and accountability, there can be detrimental consequences for wildlife, such as the lack of adequate safeguards. This often can be the result from opaque EIAs that receive no public or third-party review.

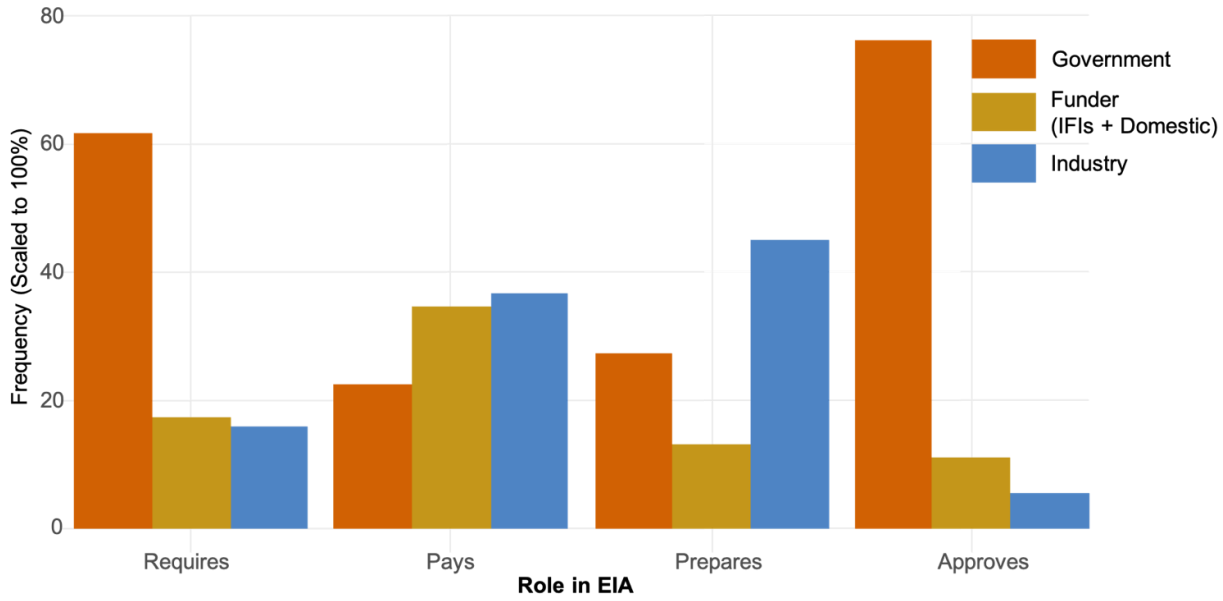


Figure 19: The percentage of government respondents that identify the roles different constituent groups play in an EIA's development

INTERNATIONAL FINANCIAL INSTITUTIONS

The respondents from the IFI constituent group were spread across headquarters (n=17, 10 central environmental units or equivalent and 7 regional or country departments) and country resident missions (n = 12). Largely, IFIs reported that their institutions either adhered to the IFC PS6 (n = 4) or had an equivalent performance standard (n = 20). Six respondents even reported that their institutional policies are more stringent than those of the IFC PS6 and only two reported that they relied on the borrowing country's policies.

In addition to their overarching environmental and social (E&S) standards, IFI respondents to the survey reported that their institutions had most of the important topics for WFLI covered in their institutional policies. The opportunities to shape wildlife safeguards for LI were most often indicated within E&S standards (n = 26) as well as through formal grievance mechanisms (n = 24). Requirements for conducting CBAs (n = 15) and preparing WFLI guidelines (n = 14) were less often reported than most other topics. Most notably, funding for long-term engagement of wildlife-focused stakeholder advisory groups (n = 4) and contingency funding (n = 11) for unforeseen mitigation needs for wildlife/habitat were the least often cited options by respondents.

IFI respondents highlighted that the mitigation hierarchy is well known (22 of 25 responses answered positively) and that possible mitigation options, such as avoidance, are noted within IFI policies. Respondents also reported that IFIs reinforce project-specific compliance for WFLI with measures that are relevant to development: implementation, and enforcement of wildlife safeguards for LI via technical assistance (n = 24), training (n = 23), and knowledge management (n = 19).

According to the survey results, IFIs perceive themselves to utilize the "mitigation" and "minimization" options most often within the mitigation hierarchy, followed closely by "avoidance" (Figure 20). Offsets and compensation were rarely cited as one of the top three mitigation hierarchy options undertaken. This could indicate that IFIs are working to implement wildlife safeguards for LI, but that there may be an over-reliance on mitigating impacts after construction, as opposed to avoiding important wildlife areas through route selection early in the project development process. We suggest that the results in Figure 20 could be validated through the evaluation of any nation's dataset of IFI projects, to determine if the avoidance option is indeed used more often than the offset and compensation option in the mitigation hierarchy.

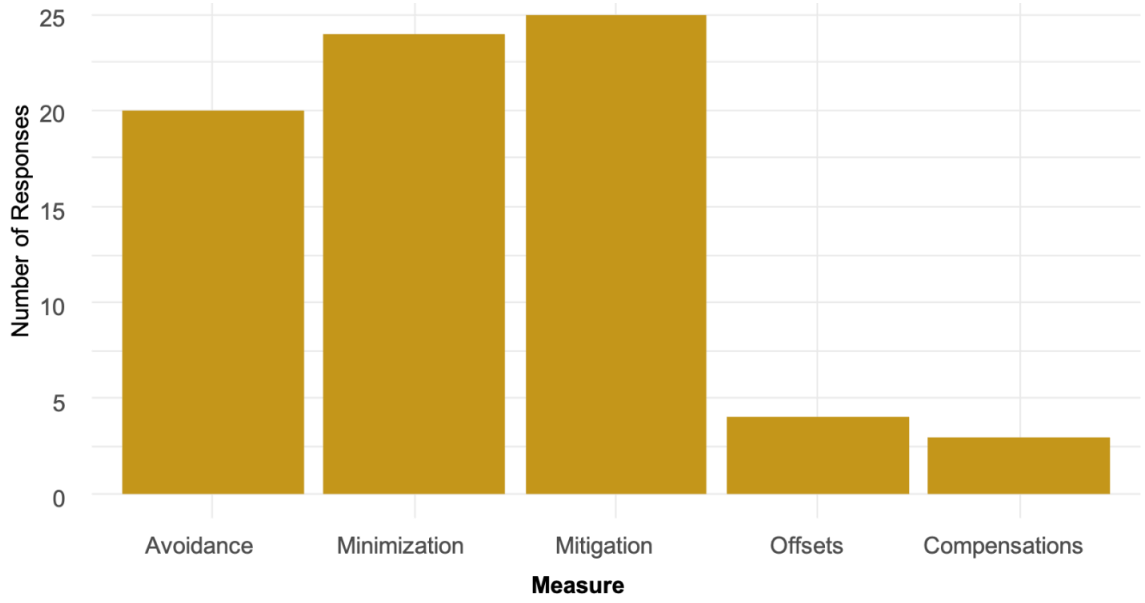


Figure 20: The number of respondents of the IFI constituent group that identified the most often used option in the mitigation hierarchy in Asian LI project development

IFI respondents reported that the avoidance of environmental and social impacts is considered throughout the project development process except during the actual loan disbursement that follows standardized ESIAs. Here, it is important to note that loan disbursement may have been perceived by

respondents as a purely administrative step, with environmental issues having been addressed in earlier stages. IFI respondents were nearly unanimous in reporting that they have adequate staff dedicated to safeguarding wildlife (26 of 28), and consider the costs of wildlife safeguards to be included in the budget for most LI projects (23 of 27 responses were positive). There are also robust internal and external coordination mechanisms between IFIs and the other actors involved in a project to assure wildlife safeguards are implemented.

IFIs use a varied set of measures to build internal capacity, it is largely focused on workforce training, webinars, and training manuals (Figure 21 (a)). To build external capacity to implement wildlife safeguards for LI with partners such as borrowers and grantees, IFIs tend to hire temporary consultants with relevant expertise, provide funds for capacity-building activities, and engage key partners (Figure 21 (b)).

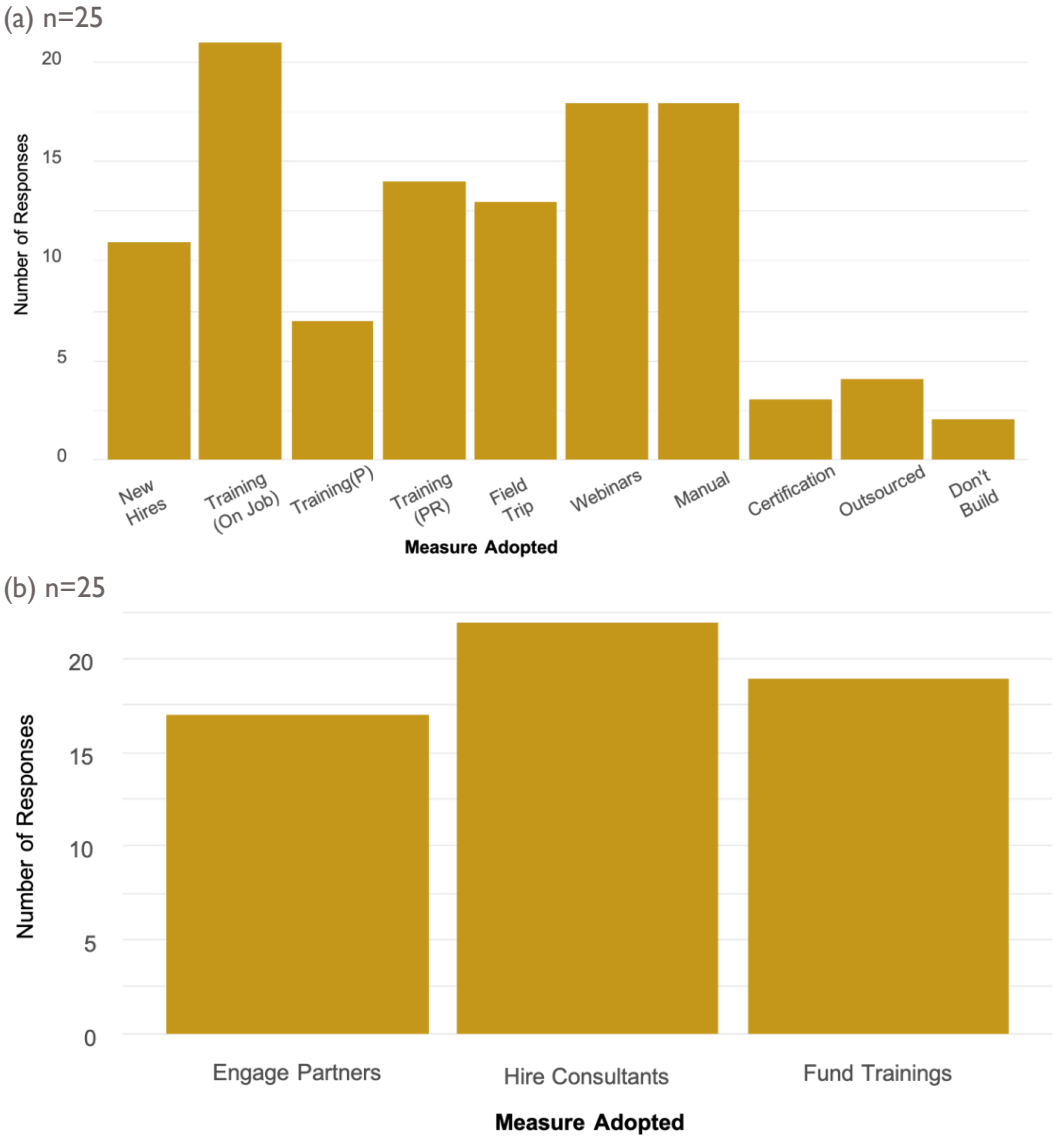


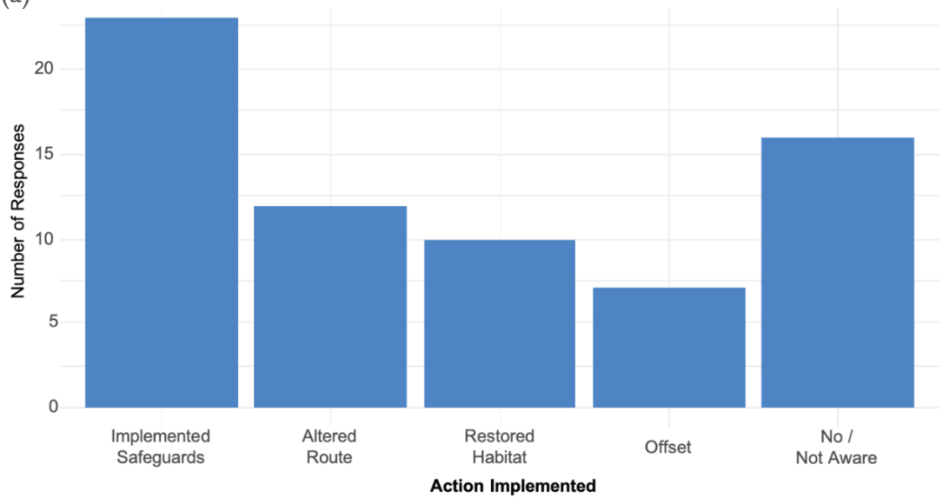
Figure 21: The number of respondents of the IFI constituent group that identified (a) the various measures adopted by IFIs to build capacity internally (P= In-person and PR= In-person and Recurring), and (b) the measures adopted by IFIs to build capacity in external partners.

Finally, the IFI respondents provided comments that clarified that they are engaged in LI projects with wildlife safeguards in all five countries in the survey and some have harmonization systems that include wildlife safeguards with these countries as well.

INDUSTRY ASSOCIATIONS

Industry respondents signaled that private sector firms are generally willing to incorporate wildlife safeguards that mitigate LI impacts (21 = very willing, 21 = somewhat willing, of 46 responses). Respondents indicated that industry firms use a variety of mitigation approaches for LI projects, although one-third of respondents were not aware of any mitigation actions taken (Figure 22 (a)). Twelve respondents indicated that routes for LI were altered to avoid or minimize impacts to wildlife—key options not often used for LI projects in the mitigation hierarchy. However, industry respondents that did indicate that they implemented safeguards most often did so by installing wildlife crossing signage (Figure 22 (b)). Although inexpensive, signage is one of the least effective mitigation measures available to protect wildlife from collisions with vehicles, conversely, although relatively expensive, crossing structures (e.g., overpasses or underpass tunnels) are highly effective (Huijser et al., 2009). Further training may be needed for industry to increase practitioners' understanding of the relative effectiveness of the many mitigation measures that are available. These mitigation measures were most often first considered during the EIA phase of the project, followed by the feasibility study phase, and only rarely in the design phase. This indicates that mitigation measures are only sometimes included from the beginning, or early in the project development process.

(a)



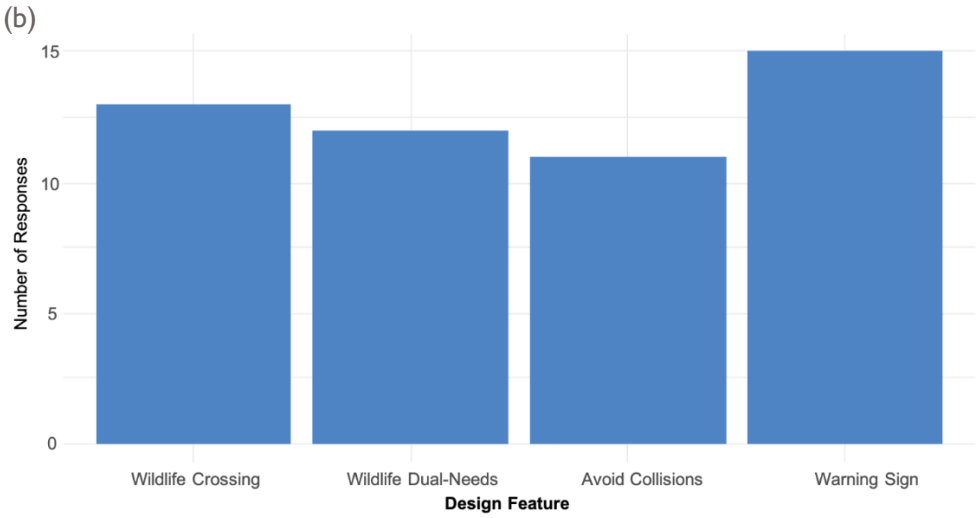


Figure 22: The number of respondents of the IFI constituent group that identified (a) actions they know have been taken in the last five years to reduce the adverse impacts of Asian LI projects, and (b) measures they know have been implemented to safeguard wildlife from LI projects in Asia.

Industry uses multiple actions to safeguard wildlife from LI development, including altering routes (Figure 22 (b)), which is a key option in the mitigation hierarchy. The safeguards for wildlife that were most often implemented were warning signs, followed by wildlife crossing structures, dual-purpose structures that serve humans and wildlife (e.g., bridges or culverts) and other design features to avoid collisions (e.g., speed bumps, traffic slowing measures, bird diverters on power lines).

Additionally, respondents reported in their comments that the costs of wildlife safeguard measures are sometimes included in the original budget of the project, but not always, and that the monitoring of the effectiveness of the mitigation measures usually takes place in cases where they are implemented.

Training on ecosystem and habitat impacts, effects on animal movement and migration, and CBA are considered the top three priorities for industry respondents across all five countries (Figure 23). This is an encouraging sign that ecological and ecosystem considerations are on par with CBA by industry professionals. The responses to the survey by industry also suggest a high level of awareness of the importance of wildlife safeguards. Future training and capacity-building activities should focus on enabling industry to understand the most effective measures that protect wildlife, habitats, and ecological connectivity.

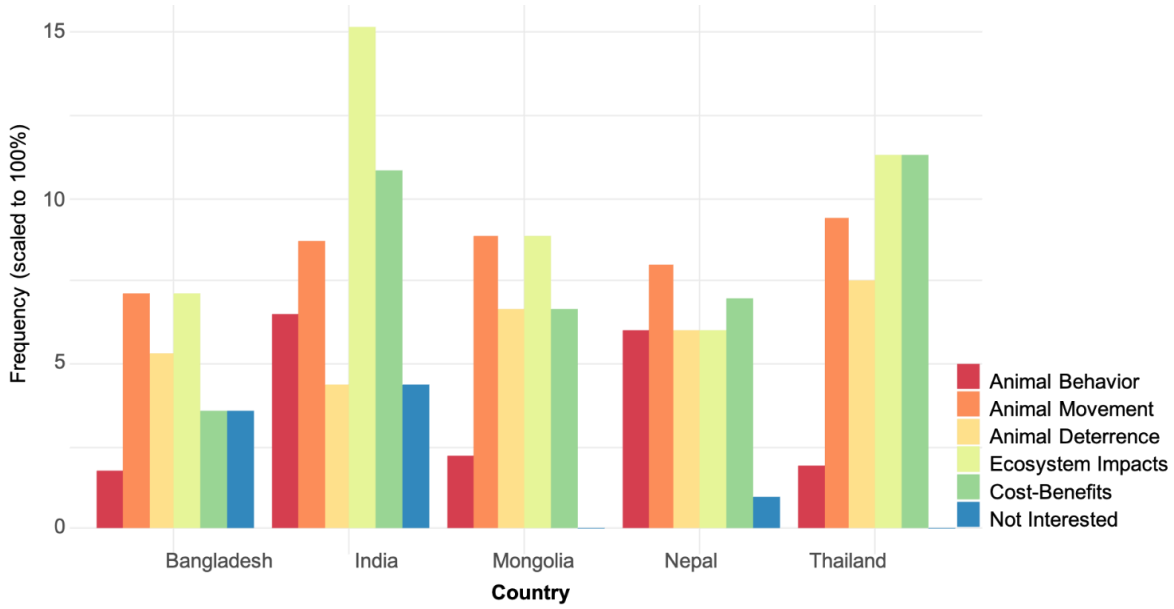


Figure 23: Percent frequency response by members of the industry constituent group in each of the project's five representative countries regarding important topics to include in training workshops to safeguard wildlife from LI development (n=45).

Industry constituent group responses indicate a relatively high general awareness of the need to evaluate cumulative impacts from multiple infrastructure projects, as well as the importance of post-construction monitoring of mitigation measure efficacy, and that respondents and their companies often engage in these aspects of project development. In addition, a little over half of industry respondents were aware of legal regulations that govern the practices of their industry to provide wildlife safeguards during the development, design, and construction of LI projects (25 = yes and 20 = no, out of total 45 responses). With respect to wildlife safeguards, respondents indicated that they were primarily aware of those related to wildlife or biodiversity laws in their own country.

Industry respondents reported that firms sometimes follow voluntary (i.e., non-mandatory) standards, guidelines, or best management practices for wildlife safeguards in LI (yes = 23, no = 19). A few respondents mentioned certain local, value-driven, voluntary actions to incorporate wildlife safeguards due to pressure from local community groups. This suggests that best practice guidelines and existing manuals for WFLI have not been mainstreamed in industry, apart from obligatory requirements linked to funding or permitting. Another interpretation is that these responses might suggest that legally mandated regulations are easier for industry to adopt than voluntary efforts. Respondents were aware of some model projects in their countries or elsewhere in Asia that have implemented avoidance or other exemplary wildlife safeguard measures, as well as, conversely, projects that did not follow best practices.

Industry respondents were not aware of any awards or other public recognition stratagems (e.g., public notice via the newspaper) received by firms for implementing best management practices to protect wildlife or exemplary wildlife safeguards other than the following four responses:

1. No specific award. However, there is the EIA monitoring award that will be announced for the project that strictly complies with EIA mitigation and monitoring measures. Some measures

within this are related to wildlife. (Response by industry professional from Thailand working on railway projects.)

2. National Environment Award. (Response by retired government official in Bangladesh.)
3. Two respondents answered that they were aware of awards, one from India and another from Nepal.

Overall, industry responses to our survey suggest that currently wildlife safeguards in LI projects result from compliance mandates required by financiers or in response to specific provisions described in the permitting phase of the project development process. The overall level of awareness in industry about the mitigation hierarchy, importance of understanding ecological information, and ecosystem functioning is encouraging. Best practice for wildlife safeguards is largely voluntary and yet such efforts do not bring public recognition or non-monetary awards to the companies or firms for safeguarding wildlife. It may be possible for governments and IFIs to leverage industry interest in implementing international standards for wildlife safeguards by creating formal award ceremonies or other forms of public acknowledgement for their excellence in design and implementation.

NGOS

The majority of NGO respondents represented national-level organizations (n = 46), followed by international-level organizations (n = 26). The remaining respondents worked at the local or regional level (multiple countries) or identified more closely with an academic institution or think tank. A variety of organization sizes were represented, ranging from less than five employees to over 500. Most NGO respondents were aware that their organization had undertaken some type of capacity building to build expertise in their understanding of wildlife safeguards for LI. The most common way to build capacity was to train existing staff, followed by partnering with other NGOs who had safeguard expertise (Figure 24). NGO respondents said that their organizations sometimes hired temporary consultants or engaged with non-NGO partners to acquire the necessary expertise, but did not often hire new staff specifically to work on LI safeguards for wildlife. Approximately one-third of NGO respondents indicated that their organization had not built any capacity, indicating a clear need.

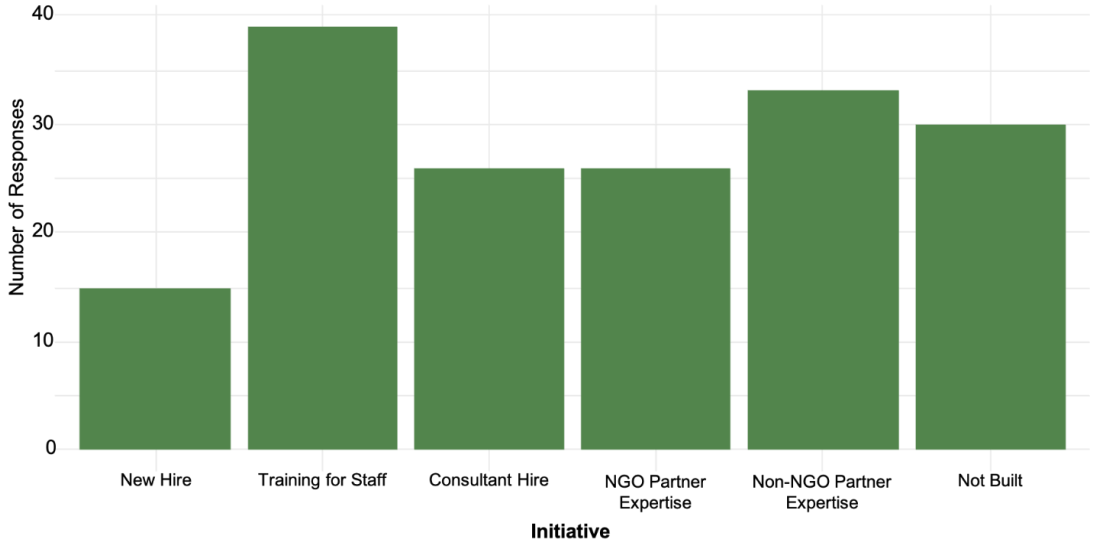
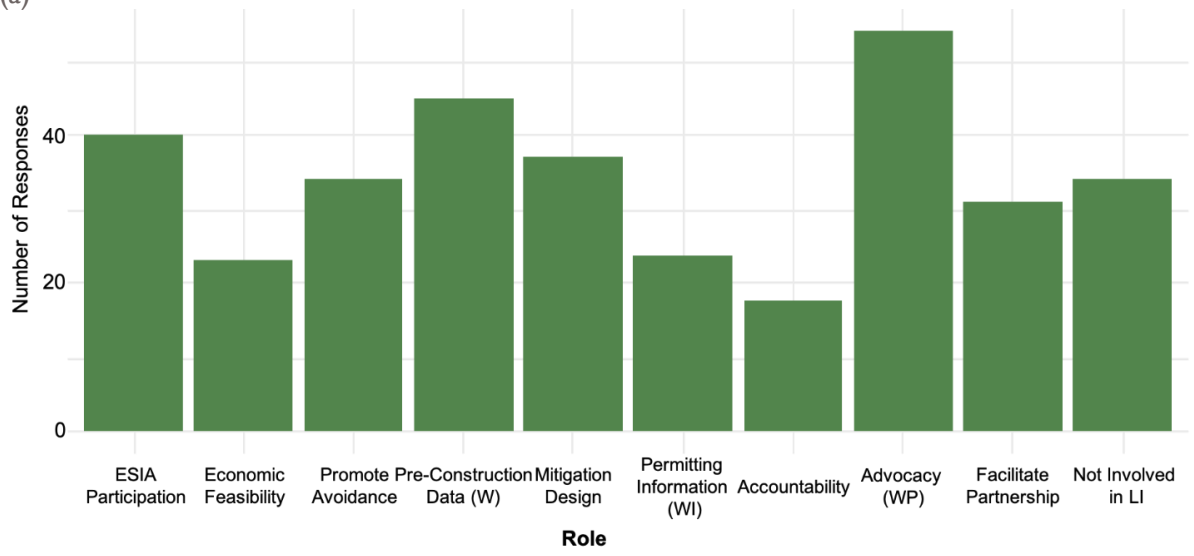


Figure 24: The number of respondents of the NGO constituent group that identified which form of capacity building technique they currently use to develop wildlife safeguard expertise to address linear infrastructure plans and projects (n=105). Not Built = capacity building techniques were not used at the respondent's NGO.

NGO respondents indicated that their organizations participate in the LI project development process in a wide variety of ways. The most common methods of participation were to conduct general advocacy for wildlife protection and to collect pre-construction wildlife data (Figure 25 (a)). Both of these measures correspond to work that often is undertaken by NGOs for other purposes. It might indicate that NGOs seek to find ways to participate in, and influence projects to safeguard wildlife that fit under current organizational missions or funding mechanisms. NGO respondents were least involved in work regarding economic feasibility studies such as CBAs or encouraging project accountability to implement safeguard commitments. This could indicate that additional training may be needed for the NGO community to understand wildlife safeguard economics, legal mandates, and IFI contractual standards more fully.

The majority of NGO respondents (n=105) indicated that their participation in projects sometimes (n = 40) led to a better project design for wildlife, but responses were mixed (rarely, n = 29; usually, n = 25), indicating that NGOs have mixed success in championing wildlife protection in the LI project development process. NGO respondents indicated a variety of reasons for why their work did not always result in better project designs (Figure 25 (b)). The most common reasons were competing priorities from the government and political pressure surrounding the project, indicating that NGOs feel that governments have a lot of control over LI development and whether safeguards are enacted. However, NGOs did not typically indicate that corruption was a major barrier. As expected, NGOs indicated that budget constraints were a barrier as well.

(a)



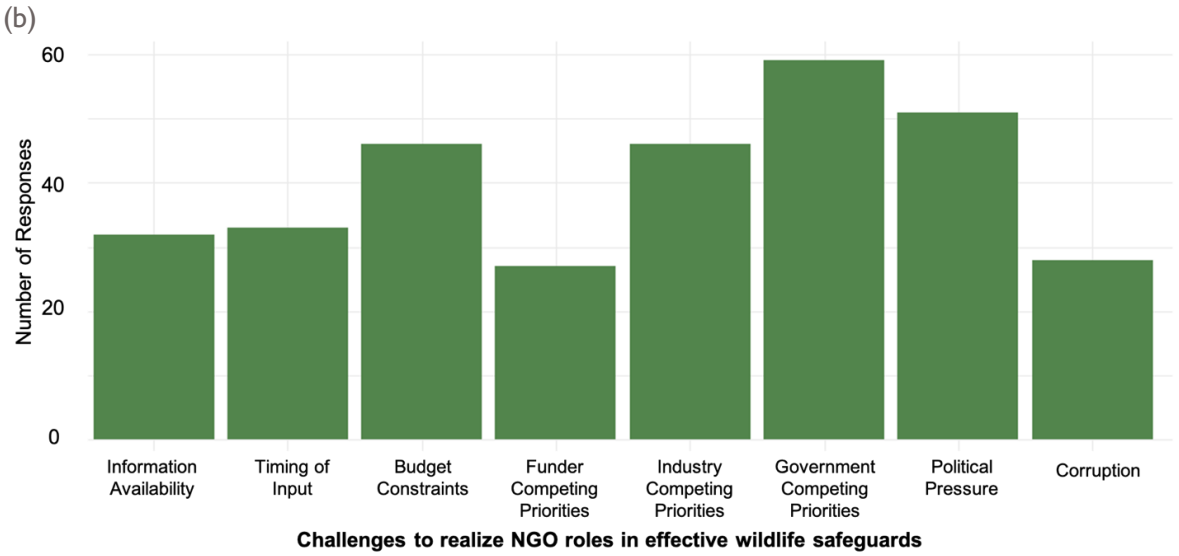


Figure 25: The number of respondents of the NGO constituent group that identified, (a) the role their institution plays in LI project development, and (b) the types of challenges that limit the effectiveness of NGOS to assure effective wildlife safeguards are implemented during the LI project development process.

Regarding future capacity building, NGO respondents indicated that it would be most helpful to receive joint training or other types of capacity-building efforts in conjunction with external stakeholders, especially communities (65 percent) and government agencies (58 percent), followed by funders (44 percent). Respondents were less interested that their institution hire consultants or new staff with expertise in LI safeguards; instead, they expressed more interest in increasing the expertise of existing staff, indicating that training and information-sharing platforms are key to future NGO capacity building.

Overall, NGOs are very interested in increasing their knowledge about wildlife safeguards for LI, but are limited by funding and expertise, and are currently most able to contribute through work already being undertaken by their organizations for other purposes (e.g., wildlife data collection). NGO respondents appear keen to develop partnerships with other constituent groups, especially government. They would like training that would help them to better engage, and increase their effectiveness, in the LI project development process.

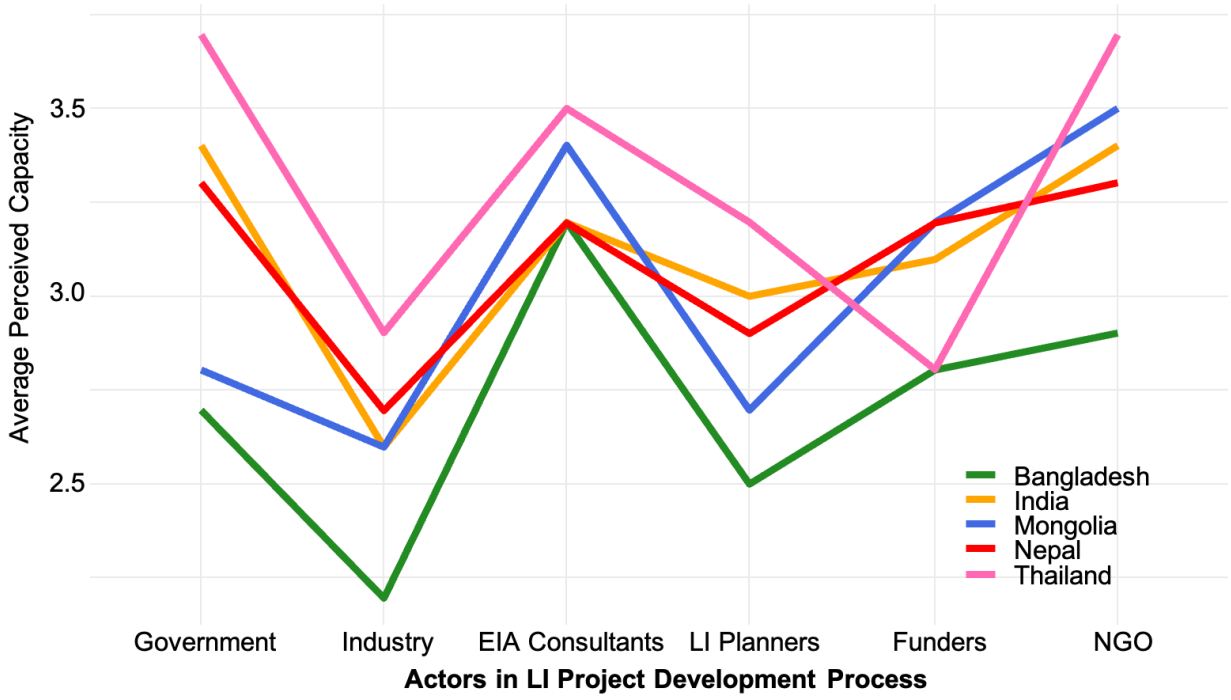
COUNTRY-LEVEL INSIGHTS

For the evaluation of the capacity of the five representative countries, we pooled all constituent group responses for each nation, to better understand which issues regarding WFLI safeguards might be specific within their own domestic policy context. We also sought to determine what wildlife safeguard capacity-building opportunities might apply across all five representative countries, and therefore inform Asia-wide strategies.

Across the five representative countries, most respondents reported higher existing expertise exists within EIA consultants and NGOs than for industry (Figure 26 (a)). This aligns well with our survey findings from Asia-wide respondents and may be used to influence training priorities locally and regionally. In India, Nepal, and Thailand, respondents reported that government agencies have sufficient capacity to provide LI safeguards for wildlife. While most respondents across the five countries reported higher capacity in funders than in LI planners, Thailand reported that LI planners have more capacity than funders. This result highlights that in Thailand there is an opportunity to understand how to elevate the capacities of LI planners that will result in more effective wildlife safeguards.

Respondents across all five countries indicated that barriers arise most often in the planning, design, and construction phases of the project development process, which aligns with the low perceived capacity of industry (Figure 26 (b)). In India, respondents perceived barriers occurring more often at the permitting stage than during the construction phase, while in Nepal, respondents reported barriers occur more often at the funding stage. Finally, in Thailand, respondents reported barriers occur more often at the selection stage.

(a)



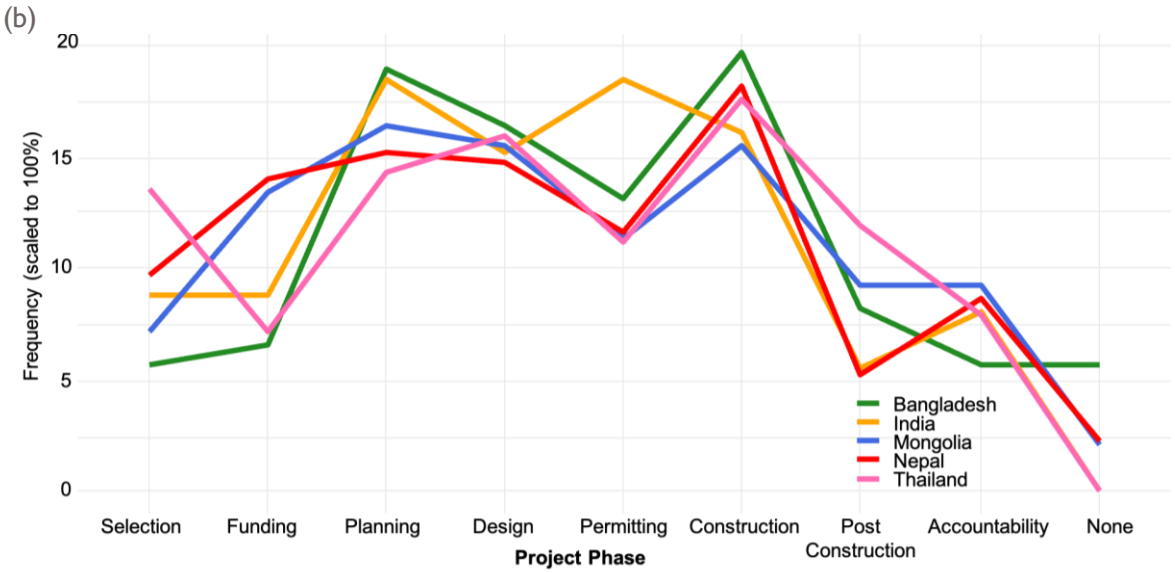


Figure 26: Percent frequency response by members of all constituent group respondents in each country—Bangladesh, India, Mongolia, Nepal, Thailand—regarding (a) which constituent group has adequate existing capacity to provide wildlife safeguards during project development, and (b) the project phase that is most prone to present barriers to wildlife safeguard implementation.

In India, Nepal, and Thailand, it is interesting that while respondents perceive government, funders, and planners to have more WFLI capacity, on average, these same countries record barriers that occur at permitting, funding, and selection phases of the project process, which tend to be led by those constituent groups. This suggests that not enough capacity exists across all actors to safeguard wildlife or that barriers to implement safeguards remain even with higher capacities. This shortcoming may be the result of poor coordination among actors or weak policy implementation.

When asked about the greatest challenges to safeguarding wildlife in their country, each nation's respondents show some similarities, attributing barriers to the lack of political will and the lack of information availability (Figure 27 (a)). On the topic of information insufficiency, almost all countries agree that CBAs are lacking, alongside best practices in mitigation design and wildlife data collection (Figure 27 (b)). The exception is Thailand, where information regarding best practices for wildlife safeguards may be more accessible.

Details of proposed projects and the development of alternate routes for LI siting remain an information gap in all countries, with Bangladesh, India, and Nepal more interested in the accessibility of project details and Bangladesh, Thailand, and Nepal more interested in information on potential alternate routes. Respondents from Mongolia identified information inadequacies but had the lowest response frequencies across all the information gaps. Respondents in all five countries indicate high levels of information insufficiency in CBAs, best practices in mitigation design (M), and best practices in wildlife data collection (W).

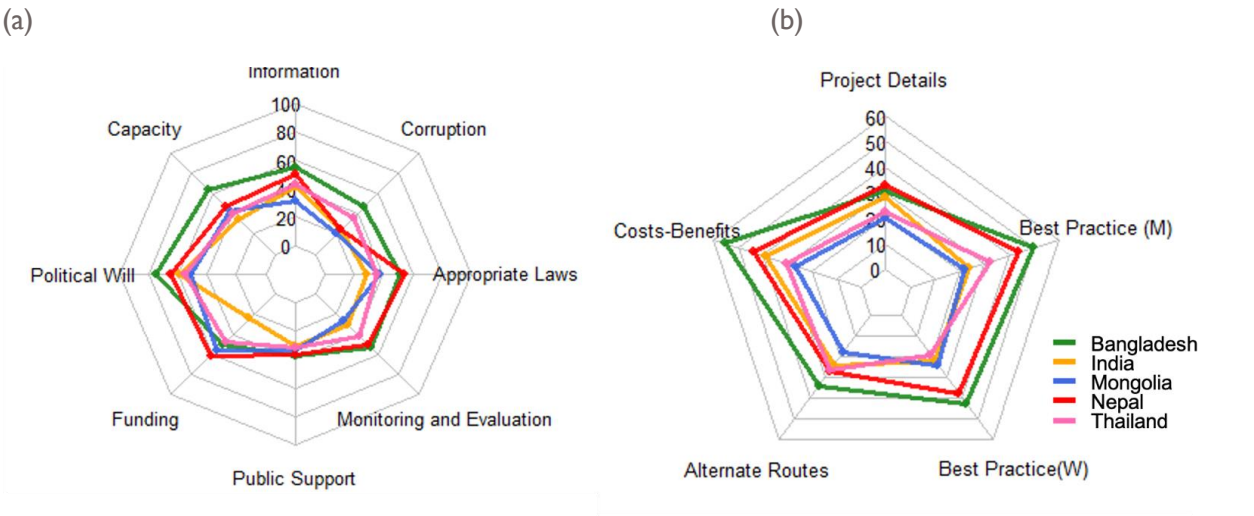


Figure 27: Radar graphs of the percent frequency response by all four constituent groups pooled for each country, to determine (a) the greatest barriers to wildlife safeguard implementation, and (b) the information insufficiency.

Finally, respondents were asked to identify the most important aspects to improve the implementation of wildlife safeguards for LI in their respective countries. They were most interested in better requirements for implementing wildlife safeguards, better requirements for the inclusion of a CBA of safeguards in the project feasibility phase, more funding for implementing wildlife safeguards, and more coordination among diverse stakeholders (governments, funders, engineers, etc.) (Figure 28).

Respondents from Bangladesh and Nepal emphasized the need for training more often than India, Mongolia, and Thailand. Respondents in India and Mongolia also reported the need for better requirements for implementing safeguards less often than other countries. Mongolians also reported less than other countries that accountability needed improvement for better implementation of wildlife safeguards. Interestingly, all countries did not feel that increasing NGO and community involvement in the project development process would improve the implementation of wildlife safeguards. Further study is needed to understand the basis for this surprising finding, as NGOs are typically considered a key player in advocating for the implementation of wildlife safeguards.

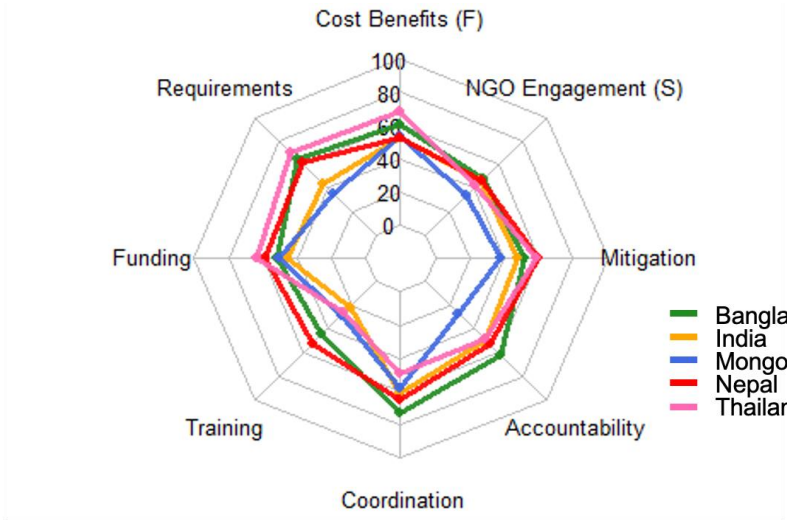


Figure 28: Radar graph of the percent frequency response by all four constituent groups pooled for each country, to determine the most important factors needed to implement wildlife safeguards during the LI project development process.

SUMMARY OF KEY INTERNATIONAL AGREEMENTS AND LAWS WITH THE POTENTIAL TO FURTHER WILDLIFE SAFEGUARDS

BANGLADESH

It is becoming increasingly evident that Bangladesh is focusing on wildlife safeguard issues. This is exemplified by the inclusion of wildlife crossings that are currently under construction as part of establishing a 120-km dual gauge railway track from Chittagong to Cox's Bazar (see case study in Annex 2). This effort, when concluded, could be greatly beneficial for the conservation of the endangered Asian elephants that move throughout the area.

Bangladesh's natural heritage is facing immense pressure due to rapid LI development. In the absence of improved safeguards, the impact on wildlife and natural habitats may be more than anticipated.

Bangladesh is a signatory to all seven MEAs considered by this project. Protective measures, which include laws and guidelines, were analyzed for the inclusion of wildlife safeguards with respect to EIAs and the three LI modes: roads, rails, and power lines. In Bangladesh, both laws and guidelines were present for EIAs and all three LI modes.

In Bangladesh, most survey respondents from the government constituent group were aware of the CBD and CITES (25). Ramsar (23), CMS (22), and WHC (20) were the next best-known conventions (Table 10).

Table 10: Bangladesh's engagement in international MEAs and the corresponding number of responses from regarding awareness of each MEA

TABLE 9: BANGLADESH'S ENGAGEMENT IN INTERNATIONAL MEAS AND THE CORRESPONDING NUMBER OF RESPONSES FROM REGARDING AWARENESS OF EACH MEA

CONVENTION	PARTY/NON-PARTY	NUMBER OF RESPONSENTS AWARE OF MULTILATERAL ENVIRONMENTAL AGREEMENTS (MEAs) (56)
CBD	Party	25
CITES	Party	25
Ramsar	Party	23
CMS	Party	22
WHC	Party	20
IPCC	Party	17
ITPGRFA	Party	13

Being a Party to these MEAs is indicative of Bangladesh's commitment to conservation and an opportunity for its leaders to provide additional directives to safeguard wildlife from LI development. To do so, typical avenues for a country to implement MEA commitments can be established in national legislation, policies, and regulations. The scope of this study was limited to documenting and listing the accessible and identified national legal mechanisms for Bangladesh (Table 11). In this case, it was not possible to have the resulting list verified and supplemented by the contacted national legal expert. However, key identified documents include the Development Act, Environment Conservation Act, Biodiversity Act, and Climate Change Trust Act. Future research could review and evaluate these laws

to identify the existing mechanisms, provisions, objectives, and responsible authorities that exist to provide WFLI safeguards, as well as develop and recommend potential improvements that would support the achievement of more wildlife-friendly infrastructure. Specific information regarding relevant laws, policies, and regulations in Bangladesh can be found in Appendix F.

Table 11: Total number of national laws, policies, and regulations in Bangladesh identified under each search category

TABLE 10: TOTAL NUMBER OF NATIONAL LAWS, POLICIES, AND REGULATIONS IN BANGLADESH IDENTIFIED UNDER EACH SEARCH CATEGORY

CATEGORY	NO. OF IDENTIFIED LAWS, POLICIES, AND REGULATIONS (22)
"Agriculture and rural development"	1
"Capacity building"	1
"Energy"	1
"Environment general"	1
"Forestry"	1
"Land and soil"	7
"Water"	5
"Wild species and ecosystems"	5

INDIA

Over the years, India has adopted considerable measures to safeguard wildlife. These include the mandatory environmental clearances prior to sanctioning development of large projects and the cancellation of forest land clearances by the Forest Department and various other stakeholder agencies like the National Tiger Conservation Authority (NTCA). Furthermore, institutional frameworks and policies are in place for more WFLI safeguards, including requisite clearances from state and central wildlife boards that undertake projects, an active civil society, and environmental legal entities that seek to ensure better accountability. The judicial system in India further strengthens protection through the National Green Tribunal and some precedential Supreme Court rulings.

India is a signatory to all seven MEAs considered for this study. Protective measures, which include laws and guidelines, were analyzed for the inclusion of wildlife safeguards with respect to EIAs and the three modes of LI: roads, rails, and power lines. In India, both laws and guidelines were developed to provide WFLI safeguards in EIAs and for the three LI modes.

In India, no single MEA received more than three responses (out of total 46) in terms of the awareness by respondents from government agencies (Table 12). This was a surprisingly low result for government employees; unfortunately, the survey design did not have a linked follow-up question to evaluate the cause of a respondent's lack of understanding. Further study will be required to ascertain the true level of awareness of those responsible for WFLI safeguard policy and practice in government.

Table 12: India's engagement in international MEAs and the corresponding number of responses from the government constituent group regarding awareness of each MEAs

TABLE 11: INDIA'S ENGAGEMENT IN AND AWARENESS OF INTERNATIONAL MEAs		
CONVENTION	PARTY/NON-PARTY	NO. OF RESPONSENTS AWARE OF MEA (46)
CBD	Party	3
CITES	Party	3
CMS	Party	3
Ramsar	Party	3
WHC	Party	3
ITPGRFA	Party	2
IPCC	Party	1
None	N/A	1

India's participation in these MEAs signals its commitment to conservation and is an opportunity for better safeguarding wildlife from LI. To implement these international obligations, India should continue to focus on the suitability and effectiveness of its existing national legislation, policies, and regulations. The scope of this study was limited to documenting and listing the key national legal mechanisms in the country (Table 12). Key identified documents include the National Green Tribunal Act, Environmental (Protection) Act, Biological Diversity Rules, and the Wildlife Protection Act. Future research should review and analyze each mechanism with respect to specific provisions related to their capacity to provide WFLI safeguards. Specific information regarding India's relevant laws, policies, and regulations can be found in Appendix G.

Table 13: Total number of national laws, policies, and regulations in India identified and verified under each search category

TABLE 12: TOTAL NUMBER OF NATIONAL LAWS, POLICIES, AND REGULATIONS IN INDIA IDENTIFIED AND VERIFIED UNDER EACH SEARCH CATEGORY	
CATEGORY	NO. OF IDENTIFIED LAWS, POLICIES, AND REGULATIONS (22)
"Agriculture and rural development"	1
"Energy"	2
"Environment general"	3
"Environmental Impact Assessment"	1
"Forestry"	6
"Land and soil"	1
"Water"	4
"Wild species and ecosystems"	4

MONGOLIA

Mongolia is making progress to develop effective WFLI safeguards through various avenues. The Constitution of Mongolia contains a number of duties for doing so, including placing land, subsoil,

forests, water, fauna, flora, and other national resources under "state protection" and making it the "sacred duty for every citizen […] to protect nature and the environment." The country's constitution also holds that "Mongolia fulfills in good faith its obligations under international treaties to which it is a Party. The international treaties to which Mongolia is a Party become effective as domestic legislation upon the entry into force of the laws on their ratification or accession." Mongolia is engaged in all seven MEAs considered for this study (Table 14).

Protective measures, which include laws and guidelines, were analyzed for the inclusion of wildlife safeguards with respect to EIAs and three modes of LI: roads, rails, and power lines. In Mongolia, both laws and guidelines exist for wildlife protection in EIAs and all three LI modes.

In Mongolia, the most well-known MEA among survey respondents was the CBD (12). Following the CBD, respondents were most aware of WHC (9), CITES (8), CMS (8), and Ramsar (8). (Table 15)

Table 14: Mongolia's engagement in MEAs and the corresponding number of responses from the government constituent group regarding awareness of each MEA

TABLE 13: MONGOLIA'S ENGAGEMENT IN AND AWARENESS OF INTERNATIONAL MEAS		
CONVENTION	PARTY/NON-PARTY	NO. OF RESPONSENTS AWARE OF MEA (45)
CBD	Party	12
WHC	Party	9
CITES	Party	8
CMS	Party	8
Ramsar	Party	8
IPCC	Party	6
ITPGRFA	Party	4
None	N/A	2

The ongoing improvement of Mongolia's national legislation, policies, and regulations is increasing the alignment of national actions with international obligations. The scope of this study was limited to documenting and listing the accessible and identified national legal mechanisms in Mongolia (Table 14). A number of the documents are only available in Mongolian, and they include the Environmental Protection Law and subsequent amendments; Law on Water, Climate, and Environmental Monitoring; Law on Fauna; National Program on Biodiversity; Medium-Term Program to Strengthen the Road Sector Capacity; and the Railway Danger Zone Regime. Specific to wildlife safeguards, a joint Ministerial Working Group between the Ministry of Nature, Environment and Tourism (MNET), and the Ministry of Roads Transportation and Development (MRTD) was reestablished in November 2016. An assessment of the regulatory environment associated with the removal of railway fences was also conducted in January 2017. Additionally, a standard for animal crossings and LI was developed in 2018 called the "Steppe Road and Railway Standard." Additional efforts can improve safeguards that further protect Mongolia's natural capital from rapid LI development. Specific information regarding relevant laws, policies, and regulations in Mongolia can be found in Appendix H.

Table 15: Total number of national laws, policies, and regulations in Mongolia identified and verified under each search category

TABLE 14: TOTAL NUMBER OF NATIONAL LAWS, POLICIES, AND REGULATIONS IN MONGOLIA IDENTIFIED AND VERIFIED UNDER EACH SEARCH CATEGORY	
CATEGORY	NO. OF IDENTIFIED LAWS, POLICIES, AND REGULATIONS (42)
"Agriculture and rural development"	1
"Biodiversity"	1
"Business, Industry, Corporations"	3
"Capacity building"	1
"Energy"	6
"Environment general"	5
"Forestry"	3
"Integrated management"	1
"Land and soil"	4
"Land use planning"	1
"Water"	6
"Wild species and ecosystems"	5
"Zoning"	2
Railways [Provided during verification]	2
Innovation [Provided during verification]	1

NEPAL

There are numerous initiatives underway in Nepal to improve wildlife safeguards. They include the recent budget allocation of NPR 15.34 billion for the fiscal year 2021-22 toward road infrastructure improvements, including the construction of wildlife crossing structures along the East-West Highway. Nepal has also committed to doubling its wild tiger populations by 2022, which requires minimizing fragmentation of ecological corridors among core habitats. Furthermore, there is an identified need to design and install wildlife crossing structures for major highways to decrease barriers to movement, vehicle collisions with wildlife, and other related conflicts. Nepal's natural heritage, however, continues to be at great risk in the face of LI development.

The country is a signatory to six of the seven MEAs considered for this study. Nepal is not a Party to the CMS (

Table 16).

Protective measures, which include laws and guidelines, were analyzed for the inclusion of wildlife safeguards with respect to EIAs and the three modes of LI: roads, rails, and power lines. In Nepal, both

laws and guidelines were present for EIAs, roads and power lines. Safeguards guidelines were developed for railways, but there was no information available regarding laws.

In Nepal, most survey respondents were aware of the CBD (30), closely followed by CITES (29), and Ramsar (28).

Table 16: Nepal's engagement in international MEAs and the corresponding number of responses from the government constituent group regarding awareness of each MEA.

TABLE 15: NEPAL'S ENGAGEMENT IN AND AWARENESS OF INTERNATIONAL MEAS		
CONVENTION	PARTY/NON-PARTY	NO. OF RESPONSENT AWARE OF MEAS (100)
CBD	Party	30
CITES	Party	29
Ramsar	Party	28
WHC	Party	25
CMS	Non-Party	24
IPCC	Party	15
ITPGRFA	Party	14

Although not a Party to the CMS, Nepal's engagement in international agreements provides an overarching framework for its conservation efforts and is an opportunity to better safeguard wildlife from LI. Joining the CMS is a future opportunity to further improve Nepal's WFLI safeguard capacity.

The scope of this study was limited to documenting and listing the accessible national legal mechanisms for Nepal and verifying the accuracy of the information. The results are summarized in Table 16. All of Nepal's laws, policies, and regulations reviewed for this project were available in English and include relevant laws such as the Electricity Act, Environmental Protection Act, Forest Act, Land Act, Water Resources Act, and National Parks and Wildlife Conservation Act. Subsequent research could review and analyze specific provisions in each law that specifically further WFLI safeguard capacity. information regarding relevant laws, policies, and regulations in Nepal can be found in Appendix I.

Table 17: Total number of national laws, policies, and regulations in Nepal identified and verified under each search category

TABLE 16: TOTAL NUMBER OF NATIONAL LAWS, POLICIES, AND REGULATIONS IN NEPAL IDENTIFIED AND VERIFIED UNDER EACH SEARCH CATEGORY	
CATEGORY	NO. OF IDENTIFIED LAWS, POLICIES, AND REGULATIONS (22)
"Agriculture and rural development"	4
"Energy"	3
"Environment general"	2
"Environmental planning"	1
"Environmental Impact Assessment"	1

"Forestry"	3
"Land and soil"	3
"Water"	3
"Wild species and ecosystems"	2

THAILAND

Thailand has taken many crucial steps for environmental and wildlife conservation in recent years, such as the recent ground-breaking revision of its Wildlife Conservation and Protection Act (WARPA) adopted in 2019, which replaces the former WARPA Act and its subsequent changes, B.E.2535 (1992), B.E. 2546 (2003), and B.E.2557 (2014). Provisions include enhancing the protection of endangered species and other non-native CITES-listed species, and dramatically increasing penalties in most cases. The country now has some of the severest penalties for illegal wildlife trafficking offenses in the region, which are intended to serve as effective deterrents for wildlife crimes. Other WFLI safeguard efforts are being implemented across the country, including construction of wildlife overpasses on Highway 304, which passes through the Dong Phayayen-Khao Yai Forest Complex, a United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage Site. However, without improved safeguards, ongoing and anticipated expansion of LI could further impact wildlife and their habitat.

Thailand is engaged in six out of the seven MEAs considered for this study. Like Nepal, it is part of all MEAs except for the CMS (Table 18).

Protective measures, which include laws and guidelines, were analyzed with respect to EIAs and the three modes of transport: road, railway, and power lines. In Thailand, laws have been promulgated for EIAs and all three LI modes. However, there was no information available regarding WFLI safeguard guidelines for EIAs or any of the three modes of transport.

In Thailand, most survey respondents were aware of CITES (Table 17), closely followed by the CBD and WHC (16 respondents each). 14 respondents were aware of Ramsar, while there were less than four responses for the remaining international agreements.

Table 18: Thailand's engagement in international MEAs and the corresponding number of responses from the government constituent group regarding awareness of each MEA

TABLE 17: THAILAND'S ENGAGEMENT IN AND AWARENESS OF INTERNATIONAL MEAS

CONVENTION	PARTY / NON-PARTY	NO. OF RESPONSES (53)
CITES	Party	17
CBD	Party	16
WHC	Party	16
Ramsar	Party	14
CMS	Non-Party	4
IPCC	Party	3
ITPGRFA	Party	2
None	N/A	1

The scope of this study was limited to documenting and listing the accessible and identified national legal mechanisms for Thailand that might provide direction for implementing WFLI safeguards (Table 18). This includes the Wildlife Conservation and Protection Act, as well as the Energy Industry Act, the Enhancement and Conservation of National Environmental Quality Act, and the National Parks Act. Based on Table 18, there appears to be relatively limited opportunities for WFLI safeguard capacity. However, succeeding research should review and analyze specific provisions related to the implementing wildlife safeguards. Specific information regarding relevant laws, policies, and regulations in Thailand can be found in Appendix J.

Table 19: Total number of national laws, policies, and regulations in Thailand identified and verified under each search category

TABLE 18: TOTAL NUMBER OF NATIONAL LAWS, POLICIES, AND REGULATIONS IN THAILAND IDENTIFIED AND VERIFIED UNDER EACH SEARCH CATEGORY

CATEGORY	NO. OF IDENTIFIED LAWS, POLICIES, AND REGULATIONS (11)
"Agriculture and rural development"	1
"Energy"	3
"Environment general"	1
"Forestry"	2
"Land and soil"	1
"Water"	1
"Wild species and ecosystems"	2

BOX 3: TRANSBOUNDARY WILDLIFE SAFEGUARDS FOR LI: CHALLENGES IN THE TERAI ARC LANDSCAPE

BACKGROUND

The Terai Arc Landscape (TAL) is an 810 kilometer long stretch of the Himalayan foothills shared by Nepal and India between the Yamuna and Bhagmati Rivers. It sprawls across three Indian states (Uttarakhand, Uttar Pradesh, Bihar) and 14 districts of Nepal. The TAL has many world-renowned protected areas (PAs), four are in Nepal, such as Chitwan National Park and Bardia Wildlife Sanctuary and nine are located in India, such as Corbett Tiger Reserve and Rajaji National Park. Combined, the PAs encompass nearly 50,000 square kilometers (WWF India, 2021).

Various large LI systems, including highways, power lines, future planned railway lines, and other LI will crisscross the TAL, impacting Key Biodiversity Areas (KBAs) and the wildlife corridors that interlace the area into an ecological network rich in biodiversity. Seven transboundary wildlife corridors have been identified in the TAL. Iconic wildlife, such as elephants, tigers, rhinos, and many other species frequently cross back and forth between the two countries and are, thus, a common shared resource.

The infrastructure development on both sides of the border is governed by their respective national governments as well as their regional strategies for development and national security (Pulipaka et al., 2018; Sinha, 2020). The LI will also link and improve access to many culturally significant sites. Various studies demonstrate that future road expansion and proposed railways are the LI projects that have the greatest potential to adversely impact wildlife and their habitat in the TAL.

THE CHALLENGE FOR WFLI SAFEGUARDS IN THE TAL

Both India and Nepal are faced with balancing future LI development with the conservation of one of Asia' best remaining landscapes for wildlife (Aggarwal, 2019, see Annex 1). It requires continual attention by a host of government and non-government actors in order to garner the support necessary to forge favorable policies, guidelines, decision-making, and outcomes. Unfortunately, federal and state governments in both countries, policymakers, and project proponents often do not prioritize ecological concerns during LI development. Nonetheless, there are dedicated ministry and agency personnel that work to reduce the adverse impacts of LI projects on the TAL's ecological values.

The TAL exemplifies the need for coordination, clear unambiguous requirements, and commitments that enact transboundary WFLI safeguards**.** A short list of some existing challenges that need be addressed are:

1) End the practice of justifying LI intrusions into PAs by first, developing sections of LI outside their boundaries. This practice has resulted in developing a rationale for entering PAs with new LI based on previously incurred expenditures and commitments to external portions of the LI systems.
2) Develop national policy on LI intrusions into PAs or wildlife corridors in the TAL, for both India and Nepal. Currently, both countries and their states/districts have guidelines but no national-level policy that requires avoidance as the primary mitigation measure. Often, under the immense pressure to develop some LI projects, voluntary best practices for WFLI are not incorporated. It may be best to have avoidance requirements based in law or regulation.
3) Mainstream robust CBAs to evaluate long-term economic gains (or losses) in investments for WFLI safeguards. This will help overcome the current practice where mitigation measures that protect wildlife are considered only as costs for LI projects. In addition, one particular element of CBAs that has been a challenge is the valuation of ecosystem services (e.g., Ghosh et al., 2016), which is still a limited practice with respect to LI plans or projects in the TAL.

The TAL provides an opportunity to convert WFLI safeguard roadblocks into capacity enhancement opportunities, but significant gaps still exist in WFLI safeguards during project development and implementation.

Gaps often occur as a result the delegation of duties. Typically, the life-cycle of a LI project involves multiple phases, including project inception, feasibility studies, preliminary route alignment, environmental assessments and environmental approvals, contracting, design, construction and monitoring. Each phase is led by different actors: different government specialists, financiers, or different private sector engineering firms or planning consultants. These stages remain linear and there are often disconnects from one stage to the next regarding design decisions and the actors responsible to provide adequate safeguards. Often, wildlife expertise is brought in at the end of the design process rather than at the beginning, during project inception. Development of multi-sectoral coordination across jurisdictions, including national borders, throughout each of a project's phases is crucial. This should occur regardless of the key actor responsible for each specific phase and will help WFLI safeguards be developed and implemented in a more seamless fashion.

In India, the private investments in infrastructure rose and subsequently fell over the past 15 years. Most recently, the Government of India has begun to increase its stake in infrastructural development and has now become the largest funder for infrastructure projects. Private investment for infrastructure development is limited to hydropower plants in Nepal. All large LI projects including roads (strategic highways, district and local) and railways are funded by the Government of Nepal, while medium-scale tertiary and local roads are funded either by provincial or local governments (Gurung, 2005). IFIs are increasing their support for infrastructure in Nepal.

All three sources of funding of LI in Nepal and India (national governments, local governments, and IFIs) should coordinate and align their standards for WFLI safeguards so that they are consistently applied in the TAL.

The Kelkar Committee has recommended establishing an institution dedicated to capacity building at the central level. Such an institution would provide easily accessible information and data on natural resources, ecological issues, critical habitats, and wildlife since this is seldom available in the public domain for use in LI planning and projects. Further, the committee makes the case for centralized clearinghouses and knowledge platforms that provide spatial and scientific information on wildlife, ecosystems, design, and planning guidance in addition to other useful resources for WFLI safeguard implementation (Department of Economics Affairs Ministry of Finance, 2015). The TAL highlights the need for centralized data platforms and clearinghouses for pertinent information to provide well-informed and effectively designed WFLI safeguards.

Current practices for LI development on both side of the international border in the TAL indicate the need to improve environmental/wildlife clearances for LI projects and enhance the quality of environmental assessments. LI planning, at the landscape scale, rather than for each individual project, would improve wildlife evaluations and their safeguard provisions. Better alignment and coordination of national and local government priorities for LI system improvement is also needed.

India and Nepal have multi-layered organizational decision-making processes, with a few frameworks operating at the national level and others at the state provincial government level. The non-alignment of priorities and mechanisms at central and local levels can exacerbate the inability to adequately address LI impacts on wildlife. The impacts of the vast network of state highways and other roads at village levels is additive to the TAL's major LI systems. Thus, there is a need to plan infrastructure at the landscape level, across ecosystems, to incorporate and address cumulative impacts.

Training for infrastructure and conservation agency personnel at the state and local government levels, those who are responsible for LI project development and WFLI safeguard implementation is of utmost importance. Further, there is a need to develop peer exchanges so that officials work in close collaboration with technical specialists and experienced consultants. The capacity of LI and conservation agencies, funders, engineers, and transport planners needs to be enhanced for both LI planning and WFLI safeguard design and implementation. Capacity can be more effectively enhanced in the TAL with dedicated workforce training and coordination across spatial scales, across both countries, and at all levels of government.

KEY FINDINGS

1. KEY FINDINGS REGARDING THE EXISTING CAPACITY AND FUTURE NEEDS OF THE FOUR CONSTITUENT GROUPS

GOVERNMENT

- Asian governments have the opportunity to reorient their national organizations and departments to better synchronize efforts to meet their commitments to multiple SDGs and other multilateral environmental agreements. These efforts offer opportunities to incorporate WFLI directives during future harmonization among disparate government actors.

- Survey respondents identified government as the key actor in the early phases of LI project development. Respondents also pointed out difficulties getting consideration for, and a commitment to, the provision of adequate wildlife safeguards early in the project's development, during the planning phase.

INTERNATIONAL FINANCIAL INSTITUTIONS

- Many of the IFIs were found to have the internal capacity to address wildlife safeguards through such means as standards and guidelines. They have supported some efforts to build capacity in other constituent groups, such as workshops attended by government and industry, but these tend to be on a project-by-project basis. IFIs were found to be harmonizing their LI development to better incorporate conservation and community values, such as by developing larger landscape assessments (e.g., Strategic Environmental Assessments).

- China's multilateral banks and its BRI are just beginning to ramp up capacity building to address WFLI. Currently, they most often rely on recipient countries to pay for, and implement, their own wildlife safeguards and WFLI capacity-building efforts.

INDUSTRY

- The industry constituent group is largely aware of the importance of wildlife safeguards and of using the mitigation hierarchy. However, construction companies and their consultants are inadequately trained to select and design effective mitigation measures that safeguard wildlife from LI projects.

- Wildlife safeguards are primarily implemented when laws and regulations require such measures. Since there are currently a lack of incentives, the voluntary implementation of WFLI guidelines and other safeguards by industry is weak or lacking.

- An Asia-wide review of 23 industry association websites representing the road, rail, energy, and engineering professions found minimal or zero information on WFLI safeguard capacity-building opportunities, such as workforce training (virtual or in-person), webinars, publications, other technical resources, policy statements, and hosted conferences or sessions on WFLI safeguards.

NONGOVERNMENTAL ORGANIZATIONS

- NGOs have the lowest frequency of involvement of the four constituent groups in all seven phases of project development. In the survey, NGOs indicated that they currently lack the opportunity to engage in the development process of most LI projects.

- In the survey, all constituent groups, except the NGOs themselves, indicated that NGOs had high levels of capacity for WFLI safeguards. This difference may be the result of perception, although NGOs are wildlife experts; they still expressed the need to receive training specific to LI safeguards, a particularly new field of inquiry for their biologists.

- Over 90 percent of the NGO respondents from across Asia found LI development to be a threat to wildlife conservation and 98 percent (53 of 54) indicated they would like training to increase their expertise on LI safeguards.

2. CROSSCUTTING FINDINGS THAT REQUIRE BROADER ENGAGEMENT OF MULTIPLE CONSTITUENT GROUPS

- Several constituent groups suggested that wildlife safeguards could be enhanced if there was more engagement between members of the different constituent groups during LI project development. The NGOs advised that capacity building be conducted at the same time with multiple constituent group members.

- Many constituent group respondents identified a need for a platform or central repository to serve all constituent groups' needs for access to high quality wildlife data, other LI planning data, and information regarding effective mitigation measures and other design features.

3. EVALUATION OF THE BARRIERS TO THE IMPLEMENTATION OF WILDLIFE SAFEGUARDS IN LI PLANNING AND PROJECTS

- Project planning is often flawed or poorly executed, such that it fails to properly incorporate the needs of wildlife and their protection into LI designs and mitigation budgets.

- The collection, storage, use, and analysis of wildlife data for pre- and post-construction evaluations is often lacking, or pre- and post-construction monitoring data collection is poorly designed.

- Constituent groups identified funding, political will, institutional support, and the lack of expertise as the greatest barriers to implement WFLI safeguards.

4. A SUMMARY OF APPLICABLE INTERNATIONAL AGREEMENTS AND NATIONAL LAWS WITH THE POTENTIAL TO FURTHER WILDLIFE SAFEGUARDS ARE DESCRIBED

- The capacity annex summarizes and lists both MEAs and national laws that are identified as relevant to the implementation of wildlife safeguards for LI projects in the five representative countries. Future research should focus on evaluating how these laws are applied, their effectiveness, and how best to improve them.

5. THE TERAI ARC LANDSCAPE OF INDIA AND NEPAL IS A MACROCOSM OF TRANSBOUNDARY LI DEVELOPMENT.

- A review of the Terai Arc Landscape found that the two key local landscape-level bottlenecks to implement wildlife safeguards—poor inter-departmental coordination and the lack of a central data platform—were the same as those at the national levels of India and Nepal.

RECOMMENDATIONS

- Some Asian governments have already initiated coordinating bodies, inter-departmental think tanks, and other forms of multi-agency integration of international and national environmental provisions. This approach should be expanded to other countries across Asia to better incorporate WFLI directives across federal and provincial infrastructure and conservation agencies.

- Each Asian country should promulgate its own laws and regulations specific to LI development so that directives for wildlife safeguard provisions are authorized and clearly defined.

- LI project proponents need to incorporate the consideration of, and provision for, WFLI safeguards into the earliest phases of the project development process.

- Concurrent to harmonizing infrastructure development with the conservation of biodiversity, IFIs need to provide long-term funding for regional advisory/stakeholder groups to engage with IFIs and other constituent groups responsible for LI development in Asia.

- Currently, there are many gaps in what is known regarding the impacts of LI projects on a variety of Asian species and ecosystems, as well as the effectiveness of potential solutions, such as mitigation measures. Therefore, IFIs need to build in contingency funding provisions for implementing wildlife safeguards and monitoring their effectiveness in LI project budgets.

- In the future, BRI (and other international LI initiatives) and its implementing institutions should provide adequate funding to build WFLI capacity, both internally and for the various constituent groups' members, in recipient countries of BRI projects.

- Workforce training, manuals, and other capacity-building measures are needed for industry to acquire the necessary expertise it needs to select effective infrastructure mitigation measures and how to best incorporate them into LI plans, designs, and budgets.

- For industry professionals that plan and construct LI and willingly provide voluntary wildlife safeguards, more public recognition or incentives for these efforts should be established by professional associations and governments.

- Industry associations have considerable potential to provide WFLI capacity-building opportunities to their members across Asia and to serve as a source of information and training on wildlife safeguards for professionals that plan, design, and construct roads, rails, and power lines.

- LI project proponents should partner more frequently with both conservation and community NGOs to take advantage of their wildlife expertise and assure they are invited to WFLI safeguard capacity-building events.

- NGOs need to partner with LI project proponents and funders to improve the use and incorporation of their wildlife data collection and analysis expertise in all seven phases of LI project development.

- Increased capacity building opportunities should be offered to members of the NGO community to help them better understand how to provide effective WFLI safeguards.
- Joint WFLI training and other capacity-building efforts should be convened among multiple constituent groups to provide opportunities to bring different stakeholders together to better clarify their roles in LI project development and improve their coordination and collaboration.
- Workshops, field trips, webinars, and other WFLI capacity-building efforts should be developed for multiple constituent groups and attended concurrently by diverse stakeholders.
- Governments and other LI developers and proponents should support the establishment and maintenance of a national and/or regional collaborative WFLI data and information-sharing platform that is publicly accessible.
- Capacity-building efforts need to better train LI planners and consultants to identify and address the various needs of the diverse species present in Asian LI project landscapes.
- Capacity-building efforts need to provide training for developing Asian LI practitioners that describes international best practices for wildlife data collection and analysis.
- A general shift is need in the infrastructure sector to embrace WFLI safeguards more fully, and to institutionalize wildlife's needs into project plans, designs, and operations.
- A future review and analysis are needed for each Asian country to determine the existing provisions in national laws that provide direction to implement WFLI safeguards and to make suggestions for additional wildlife-friendly language that might be incorporated in future legislative efforts, particularly for infrastructure.
- Providing solutions that facilitate easier implementation of WFLI safeguards at the national level will also provide relief for local landscape projects.

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APPENDICES

APPENDIX A: APPROACH ON THE ECOLEX DATABASE TO SEARCH AND IDENTIFY NATIONAL REGULATION ON THE CONSERVATION OF SPECIES, ECOSYSTEMS, BIODIVERSITY, AND WFLI

The search on the database is narrowed by applying common terminologies and areas of application, while acknowledging the possibility of duplication in results (especially roads, railways, and transmission) based on the following sequence of predetermined "filters."

1. Predetermined filters individually chosen
    a. Agricultural and rural development
    b. Energy
    c. Environment gen
    d. Forestry
    e. Land and soil
    f. Water
    g. Wild species and ecosystems
2. Predetermined filter keywords selected individually
    a. Business, Industry, Corporations
    b. Biodiversity
    c. Capacity building
    d. Environmental Impact Assessment
    e. Environmental planning
    f. Integrated management
    g. Land use planning
    h. Policy/planning
    i. Zoning
3. Predetermined filters selected simultaneously
    a. Legislation
    b. Miscellaneous
    c. Regulation

The results were assessed based on expertise and experience.

- Excluded: results not related to the conservation of species, ecosystems, biodiversity, and WFLI (especially roads, railways, and energy transmission)
- Omitted: duplicate results
- Noted: additional laws, regulations, policies, etc. found

APPENDIX B: CONSERVATION NGO QUESTIONNAIRE AND SCRIPT

(Introduction) We want to thank you for meeting with us via Zoom so that we might learn more about your organization and its capacity to address biodiversity concerns in the face of Asia's rapidly expanding LI. We know there are many types of infrastructure, but the project is specifically focused on roads, railways, and power lines.

We hope you have had time to review the USAID Fact Sheet that we sent you via email. It briefly explains the project. Interviewing international NGOs is just one small part of the capacity assessment task for this project. We are also assessing ministries, national LI and natural resource agencies, investment banks and donors that fund LI, and private sector developers—engineering firms, consulting firms, EIA and transport planners—and all of these groups' professional associations.

The purpose of the questionnaire is to determine the capacity that NGOs currently have to address concerns of LI plans and projects, and to understand whether they receive any training and how they acquire information regarding LI safeguards.

We have seven questions, many of which are multiple choice, while others are more open-ended. With the multiple-choice questions, we will read you the options, and then we also welcome further explanation of your answers. We hope to only take around 30 minutes of your time.

Before we proceed, do you have any questions for us regarding the project, our organization, or the purpose of this interview?

Great, let's begin with question 1.

Q1: Do you feel that LI is a threat to biodiversity conservation? And, if so, where does addressing this threat rank among conservation issues for your organization?

A. Top 3 issue of our conservation program – highest priority
B. Top 10 issue for our conservation program
C. We deal with LI only on a case-by-case basis
D. Not that urgent of a risk, best to put our organization's limited resources elsewhere

Q2: Of the 28 Asian countries that are the focus of our LISA, which are in your conservation program?

> Q2.1: In which of these countries over the last 5 years has your conservation program engaged in LI projects or plans?

Q3: How much capacity does your organization currently have to address the impacts of LI on biodiversity?

A. Full Program dedicated to this issue
B. Individual staff or staffers working on this issue
C. Addressed within other programs, but no LI experts, per se
D. Other?

Q4: When your conservation program or program staff are confronted with LI as an issue, what options do you pursue? Yes or No to the following options:

Internal Capacity

A. We already had LI expertise in the Asia program
B. We brought in experts from our org from outside the Asia program
C. We supported our staff to learn more about designing/implementing WFLI
D. We hired new employees with LI expertise

External Capacity

A. We hired temporary consultants with LI expertise
B. We engaged NGO partners with LI expertise
C. We engaged non-NGO partners with LI expertise

Q5: In the future, how best do you think your Asian program can build capacity to address biodiversity concerns for LI plans and projects. Yes or No to the following options:

A. Develop a LI program or expand an existing program
B. Hire LI experts in future staff positions
C. Increase LI technical expertise for current staff, but do not have dedicated LI positions
D. Seek to develop more capacity to engage with and influence transport and energy agencies and decision-makers
E. Seek to develop more capacity to engage with and influence MDBs and other LI funders.
F. Seek to develop more capacity to engage with communities/stakeholders facing LI projects.

Q6: Would your organization be interested in building more capacity for addressing the impacts of LI to biodiversity? If yes. Which of the following options would you find most attractive for your program (top 3):

A. Webinars – short 1-hour trainings (online)
B. Workshops – several day trainings with field trips
C. Online university level courses (w/continuing education credits or certificates)
D. A central clearinghouse of information, with online library, diverse case studies, design principles, etc.
E. Handbook, guidelines, or other documents on LI biodiversity safeguard designs, specifications and construction solutions (i.e., wildlife crossing dimensions, sizes of crossings for specific species, types and frequency of structures for different taxa, etc.)
F. Other?

Q7: Do you have any other ideas for what would be the best avenue to build LI safeguard capacity for the NGO community in Asia?

Thank you for your time and for sharing your ideas with us.

APPENDIX C: ELECTRONIC SURVEY OF NGOS WORKING TO ADDRESS INFRASTRUCTURE IMPACTS TO BIODIVERSITY IN ASIA

(Introduction) The Center for Large Landscape Conservation is working to understand the capacity for nongovernmental organizations (NGOs) in Asia to implement biodiversity safeguards that address the development and expansion of LI, specifically roads, rails, and power lines.

Responses to this survey are anonymous. Your participation in this survey is voluntary and no compensation is offered for your participation. Thank you for your assistance!

1. What is the name of your organization?

_____

2. In what category does your organization fall? (Pick one category by typing an X on the line)

__ National non-governmental organization
__ International non-governmental organization
__ Government Agency
__ Private Sector
__ Other: _____

3. In what country is your organization based?

_____

4. How big is your organization (# of employees)? (Pick one category by typing an X on the line)

__ <5
__ 6-10
__ 11-25
__ 26-50
__ 50-100
__ 101-500
__ 500+

5. Do you think LI (roads, rails, and power lines) is a threat to biodiversity in your country? (Pick one option by typing an X on the line)

__ Yes
__ No

6. Is working to mitigate the impacts of LI on biodiversity a priority for your organization? (Pick one option by typing an X on the line)

__ Yes
__ No

7. Does your organization have staff allocated (part-time or full-time) to address the impacts of LI on wildlife? (Pick one option by typing an X on the line)

__ Yes
__ No

   A. If yes, how many staff work on this issue? (Pick one option by typing an X on the line)

__ 1
__ 2-5
__ 6-10
__ 11-50
__ 51-100
__ 100+

B. If yes, what infrastructure mode(s) do they work on? (Pick one or more options by typing an X on the line)

__ Roads
__ Rails
__ Power lines

8. What barriers does your organization face to working on LI – biodiversity issues? (Pick one or more options by typing an X on the line)

__ Not a priority for our organization
__ Inadequate staffing
__ Lack of knowledge
__ Lack of funding
__ Other: _____

9. Would your organization be interested in attending trainings/workshops related to policy/planning/design/mitigation/monitoring for WFLI? (Pick one option by typing an X on the line. This is not a commitment to attending any trainings)

__ Yes
__ No

A. If yes, what would you most like to learn during a training or workshop? (Pick one or more options by typing an X on the line)

__ Policy
__ Planning
__ Design
__ Mitigation
__ Monitoring
__ Other: _____

10. Is your organization a part of any networks, coalitions, or other types of working groups that discuss the impacts of LI on wildlife? (Pick on option by typing an X on the line)

__ Yes
__ No

A. If yes, please describe the network/coalition/working group and its scope (i.e., landscape of focus, number of groups, etc.):

_____

11. Do you know of other organizations in your country that are working to address the impacts of roads, rails, or power lines on biodiversity? Please list them below.

_____

12. Are you willing to be contacted about your responses?

__ Yes
__ No

A. If yes, please list you name and email:

_____

13. Additional Comments?

_____

Thank you for taking the time to fill out our survey.

APPENDIX D: LINEAR INFRASTRUCTURE SAFEGUARDS FOR ASIA (LISA) CAPACITY SURVEY SCRIPT

WHAT IS LISA? "Linear Infrastructure Safeguards in Asia (LISA)" is a USAID-funded project working to inform a capacity building program to safeguard wildlife when constructing or expanding linear infrastructure (LI). As part of this project, the Center for Large Landscape Conservation is evaluating issues of capacity regarding wildlife safeguards during the development of linear infrastructure (LI).

WHY IS THIS SURVEY BEING CONDUCTED? We invite you to participate in this survey to help us understand your capacity to implement wildlife safeguards on LI, specifically roads, rails, and electric power transmission lines. This questionnaire will examine multiple types of capacity, such as individual (knowledge and skills), institutional (structures, systems, and management), political (processes, regulations, and laws), and financial.

This questionnaire is essential for the LISA project to more fully understand the capacities that exist and to identify where support can be targeted. We also seek to identify any barriers to wildlife safeguards during the LI project development process. Ultimately, the LISA project seeks to develop a capacity building program to assure that Asia's thriving wildlife populations safely co-exist with its expanding networks of LI.

WHO IS BEING SURVEYED? This questionnaire is intended to collect responses from representatives of government ministries, national infrastructure and natural resource agencies, international financial institutions and other donors, non-governmental organizations, and private sector LI planning, design and construction companies. We ask that you submit your answers on behalf of your place of work (institution). While some questions are focused on more general issues, others are specific to the country in which you work and/or reside. USAID's five countries of special interest for this project are Bangladesh, India, Mongolia, Nepal and Thailand.

HOW DOES THE SURVEY WORK? Depending on your place of work, there will be 30-40 questions to answer. Most questions are multiple choice, yes/no, or have a value scale. Responses to the survey are anonymous and only the survey analyst will have access to disaggregated responses. Your participation in this survey is voluntary and no compensation is offered for your participation. If you wish to receive a copy of the final report, please type in your contact information at the end of the survey.

CONTACT: If you have questions regarding this survey or the project in general, please contact us at LISAsurvey@largelandscapes.org

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TERMINOLOGY, AS USED IN THIS SURVEY:

Linear Infrastructure (LI): Roads, rails, and power transmission lines only, the foci of this project.

Wildlife-Friendly Linear Infrastructure (WFLI): Infrastructure that is planned and designed with the needs of wildlife and their safe passage within the project area and surroundings.

Wildlife Safeguards for Linear Infrastructure: Measures that mitigate the impacts of linear infrastructure on wildlife and their habitat. Safeguards may be put in place during the construction of new infrastructure, or during the improvement of existing infrastructure.

Wildlife: All species of wild animals, both inside and outside of protected areas.

Institution: Your place of work: Organization, Agency, Company, etc.

Mitigation Hierarchy: A series of sequential steps taken to limit the negative impacts of a project on biodiversity: avoid, minimize, mitigate/restore, offset/compensate.

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Cross-Cutting Questions

1) Out of the following options, which most closely describes your place of work? (select one)
__ Government
__ Private Sector (engineering, construction, and consulting firms and their professional associations)
__ International Financial / Aid Institution (multilateral, regional, and national development banks)
__ Non-Governmental Organization (NGO)/Civil-Society Organization (CSO)
__ Non-Governmental Academic Institution or Think-tank
__ Other (please specify)

2) What country do you primarily work in? (select one)
__ Bangladesh
__ India
__ Mongolia
__ Nepal
__ Thailand
__ Multiple countries
__ None of the above

3) What type(s) of linear infrastructure do you work on? Please select all that apply.
__ Road
__ Rail
__ Power Transmission
__ Not a specific mode
__ Not applicable

4) Please indicate how much you agree or disagree with the following statement: Working to reduce the impacts of linear infrastructure on wildlife is a priority for my institution. (select one)
__ Strongly disagree
__ Disagree
__ Somewhat Disagree
__ Neither Agree nor Disagree
__ Somewhat Agree
__ Agree
__ Strongly Agree

5) In your opinion, why does your institution address the impacts of linear infrastructure on wildlife? Please select all that apply.
__ Legal requirements
__ Funding or financing requirements
__ Best practices
__ Reduce project delays

__ Sustain healthy landscapes and wildlife
__ Improve human safety
__ Institutional reputation
__ It's a central purpose for my institution
__We don't address impacts on wildlife
__ Other (please specify): _____

6) Does your institution consider the potential costs and benefits of wildlife safeguards (underpasses, overpasses, etc.) when evaluating an infrastructure project? (select one)
__ Yes
__ Sometimes
__ No
__ Not sure
__ Not applicable

7) Does your institution use pre-construction wildlife data when starting a new linear infrastructure project? (select one)
__ Yes
__ Sometimes
__ No
__ Not sure
__ Not applicable

8) In your opinion, is there enough pre-construction wildlife data available to understand the potential impacts to wildlife during the planning and construction of linear infrastructure? (select one)
__ Yes
__ Sometimes
__ Rarely, primarily for projects receiving elevated public scrutiny
__ No
__Not sure

9) To your knowledge, does your institution have staff dedicated (part-time or full-time) to safeguarding wildlife from linear infrastructure impacts? (select one)
__ Yes
__ No
__ Not sure

10) How does your institution's staff get information on wildlife safeguards? Please select all that apply.
__ General web searches
__ Handbooks or guideline documents
__ Webinars
__ Academic Studies
__ Internal Trainings
__ External Workshops
__ Professional Partners

__Consultants
__We don't seek out information
__ Other (please specify): _____

11) When working on a linear infrastructure project, what types of partners has your institution engaged with to safeguard wildlife? Please select all that apply.

__ Government Agencies
__ Industry Professionals (e.g., engineers, consultants, builders, etc.)
__ Funders (e.g., multilateral development banks)
__ Conservation NGOs/CSOs
__ Academic Institutions/Think-tanks
__ Local communities
__ Individual Consultants
__ My institution has not worked on this type of project
__ My institution has not engaged with external partners on this type of project
__ Other (please specify): _____

12) On a scale of 1 (no capacity) to 5 (high capacity), how much capacity do you think each institution in your country has to implement wildlife safeguards for linear infrastructure projects? Scale: 1 (No Capacity), 2, 3 (Some Capacity), 4, 5 (High Capacity)

__ Government
__ Industry – construction firms & engineers
__ EIA consultants, etc.
__ Linear infrastructure planners
__ Funders
__ Conservation NGOs/community organizations

13) What part(s) of the project development process is your institution typically involved in? Please select all that apply.

__ Selection
__ Funding
__ Planning
__ Design
__ Permitting (Approval Process)
__ Construction
__ Post-construction
__ We don't participate in the project development process

14) When in the project development process does your institution typically address the potential impacts of linear infrastructure on wildlife? Please select all that apply.

__ Selection
__ Funding

__ Planning
__ Design
__ Permitting (Approval Process)
__ Construction
__ Post-construction
__ Accountability throughout the full project cycle
__ We don't typically address the impacts of linear infrastructure on wildlife
__ We don't participate in the project development process

15) In your opinion, when in the project development process do barriers to implementing wildlife safeguards most often arise? Please select all that apply.
__ Selection
__ Funding
__ Planning
__ Design
__ Permitting (Approval Process)
__ Construction
__ Post-construction
__ Accountability throughout the full project cycle
__ None of the above are a concern

16) Please indicate how much you agree or disagree with the following statement: My institution has the capacity and expertise needed to help safeguard wildlife during linear infrastructure projects.
__ Strongly disagree
__ Disagree
__ Somewhat Disagree
__ Neither Agree nor Disagree
__ Somewhat Agree
__ Agree
__ Strongly Agree

17) In your opinion, is your institution interested in receiving training to build expertise in implementing wildlife safeguards for linear infrastructure?
__ Yes
__ No, we already have expertise
__ No, not a priority at this time

> **[IF YES] 17a) Which of the following training types would your institution be most interested in? Please select all that apply.**
> __ Webinars – short 1-hour online trainings
> __ Workshops – multi-day trainings
> __ Workshops - multi-day trainings with field trips
> __ Online university-level courses (with continuing education credits or certificates)
> __ A central clearinghouse of information (online library, case studies, design guidelines, etc.)
> __Guidelines for wildlife safeguard designs and specifications (e.g., wildlife crossing dimensions)

[IF YES] 17b) In your opinion, what linear infrastructure-related topics would your institution be interested in? Please select all that apply.

__ Policy
__ Planning
__ Design
__ Mitigation
__ Monitoring
__ Other (please specify): _____

18) In your opinion, how easy is it to implement effective wildlife safeguards in the linear infrastructure projects that you work on?

__ Very Difficult
__ Difficult
__ Neutral
__ Easy
__ Very Easy
__ Not Applicable

19) For your *institution*, what best describes the greatest barriers to implementing wildlife safeguards for linear infrastructure projects? Please select all that apply.

__ Lack of opportunity to engage
__ Lack of expertise
__ Lack of institutional support
__ Lack of political will
__ Lack of funding
__ Lack of public support and pressure
__ Lack of monitoring & evaluation
__ Other (please specify):_____

20) For your *country*, what best describes the greatest barriers to implementing wildlife safeguards for linear infrastructure projects? Please select all that apply.

__ Lack of information
__ Lack of capacity
__ Lack of political will
__ Lack of funding
__ Lack of public support and pressure
__ Lack of monitoring & evaluation
__ Lack of appropriate laws and regulations or other requirements
__ Corruption
__ We don't work in a specific country
__ Other (please specify): _____

[If YES for lack of information]: 20a) What type of information do you feel is lacking?

__ Details of proposed projects

__ Economic costs of wildlife impacts and the benefits of safeguards
__ Options for alternative routes
__ Best practices for collecting wildlife data
__ Best practices for designing mitigation measures
__ Other (please specify):_____

21) Out of the following options, which are most important to improve the implementation of wildlife safeguards for linear infrastructure in your country? Please select all that apply.

__ Better requirements to include a cost-benefit analysis of safeguards in the project feasibility study
__ Better requirements for implementing wildlife safeguards
__ More funding for implementing wildlife safeguards
__ Training and certification
__ More coordination with diverse stakeholders (governments, funders, engineers, etc.)
__ Increased accountability, oversight, and transparency
__ More information on mitigation measures and design
__ NGOs and community engagement – these groups need more opportunities to engage in the project development process, at the earliest phases.
__ Other (please specify): _____

22) Next, we will ask some questions specific to your institution. Please confirm which best describes your place of work:

__ Government
__ Private sector (engineering, construction, and consulting firms)
__ International Financial/Aid Institution
__ Non-Governmental Organization/Civil-Society Organization
__ Non-Governmental Academic Institution or Think-tank

Government

Part 1: The following questions ask about capacity with regard to international commitments that your country has signed on to.

1) Which of the following international commitments regarding wildlife have you heard of? Select all that apply.

_____ Convention on Biological Diversity (CBD)
_____ World Heritage Convention
_____ Convention on Trade in Endangered Species of Flora and Fauna (CITES)
_____ Convention on Migratory Species
_____ International Plant Protection Convention (IPCC)
_____ International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)
_____ Ramsar Convention on Wetlands of International Importance
_____ None of the above

2) What type of system exists at your institution for sharing information about international commitments regarding wildlife? (check one)

__ There is an **official planned and implemented** system

__ There is an **informal and ad hoc** system
__ There is **no** system
__ Not sure

3) Does your institution have designated staff responsible for monitoring international commitments regarding wildlife and informing possible national actions?
__ Yes
__ No
__ Not sure

4) Does your institution provide access to any informational resources for staff about international commitments and necessary actions regarding wildlife?
__ Yes
__ No
__ Not sure

5) Does your institution provide access to training for staff about international commitments and necessary actions regarding wildlife?

__ Yes
__ No
__ Not sure

[IF YES] 5a) What type(s) of training does your institution offer regarding international commitments and necessary actions regarding wildlife? Please select all that apply.
_____ Printed guidance and materials
_____ Workshops
_____ Training courses
_____ Certification programs
_____ Other (please specify):_____

Part 2: The following questions ask about capacity with regard to the National Agencies within your country.

6) To your knowledge, does staff at your agency receive training for Wildlife Friendly Linear Infrastructure (roads, railways, transmission lines)? Please select all that apply.
__Yes, Internally by my own organization
__Yes, through another organization
__No

[IF YES] 6a) To your knowledge, why are these trainings in place? Please select all that apply.
__ They are mandated by Law
__ They are mandated by Donors / Funders
__ They are a prerequisite for signed agreements (multilateral agreements)
__ Other (please specify): _____

[IF YES] 6b) Which of the following topics are covered during these trainings? Please select all that apply.

__ Roads
__ Railways
__ Transmission Lines
__ Planning
__ Other (please specify):_____

7) In your opinion, which most closely describes your agency's capacity to address the impacts of linear infrastructure on wildlife? (select one)

__ Full Program dedicated to this issue
__ Individual staff or staffers working on this issue
__ Addressed within other programs, but no linear infrastructure experts, per se
__ We have no capacity for addressing the impacts of linear infrastructure on wildlife
__ None of the above
__ Other (please specify): _____

8) In your opinion, which of the following options most closely matches the reason that your institution has staff that work on wildlife safeguards for linear infrastructure? (select one)

__ It is mandated by home Agency
__ It is mandated by an external institution
__ It is need-based or project-based
__ We don't have staff that work on wildlife safeguards for linear infrastructure
__ Other (please specify):_____

9) Does your country, state or province have legislation or regulations for feasibility studies or environmental impact assessments for linear infrastructure?

__ Yes
__ No
__ Not sure

[If Yes] 9a) What type of linear infrastructure projects are subject to requirements for feasibility studies or environmental impact assessments? Please select all that apply.

__ Government projects
__ Private projects
__ Not sure
__ Other

10) Please select the stakeholder(s) that performs the following roles for environmental impact assessments (EIAs) or feasibility studies for a new linear infrastructure project:

Who...
Decides that an EIA/feasibility study is required
__ Government

__ Developer
__ Funder
__ Other
Prepares the EIA/feasibility study
__ Government
__ Developer
__ Funder
__ Other
Pays for the EIA/feasibility study
__ Government
__ Developer
__ Funder
__ Other
Approves the EIA/feasibility study
__ Government
__ Developer
__ Funder
__ Other

Industry

1) In your opinion, how willing are firms in your industry to incorporate wildlife safeguards to mitigate linear infrastructure impacts? (select one)

__ Not at all willing
__ No so willing
__ Somewhat willing
__ Very willing
__ Extremely Willing

2) To the best of your knowledge, has *your* firm implemented any of the following actions in a linear infrastructure project(s) during the past five years? Please select all that apply.

__ Implemented wildlife safeguards or mitigation measures to avoid direct impacts (e.g., collisions with wildlife or noise) or indirect impacts (e.g., blocking animal movement)
__Altered the route or extent of a linear infrastructure feature to avoid areas of high biodiversity
__Undertaken restoration of wildlife habitat affected during construction or operation of linear infrastructure
__Undertaken conservation offsets in other areas to compensate for projects in wildlife habitat
__ No, I am not aware of my firm implementing any of these actions

[IF option 1 (mitigation/safeguards) is selected above, answer next 4 questions]:

2a) What types of wildlife safeguards were implemented? Please select all that apply.

__ Engineering structures specifically designed for wildlife to enable them to cross linear infrastructure safely
__ Engineering structures that serve the dual needs of wildlife and other requirements (e.g., culverts or bridges)
__ Design features to avoid collisions (e.g., speed bumps or other traffic slowing methods, bird diverters)
__ Warnings and signage to alert people

__ Other

2b) In what phase of the project were wildlife safeguards <u>first</u> considered?

__ Feasibility study phase
__ EIA phase
__Design phase
__ Implementation phase
__ Post-implementation phase (i.e., retro-fitting)
__ Not sure

2c) How often are the costs of wildlife safeguard measures included in the original budget of the project(s)?

__ Never
__ Rarely
__ Sometimes
__ Often
__ Always

2d) Was a plan put in place to monitor the outcomes of wildlife safeguard measures?

__ Yes
__ Sometimes
__ No
__ Not sure

3) To your knowledge, have *other* firms in your industry implemented any of the following wildlife safeguard measures in linear infrastructure projects during the past five years? Please select all that apply.

__Altered the route or extent of a linear infrastructure feature to avoid areas of high biodiversity
__ Implemented wildlife safeguards or mitigation measures to avoid direct impacts (e.g., collisions with wildlife or noise) or indirect impacts (e.g., blocking animal movement)
__Undertaken restoration of wildlife habitat affected during construction or operation of linear infrastructure
__Undertaken conservation offsets in other areas to compensate for projects in wildlife habitat
__ No, I am not aware of other firms implementing these measures

4) Are there specific training topics regarding wildlife safeguards that would be particularly useful to your place of work? Please select all that apply.

__ Animal behavior
__ Animal movement/migration
__ Animal deterrence (fencing, lights, noise, etc.)
__ Ecosystem and habitat impacts
__ Costs and benefits of wildlife safeguards
__ Other (please specify): _____

5) How often does your firm consider cumulative impacts (i.e., impacts that are caused by the project in combination with other, pre-existing infrastructure projects in the area) on wildlife in planning linear infrastructure projects?

__ Never
__ Rarely
__ Sometimes
__ Often
__ Always

6) How often do you think your industry monitors and evaluates the effectiveness of wildlife safeguard measures implemented for a linear infrastructure project?

__ Never
__ Rarely
__ Sometimes
__ Often
__ Always

7) Are you aware of any *legal regulations* that govern the practices of your industry for wildlife safeguards during the development, design, and construction of linear infrastructure?

__ Yes
__ No

[IF YES] 7a) Please name the regulations that apply:
Short Answer_____

8) To the best of your knowledge, does your firm follow *voluntary* (i.e., non-mandatory) standards, guidelines, or best management practices for wildlife safeguards in linear infrastructure?

__ Yes
__ No

[IF YES] 8a) Please name the voluntary standards, guidelines, or best management practices Short Answer_____

9) Are you aware of model projects in your country or elsewhere in Asia that have implemented avoidance or other exemplary wildlife safeguard measures? Please describe the project and its location.

Short Answer_____

10) Are you aware of any awards or other recognition (e.g., public notice via the newspaper) received by firms in your industry for implementing best management practices to protect wildlife or exemplary wildlife safeguards in linear infrastructure projects? Please name the award or describe the type of recognition

Short Answer_____

International Financial Institutions

1) What most closely describes your place of work? (select one)

__ Headquarters - central environmental unit or equivalent
__ Headquarters - regional or country department
__ Country resident mission
__ Project office
__ Consultant to IFI
__ Other

2) Does your institution have policies related to development, implementation, or enforcement of wildlife safeguards (overpasses, underpasses, etc.) for linear infrastructure? An example of a policy is IFC Performance Standard (PS) 6, Biodiversity Conservation and Sustainable Management of Living Natural Resources.

__ Yes, we use IFC PS6
__ Yes we have a policy equivalent to IFC PS6
__ Yes we have a policy that goes beyond IFC PS6
__ No, we rely on the policies of the borrowing country
__ No

[IF YES] 2a) Does your institution have policies or other measures regarding any of the following topics? Please select all that apply.

__ Environmental/social safeguards policies and guidance
__ Wildlife-friendly linear infrastructure guidelines
__ Requirements for conducting cost-benefit analyses
__ Loan agreement provisions
__ Contractual terms and conditions for design and construction
__ Safeguard system harmonization between your institution and the project's host country
__ Inspection and approval of project-level safeguards & mitigation implementation
__ Post-construction monitoring and evaluation of safeguards' effectiveness
__ Funding for long-term engagement of wildlife-focused stakeholder advisory groups
__ Contingency funding for unforeseen mitigation needs for wildlife/habitat
__ Grievance mechanisms
__ Other (please specify): _____

The Mitigation Hierarchy

[IF YES] 2b) Within your institution's wildlife safeguards policy(ies), do you list specific types of mitigation hierarchy measures that should be considered?

__ Yes
__ No

[IF YES] 2c) What types of mitigation hierarchy measures are specifically listed? Please select all that apply.

__ Avoidance
__ Minimization
__ Mitigation
__ Offsets (e.g., mitigation outside the project area)
__ Compensation (e.g., payments in lieu of mitigation)

3) How does your institution reinforce project-specific compliance with measures that are relevant to development, implementation and enforcement of wildlife safeguards for linear infrastructure?

__ Technical assistance
__ Training
__ Knowledge management tools
__ We rely on the country's own safeguard policies
__ Other (please specify): _____

4) In your opinion, what mitigation measures are used most often by your institution? (Select up to 3)

__ Avoidance
__ Minimization
__ Mitigation
__ Offsets (e.g., mitigation outside the project area)
__ Compensation (e.g., payments in lieu of mitigation)
__ None of the above

5) To your knowledge, at what stage(s) of the project development cycle is the avoidance of social and environmental impacts considered? Please select all that apply.

__ Country strategy or plan
__ Project concept
__ Project preparation and feasibility study
__ Environmental and Social Impact Assessment (ESIA)
__ Loan approval
__ Route selection
__ Engineering design
__ Construction
__ The avoidance of social and environmental impacts is not considered

6) Does your institution have staff dedicated to environmental concerns, such as biodiversity, wildlife, habitat, and ecosystem protection?

__ Yes
__ No

[IF YES] 6a) What is the approximate number of staff dedicated to biodiversity, wildlife, habitat, or ecosystem protection at each level of your organization?

Headquarters - central environmental unit or equivalent: _____
Headquarters - regional or country department: _____

Country resident mission: _____
Project office: ____

7) Are the financial costs of wildlife safeguards included in the budget for linear infrastructure projects?

__ Yes
__ No
__ Not sure

8) To your knowledge, what type(s) of internal coordination exist within your institution to assure that wildlife safeguards are implemented? Please select all that apply.

__ Joint meetings to reach consensus at critical points in the project development process
__ Official sign-offs by relevant parties at critical points in the project development process
__ No internal coordination
__ Other (please specify): _____

9) To your knowledge, what type(s) of external coordination exists between your institution and others involved in a project to assure wildlife safeguards are implemented? Please select all that apply.

__ Loan or grant agreements with borrowing countries
__ Loan or grant agreements with private sector borrowers
__ Agreements with co-financing financial institutions
__ No external coordination
__ Other (please specify): _____

10) To your knowledge, how does your institution build internal capacity for implementing wildlife safeguards for linear infrastructure projects in Asia? Please select all that apply.

__ Hire new employees with wildlife-friendly linear infrastructure expertise
__ On-the-job training and mentoring
__ One-time in-person trainings
__ Recurring in-person trainings
__ Field trips and site visits
__ Webinars
__ Guidance documents and training manuals
__ Certification programs
__ Outsourced continuing education incentives
__ Other
__ We don't build internal capacity for wildlife safeguard implementation

11) To your knowledge, how does your institution build external capacity (i.e., the capacity of your borrowers and grantees) for implementing wildlife safeguards for linear infrastructure projects in Asia?

__ Engage partners with expertise in wildlife safeguards for linear infrastructure
__ Hire temporary consultants with expertise in wildlife safeguards for linear infrastructure
__ Provide funds for trainings, workshops, or other capacity building activities for project partners
__ Other
__ We don't build external capacity for wildlife safeguard implementation

12) Is your institution executing linear infrastructure projects *with wildlife safeguards* in any of the following countries? Please select all that apply.

__ Bangladesh
__ India
__ Mongolia
__ Nepal
__ Thailand
__ None of the above

13) Does your institution have any harmonization systems that include wildlife safeguards with any of the following countries? (Harmonization means alignment between the environmental safeguards systems of the borrowing country with those of the funder/lender)

__ Bangladesh
__ India
__ Mongolia
__ Nepal
__ Thailand
__ None of the above

[IF YES] 13a) In your opinion, are these systems working effectively?

__ Yes
__ No

14) In your opinion, which of the following countries have the biggest barriers to implementing Linear Infrastructure safeguards for wildlife? [select all]

__ Bangladesh
__ India
__ Mongolia
__ Nepal
__ Thailand
__ None of the above

15) In your opinion, which of the following countries present the biggest OPPORTUNITIES for implementing Linear Infrastructure safeguards for wildlife?

__ Bangladesh
__ India
__ Mongolia
__ Nepal
__ Thailand
__ None of the above

16) Are you aware of any examples of wildlife safeguards for linear infrastructure being addressed in broader-scale/upstream ESIAs (e.g., strategic, cumulative, programmatic, regional, or sectoral ESIAs), Country Strategy Plans, or other projects? Please elaborate on any examples that you are aware of. When possible, please provide information such as project title, country, links, or points of contact.

Short Answer: _____

NGOs

1) Out of the following options, which most closely describes your organization? (select one)

__ International non-governmental organization
__ National non-governmental organization
__ Local or regional non-governmental organization
__ Academic Institution
__ Think-tank
__ Other (please specify): _____

2) How many paid staff does your organization employ (# of employees)?

__ <5
__ 6-10
__ 11-25
__ 26-50
__ 51-100
__ 101-500
__ 500+

3) To your knowledge, how has your organization built capacity to work on wildlife safeguards (overpasses, underpasses, etc.) for linear infrastructure (roads, railways, transmission lines)? Please select all that apply.

__ Hired new staff with LI expertise
__ Supported staff to learn more about LI
__ Hired temporary consultants with LI expertise
__ Engaged NGO/CSO partners with LI expertise
__ Engaged non-NGO/CSO partners with LI expertise
__ We have not built capacity
__ Other (please specify): _____
__ Not sure

4) Which of the following most closely describe the work your organization does during the linear infrastructure project development process? Please select all that apply.

__ Participate in ESIAs (Environmental and Social Impact Assessments)
__ Participate in economic feasibility studies, such as cost-benefit analyses
__ Promote avoidance (not building in certain areas) as a key mitigation strategy
__ Provide pre-construction wildlife data
__ Support mitigation design
__ Provide permitting information (with respect to wildlife impacts)
__ Conduct general advocacy for wildlife protection
__ Encourage accountability of project proponents and their contractors
__ Facilitate partnerships between various stakeholders
__ We are not involved in linear infrastructure development

__ Other (please specify): _____

5) How often do you feel that your work results in a better project design, from a wildlife perspective?

__ Never
__ Rarely
__ Sometimes
__ Usually
__ Always

6) In your opinion, when your work does not result in better project design for wildlife, why does this happen? Please select all that apply.

__ Quality/Availability of information
__ Timing of input
__ Budget Constraints
__ Competing priorities of funders
__ Competing priorities of planners/engineers/builders
__ Competing priorities of government
__ Political pressures surrounding project
__ Corruption
__ Other (please specify): _____

7) Out of the following options, which would be most helpful in improving your organization's capacity to address wildlife safeguards for linear infrastructure plans and projects? Please select all that apply.

__ Hire linear infrastructure experts in future staff positions
__ Increase linear infrastructure technical expertise for current staff
__ Hire temporary consultants with LI expertise
__ Engage with and influence transport and energy agencies and decision-makers
__ Engage with and influence MDBs (multilateral development banks) and other LI funders.
__ Engage with communities/stakeholders facing LI projects.
__ Other (please specify): _____

Thank you

We are grateful for your participation in this survey. Your answers will inform USAID's efforts to build capacity in Asia for implementing wildlife safeguards for linear infrastructure. If you would like to be notified regarding the project workshop or the publication of project reports, please leave your contact information below. Your email will not be connected with your responses.

1) (Option) What is your email address?

_____

2) What would you like to be contacted about? Please select all that apply.

__ Trainings
__ Final Report

3) Is there anything else that you would like us to know?

APPENDIX E: SURVEY CONTACTS FRAMEWORK

CONTACT FRAMEWORK: GOVERNMENT	
GENERAL CATEGORY	SPECIFIC CATEGORY
Internal	
Ministry of Environment and Forestry, Tourism, Green Development, etc.	
	EIA/ESIA Officer
	Environmental Information Officer
	Legal/Policy Officer/Consultant
	Biodiversity/Ecosystems/Biosphere Reserves/Protected Areas/Endangered Species Officer
	International Cooperation - Multilateral Environmental Conventions - UN Agencies/Programs/GEF - Regional cooperation Officer
	Zoological/Botanical/Forest Survey Officer
	Animal Welfare - Roadkill Officer
	Forest and Wildlife Division(s) (See for example India: Wildlife Preservation: Project Elephant Division, Wildlife Division).(See for example Thailand's Department of National Parks, Wildlife and Plant Conservation")
	Sustainable Development Coordination
	Development, Monitoring, and Evaluation Officer
	Research and Training Officer
	Green/Sustainable Infrastructure Officer
Wildlife/Forest Service / Environmental Protection /Agency	
Ministry of Tribal/Indigenous Affairs, etc.	
Protected Area Authority / Endangered or Flagship Species Authority	
Ministry of Transport> National Road Building (e.g. - India's NHAI) / Railways / etc.	
Ministry of Energy: Transmission - heads of guidelines and policy; head of training if any	
Ministry of Construction	
Ministry of Planning	
Ministry of Development	
Ministry of Foreign Affairs - Legal Affairs - International Organizations Environment Officer (See for example negotiating treaties)	
Planning agencies/commissions (Capacity for inter-ministry/agency/departmental coordination)	
Internal/External	

CONTACT FRAMEWORK: GOVERNMENT	
GENERAL CATEGORY	SPECIFIC CATEGORY
Autonomous/quasi-govt. research and implementation hubs, commissions, boards, authorities, tribunals, etc. but part of ministries/agencies (See for example India's National Board for Wildlife, Niti Aayog, Wildlife Institute of India, Central Zoo Authority, National Tiger Conservation Authority, National Green Tribunal, etc. OR Thailand Wildlife Conservation Trust)	
Think Tanks and Law/Policy Centers re infrastructure, development, environment, etc.	
Department coordination mechanisms - biodiversity committees / oversight / guidelines / SDGs coordination mechanisms, dedicated office/bodies for balancing development with environment / biodiversity targets	
National Missions - biodiversity and well-being / development / greening, etc.	
External	
IUCN Country and Regional Offices	
University research/policy centers	
Independent Environmental Monitoring/Law/Policy Centers	
...But mostly NGOs	
National Focal Points	
Convention on Biological Diversity (CDB) Focal Point	
Convention on Migratory Species (CMS) Focal Point	
Independent National Environmental Law Specialists	

CONTACT FRAMEWORK—IFIS: ORGANIZATION/AGENCY/COMPANY - AT COUNTRY LEVEL OFFICE / REGIONAL HQ: RELATED TO ESIA MECHANISMS / HARMOZINATION PROGRAMS / SAFEGUARDS
Asian Development Bank
World Bank
IFC RM
Equator Principles Financial Institutions
European Union
EIB
EBRD
UNDP

UNEP
NDB
AIIB
ASEAN
CIDCA & BRI
JICA

CONTACT FRAMEWORK—INDUSTRY ASSOCIATIONS
General Category
Major National Association(s) for Roads: Sustainability Officer
Major National Association(s) for Rails: Sustainability Officer
Major National Association(s) for Transmission: Sustainability Officer
Major National Engineering Association(s): Sustainability Officer
Major National Planning Association(s): Sustainability Officer
Major Engineering Firms (Global, with National Office) working on Significant Road, Rail and/or Transmission Projects
Major Engineering Firms (National) working on Significant Road, Rail and/or Transmission Projects
Major Planning, Consulting or EIA Firms (Global, with National Office) working on Significant Road, Rail and/or Transmission Projects
Major Planning, Consulting or EIA Firms (National) working on Significant Road, Rail and/or Transmission Projects
Major (Global) Construction Companies working on Significant Road, Rail and/or Transmission Projects
Major (National) Construction Companies working on Significant Road, Rail and/or Transmission Projects
Major Chinese Construction Companies working on Significant Road, Rail and/or Transmission Projects
ERM (National office)
ICF (National office)
IAIA (National office)
WSP (National office)
AECOM (National office)
Other relevant corporations?

CONTACT FRAMEWORK—NGOs
General Category
National NGO working on biodiversity/landscape conservation (copy to as many rows as needed)
National NGO working on biodiversity/landscape conservation (copy to as many rows as needed)
National NGO working on biodiversity/landscape conservation (copy to as many rows as needed)
Community group working at the project level on wildlife conservation (copy to as many rows as needed)
Community group working at the project level on wildlife conservation (copy to as many rows as needed)
Community group working at the project level on wildlife conservation (copy to as many rows as needed)

APPENDIX F: BANGLADESH'S ENVIRONMENTAL LAWS

BANGLADESH'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
"Agricultural and rural development"			
	Bangladesh Public-Private Partnership Act	2015	https://www.ecolex.org/details/legislation/bangladesh-public-private-partnership-act-2015-act-no-18-of-2015-lex-faoc179711/?q=Bangladesh+Public-Private+Partnership+Act%2C+2015
"Energy"			
	Electricity Act	1910 (2016)	https://www.ecolex.org/details/legislation/electricity-act-1910-act-no-ix-of-1910-lex-faoc095365/?q=Electricity+Act%2C+1910&xdate_min=&xdate_max=
"Environment general"			
	Bangladesh Environment Conservation Act	1995 (2002)	https://www.ecolex.org/details/legislation/bangladesh-environment-conservation-act-1995-act-no-1-of-1995as-amended-by-act-nos-12-of-2000-and-9-of-2002-lex-faoc042272/?q=&type=legislation&xsubjects=Forestry&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
"Forestry"			
	Forest Act	1927 (2000)	https://www.ecolex.org/details/legislation/forest-act-1927-lex-faoc006895/?q=Bangladesh+Forest+Act&type=legislation&xsubjects=Forestry&xcountry=Bangladesh&xdate_min=&xdate_max=
"Land and soil"			
	Chittagong Hill Tracts Development Board Act	2014	https://www.ecolex.org/details/legislation/chittagong-hill-tracts-development-board-act-2014-law-no-8-of-2014-lex-faoc172379/?q=&type=legislation&xsubjects=Land+%26+soil&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	State Acquisition and Tenancy Act	2006	https://www.ecolex.org/details/legislation/state-acquisition-and-tenancy-act-1950-east-bangal-act-no-xxviii-of-1951-lex-faoc035574/?q=&type=legislation&xsubjects=Land+%26+soil&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Transfer of Property Act	1882 (2006)	https://www.ecolex.org/details/legislation/transfer-of-property-act-1882-act-no-iv-of-1882-lex-faoc035572/?q=&type=legislation&xsubjects=Land+%26+soil&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation

BANGLADESH'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
	Chittagong Hill Tracts Land Dispute Settlement Commission Act	2001	https://www.ecolex.org/details/legislation/chittagong-hill-tracts-land-dispute-settlement-commission-act-2001-act-53-of-2001-lex-faoc165300/?q=&type=legislation&xsubjects=Land+%26+soil&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Chittagong Hill Tracts Regional Council Act	1998	https://www.ecolex.org/details/legislation/chittagong-hill-tracts-regional-council-act-1998-lex-faoc165438/?q=&type=legislation&xsubjects=Land+%26+soil&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Land Reform Board Act	1989	https://www.ecolex.org/details/legislation/land-reform-board-act1989-lex-faoc032974/?q=&type=legislation&xsubjects=Land+%26+soil&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Development Act	1935 (1987)	https://www.ecolex.org/details/legislation/development-act-1935-bengal-act-no-xvi-of-1935-lex-faoc035595/?q=&type=legislation&xsubjects=Land+%26+soil&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
"Water"			
	Bangladesh Water Act	2013	https://www.ecolex.org/details/legislation/bangladesh-water-act-2013-act-no-14-of-2013-lex-faoc154320/?q=&type=legislation&xsubjects=Water&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	National River Protection Commission Act	2013	https://www.ecolex.org/details/legislation/national-river-protection-commission-act-2013-act-no-9-of-2013-lex-faoc154355/?q=&type=legislation&xsubjects=Water&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Water Development Board Act	2000	https://www.ecolex.org/details/legislation/water-development-board-act-2000-act-no-xxvi-lex-faoc065118/?q=&type=legislation&xsubjects=Water&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Water Resources Planning Act	1992	https://www.ecolex.org/details/legislation/water-resources-planning-act-1992-no-12-of-1992-lex-faoc050638/?q=&type=legislation&xsubjects=Water&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Canals Act	1864 (1973)	https://www.ecolex.org/details/legislation/canals-act-1864-act-no-v-of-1864-lex-faoc035598/?type=legislation&xcountry=Bangladesh&xsubjects=Water&leg_type_of_document=Regulation&page=2
"Wild species and ecosystems"			
	Bangladesh Biodiversity Act	2017	https://www.ecolex.org/details/legislation/bangladesh-biodiversity-act-2017-act-no-ii-lex-faoc165299/?q=&type=legislation&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Wildlife (Conservation and Security) Act	2012	https://www.ecolex.org/result/?q=&type=legislation&xsubjects=Wild+species+%26+ecosystems&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Legislation&leg_type_of_document=Miscellaneous&leg_type_of_document=Regulation
	Bangladesh Tourism Reserved Area and Special Tourism Zone Act	2010	https://www.ecolex.org/details/legislation/bangladesh-tourism-reserved-area-and-special-tourism-zone-act-2010-act-no-31-of-2010-lex-faoc179687/?q=&type=legislation&xsubjects=Wild+species+%26+ecosystems&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation

BANGLADESH'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
	Rule for the Conservation of the Environment	1997	https://www.ecolex.org/details/legislation/rule-for-the-conservation-of-the-environment-lex-faoc019918/?q=&type=legislation&xsubjects=Forestry&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Biodiversity and Community Knowledge Protection Act	1998	https://www.ecolex.org/details/legislation/biodiversity-and-community-knowledge-protection-act-lex-faoc028749/?q=&type=legislation&xsubjects=Wild+species+%26+ecosystems&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation
"Capacity building"			
	Climate Change Trust Act	2010	https://www.ecolex.org/details/legislation/climate-change-trust-act-2010-act-no-57-of-2010-lex-faoc179684/?q=&type=legislation&xkeywords=capacity+building&xcountry=Bangladesh&xdate_min=&xdate_max=&leg_type_of_document=Regulation

APPENDIX G: INDIA'S ENVIRONMENTAL LAWS

INDIA'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
"Agricultural and rural development"			
	Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (Amendment)	2015	https://www.ecolex.org/details/legislation/right-to-fair-compensation-and-transparency-in-land-acquisition-rehabilitation-and-resettlement-amendment-ordinance-2015-no-4-of-2015-lex-faoc168448/?q=&type=legislation&xsubjects=Agricultural+%26+rural+development&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
"Energy"			
	Electricity (Amendment) Act	2007	https://powermin.gov.in/sites/default/files/uploads/Electricity_Act_2007.pdf
	Electricity Act	2003	https://www.ecolex.org/details/legislation/electricity-act-2003-act-no-36-of-2003-lex-faoc082256/?q=&type=legislation&xsubjects=Energy&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
"Environment general"			
	National Green Tribunal Act	2010	https://www.ecolex.org/details/legislation/national-green-tribunal-act-2010-act-no-19-of-2010-lex-faoc098219/?q=&type=legislation&xsubjects=Environment+gen.&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
	Environmental (Protection) Rules	1997	https://www.ecolex.org/details/legislation/environment-protection-rules-1986-lex-faoc008236/?q=&type=legislation&xsubjects=Environment+gen.&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
	Environmental (Protection) Act	1986	https://www.ecolex.org/details/legislation/environment-protection-act-1986-no-29-of-1986-lex-faoc021695/?q=&type=legislation&xsubjects=Environment+gen.&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
"Forestry"			
	Forest (Conservation) Amendment Rules	2017	http://forestsclearance.nic.in/writereaddata/Rules/FC%20Amedment%20Rule%202017.pdf
	The Compensatory Afforestation Fund Act	2016	http://forestsclearance.nic.in/writereaddata/ACT/CA_Fund_Act2016.pdf
	Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act	2007	https://www.ecolex.org/details/legislation/scheduled-tribes-and-other-traditional-forest-dwellers-recognition-of-forest-rights-act-2006-act-no-2-of-2007-lex-faoc077867/?q=&type=legislation&xsubjects=Forestry&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
	Forest (Conservation) Rules	2003	https://www.ecolex.org/details/legislation/forest-conservation-rules-2003-lex-faoc050637/?q=&type=legislation&xsubjects=Forestry&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
	Forest (Conservation) Act	1980 (1998)	https://www.ecolex.org/details/legislation/forest-conservation-act-1980-6-of-1980-lex-faoc003172/?q=&type=legislation&xsubjects=Forestry&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation

INDIA'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
	Indian Forest Act	1927	https://www.ecolex.org/details/legislation/indian-forest-act-1927-lex-faoc003171/?type=legislation&xcountry=India&xsubjects=Forestry&leg_type_of_document=Legislation&page=3
"Land and soil"			
	Ancient Monuments and Archaeological Sites and Remains Act	1958 (1972)	https://www.ecolex.org/details/legislation/ancient-monuments-and-archaeological-sites-and-remains-act-1958-act-no-24-of-1958-lex-faoc094090/?q=&type=legislation&xsubjects=Land+%26+soil&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
"Water"			
	Wetlands (Conservation and Management) Rules	2017	https://www.ecolex.org/details/legislation/wetlands-conservation-and-management-rules-2017-lex-faoc179416/?q=&type=legislation&xsubjects=Environment+gen.&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
	National Waterways Act	2016	https://www.ecolex.org/details/legislation/national-waterways-act-2016-lex-faoc169653/?q=&type=legislation&xsubjects=Water&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
	Inter-State River Water Disputes Act	1956 (2002)	https://www.ecolex.org/details/legislation/inter-state-river-water-disputes-act-1956-act-no-33-of-1956-lex-faoc082376/?type=legislation&xcountry=India&xsubjects=Water&leg_type_of_document=Legislation&page=2
	Embankment and Drainage Act	1953	https://www.ecolex.org/details/legislation/embankment-and-drainage-act-1952-act-no-i-of-1953-lex-faoc019915/?type=legislation&xcountry=India&xsubjects=Land+%26+soil&leg_type_of_document=Legislation&page=2
"Wild species and ecosystems"			
	The Wild Life (Protection) Amendment Act	2006	https://parivesh.nic.in/writereaddata/WildLifeAmedmentAct2006.pdf
	Biological Diversity Rules	2004	https://www.ecolex.org/details/legislation/biological-diversity-rules-2004-lex-faoc053983/?q=&type=legislation&xkeywords=biodiversity&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	The Wild Life (Protection) Amendment Act	2003	https://parivesh.nic.in/writereaddata/MINISTRY%20OF%20LAW%20AND%20JUSTICE.pdf
	The Wild Life (Protection) Act	1972 (1991)	https://www.ecolex.org/details/legislation/wild-life-protection-act-1972-53-of-1972-lex-faoc021932/?q=&type=legislation&xsubjects=Wild+species+%26+ecosystems&xcountry=India&xdate_min=&xdate_max=&leg_type_of_document=Legislation
"Environmental Impact Assessment"			
	Environmental Impact Assessment Notification	1994	https://parivesh.nic.in/writereaddata/ENV/EnvironmentalImpactAssessmentNotification-2006/so1533.pdf

APPENDIX H: MONGOLIA'S ENVIRONMENTAL LAWS

MONGOLIA'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
"Agricultural and rural development"			
	Government decree on "Approval of national program"	2018	https://www.legalinfo.mn/law/details/13932
"Energy"			
	"Connection procedure" for electricity transmission and distribution network	2018	https://www.legalinfo.mn/annex/details/8736?lawid=13720
	Installation rules for electrical facilities	2011	https://www.legalinfo.mn/annex/details/6232?lawid=9809
	Integrated power network rules	2010	https://www.legalinfo.mn/annex/details/5477?lawid=7721
	Energy Law	2001	https://www.legalinfo.mn/law/details/60
	Energy network protection rules	1996	https://www.legalinfo.mn/annex/details/959?lawid=2277
	Law on electricity, heat energy and coal payment	1995	https://www.legalinfo.mn/law/details/573?lawid=573
"Environment general"			
	Law on Environmental Impact Assessment	2012	https://www.legalinfo.mn/law/details/8665
	Law on administrative and territorial units of Mongolia and their governance	2006	https://www.ecolex.org/details/legislation/law-on-administrative-and-territorial-units-of-mongolia-and-their-governance-lex-faoc149651/?q=NoN&type=legislation&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Law amending the Environmental Protection Law	2005	https://www.ecolex.org/details/legislation/law-amending-the-environmental-protection-law-lex-faoc061514/?q=N&type=legislation&xsubjects=Environment+gen.&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Environmental Protection Law	1995	https://www.ecolex.org/details/legislation/environmental-protection-law-no-of-1995-lex-faoc032709/?q=N&type=legislation&xsubjects=Environment+gen.&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Law on specially protected areas	1997	https://www.legalinfo.mn/law/details/478
"Forestry"			
	Law on Forestry	2012	https://www.ecolex.org/details/legislation/law-on-forestry-lex-faoc073111/?q=N&type=legislation&xsubjects=Forestry&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Ministerial Resolution No. 114 on non-governmental entities	2007	https://www.ecolex.org/details/legislation/ministerial-resolution-no-114-on-non-governmental-entities-lex-faoc073112/?q=NoN&type=legislation&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Forest Law	1995	https://www.ecolex.org/details/legislation/forest-law-1995-lex-faoc009285/?q=N&type=legislation&xsubjects=Forestry&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Regulation

MONGOLIA'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
"Land and soil"			
	Law on land/soil protection and desertification prevention	2012	https://www.legalinfo.mn/law/details/8664
	Land Law	2002	https://www.legalinfo.mn/law/details/216
	Law on registration of immovable property (1997)	1997	https://www.ecolex.org/details/legislation/law-on-registration-of-immovable-property-1997-lex-faoc049841/?type=legislation&xcountry=Mongolia&leg_type_of_document=Regulation&q=NoN&page=2
	Law on State and Local Property	1996	https://www.ecolex.org/details/legislation/law-on-state-and-local-property-lex-faoc049842/?q=N&type=legislation&xsubjects=Forestry&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Regulation
"Water"			
	Law on Water Pollution Payments	2012	https://www.legalinfo.mn/law/details/8684
	Law on urban settlement and water supply and sewerage use	2011	https://www.legalinfo.mn/law/details/531
	WATER National Program Annex to the decree of the State Great Hural	2010	https://www.legalinfo.mn/annex/details/3341?lawid=7038
	Mongolian Law to prohibit mineral exploration and mining operation at headwaters of rivers, protected zones of water reservoirs and forested area	2009	https://www.ecolex.org/details/legislation/mongolian-law-to-prohibit-mineral-exploration-and-mining-operations-at-headwaters-of-rivers-protected-zones-of-water-reservoirs-and-forested-areas-lex-faoc169787/?q=NoN&type=legislation&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Law on water, climate and environmental monitoring	1997	https://www.legalinfo.mn/law/details/518
	Water Law	1995	https://www.ecolex.org/details/legislation/water-law-lex-faoc019482/?q=NoN&type=legislation&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Regulation
"Wild species and ecosystems"			
	National Program on the protection of endangered and critically endangered species	2011	https://www.legalinfo.mn/annex/details/2927?lawid=5500
	Law on regulation of foreign trade of endangered animals, plants and products made from them	2002	https://www.legalinfo.mn/law/details/527
	Ecological and economic assessment of animals	2001	https://www.legalinfo.mn/annex/details/1546?lawid=2450

MONGOLIA'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
	Law on Fauna	2000	https://www.ecolex.org/details/legislation/law-on-fauna-lex-faoc077263/?q=NoN&type=legislation&xsubjects=Wild+species+%26+ecosystems&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Legislation
	Mongolian Law on Buffer Zones	1997	https://www.ecolex.org/details/legislation/mongolian-law-on-buffer-zones-lex-faoc078977/?q=NoN&type=legislation&xsubjects=Wild+species+%26+ecosystems&xcountry=Mongolia&xdate_min=&xdate_max=&leg_type_of_document=Legislation
"Biodiversity"			
	National program on biodiversity - Annex to Government Decree No. 325	2015	https://www.legalinfo.mn/annex/details/6909?lawid=11359
"Business, Industry, Corporations"			
	Procedure for determining appropriate person who will conduct financial or non-financial business and professional activities other than banks Financial Regulatory Commission	2020	https://www.legalinfo.mn/annex/details/10960?lawid=15268
	Law on support of small and medium enterprises and services	2019	https://www.legalinfo.mn/law/details/14525
	Law on Companies	2011	https://www.legalinfo.mn/law/details/310
"Capacity-building"			
	Medium term program to strengthen the road sector capacity Annex to Government Resolution No. 258	2011	https://www.legalinfo.mn/annex/showPrint/2934
"Integrated management"			
	Mongolia's Integrated Water Resources Management Action Plan Annex to Government Decree No. 389	2013	https://www.legalinfo.mn/annex/details/6140?lawid=9687
"Land use planning"			
	State Land Management Plan Annex to Government Decree No. 264	2003	https://www.legalinfo.mn/annex/details/1498?lawid=2389
"Zoning"			
	Government decree on the establishment of some agricultural areas/zones	2018	https://www.legalinfo.mn/law/details/13357
	Law on Free zone	2015	https://www.legalinfo.mn/law/details/10930

MONGOLIA'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
Railways			
	Railway Transport Law	2007	https://www.legalinfo.mn/law/details/467
	Railway danger zone regime	2009	https://www.legalinfo.mn/annex/details/369?lawid=1378
Innovation			
	Law on Innovation	2012	https://www.legalinfo.mn/law/details/8668

APPENDIX I: NEPAL'S ENVIRONMENTAL LAWS

NEPAL'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
"Agricultural and rural development"			
	Mediation Act	1999	https://www.lawcommission.gov.np
	Good Governance (Management and Operation) Act	2008	https://www.ecolex.org/details/legislation/good-governance-management-and-operation-act-2064-2008-lex-faoc137755/?q=NoN&type=legislation&xsubjects=Agricultural+%26+rural+development&xcountry=Nepal&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Nepal Law Commission Act	2007	https://www.ecolex.org/details/legislation/nepal-law-commission-act-2063-2007-lex-faoc137759/?q=NoN&type=legislation&xsubjects=Agricultural+%26+rural+development&xcountry=Nepal&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Local Government Operation Act	2017	https://www.lawcommission.gov.np
"Energy"			
	Electricity Rules	1993 (2009)	https://www.ecolex.org/details/legislation/electricity-rules-2050-1993-lex-faoc100342/?q=NoN&type=legislation&xsubjects=Energy&xcountry=Nepal&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Electricity Act	1992	https://www.ecolex.org/details/legislation/electricity-act-2049-lex-faoc040799/?q=NoN&type=legislation&xsubjects=Energy&xcountry=Nepal&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Nepal Electricity Authority Act	1984 (1991)	https://www.ecolex.org/details/legislation/nepal-electricity-authority-act-2041-1984-lex-faoc100291/?q=NoN&type=legislation&xsubjects=Energy&xcountry=Nepal&xdate_min=&xdate_max=&leg_type_of_document=Regulation
"Environment general"			
	Environment Protection Act	2019	https://www.lawcommission.gov.np/en/wp-content/uploads/2021/03/The-Environment-Protection-Act-2019-2076.pdf
	Environment Protection Rules	2020	https://www.lawcommission.gov.np
"Forestry"			
	Forest Act	2019	https://www.lawcommission.gov.np/en/wp-content/uploads/2021/06/The-Forests-Act-2019-2076.pdf
	Forest Regulation	1995	https://www.ecolex.org/details/legislation/forest-regulation-1995-no-2051-of-1995-lex-faoc006233/?q=NoN&type=legislation&xsubjects=Forestry&xcountry=Nepal&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Community Forestry Directives	1995	https://www.ecolex.org/details/legislation/community-forestry-directives-1995-no-2052-of-1995-lex-faoc014067/?q=NoN&type=legislation&xsubjects=Forestry&xcountry=Nepal&xdate_min=&xdate_max=&leg_type_of_document=Regulation
"Land and soil"			
	Land Revenue Act	1978 (2010)	https://www.ecolex.org/details/legislation/land-revenue-act-2034-act-no-25-of-1978-lex-faoc107986/?q=NoN&type=legislation&xsubjects=Land+%26+

NEPAL'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK(S)
			soil&xcountry=Nepal&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Lands Act	1962 (2010)	https://www.ecolex.org/details/legislation/lands-act-2021-1964-lex-faoc006239/?q=NoN&type=legislation&xsubjects=Land+%26+soil&xcountry=Nepal&xdate_min=&xdate_max=&leg_type_of_document=Regulation
	Land Rules	1964 (2010)	https://www.ecolex.org/details/legislation/land-rules-1964-lex-faoc006228/?q=NoN&type=legislation&xsubjects=Land+%26+soil&xcountry=Nepal&xdate_min=&xdate_max=&leg_type_of_document=Regulation
"Water"			
	Irrigation Rules	2000	https://moewri.gov.np/storage/listies/May2020/irrigation-rules-2056-2000.pdf
	Water Resources Rules	1993	https://www.moewri.gov.np/storage/listies/May2020/water-resources-rules-2050-1993.pdf
	Water Resources Act	1992	https://www.ecolex.org/details/legislation/water-resources-act-1992-no-2049-of-1992-lex-faoc001367/
"Wild species and ecosystems"			
	National Parks and Wild Life Conservation Rules	1974 (2019)	http://extwprlegs1.fao.org/docs/pdf/nep6220.pdf
	National Trust for Nature Conservation Act	1982 (2006)	https://www.ecolex.org/details/legislation/water-resources-act-1992-no-2049-of-1992-lex-faoc001367/
"Environmental Impact Assessment"			
	National Environmental Impact Assessment Guidelines	1993	https://portals.iucn.org/library/sites/library/files/documents/1994-009.pdf
"Environmental Planning"			
	Environmental Management Guidelines	1997	http://nepalpolicynet.com/images/documents/transportation/regulations/DoR_Environmental_Management_Guidelines_1997.pdf

APPENDIX J: THAILAND'S ENVIRONMENTAL LAWS

THAILAND'S ENVIRONMENTAL LAWS			
SUBJECT	TITLE	YEAR ADOPTED	DOCUMENT HYPERLINK
"Agricultural and rural development"			
	Agricultural Land Consolidation Act	2015	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC159712/
"Energy"			
	Energy Conservation and Promotion Act	2007	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC089590/
	Energy Industry Act	2007	https://www.ecolex.org/details/legislation/energy-industry-act-be-2550-lex-faoc155100/?q=NoN&type=legislation&xsubjects=Energy&xcountry=Thailand&xdate_min=&xdate_max=&leg_type_of_document=Legislation
	Energy Development and Promotion Act	1992	https://www.ecolex.org/details/legislation/energy-development-and-promotion-act-be-2535-lex-faoc155099/?q=NoN&type=legislation&xsubjects=Energy&xcountry=Thailand&xdate_min=&xdate_max=&leg_type_of_document=Legislation
"Environment general"			
	Enhancement and Conservation of National Environmental Quality Act (NEQA) (No. 2)	2018	http://www.onep.go.th/eia/wp-content/uploads/2019/04/ACT2561-2.pdf.
"Forestry"			
	Forests Act	2019	http://extwprlegs1.fao.org/docs/pdf/tha201963.pdf
	National Reserved Forests Act	2016	https://www.ecolex.org/details/legislation/national-reserved-forests-act-no-4-be-2559-2016-lex-faoc181041/?q=NoN&type=legislation&xsubjects=Forestry&xcountry=Thailand&xdate_min=&xdate_max=&leg_type_of_document=Regulation
"Land and soil"			
	Act Promulgating the Land Code	1954 (2008)	https://www.ecolex.org/details/legislation/act-promulgating-the-land-code-be-2497-lex-faoc033176/?q=NoN&type=legislation&xsubjects=Land+%26+soil&xcountry=Thailand&xdate_min=&xdate_max=&leg_type_of_document=Regulation
"Water"			
	Water Resources Act	2018	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC201938/
"Wild species and ecosystems"			
	Wildlife Conservation and Protection Act	2019	https://data.opendevelopmentmekong.net/laws_record/wildlife-conservation-and-protection-act-b-e-2562-2019
	National Parks Act	2019	https://data.opendevelopmentmekong.net/laws_record/national-park-act-b-e-2562-2019