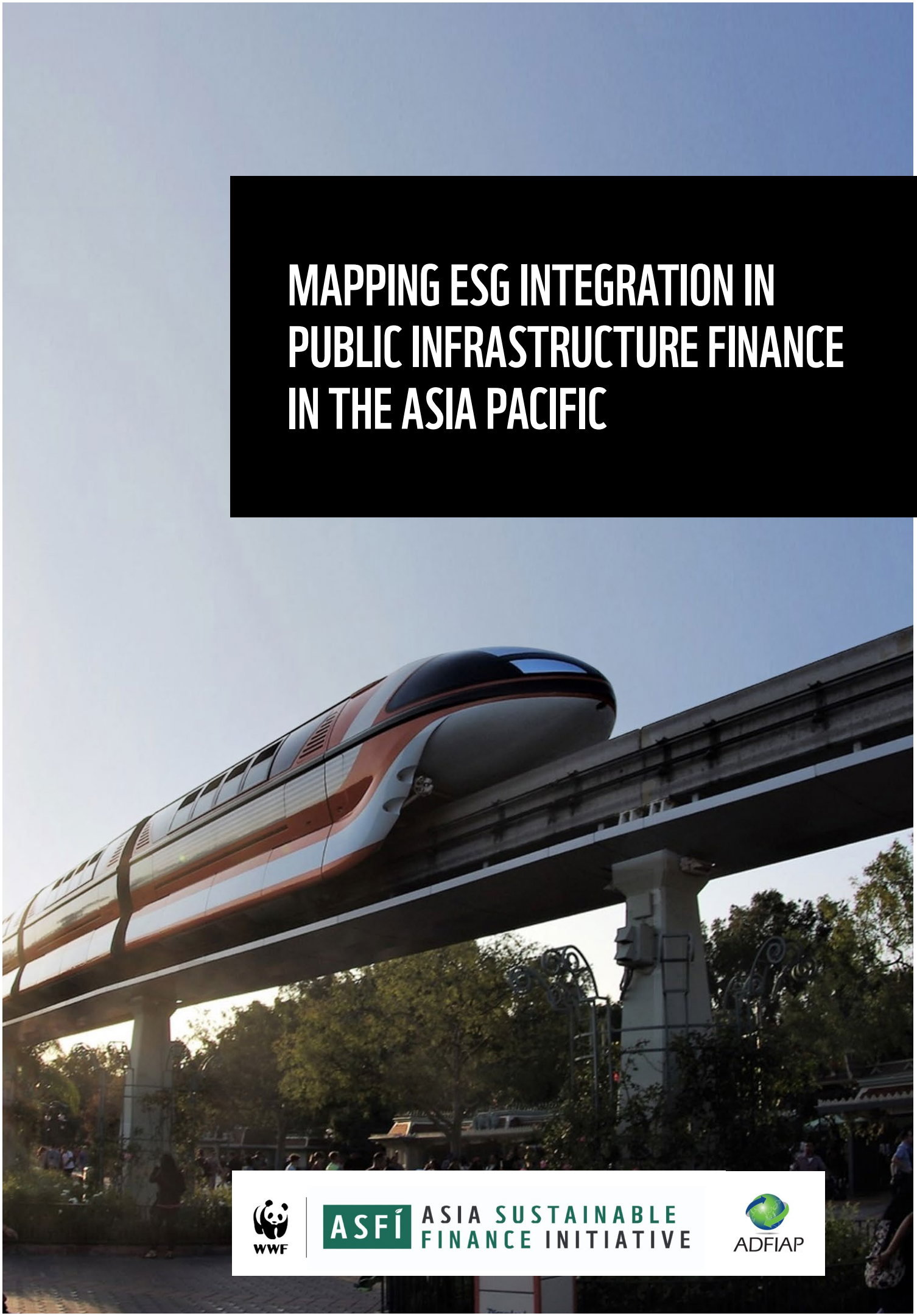
# MAPPING ESG INTEGRATION IN PUBLIC INFRASTRUCTURE FINANCE IN THE ASIA PACIFIC



WWF | ASFI ASIA SUSTAINABLE FINANCE INITIATIVE | ADFIAP

**Author: Sergiu George Jiduc**

WWF is one of the world's largest and most experienced independent conservation organizations, with over 5 million supporters and a global network active in more than 100 countries. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.



**Disclaimer**
This report includes interpretation of interview conversations and survey responses from Development Finance Institutions staff and subject matter experts. The views expressed do not necessarily correspond to those of specific Development Finance Institutions, WWF, or the Association of Development Financing Institutions in Asia & the Pacific (ADFIAP). Furthermore, this report has been published for information and illustrative purposes only and is not intended to serve as advice of any nature whatsoever. The information contained and the references made in this report are in good faith, neither WWF-Singapore nor any of their directors, agents or employees give any warranty of accuracy (whether expressed or implied), nor accept any liability as a result of reliance upon the content. This report also contains certain information available in public domain, curated and maintained by private and public organizations. WWF-Singapore does not control or guarantee the accuracy, relevance, timelines, or completeness of such information.

**Acknowledgments**
Reviewers: Achmad Fauzan Alfansuri (WWF-Indonesia), Dr Adrian Fenton (WWF-Singapore), Adam Ng (WWF-Malaysia), Dr Ambrose Smith CBE (Aquinas College), Anders Nordheim (WWF-Singapore), Aveline Chan (WWF-Singapore), Céline Beaulieu (WWF International), Charles Selestine (WWF-Myanmar), Cressida Alday (ADFIAP), David S McCauley (WWF-USA), Ed Tongson (WWF-Philippines), Enrique Florencio (ADFIAP), Evan Freund (WWF-USA), Dr Helena Wright (FAIRR Initiative) Hongxia Du (WWF-China), Joanne Lee (WWF International), Joseph Eijansantos (WWF-Philippines), Kate Newman (WWF-US), Kristina Anguelova (WWF-Singapore), Marie Gauthier (WWF-Singapore), Lauren Meghan Lynch (WWF-SG), Naoyuki Yamagishi (WWF-Japan), R. Raghunathan (WWF-Singapore), Rizkiasari Yudawinata (WWF-Indonesia), Siti Khilofatul Rizkiah (WWF-Malaysia), Sylvain Augoyard (WWF-Singapore), Thiaga Nadeson (WWF-Malaysia), Urvana Menon (WWF-Myanmar), and Zacharias Malik (Deloitte).

**Special thanks for input**
Zhong Yi Lee (WWF Singapore)

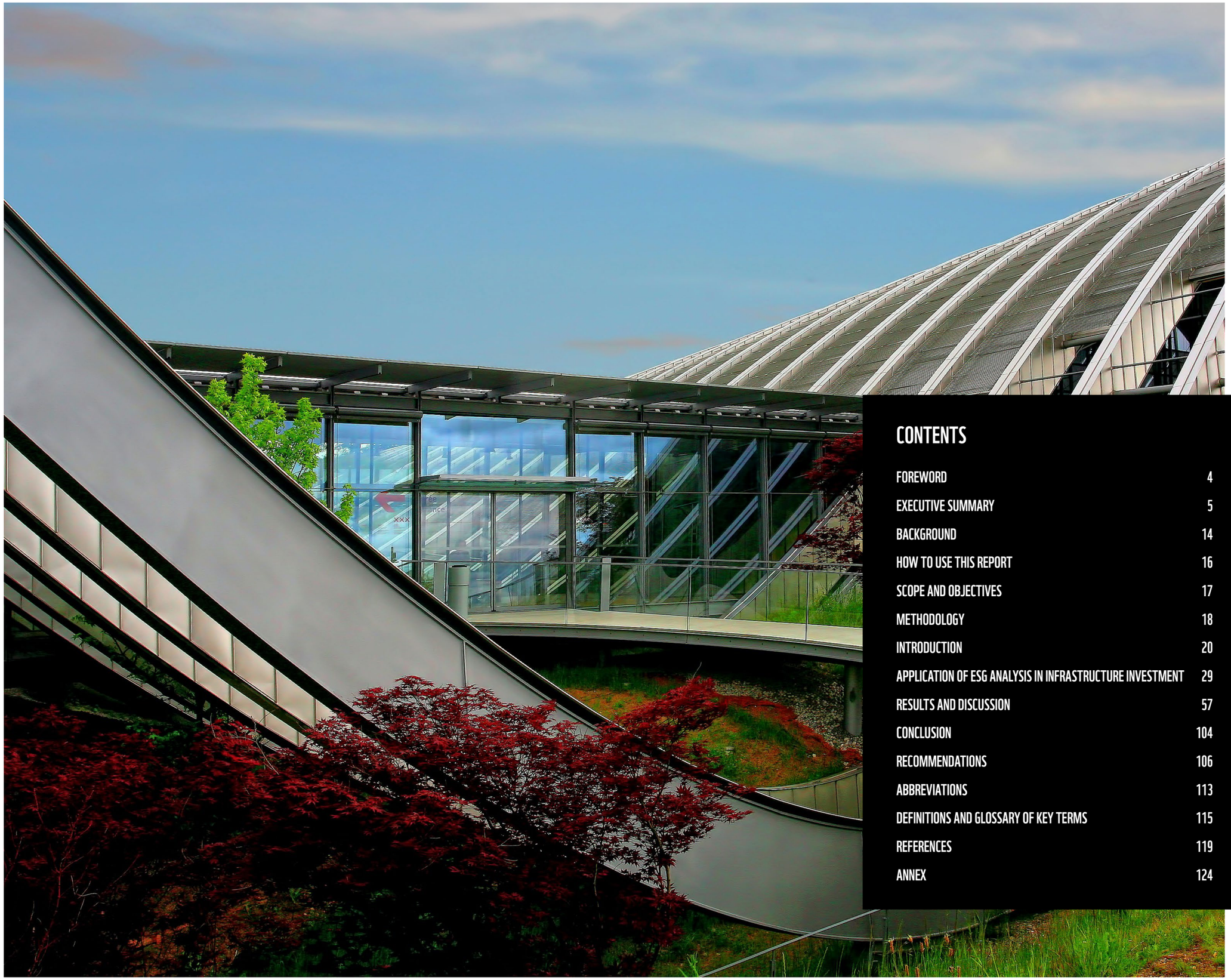
This report is part of Asia Sustainable Finance Initiative (ASFI)

**Production and design:**
Raphael Albinati

Published in December 2021 by WWF – World Wide Fund for Nature (Singapore) Limited



Cover photo: © David Chambers, Unsplash



# CONTENTS

# FOREWORD

We are currently experiencing the most rapid expansion of built infrastructure in history with almost US$100 trillion predicted to be spent on new infrastructure globally by 2050. Infrastructure expansion has been an important mechanism for alleviating poverty and delivering economic growth, but when unaccompanied by strong environmental safeguards it has also been a key driver of climate change, and loss of biodiversity and ecosystem services.

Across the Asia Pacific, major extractive, transport, and energy-production infrastructure projects are planned within some of the world's most biodiverse and carbon-rich regions. If these projects ignore sustainability principles, they will further exacerbate our interconnected global environmental challenges.

The COVID-19 pandemic has presented an additional challenge to both infrastructure development and environmental sustainability as Asian countries face increasing financial constraints on infrastructure spending given the competing demands on public finances. Nonetheless, this challenge presents an opportunity to "build back better" and intensify efforts to ensure greater efficiencies in infrastructure investments.

But is it truly possible to meet Sustainable Development Goal (SDG) 9 (develop infrastructure networks) without sacrificing goals 13, 14 and 15 (take urgent action to combat climate change and its impacts, and end biodiversity loss) whilst also tackling the health and economic impact associated with COVID-19? Can the financial sector show leadership and help tackle our interconnected crisis?

Historically, Development Finance Institutions (DFIs) have emerged as a source of finance and have become preferred vehicles to deliver financial stimulus provided by governments to support struggling industries, invest in necessary infrastructure, and lead the way out of a recession. This in turn has brought into focus the importance of well-functioning DFIs to the overall development of economies.

In recent years, the financial sector has paid increased attention to the risks posed by environmental, social, and governance (ESG) aspects as part of a broader notion of sustainable finance. Recognizing the need and opportunity to harness and amplify the power of finance to create resilient economies that deliver on the SDGs and the Paris Agreement, WWF Singapore established the Asia Sustainable Finance Initiative (ASFI). This is a multi-stakeholder forum that brings together industry, academic, and science-based resources from around the world to assist financial institutions in the region in implementing ESG best practices.

The Association of Development Financing Institutions in Asia and the Pacific (ADFIAP) has partnered with ASFI to promote progress on sustainable finance in the region. ADFIAP is the focal point for all development banks and other financial institutions engaged in the financing of development in Asia Pacific.

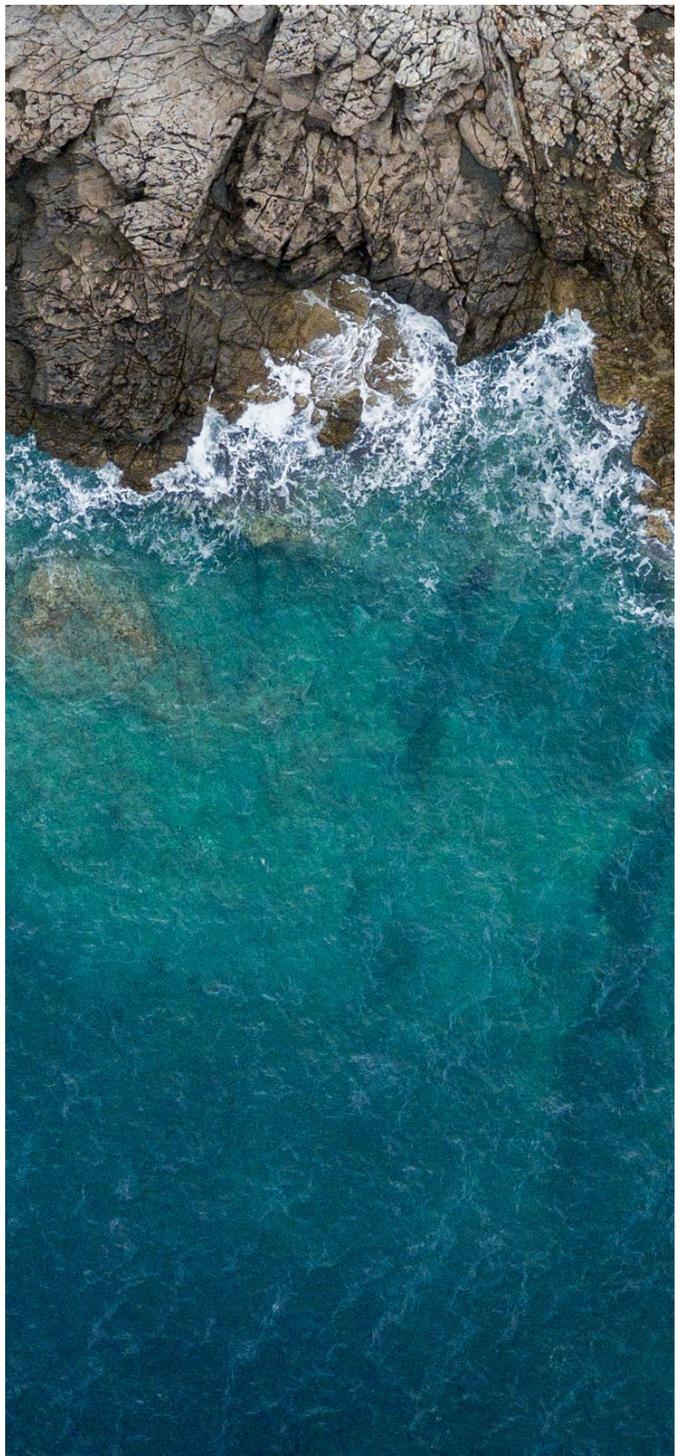
The first knowledge product to emerge from this collaboration is this report. Its goal is to facilitate ESG integration and sustainable infrastructure investment at regional DFIs in the Asia Pacific, as well as to assist the infrastructure community and DFIs in developing a more consistent approach to analysing the sustainability of infrastructure projects.

**ENRIQUE I. FLORENCIO,**
**SECRETARY GENERAL**

*Association of Development Financing Institutions in Asia and the Pacific (ADFIAP)*



# EXECUTIVE SUMMARY



**Our unsustainable production and consumption have created interconnected crises** such as climate change, biodiversity loss, pollution and waste, and global pandemics. These existential crises are causing economic devastation and require an urgent and transformative global response.

**A new development pathway is required** that addresses damage incurred and aligns socioeconomic activity with the safe operating space provided by earth systems. This pathway must simultaneously enable the achievement of all the Sustainable Development Goals (SDGs).

**Infrastructure investment is critical to creating a sustainable development pathway.** It is needed for economies to grow and for the provision of basic services societies need such as energy, transport, as well as water and sanitation. Infrastructure assets have long lifespans, with positive or negative long-term effects locked in. When infrastructure is sustainable it can re-direct development pathways towards future prosperity. When it is unsustainable it creates pathway dependency, locking-in problems and costs that are expensive or impossible to resolve.

**A paradigm shift aligning infrastructure investment to the principles of sustainable development is an urgent issue.** It will require changes to how infrastructure systems are planned, constructed, financed, built, operated, and decommissioned. Much of the infrastructure required today and, in the future, has not yet been built. To achieve the SDGs almost US$100 trillion is required by 2050. Insufficient capital exists to finance investments which inhibit progress to achieve the SDGs. Concerted effort is needed to ensure infrastructure investment aligns development pathways with a resilient future.

**Aligning infrastructure investment with sustainability principles is especially critical in the Asia Pacific.** Annual infrastructure investment of US$1.7 trillion is needed until 2030 to support economic growth, support urbanisation, improve living standards, and address physical climate risks. Asia Pacific is also home to numerous biodiversity hotspots and many countries in the region are globally among those most vulnerable to environmental and climate hazards. Infrastructure has already been impacting on natural capital, biodiversity, and ecosystem services as construction projects open up areas previously inaccessible to human activity. And financial institutions (FIs) tend to disproportionately lend in countries that have relatively high levels of biodiversity, highly resource-intensive economies, and weak environmental regulation.

**Global efforts to address the biodiversity and climate crises need the Asia Pacific region to be on a sustainable decarbonisation pathway.** Many COVID-19-related stimulus packages focus on infrastructure to aid economic recovery through job creation and demand stimulation. If infrastructure investment flows in the Asia Pacific are not made sustainable then it is likely that international efforts to halt biodiversity loss and climate change will fail to achieve their targets.

**Within Asia Pacific, the public sector has an important role in infrastructure investment and project development.** However, it cannot alone cover infrastructure investment needs. Many argue for a renewed focus on the public sector to incubate sustainable projects and to leverage private sector investment. Unfortunately, despite private sector interest, participation remains low and making infrastructure investments more attractive to private investors remains a challenge.

**Moving forward, integrating sustainability will be integral to developing successful infrastructure projects that leverage private sector support.** To improve private sector co-financing and investment, projects incubated within the public sector need to match their processes and expectations. Central to this is ensuring infrastructure projects match sustainability themed business lines being developed by FIs and at least ensure they pass screening processes for environmental, social and governance (ESG) risks.

**Development Finance Institutions (DFIs) are critical stakeholders with relevant government mandates that can be instrumental in efforts to achieve the SDGs.** However, they must show leadership by matching industry practices, develop project best practices, leverage private capital by de-risking worthy projects, and utilise concessional flows of international public finance. At a minimum, they must reduce the negative environmental impacts of their funded projects.

# STUDY AND RESULTS

**This study documents a study into how DFIs in the Asia Pacific have integrated climate- and biodiversity-related ESG factors into decision-making processes and policies.** To achieve this, ten national and multilateral DFIs headquartered in Southeast and East Asia and predominantly involved in infrastructure investment participated in a mixed-methods study involving secondary research, a survey, and interviews. An assessment framework was used covering ten criteria embracing six areas of inquiry frequently used to assess integration of sustainability at the organisation level (Table 1).

Table 1. The six pillars and the ten areas of inquiry used in this study.

| Pillars | | Areas of inquiry | Description |
|---|---|---|---|
| PURPOSE | 1 | Sustainability strategy and stakeholder engagement | Good performance is important as sustainability is a necessary condition for long–term national growth prospects and a dynamic topic with constant developments which need to be followed. |
| | 2 | Participation in sustainable finance and infrastructure initiatives | |
| POLICIES | 3 | Public statements on specific ESG issues | Good performance is important as transparent policies ensure intentions are embedded into daily business operations. Specific policies are required for industries with high E&S risks and otherwise prominent cross-cutting topics, such as climate change and biodiversity loss. |
| | 4 | Public statements on specific sectors | |
| PROCESSES | 5 | Assessing and monitoring ESG risks at project level | Good performance is important as effective implementation of E&S policies requires transparent integration of E&S criteria into client and transaction approval processes so that policy enforcement is meaningful with consequences for non-compliance. |
| PEOPLE | 6 | Responsibilities for ESG | Good performance is important as effectively implementing policies and processes requires sufficient staff capacity and clear allocation of responsibilities to different departments and senior management |
| | 7 | E&S staff competency and performance evaluation | |
| PRODUCTS | 8 | ESG integration in products and services | Good performance is important as integrating ESG issues into business operations does not only entail adequate risk assessment, but also tapping into business opportunities. |
| PORTFOLIO | 9 | ESG risk assessment and mitigation at portfolio level | Good performance is important as the assessment of key E&S risks at client and transaction level only provides a micro-level snapshot of issues which ultimately accumulate at the portfolio level. Disclosure of risk exposure indicators and setting targets helps progress assessment in dealing with material ESG risks and business model transitioning. |
| | 10 | Disclosure of ESG risk exposure and targets | |

**DFIs showed relatively good compliance with the 'purpose' pillar of the assessment framework.** Within the study, some DFIs have started to explicitly consider E&S factors and sustainability when expressing their corporate strategy, vision, and mission statement. Additionally, some have also started to link mandates to sustainability more broadly. However, social and economic considerations are arguably prioritised over environmental considerations, despite linkages between climate and environmental risks and economic/social development.

**DFIs show potential for improvement on the 'policy' pillar.** DFIs in this study typically acknowledge E&S risks associated with climate change but acknowledgement of biodiversity risks remains limited. Many DFIs lack clear or ambitious policies for especially sensitive issues such as deforestation, protection of marine biodiversity resources, and financing of coal-powered projects. Less than half of the DFIs have sector-specific requirements, policies, or up-to-date exclusionary criteria. A prominent reason for this is that DFIs struggle to define biodiversity and quantify associated risks, impacts and benefits. This in turn hinders mainstreaming including target-setting and financing.

**DFIs also show potential for improvement on the 'processes' pillar.** Many DFIs lack adequate use of ESG metrics, evaluation and screening tools, more ambitious outcome-based requirements for safeguards, and sector policy updates, which are caused by resource constraints (staffing and financial) and limited technical knowledge, particularly regarding relevant metrics and/or methodologies/frameworks to use when assessing biodiversity risks and impacts.

**DFIs showed reasonable compliance with the 'people' pillar.** Most DFIs had senior management and/or board oversight of E&S issues, and half have a dedicated ESG/environment/sustainability team and provide training to staff on ESG-related issues. However, staff appraisal regarding sustainability is lacking and staff capacity is a key concern. Specialized technical expertise was limited. Relevant staff training is in its infancy. Training is targeted on staff directly involved with sustainability issues but often is optional and fails to adequately prepare staff to value impacts/risks, particularly regarding biodiversity and nature-based solutions (NbS).

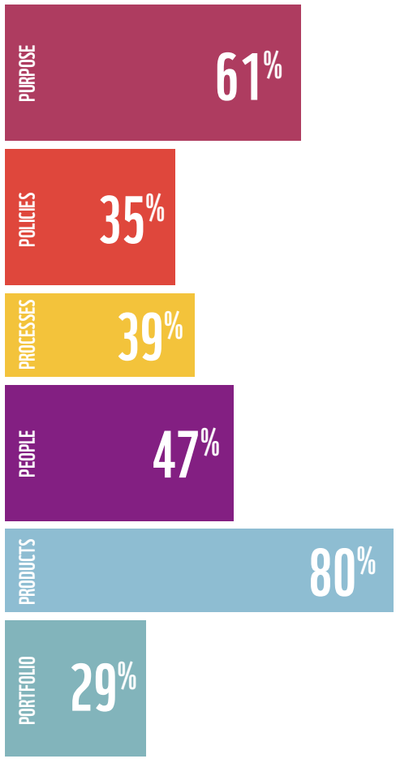



Figure 1. Compliance (percentage) across the six assessment pillars (i.e., Purpose, Policies, Processes, People, Products and Portfolio) which signify what WWF considers to be robust ESG integration. Source: WWF public disclosure analysis (N=10).

**DFIs showed most progress with the 'products' pillar.** Most of the DFIs have used green financial and non-financial products (e.g., bonds/sukuk, loans, guarantees, and technical assistance) and/or have specialised funds to address the SDGs and finance sustainable infrastructure. Renewable energy is often a target but few if any products are dedicated to address nature loss.

**DFIs showed least progress with the 'portfolio' pillar.** There is a lack of adequate green finance targets supported by performance indicators, including tracking biodiversity and climate finance flows. Few use the standard Multilateral Development Banks (MDBs) methodology for tracking climate change mitigation and adaptation finance. Sustainability-linked targets are focused on climate finance or social responsibility. Only one DFI had biodiversity-related targets for the blue economy. A lack of knowledge on biodiversity risks is echoed by a lack of relevant commitments, and DFIs have inadequate transparency regarding E&S risks at portfolio level.

## FACTORS DRIVING ESG INTEGRATION

**The most important factors driving ESG integration efforts were government regulation and guidelines, investor or counterparty preference, and brand reputation.** This is not surprising as DFIs are specialised development organisations that are majority owned by one or more national government and are charged with a particular mandate. This limits their freedom in terms of their own agenda-setting and decision-making as they operate within prescribed policies and legislation.

**Physical climate risks and greenhouse gas (GHG) emissions were cited by DFIs as the most important environmental factors for assessing overall infrastructure investments.** This is consistent with many DFIs having explicit climate investment targets (either absolute or relative). Waste and hazardous materials are also important, likely due to regulations. Energy efficiency and sourcing, and raw materials and supply chain issues are also important considerations. Water issues such as pollution, depletion and diversion are considered more important than climate-related factors by a few DFIs, again likely due to regulation, with some jurisdictions requiring offsets of project impacts. Biodiversity and habitat loss issues are the least important environmental factors considered when making infrastructure investments.

**Looking at the various infrastructure sub-sectors more specifically[1], the most significant environmental factor is air pollution, followed closely by waste- and water-related issues.** Physical climate risks are mostly applied to energy, social and water infrastructure whereas GHG emissions are predominately considered in energy and transport projects. This latter could be due to weak or non-existent policies to limit GHG emissions across all activities and countries with due consideration to national circumstances (something which effective risk management demands), existing ongoing support to carbon-intensive investments, and/or lack of internal capacity or incentive for valuation. Additionally, reducing GHG emissions across financing activities in line with national or sector pathways is not a mandate given to DFIs.

**Finally, factors associated with biodiversity, raw material, and supply chains are the least applied to infrastructure sub-sectors.** This is likely due to the lack of understanding over what constitutes biodiversity (including biodiversity impact) and DFIs are still focusing on mainstreaming climate change across their operations and decisions-making.

## PROCESSES FOR MANAGING E&S RISKS: SAFEGUARDS

**Most of the DFIs surveyed use ESG factors for a qualitative negative screening rather than integrating them into financial models.** ESG valuation is rudimentary, used in very specific circumstances if not lacking entirely across DFIs. Some DFIs stated that ESG integration is more commonly applied for their capital market operations rather than project finance. Additionally, little incentive exits to revise projects as most are developed before DFI involvement. Consequently, DFIs only screen projects for climate or biodiversity risks to ensure that these meet the requirements of their safeguard policies and/or national regulation. However, DFIs have significant amounts of relevant data that can be used to improve ESG integration at project level, particularly for climate change factors.

**Influencing infrastructure projects has greater impact in the earlier stages of the infrastructure lifecycle when policies, planning, and designs are being set.** As the Chinese Sponge City[2] case study demonstrates, the biggest opportunity for impact lies in the infancy of a project. This NbS shows that early incorporation of a 'sponge project' into strategic planning, combined with a comprehensive assessment of its environmental, social, and economic viability, can be effective in solving urban water management challenges. This was done in collaboration with different city departments and the development of localised strategies and technical standards, as well as the establishment of a suitable fundraising mechanism (e.g., Public-Private Partnership (PPP)) and attracting social participation for risk- and benefit-sharing.

**Safeguard policies (which inform investment decisions) are the main mechanism used for managing E&S risk.** More than two thirds of DFIs apply a formal safeguard framework for assessing and managing climate change risks and slightly less (60%) do so for assessing and managing biodiversity risks. Corporate and project lending benefit most from safeguards, which corresponds to the core activities of DFIs. Interestingly, biodiversity corporate lending benefits more from safeguards than climate corporate lending investments.

**Half of E&S policies used by DFIs tend to include minimum requirements, recommendations or principles that converge with those of other DFIs and private sector entities.** This includes the International Finance Corporation Environmental and Social Performance Standards (IFC PS), the Green Climate Fund Investment Framework, JICA's New Guidelines for Environmental and Social Considerations, and/or are based on internationally recognized standards for best E&S risk management practices such as the Equator Principles, Global Reporting Initiative (GRI) or the International Organization for Standardization (ISOs). Larger DFIs usually have their own safeguard framework, while less-resourced DFIs have adopted the IFC's PSs or rely on an environmental assessment process, usually aligned with government/national regulation - which is more about acceptable limits of harm rather than demonstrating positive contribution[3].

**Adopting more rigorous outcome-based requirements for safeguards (no net loss or net gain for biodiversity or net-zero or zero carbon for climate) would be new for many DFIs.** Most acknowledged that although this is desirable, their lack of capacity (finance, staffing and knowledge) regarding these topics (particularly in what concerns biodiversity) may hinder adoption.

1 These include: energy, transport, telecommunications, water supply and waste, and social amenities.

2 The Sponge Cities concept refers to a way of urban management that allows cities to resolve urban waterlogging, improve water storage and discharge capacity, enhance water quality, and alleviate heat island effects through NbS.

3 Positive contribution refers to the measurable, positive contribution to a sustainability objective, over and above the baseline requirements that sustainable infrastructure assets shall demonstrate.

## PROCESSES FOR MANAGING E&S RISKS: APPROACHES FOR ASSESSING AND REPORTING ON BIODIVERSITY AND CLIMATE RISKS

Generally, climate and biodiversity risk assessment should be part of project E&S screening, categorisation, and due diligence phase as required by a DFI's E&S framework. This is followed by client E&S assessment. These processes leverage on E&S standards and an E&S exclusion list. Larger DFIs may carry out comprehensive modelling depending on project risk category, data availability/quality and internal technical resources.

**Fewer than half of DFIs surveyed screen projects for climate physical risk and only about a third do so for climate transition risk.** This is because of insufficient assessment capacity, including adequately understanding distinctions between climate physical and transition risk, and available methodologies. Almost two-thirds do not consider physical acute or chronic risks and a considerable portion lack resources to assess them. Only one third screen projects for biodiversity risks and less than half use science-based tools such as IUCN's Species Threat Abatement and Recovery (STAR) metric, and the Integrated Biodiversity Assessment Tool (IBAT). About two thirds of DFIs consider climate risks during monitoring and evaluation, but only 43% consider biodiversity risks, probably due to the greater ease of measuring climate risks post-investment. Biodiversity risks and impacts are not adequately assessed in the investment decision process. Biodiversity is viewed as complicated, with no straightforward metric, no clear national or corporate targets, and the systemic risks posed by biodiversity loss is insufficiently understood. Most DFIs do not yet have the capacity (finance, staffing or knowledge) to adequately address biodiversity.

**DFIs utilise government, proprietary or other locally available resources for climate physical risk assessment** rather than commercially available tools, analytics, and geospatial datasets. Impact measurement metrics are often focused on climate change, but challenges remain. Notably, data often is not collected by the DFIs, but based on governmental reporting from project developers. A lack of understanding exists regarding suitable metrics, especially for tracking biodiversity impact. Finally, metrics may not be that important given that most DFIs are conducting yes/no evaluations rather than financial valuation.

As for specific measuring and reporting methods and standards[4] such as i) screening tools to review or verify information at the project level, or ii) accounting tools for assessing and reporting performance against specific indicators or sustainable development goals – half of DFIs use the UN SDGs, and over a third use the International Capital Market Association (ICMA)'s Green Bond Principles and IFC's PSs respectively. Few to none use infrastructure specific tools such as the Standard for Sustainable and Resilient Infrastructure (SuRe) or the Sustainable Asset Valuation (SAVi) assessment methodology. DFIs have stated that these tools are not required, not applicable, and/or DFIs lack in-house expertise and awareness of them. Most DFIs do not know what methods can be used to manage biodiversity risks and impacts. Less than a third indicated that they are aware of or have used mapping tools such as the Integrated Biodiversity Assessment Tool (IBAT)5, the Artificial Intelligence for Ecosystem Services (ARIES), the Integrated Valuation of Ecosystem Services and Trade-offs (InVEST), and Co$ting Nature.

## REPORTING: EXPOSURE TO E&S RISKS AND CLIMATE AND BIODIVERSITY FINANCING

**About a third of DFIs periodically review portfolio exposure to E&S risks on a regular basis.** Half of them track and disclose financial risks related to climate change. However, very few track and disclose biodiversity-related financial risks, perhaps due to a lack of knowledge about available tools, metrics and methodologies. More than half of DFIs (57%) follow the Global Reporting Initiative (GRI) standards[5] toto publicly report the impacts of their business activities.

**Most DFIs (63%) do not track or do not know if they actively track climate finance**. However, half of DFIs track the composition of their energy lending portfolio. Generally, climate investment is tracked more than biodiversity investment. The vast majority (88%) of DFIs do not track the level of investment that supports biodiversity, ecosystem services and natural capital goals or simply do not know.

4 The sustainability standards in the study have been grouped at a very high level as either project screening tools or accounting tools based on the degree to which they are focused on accounting or performance rating at the project level vs aggregate accounting or reporting information at the portfolio level or across projects. These two general categories are useful for comparing the different types of tools available to infrastructure investors, but at the same time does not capture some of the nuances and differences between the various standards included in each category. We acknowledge that the types of standards looked at in this report are very different in nature and making comparability assessments can be very challenging.

5 The GRI Standards enable any organization – large or small, private or public – to understand and report on their impacts on the economy, environment and people. Source: GRI, undated.



**Currently, DFIs find it is easier to measure the positive contributions (direct and indirect) of their climate-related investments.** However, DFIs are unable to quantify the biodiversity outcomes of their funded projects. This is because DFIs find it challenging to collect monetary information on a project basis due to a myriad of restrictions. For instance, limited data availability (access is also an issue as it is often held by a 3rd party), or insufficient technical expertise and capacity for natural capital accounting (with most resources dedicated to safeguards).

**The dominant form of financial instrument used for climate change opportunities is debt finance** (86%) (i.e., particularly green loans and green bonds). Other instruments utilised are grants (57%) and technical assistance (43%). Almost two-thirds of DFIs use debt finance followed by grants for biodiversity, ecosystem services and/or natural capital investments. However, one quarter of DFIs were unaware if they use any such instruments for this purpose. Generally, there are more financial instruments available and used for climate-related investments as compared to biodiversity.

**More than half of DFIs indicated that they make investments that contribute to the conservation, sustainable use and restoration of biodiversity and ecosystem services.** This is in slight contrast with their limitations on the subject matter (including lack of capacity and technical know-how to effectively manage biodiversity risks and/or make investments with positive biodiversity outcomes, for example in NbS). Two thirds of DFIs use infrastructure-related approaches and half promote sustainable natural resource use. Investments for biodiversity were often directed towards water security and sustainable livelihoods.

## COVID-19 GREEN RECOVERY

**Within the study, DFIs have shown weak financial commitment to green COVID-19 recovery and indicated that challenges remain.** This is despite zoonotic disease emergence (e.g., COVID-19) and the resulting pandemic, which has increased focus on biodiversity and the need to healthily coexist with nature.

DFIs have been focusing on providing short-term COVID-19 assistance and relief as opposed to long-term green recovery measures. Focus has been on protecting broader development finance portfolios, rather than launching COVID-19 blended finance vehicles. DFIs have mostly focused on protecting existing investments, safeguarding their portfolios, and preserving jobs. Risk aversion among DFIs makes it particularly challenging for them to attract even more risk-averse commercial investors and find new investable opportunities in the near term and the pandemic duration.

Furthermore, travel restrictions frustrate due diligence for investors, requiring deeper local partnerships with financial institutions.

Health spending and mitigating the economic impact associated with COVID-19 have become top priority whereas addressing climate and biodiversity risk has been deprioritised. But choosing between mitigating the economic impact of COVID-19 and tackling zoonotic disease is a false dichotomy. Both need to be tackled at the same time and stewardship for current and future generations (not assets) needs to be liquidised and used as leverage. The trend of growing sovereign debt could present opportunities for promoting innovative green financial instruments such as debt-for-nature swaps.

# RECOMMENDATIONS

DFIs in Asia Pacific have potential to improve the consideration of complex and interlinked ESG issues and opportunities, and the assessment framework employed in this study can be used to provide guidance to realise the full potential of DFIs.

**PURPOSE.** DFIs need to engage more meaningfully with shareholders and stakeholders, such as by participating in commitment-based sustainable finance initiatives such as UNEP FI Principles for Responsible Banking, gaining Green Climate Fund accreditation, and adopting international best practice. Additionally, they should proactively seek mandate enhancements and clarifications from their respective governments to integrate ESG considerations into their founding statutes, overall goals, target sectors, and the geographical scope of their activities. DFIs must also develop and implement time-bound and target-led climate- and biodiversity-positive institutional commitments – in line with commitments made by peers and their national governments through the respective NDC, LEDS, NAP and NBSAP processes[6]. This should include incorporating explicit climate- and biodiversity-positive goals into their COVID-19 recovery plans. In addition, DFIs must work collaboratively to identify and endorse best practices and principles for sustainable infrastructure to improve clarity for infrastructure stakeholders, creating a common language for dialogue, and providing needed metrics for sustainability that can inform decision-making, implementation and monitoring over a project's life cycle. Making these changes will help to ensure sustainability within the economic system – a necessary condition for long-term national growth prospects. Additionally, it will enable DFIs to stay up to date with the constant developments being made in the topic area.

**POLICIES.** DFIs should recognise the linkages between efforts to address climate change, biodiversity loss and socioeconomic development. This would better enable DFIs to manage associated risks and opportunities and can be achieved through public statements through their respective governing bodies. DFIs need to take a strategic approach on the alignment of their safeguard policies with the Paris Agreement and the post-2020 Global Biodiversity Framework. They should develop robust sector-specific policies, including a fossil fuels policy aligned with the latest climate science. DFIs must also implement policies for what they demand of their clients (e.g., financial intermediaries as well as corporate clients) in terms of ESG requirements. DFI can learn from COVID-19 to strengthen policies and better cope with future ESG risk challenges. Making these changes will ensure policies are transparent and intentions are embedded into daily business operations. Additionally, it ensures specific policies exist for high E&S risk activities and climate change and biodiversity loss as prominent cross-cutting topics.

**PROCESSES.** DFI should establish a holistic E&S risk management framework that integrates all material climate- and biodiversity-related risks. They should utilise specific sets of metrics for different ESG risk categories when assessing ESG risks and impacts. ESG risk grading for each impact indicator should be assigned, considering factors such as likelihood and materiality of risks, stakeholder interests, national priorities, and targets. DFIs need also to improve transparency about which specific ESG factors are considered, how these are integrated, and the extent to which they are deemed material in credit assessments. DFIs should also look to adopt more infrastructure specific standards and frameworks such as SuRe Standard for Sustainable and Resilient Infrastructure, GRESB Infrastructure Asset Assessment, FAST-Infra Label, Sustainable Asset Valuation (SAVi), ENVISION Rating system among others. DFIs must bring sustainability into the procurement process because it offers the opportunity to engage early for the most profound impact. Procurement processes that place value on the full lifecycle benefits of infrastructure can help to ensure more accurate cost estimates, which in turn contribute to the fiscal sustainability of infrastructure investments[7]. Making these changes will facilitate E&S policy implementation through the transparent integration of E&S criteria into client and transaction approval processes resulting in meaningful enforcement and consequences for non-compliance.

**PEOPLE.** DFIs should ensure that governing and decision-making bodies are aware of climate change and biodiversity issues as they relate to institution mandates so that they can provide accountability and oversight. Staff appraisal should consider performance relating to ESG issues and training on climate- and biodiversity- related issues should be made mandatory at all levels – board, senior management, and all staff. Furthermore, specialized technical expertise should be made available – especially relating to specialist tools and frameworks – which adequately prepares staff to value impacts/risks (particularly regarding biodiversity and NbS). Making these changes will ensure staff capacity and clear allocation of responsibilities to different departments and senior management with respect to implementing policies and processes.

**PRODUCTS.** DFIs already have utilised many green financial products. The next step would be to increase the extent to which these products are used and to increase the variety used such as sustainability-linked loans. DFIs can also use the NDC, NAP, LEDS and NBSAPs processes to develop sustainability themed business lines, especially where linkages to climate change and biodiversity issues exist. In addition, DFIs can improve the extent to which international public finance is leveraged, whether it be international or regional sources. These and other concessional sources of finance could contribute to an enabling environment for the implementation and scaling up NbS and other biodiversity-positive projects. Making these changes will ensure business operations tap into business opportunities.

**PORTFOLIO.** DFIs need to enhance sustainability disclosure, particularly the impact assessment and reporting of climate- and biodiversity- related risks. On the climate side, DFIs need to improve tracking methodologies (including portfolio alignment, climate scenario analysis, and stress testing) and expand emissions disclosure to report on absolute emissions. They should identify and disclose portfolio level financial risks resulting from the loss of biodiversity, and understand the timescale and extent to which these risks contribute to the total risk profile. DFIs must also provide a template and associated indicators for measuring the positive contribution of financed projects to biodiversity and climate change agendas. A good first step in this direction is benchmarking and cooperating with more advanced DFIs on their ESG integration journey (e.g., benchmarking products, processes such as climate risk assessments and reporting) to improve risk integration, improve capacity and cover data and methodological gaps. Making these changes will facilitate the assessment of key E&S risks at the portfolio level and progress assessment in dealing with material ESG risks and business model transitioning.

**While the first step for DFIs is to 'do no harm' with their investments, the ultimate aim must be to move beyond negative ESG screening and progress towards sustainability-themed business lines[8]** which facilitate the achievement of the SDGs and other national commitments relating to climate change and biodiversity loss. DFIs should always be aiming to redirect finance to investments which benefit biodiversity and the climate through their respective mandates. Limiting investment activities which are harmful to biodiversity or the climate will be insufficient to reverse erosion of planetary boundaries which provide a safe operating space for economic prosperity.

6 Nationally Determined Contributions (NDCs), Low Emission Development Strategies (LEDS), National Adaptation Plans (NAPs) and National Biodiversity Strategies and Action Plans (NBSAPs).

7 Note: If the tenders and contracts that govern the process include sustainable best practices as requirements, then these will be integrated into the planning and design of the infrastructure project from the outset – not fought for later, once time and cost have already been sunk into an unsustainable idea.

8 The authors of this report recognise that there needs to be development in the way positive impact to climate and biodiversity can be measured before DFIs can start to identify projects that 'do good' as opposed to 'do no harm'.

# BACKGROUND

This study continues the line of work in sustainable infrastructure finance and ESG integration that WWF and partners have started. While the previous work focused more on assessing the needs and approaches of private investors, the present report turns the attention to development and public finance actors and aims to support sustainable infrastructure investment and ESG integration at the regional DFIs in Southeast and East Asia. The focus of this report is on the 'E' from the ESG, particularly on climate- and biodiversity-related risks and opportunities as they relate to infrastructure lending. To bring the reader up to speed regarding previous research efforts, a short summary is provided below.

In 2018, WWF Switzerland and Cadmus Group interviewed more than 20 infrastructure investors and related stakeholders about how investors evaluate the sustainability of infrastructure assets[9]. It became clear that most investors typically use ESG factors in the context of a qualitative go/no-go screening rather than integrating them in the financial model. While investors do see the relevance and potential financial impact of ESG issues on their assets, they report they have neither the data nor suitable integration methodologies available to take ESG integration a step further.

To address the need for greater consistency and convergence in terms of how infrastructure investors factor ESG into their investment decisions, the Stanford Global Projects Center (SGPC) – an interdisciplinary research centre at Stanford University, USA – conducted in 2018, on behalf of Guggenheim and WWF US, a review of the tools available to infrastructure investors and other participants in the infrastructure value chain that could help to measure the sustainability and resilience of their infrastructure projects and assets[10]. The core of the study was a comparative assessment of 12 standards and tools based on a five-dimensional framework of each standard's comprehensiveness, objectivity, clarity, transaction costs and traction. It concluded that there are several challenges associated with the development of sustainability standards for infrastructure investment. While the scale of potential impacts may be greater for infrastructure, it is also significantly more difficult to apply standardized measurement tools within the sector.

In 2019, WWF and B Capital Partners published a guidance note[11] to illustrate how the consideration of ESG factors may inform the forecasting of financials, such as revenues, operating costs, and capital expenditure in the context of assessing an infrastructure asset. The report recognized that the journey towards a better understanding of ESG integration in the context of infrastructure investing has just begun. The study offers ideas that invite investors to develop their own thinking about ESG integration.

In 2020, Guggenheim and WWF picked up where SGPC left off and engaged KPMG and Mott MacDonald to apply a selection of ESG and sustainability standards and tools to real-life case studies of operating infrastructure assets and present the results in a public report[12]. The sustainability tools and standards tested for this research only partially fulfilled the identified investor needs; none did so comprehensively. The report recommended that in order to develop a more efficient sustainability assessment process for infrastructure investors, it may be beneficial to refine existing tools, develop a new standard or tool specifically tailored toward the needs of investors, or to combine existing standards and tools so that they better fulfil investors' needs.

Also in 2020, WWF commissioned Oliver Wyman to assess the current industry trends and practices in infrastructure investing as they relate to ESG factors, with a particular focus on climate- and nature-related considerations. The report[13] examined ways in which ESG factors are integrated into investment decision-making processes and the methods used to assess ESG concern. It concluded that investors want to work closely with portfolio companies and include additional climate- and nature-related ESG measurement requirements as part of the due diligence process. In addition to accessing better data quality when considering a single ESG factor, investors are also seeking better ways to incorporate less prevalent ESG factors, such as air pollution and biodiversity. Finally, they are looking to identify key asset classes in which to focus ESG factors into infrastructure investment decision making.

Extremely relevant to this present study, is the 2021 study by WWF France and the Biodiversity Consultancy into how Public Development Banks (PDBs) can align with the Post-2020 Global Biodiversity Framework[14]. Among the 552 PDBs identified globally, not all of them are integrating nature in their process and investment strategies: although multilateral banks and a few bilateral banks follow environmental commitments, apply biodiversity safeguards and are starting to invest in nature, most of national development still do not recognize either biodiversity risks or opportunities and have no investments in nature.

To turn the focus to Asia in terms of background research on infrastructure, in 2018 WWF UK and HSBC produced a short publication which highlights the environmental opportunities and risks of the Belt and Road Initiative (BRI)[15]. This report provided recommendations to the finance sector in three main areas i) integrating sustainability in infrastructure decision-making, ii) demonstrating the sustainable business opportunity, and iii) scaling up sustainable infrastructure. It also proposed three sustainable investment principles for all infrastructure investments: only invest in sustainable infrastructure, in compliance with environmental regulations, best practice planning approaches, strong stakeholder involvement, transparency and monitoring of impacts; invest only in future-proofed environmentally friendly infrastructure; and invest in infrastructure outside or not negatively impacting natural habitats with a critical role for the ecosystem.

Last but not least, WWF-India's recent report *"Integration of Environmental Risks in Infrastructure Investments: A Business Case for Financial Institutions"*[16] indicated that the involvement of financial institutions at early stages of an infrastructure project's life cycle is necessary to identify, assess, and suitably mitigate environmental risks, to catalyse a paradigm shift towards sustainable infrastructure investments in India.

9 WWF and Cadmus Group, 2019.
10 Guggenheim, Stanford Global Projects Center and WWF, 2018.
11 WWF and B Capital Partners, 2019.
12 WWF, KPMG and Mott MacDonald and Guggenheim, 2020.
13 WWF and Oliver Wyman, 2020.
14 WWF and The Biodiversity Consultancy, 2021.
15 WWF and HSBC, 2018.
16 WWF, 2021.

# HOW TO USE THIS REPORT

This report and its recommendations are designed to be of practical value for key stakeholders in the infrastructure finance community:

- **DFIs** can use this report to benchmark their individual performance and inform areas for improvement. Examples of best practice have been included in the report to help raise awareness of how a DFI may tackle various climate- and biodiversity-related issues;
- **PRIVATE INVESTORS AND FIs** can use the information in this report to engage with their partner DFIs to challenge them on areas of poor performance and to highlight positive trends set by leading players;
- **POLICYMAKERS AND REGULATORS** can use this report to identify areas of sector-wide strength and weakness and to determine appropriate policy action that helps protect areas of public interest;
- **INFRASTRUCTURE DEVELOPERS** can use this report to get a better understanding of how to design sustainable infrastructure and to engage early with the public sector actors at the portfolio planning stage; and
- **CSOs AND NGOs** can use this report to identify areas for future research and to design training and capacity building activities.

# SCOPE AND OBJECTIVES

This paper sets out to explore how a selection of DFIs in Southeast and East Asia are integrating climate and biodiversity-related (ESG) factors into their infrastructure investment decision-making processes and policies around financing infrastructure, and the methods used to assess ESG concerns. It highlights the efforts that DFIs have made to date, identifies constraints, and challenges, and develops constructive recommendations to help overcome these. Finally, it seeks to help the infrastructure community and DFIs to reach a more coherent approach towards assessing the sustainability of infrastructure projects.

To address these aims, the research team set out to:

- Map the DFIs' broad sustainability commitments (incl. climate and biodiversity-related pledges) and the evidence for implementing them;
- Map and analyse publicly available strategies, processes, and methodologies concerning climate and biodiversity safeguards across the entire project life cycle;
- Map, analyse, and compare existing methodologies for both risk and impact assessment vis-à-vis climate and biodiversity across investment portfolios and product segments;
- Assess existing reporting and disclosure methodologies on financial flows for climate and biodiversity across DFIs;
- Showcase innovative financial mechanisms which could act as positive solutions for better integrating natural capital, ecosystems services in development finance; and
- Identify enabling conditions for ESG integration.

# METHODOLOGY

The research team identified and sampled DFIs (N=10) headquartered across Southeast and East Asia using five selection criteria as follows:

- Each DFI must have a minimum total asset value of 0.2 bn $USD;
- The DFIs must engage in the financing of infrastructure projects in the Asia Pacific;
- Each country in which the government is the main shareholder of a particular DFI should be represented by a maximum of three institutions and a minimum of one;
- DFIs must be members of the Association of Development Financing Institutions in Asia & the Pacific (ADFIAP); and
- DFIs have expressed their consent to participate in the study.

Next, the research team compiled information through an **in-depth review of existing publicly available information** such as annual and corporate reports, sustainable investment strategies, safeguards frameworks, sector policies, blog posts and articles, and best practice guidelines (N=30). The analysis was based on a version of the WWF's Sustainable Banking Assessment (SUSBA) tool, which was simplified and adapted[17] for DFIs. SUSBA comprises six pillars (i.e., Purpose, Policies, Process, People, Products and Portfolio) that signify what WWF considers to be robust ESG integration (Table 2 and Annex A1). Furthermore, the research team conducted an **online survey** (N=8) (see Annex A2) to provide specific information to benchmark against reporting frameworks, fill in the gaps left by the review of bank disclosures, including obtaining standardized information on climate- and biodiversity-related activities, and to collect the individual views of staff on the status and importance of mainstreaming climate and biodiversity considerations in investment decisions. Additionally, the research team conducted **interviews** (N=5) (see Annex A3) with willing DFIs to clarify responses from the questionnaire and obtain further detail on specific areas of interest (e.g., enabling environments) and to identify case studies of best practice ESG integration at project or portfolio level.

In essence, the collection of data involved looking for written evidence of:

- Broader environmental sustainability mandate or commitment;
- Climate change and biodiversity/nature mandate or commitment (e.g., strategy, or component of the bank's mission and vision);
- Whether a DFI is accredited or signatory of international environmentally related commitments (e.g., UNEP Principles for Responsible Banking, Green Climate Fund);
- Formal safeguards framework used for assessing and managing climate and biodiversity risks;
- Disclosure or reporting on climate and biodiversity risk and/or impacts; and
- Investments that directly or indirectly might benefit climate and/or biodiversity.

17 Note: Deleted criteria unrelated to infrastructure such those concerning agriculture and soft commodities, as well as that unrelated to climate and biodiversity such as water quality or quantity risk due to human intervention. Also deleted general ESG criteria focused strongly on clients or somewhat repetitive.

Table 2. The 10 areas of inquiry of this study. Each of these indicators has been assessed according to their contribution to the International Development Finance Club (IDFC) green finance 'building blocks' as presented in the 2018 Joint MDB Approach to Paris Alignment[18] (i.e., alignment with mitigation goals, adaptation and climate-resilient operations, accelerated contribution to the transition through climate finance, engagement and policy development support, reporting and align internal activities), a key indicator of the SDGs (i.e., Target 15a) which concerns biodiversity finance[19] and the OECD Development Assistance Committee (DAC) Rio Marker[20], the later monitors development finance flows targeting the objectives of the Rio Conventions on biodiversity (amongst others). For a complete overview of the assessment criteria including explanation of scoring, please visit Annex A1.

18 World Bank, 2018.

19 SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. Source: United Nations Department of Economic and Social Affairs: Sustainable Development, undated.

20 An activity should be classified as biodiversity- related (score Principal or Significant) if: it promotes at least one of the three objectives of the Convention on Biological Diversity: the conservation of biodiversity, sustainable use of its components (ecosystems, species, or genetic resources), or fair and equitable sharing of the benefits of the utilisation of genetic resources. Source: OECD Rio Markers, undated.

| Frameworks/Targets/Indicators | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Climate Change Finance/Financing | | | | | | Biodiversity Finance/Financing | |
| | | Joint MDB Approach to Paris Alignment | | | | | | SDGs | OECD DAC Rio Markers |
| | | Accelerated contribution to the transition through climate finance | Adaptation and climate-resilient operations | Alignment with mitigation goals | Align internal activities | Engagement & policy development support | Reporting | Target 15A: DFIs mobilise & increase financial resources to conserve & sustainably use biodiversity & ecosystems | CBD objectives: conservation of biodiversity, sustainable use of its components, fair & equitable sharing of the benefits of the utilisation of genetic resources |
| PURPOSE | 1 Sustainability strategy and stakeholder engagement | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 2 Participation in sustainable finance and infrastructure initiatives | ✓ | | | | ✓ | | | ✓ |
| POLICIES | 3 Public statements on specific ESG issues | | | ✓ | ✓ | | | ✓ | ✓ |
| | 4 Public statements on specific sectors | | | ✓ | ✓ | | | | |
| PROCESSES | 5 Assessing and monitoring ESG risks at project level | | | | ✓ | | | | |
| PEOPLE | 6 Responsibilities for ESG | | | | ✓ | | | | |
| | 7 E&S staff competency and performance evaluation | | | | ✓ | | | | |
| PRODUCTS | 8 ESG integration in products and services | ✓ | | | ✓ | | | ✓ | |
| PORTFOLIO | 9 ESG risk assessment and mitigation at portfolio level | | | | ✓ | | | | |
| | 10 Disclosure of ESG risk exposure and targets | | | | | ✓ | | | |

# INTRODUCTION

## THE ROLE OF INFRASTRUCTURE IN OUR ECONOMY

**Infrastructure is the organisational backbone of the economy (Box 1)**. It underpins human and economic development and is linked to all 17 of the SDGs, either directly or indirectly influencing the attainment of 92% of the 169 individual SDG targets[21]. For example, the availability of transport, communication, electricity, safe water and sanitation, and other basic facilities has a tremendous impact on improving quality of life and well-being. Infrastructure facilities and services are instrumental to the efficient production, transport, and trade that all spur economic growth, which in turn helps in reducing poverty[22].

***Box 1. In a conventional sense, infrastructure displays several specific characteristics[23]***

It represents a **KEY PUBLIC SERVICE**. Infrastructure assets enhance the development of a country as they deliver fundamental public services such as the provision of clean water or electricity, enable the mobility of persons and goods and offer efficient communication.

It is characterised by a **LOW ELASTICITY OF DEMAND**. This means that the use of infrastructure is often independent from business cycles for it plays fundamental roles in the economy: indeed, the rail and road networks are used even during downturns. Hence demand for infrastructure services is expected to remain relatively constant.

Infrastructure is also characterised by a **QUASI-MONOPOLY** with high barriers to market entry given the high upfront cost of new infrastructure and the important returns to scale. Once the network exists, connecting one more household for instance is relatively cheap. Competition appears limited or even non-existent.

As a direct consequence, infrastructure may witness specific **REGULATION**. In fact, in case of little or no competition, regulatory authorities do step in to correct the market by, for example, fixing prices while compensating the infrastructure holder through a set of guarantees.

**LONG SERVICE LIFE** is also a particularity of infrastructure (50-100 years). In fact, some roads existing today in Europe were traced by the Romans some 2,000 years ago, illustrating the notion of infrastructure as the long-term backbone of the economy.

Infrastructure is also expected to provide **INFLATION PROTECTION**: revenues are likely to be combined with inflation adjustment mechanisms, be it through regulated income clauses, guaranteed yields, or any other contractual guarantees. When revenues are generated by user charges, prices follow the Consumer Price Index (CPI) or Gross Domestic Product (GDP) growth.

**REGULAR, STABLE, YET LATE CASH FLOWS** are also a feature of infrastructure. Given the characteristics mentioned above, after an initial construction phase, infrastructure assets produce regular and stable cash flows. Thus, they generally represent safe investment opportunity for risk-averse institutional investors.

21 UNEP, 2021.
22 OECD, 2021.
23 LTIA, 2020.



However, at the same time, **infrastructure can have significant negative impacts on people and the environment**. The construction and operation of grey infrastructure (including buildings, transportation, and power generation) account for approximately 70% of global GHG emissions[24], and can have direct and indirect impacts on biodiversity and ecosystem services. Similarly, poorly planned infrastructure can exclude certain segments of society from access to services and benefits (e.g., employment), and large-scale infrastructure development can lead to displacement of entire communities. Financial sustainability is also a concern, as unaffordable infrastructure projects can burden national and subnational governments with unsustainable debt, and create unsustainable business models for private participation, investment, and local communities. In addition, poorly designed infrastructure can lead to high long-term maintenance or replacement costs during operation and have implications for decommissioning[25].

**For infrastructure to serve a positive purpose, risks to people and the planet must be managed** while societal, environmental, and economic benefits are enhanced, and it should also be resilient and flexible under changing conditions (e.g., climate). Making well-informed decisions is critical, because infrastructure typically lasts for decades, defining our collective future by locking in the consequences of decisions that are being made now.

This is particularly important due to the **scale of new infrastructure investment that is expected in the coming decades, and the short window of opportunity** before unsustainable investments cause irreparable damage to the planet. Increasing demand or infrastructure services means that trillions of dollars will need to be invested in new and existing infrastructure. The Organisation for Economic Co-operation and Development (OECD) has estimated that an annual average of 6.9 trillion USD in climate-compatible infrastructure investment is required over the next decade to meet global development needs[26]. According to the Global Infrastructure Hub, some 94 trillion dollars will be needed by 2040 to cover infrastructure investment needs. But there is a significant gap (of $15 trillion) between these investment needs and current trends ($79 trillion), particularly in low- and middle-income countries[27,28,29]. Asia is a particularly relevant example to point out.

24 Saha, 2018.
25 UNEP, 2021.
26 OECD, 2017.
27 Global Infrastructure Hub, 2021.
28 Hallegatte, Rentschler, and Rozenberg, 2019.
29 For example, approximately 90% of the projected 25 million kilometres of new roads to be paved around the world by 2050 are planned in developing countries, frequently in tropical or subtropical regions, to the detriment of biodiversity and the environment.

## INFRASTRUCTURE STATE OF PLAY IN THE ASIA PACIFIC

Over the past half-century Asia has invested heavily in infrastructure, such as roads, power plants, telecommunication facilities, and water supply and sanitation. Different economies have prioritised infrastructure to different degrees. Some countries integrated infrastructure provision into national and local development plans and followed through on those plans, whereas in other countries these plans were not followed, or they were never made. As a result, some countries improved their infrastructure dramatically, while others fell behind[30], but the region as a whole made significant investments in infrastructure (Figure 2).

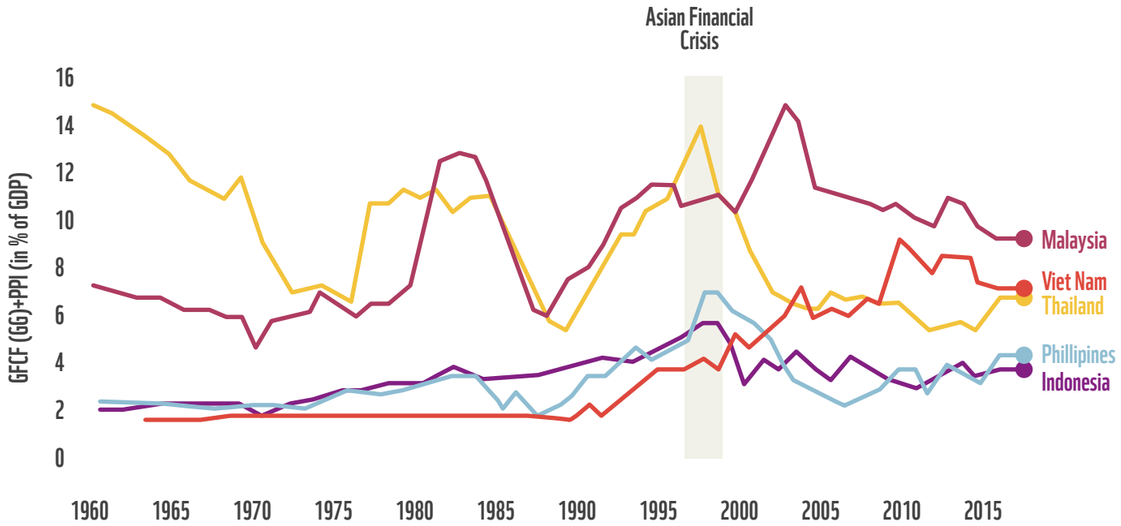



Figure 2. Infrastructure investment in selected Southeast Asian countries between 1960 and 2015. Notes: GDP = gross domestic product, GFCF (GG) = general government component of gross fixed capital formation; Infrastructure investment is the sum of public investment (International Monetary Fund data) and private infrastructure investment (World Bank data). Sources: International Monetary Fund, Investment and Capital Stock dataset, 2017); World Bank Private Participation in Infrastructure database, 2018; World Development Indicators; and authors' estimates.

At present, developing Asia (with its 45 developing member countries[31]) is undergoing transformational changes as it adapts to climate change and pivots towards a more sustainable path of development. But to deliver the SDGs and support its expanding population, the region will **require US$26 trillion[32] in investment from 2016 to 2030** (or US$1.7 trillion per year, climate-adjusted estimate[33]), in infrastructure alone, to maintain current growth rates, eradicate poverty and respond to climate change[34] (Table 3). Even if climate-related costs are excluded, infrastructure investment requirements amount to $22.6 trillion, or $1.5 trillion per year (baseline estimate)[35]. This translates to greater than 5% of the developing Asian economies' GDP over the next decade, in terms of both building new capacity and maintaining and replacing existing structures[36]. Of the total climate-adjusted investment needs over 2016–2030, $14.7 trillion will be for power and $8.4 trillion for transport. Investments in telecommunications will reach $2.3 trillion, with water and sanitation costs at $800 billion over the period. With many of the countries in the region investing much less than that amount, financing infrastructure to maintain economic growth remains a tough challenge – one that cannot be met alone by governments. Furthermore, if this new infrastructure stock is poorly planned, sited, and designed, the result will be damage to some of the planet's richest ecosystems, compromised economic and social development goals, and weakened resilience of supply chains[37,38]. As one of the most geographically exposed and vulnerable regions to climate physical impacts (e.g., extreme weather events sea level rise) and one of the most economically dependent regions on environmentally sensitive industries[39] (e.g., palm oil), developing Asia needs to put itself on a sustainable trajectory. This will not only, reduce its vulnerability, but also provide long-term economic stability and prosperity.

Table 3. Estimated infrastructure investment needs and gaps, 45 developing member countries, 2016-2020 ($ billion in 2015 prices). Note: a) Afghanistan and Pakistan are included in South Asia. b) Climate-adjusted estimates include climate mitigation and climate proofing costs, but do not include other adaptation costs, especially those associated with sea level rise. Sources: 2015 Revision of World Population Prospects, United Nations; and ADB estimates. East Asia (particularly the PRC) accounts for 61% of the required estimate reflecting its high share of regional GDP, population, and infrastructure stock.

| Region | Projected Annual GDP Growth | 2030 United Nations Population Projection (billion) | 2030 projected GDP per capita (2015 $) | Baseline Estimates | | | Climate-Adjusted Estimates | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Investment Needs | Annual Average | Investment Needs as % of GDP | Investment Needs | Annual Average | Investment Needs as % of GDP |
| Central Asia | 3.1 | 0.096 | 6,202 | 492 | 33 | 6.8 | 565 | 38 | 7.8 |
| East Asia | 5.1 | 1.503 | 18,602 | 13,781 | 919 | 4.5 | 16,062 | 1,071 | 5.2 |
| South Asia | 6.5 | 2.059 | 3,446 | 5,477 | 365 | 7.6 | 6,347 | 423 | 8.8 |
| Southeast Asia | 5.1 | 0.723 | 7,040 | 2,759 | 182 | 5.0 | 3,147 | 210 | 5.7 |
| The Pacific | 3.1 | 0.014 | 2,889 | 42 | 2.8 | 8.2 | 46 | 3.1 | 9.1 |
| Asia and the Pacific | 5.3 | 4.396 | 9,277 | 22,551 | 1,503 | 5.1 | 26,166 | 1,744 | 5.9 |

**Currently, the public sector dominates infrastructure financing in Asia**, encompassing around 92% of the total infrastructure investments in the region[40]. Shares vary by location. For example, South Asia has the lowest average public infrastructure financing of 62% while in East Asia the value is over 90%. On the other hand, private contribution to infrastructure financing is rising in Maldives (80%), Pakistan (50%), the Philippines (50%), and India (40%)[41]. However, evidence suggests that, even if massive reforms were made to free up public resources, it would still potentially cover only half of the investment requirements of the region.

Thus, **private contributions are critical to meeting the region's infrastructure finance deficit.** However, there is a seeming lack of interest to invest from the private sector. A myriad of reasons has been offered. This includes the lack of knowledge and capacity to design and implement bankable infrastructure projects[42], lack of knowledge on new technologies[43], lack of alternative financing structures[44], low governance capacity, and, more importantly, weak institutions.

30 ADB and World Scientific, 2020.

31 For their 2017 report – "Meeting Asia's Infrastructure Needs", the ADB included 45 member countries in developing Asia compared to 32 in the 2009 report. Source: ADB, 2017.

32 In 2015 prices

33 The $1.7 trillion annual estimate is more than double the $750 billion ADB estimated in 2009.

34 East Asia will account for 61% whilst Southeast Asia for 10% of these climate-adjusted investment needs through 2030. For 25 countries in 2016-2020, the infra investment gap is 2.4% of projected GDP; excluding PRC, this gap rises to 5% of projected GDP. Source: ADB, 2017.

35 Ibid

36 ADB and World Scientific, 2020.

37 WWF, Guggenheim Investments, Mott Macdonald, and KPMG., 2020.

38 For example, WWF has ascertained that about three quarters of the protected areas of Pakistan will be impacted by BRI projects, including habitats for priority species such as the Snow Leopard, Marco Polo Sheep, Himalayan and Suleiman Ibex, and the Himalayan Brown Bear.

39 More than any other region in the world, DFIs in Asia depend on vulnerable biodiversity and, at the same time, are putting more nature at risk through their financing. DFI investments in Asia were endangering nature worth US$540 billion annually, half the global total. Two key components of this nature at risk were deforestation and water scarcity, especially in Southeast Asia and Central Asia respectively. Source: Finance for Biodiversity (F4B), 2020.

40 ADB, 2017.

41 Ibid.

42 Note that up to 65% of Asia's infrastructure projects are not considered bankable, and it requires significant upfront cost and time on project preparation to get the projects to a bankable stage. Marginally bankable projects typically face a range of barriers to accessing private sector finance. These may include a variety of capability, policy, and economic issues which can impact a project's ability to attract commercial financing. Source: ADB, 2021.

43 Susantono, 2018.

44 ADB, 2017.

## THE ROLE OF DFIS IN INFRASTRUCTURE FINANCING

**DFIs play a significant role in the provision of capital for infrastructure development (Box 2)**. By providing financing solutions through their core expertise, from lending to catalysing capital markets, DFIs can tap into an immense and increasingly critical opportunity while creating positive impact. However, the complexity of infrastructure investment is one of the main reasons why governments in Asia and the Pacific region are investing less in infrastructure than necessary to maintain the present growth momentum[45].

**MDBs have historically been among the most prominent sources of financial support for infrastructure in developing countries**. However, for various reasons, the importance of MDBs in infrastructure has declined in relative terms compared to previous lending patterns as well as to other sources of finance[46]. In 2015, MDBs have financed an estimated 2.5% of infrastructure investments in developing Asia[47]. Excluding India and the People's Republic of China (PRC), MDBs' contributions rise above 10%[48].

### *Box 2. National and international DFIs*

National[49] and international development banks[50] or subsidiaries are usually majority-owned by national governments and source their capital from national or international development funds or benefit from government guarantees. This ensures their creditworthiness, which enables them to raise large amounts of money on international capital markets and provide financing on very competitive terms[51]. Globally, there are over 450 DFIs, with an aggregate US$ 11.2 trillion balance sheet, which is the total value of their lending to companies today[52]. They invest about US$ 2 trillion annually, at the national, regional, and global level[53].

DFIs provide a broad range of financial services in developing countries, such as loans or guarantees to investors and entrepreneurs, equity participation in firms or investment funds and financing for public infrastructure projects. Usually, DFIs will initiate or develop projects in industrial fields or in countries where commercial banks are reticent about investing without some form of official collateral. They are also active in financing small and medium-size enterprises, supporting micro loans to companies, often viewed as too risky by private sources of financing. A benefit of this approach is that DFIs often find themselves with first-mover advantage in markets with strong growth potential[54]. They are potentially potent policy instruments for fixing market failures, incubating markets, and promoting structural transformation[55].

Most financing by DFIs is directly to governments and government-funded projects. Another part goes directly to the private sector in developing countries. For such direct forms of financing, DFIs have developed policy frameworks which set out in detail their responsibilities regarding the management of ESG risks. The way such frameworks are structured often follows these levels:

- First, DFIs define a few sectors or certain business activities that they do not finance and publish these in an exclusion list.
- Second, DFIs outline frameworks for environmental and social assessments and classify projects in different risk categories, leading to specific due diligence depending on the level of risk and governance structure, or to restrictions or special conditions for financing. Adhering to the framework is a prerequisite for potential DFI's borrowers/clients and DFIs are in charge to monitor compliance with that framework throughout the duration of all projects financed.

11.3 billion in impact capital (or investments made with the intention to generate positive, measurable social and environmental impact alongside a financial return)[56] through 289 direct deals in Southeast Asia (Figure 3). Infrastructure accounts for USD 734 million delivered through 15 deals[57] (Figure 4). About 85% of the total DFI investments from 2007 to 2017 have been made through debt[58]. The International Finance Corporation (IFC) is the largest DFI investing in the region, contributing to almost 70% of all deals and more than 65% of all capital deployed by DFIs in the region. Together, DFIs account for over 90% of all impact capital invested in Southeast Asia. Indonesia and the Philippines have seen the most impact investment activity, and Viet Nam, Myanmar, and Cambodia are seeing increasing DFI interest (Table 4). However, analysis of DFI impact investments compared to the size of the invested economies indicates that the amounts of DFI investments in Southeast Asian countries are typically less than 0.01% of countries' GDPs.

45 ADB Institute, 2018.

46 The Global Green Growth Institute, 2015.

47 The 25 DMCs include Afghanistan, Armenia, Bangladesh, Bhutan, Cambodia, Fiji, India, Indonesia, Kazakhstan, Kiribati, Kyrgyz Republic, Malaysia, Maldives, Marshall Islands, Federated States of Micronesia, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, PRC, Sri Lanka, Thailand, and Viet Nam. Source: ADB, 2017. nfra-structure financing in Asia and the Pacific region in general is broadly estimated to be split along the following lines: 70% from public funds (government budgets and national development banks), 20% from private funds, and 10% from MDBs, official development assistance, and other sources. Source: DBS Bank, 2017.

48 Government financing contributes the rest of 90% of infrastructure expenditure in Asia.

49 National development banks (NDBs) are specialized public finance institutions, common in many developing and industrialized countries. At least 280 NDBs operate in the world, defined as having a minimum 30% government ownership stake and an explicit developmental mandate. Source: Humphrey, 2015.

50 DFIs are public banks, accountable to governments, and their purpose is to facilitate sustainable development.

51 OECD, undated.

52 Finance for Biodiversity, 2020.

53 Research in support of the Finance in Common Summit estimates there are about 450 public development banks in the world in 2019, they held US$11.2 trillion assets in 2018, and have annual average investments of US$2.3 trillion.

54 OECD, undated.

55 Jiajun, Xiaomeng, and Xinyue, 2019.

56 Impact investments are defined as "investments made into companies, organizations, and funds with the intention to generate social and environmental impact alongside a financial return. Impact investors must meet three definitional criteria: 1. The investor should have the intention to create positive social or environmental impact through their investments. 2. The investor should expect some financial return. 3. The investor should have a commitment to measure the social or environmental impact created through their investments.

57 Analysis of DFI investments compared to the size of the invested economies indicates that the amounts of DFI investments in Southeast Asian countries are typically less than 0.01% of countries' GDPs. Source: GIIN, 2018.

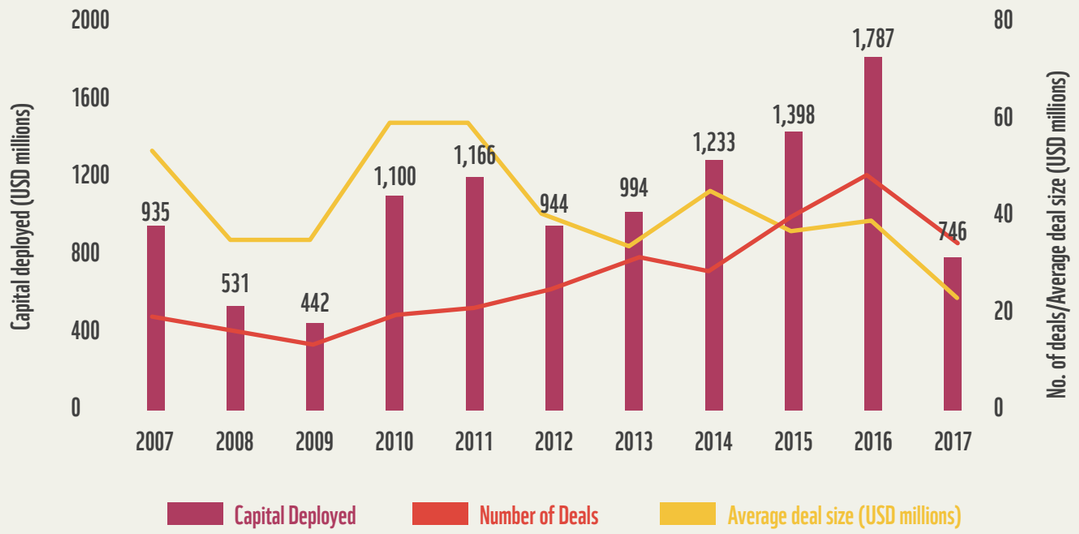



*Figure 3. Impact capital deployed by DFIs, by year. Almost a dozen DFIs have invested about USD 11.3 billion into 289 deals in Southeast Asia (Myanmar, Thailand, Laos, Cambodia, Viet Nam, Malaysia, Singapore, Indonesia, the Philippines, Brunei, and East Timor) since 2007. These DFIs also invest in private funds active in the region. These values, however, reflect only DFIs' direct investments into enterprises or projects to avoid double-counting investments already reported within Private Impact Investors activity. Source: Global Impact Investing Network (GIIN), 2018.*

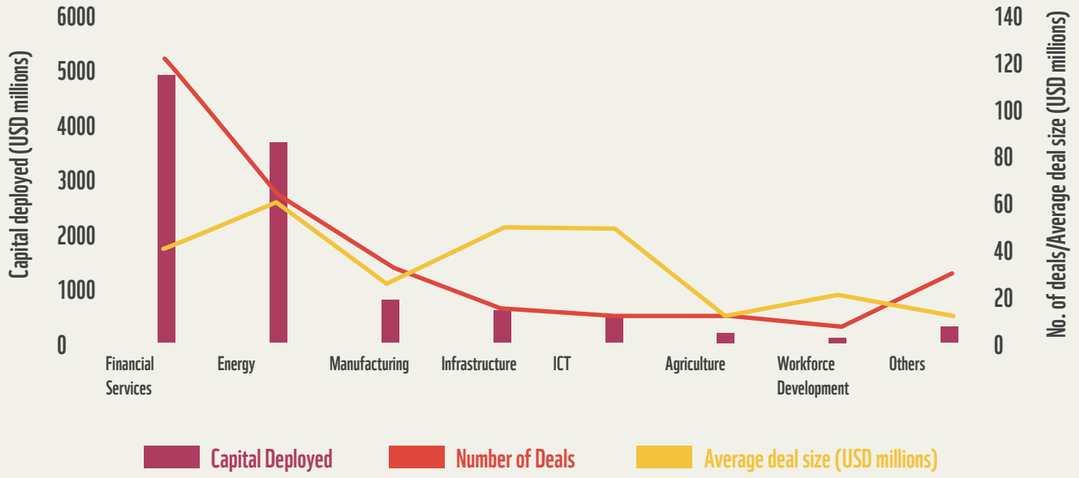



*Figure 4. Impact capital deployed by DFIs by sector. USD 11.3 billion in 289 deals from 2007 to 2017. DFIs have traditionally been attracted to investments in the financial services sector, particularly microfinance, because of its potential to significantly expand the financial inclusion of marginalized communities and women. Within manufacturing and infrastructure, DFIs have invested primarily in large-scale projects that seek to create jobs and improve livelihoods. Source: GIIN, 2018. Analysis from Intellecap Advisory Services.*



Table 4. Overview of key impact investing sectors for DFIs by country. Within manufacturing and infrastructure, DFIs have invested primarily in largescale projects that seek to create jobs and improve livelihoods. Source: GIIN, 2018.

| COUNTRY | KEY SECTORS |
|---|---|
| Cambodia | Most DFI deals in Cambodia have been in financial services, including microfinance and SME finance. Other sectors of investment include agriculture, education, energy, and ICT |
| East Timor | The financial services sector (microfinance) is the only sector in East Timor to receive DFI capital |
| Indonesia | Financial services (both microfinance and commercial banks) and energy have had the highest DFI activity in terms of both the number of deals and amount of capital deployed. Various energy sub-sectors, such as geothermal power, wind energy and hydropower, have drawn investor interest. Manufacturing, WASH, and ICT have also received impact investment |
| Laos | Almost 80% of DFI deals in Laos were made in the energy sector, with financial services and manufacturing also attractive some investment. |
| Malaysia | Financial services and manufacturing are the only 2 sectors that have received impact investment from DFIs in Malaysia |
| Myanmar | Infrastructure and ICT, including telecommunications infrastructure account for over 70% of DFI deals in Myanmar. The energy sector has also received substantial investment |
| Philippines | The energy sector, mostly geothermal energy and solar power has received the most DFI capital deployed in the Philippines. Within financial services, commercial banks that work to expand the financial inclusion and provide loans to SMEs have received investment. Healthcare, education, and tourism are up-and-coming sectors. |
| Singapore | Most DFI investment in Singapore have supported energy and healthcare |
| Thailand | Since 2007, DFIs have invested almost USD 1b into the energy sector in Thailand. They have also invested in financial services and manufacturing |
| Viet Nam | Of all capital deployed by DFIs in Viet Nam, the largest share was channelled towards financial services; no investments, however, were made in microfinance, because microfinance institutions are largely controlled by the Viet Namese government. The manufacturing and infrastructure sectors have also received substantial investment, as the country seeks to position itself as an attractive manufacturing destination after China |

**Public finance reforms could generate additional revenues** estimated to bridge around 40% of the gap (or 2% of GDP) for the 24 economies[59] (excluding the PRC) in the climate-adjusted scenario (where climate mitigation-related needs such as producing cleaner energy and limiting global warming to 2 degrees Celsius between now and 2100 are met)[60].

Although many ASEAN DFIs including MDBs are beginning to embrace sustainability and advance climate-neutral and/or biodiversity-positive approaches to infrastructure financing, **they are facing a range of constraints** such as the weak pipeline of viable projects, high-risk perception, institutional constraints, and poor definition of sustainable infrastructure as an asset class - which is reflected in the fact that green and sustainable financing is currently lacking in ASEAN's infrastructure sector[61]. Asia needs to address these barriers to infrastructure development (Box 3) and the existing and new DFIs will play a key role by developing (among other things) innovative financing mechanisms and instruments that use Asian (national, subregional, and regional) and international savings for infrastructure development[62].

59 The 24 DMCs include Afghanistan, Armenia, Bangladesh, Bhutan, Cambodia, Fiji, India, Indonesia, Kazakhstan, Kiribati, Kyrgyz Republic, Malaysia, Maldives, Marshall Islands, Federated States of Micronesia, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Thailand, and Viet Nam. These countries account for 96% of the region's total population. Source: ADB, 2018.

60 Climate-adjusted scenario includes the climate mitigation costs to meet 2°C global climate goal as well as climate proofing cost (i.e., ADB experience or existing studies)

61 SIIA, HSBC, and KPMG, 2020.

62 ADB, 2018.

***Box 3. There are several challenges that limit our ability to make all our infrastructure, sustainable[63].***

1. One of them is the **lack of a common language around what sustainable infrastructure looks like** and the disparity in the understanding of sustainable infrastructure across a plethora of standards, frameworks, and principles. The latter reflects the need for FIs to look to multiple sources to develop a comprehensive assessment and management of E&S risks.

2. **True value of sustainable infrastructure is not recognized** (i.e., the business case that sustainable investments can generate a positive return has not been demonstrated).

    - Gaps in the understanding of sustainable infrastructure, leading to inconsistent application to capital formation, procurement, regulation, and planning;
    - Inability to model the benefits of sustainable infrastructure and ecosystem value (e.g., lack of understanding of climate risks or ecosystem impact); and
    - Limited understanding of actual cost of project, particularly the indirect costs from environmental degradation or potential savings offered by natural infrastructure (e.g., mountainside road cost estimations do not consider the risk of landslides due to soil degradation further uphill).

3. There are **insufficient bankable sustainable projects** (risk-adjusted returns are too low for some sustainable infrastructure designs because investments in sustainability are not adequately compensated by revenue streams or public incentives)

    - Limited pipeline of bankable models for sustainable infrastructure (i.e., sustainable projects may require additional upfront development capital that investors may not be willing to pay if the funding model is unclear);
    - Insufficient stakeholder engagement including indigenous peoples and local communities;
    - Unfavourable and uncertain regulations and policies; and
    - Local corruption can limit projects or push through harmful projects.

4. **Sustainable infrastructure is not required by procurement and is disadvantaged** (environmental design requirements are not integrated in the project cycle, in particular early-stage project planning).

    - Funding not committed to cover the sometimes-higher upfront costs and risks of sustainable infrastructure (e.g., sustainable projects are identified but cannot raise funding to cover the additional cost and required premium);
    - Inadequate risk-adjusted returns limit investor interest in sustainable infrastructure projects; and
    - Limited government requirements to ensure provision of sustainable infrastructure (e.g., procurement standards);
    - Few hard requirements or pressures on investors to shift the composition of their portfolios;
    - Lack of incentives for developers to bring sustainable projects into pipelines.

5. **Infrastructure practitioners do not have experience or the expertise to make projects sustainable (or overcome barriers)**

    - Best practices are not incorporated early in the development cycle;
    - Limited granular data on environmental and financial risk;
    - Inadequate contractors' expertise to complete sustainable projects or high-risk aversion towards sustainable technologies (e.g., synthetic cement, which does not get widespread traction due to a perceived risk to construction companies in successfully executing on their contracts;
    - Market failure in proving and scaling new technologies or construction approaches that are more sustainable);
    - Procurement practices that do not set common standards for practitioners or encourage the use of more sustainable materials or specialist contractor services; and
    - Inadequate data on cost of sustainable recommendations.

63 WWF and HSBC, 2018.



# APPLICATION OF ESG ANALYSIS IN INFRASTRUCTURE INVESTMENT

## OVERVIEW

**Sustainability analysis can be built into an investment process from both a bottom-up and top-down perspective.** This can include a range of exclusions, identifying which infrastructure projects address the greatest unmet need, as well as quantitative and qualitative assessments. At its core, lies the concept of ESG, which stands for environmental, social, and corporate governance. These are key criteria or dimensions that directly and indirectly affect the financial performance of investments. ESG investment analysis involves acknowledgement of the materiality of and interplay between environmental, social and governance issues by incorporating a set of performance indicators that provide a measure of sustainability. It can be classified into two broad approaches - evaluating the ESG performance of an asset or integrating the selected ESG considerations into financial model valuation[64]. More specifically, evaluation analysis refers to an assessment of qualitative and quantitative criteria which often is reported as a score or rating. This is most used during the due diligence process for benchmarking against other projects and reporting how a particular project fares from the perspective of ESG considerations. This is followed by ESG performance monitoring at the post-investment stage.

Recently, there has been an increasingly nuanced approach. For instance, some investors invest in less "sustainable" assets in a bid to support the transition towards a more sustainable footing from an ESG perspective. Beyond that, some investors have gone beyond a 'yes or no' approach (i.e., exclusions)[65] and are integrating quantified ESG metrics (i.e., assigning a monetary value to an ESG risk) into their valuation modelling assessments[66] (Table 5).


Copyright Credit © Shutterstock

64 WWF and Cadmus Group, 2019

65 In terms of exclusions, investments are generally be screened based on their business model or sector. For example, investments into coal-fired power plants or biomass power plants where biomass was supplied from non-sustainable sources and shale gas projects, should raise red flags.

66 WWF and Oliver Wyman, 2020.

Table 5. Strategies for ESG integration and sustainable infrastructure finance. Adapted from UN PRI, BNP Paribas, and Credit Suisse.

| | Traditional investment | Responsible investment | | Impact investment | | | Philanthropy |
|---|---|---|---|---|---|---|---|
| Types & Description | Long-only position in stocks, bonds, and cash | ESG integration (including shareholder engagement & voting) | Negative screening (& norms based) | Positive or best-in-class screening (& norms based) | Thematic sustainability and/or Themed investments | Impact investing – Market rate | Impact investing – Concessionary rate | Venture philanthropy and Philanthropic donations |
| Focus | Limited or no regard for environmental, social and governance factors | Consideration & analysis of ESG factors as part of investment decision making | Industry sectors or companies excluded/divested from to avoid risk or better align with values | Investments that target companies or industries with better ESG performance | Investments that specifically target sustainability themes (e.g., clean energy) | Investments that target social and environmental impact and deliver market rate returns | Investments that target social and environmental impact and deliver below market rate returns | Grants that target positive social and environmental impact with no financial return |
| Impact intention | Agnostic | Avoids harm | | Benefits stakeholders | | | | |
| | | | | | Contributes to solutions / Seeks high impact | | | |
| Features | Delivers competitive financial returns | | | | | | | |
| | | Manages ESG risks | | | | | | |
| | | | | Pursues ESG opportunities | | | | |
| | | | | | Delivery of impact is central to understanding underlying asset/investment. Focus is on measurable high-impact solutions | | | |
| | | | | | Impact of investment is measured & reported | | | |

Infrastructure is a distinct asset class for a variety of reasons - the impact it has on society at large, its predictable long-duration cash flows and inflation-linked returns as well as insensitivity to economic cycles. Therefore, ESG analysis applied to other asset classes cannot be blindly applied to infrastructure investment. A challenge in applying ESG analysis in infrastructure investment is the length of the project lifecycle as well as the number of entities involved (Box 4)[67]. There are several institutions involved in sustainability measurement at various stages of the infrastructure lifecycle. Therefore, the application of ESG analysis is not straightforward and will vary across the stage of the project lifecycle, the stakeholders, and industries.

**Furthermore, each stage of an infrastructure project has different risks and expected returns, and thus requires a different financing method** (Table 6). During the early stage of planning and construction equity investments and bank loans represent most of the financing. Once the project enters the mature stage and creates stable cashflows, capital can be raised via bond issuance[68]. The participation of international organizations and/or state-owned banks can help an infrastructure project enhance its viability by facilitating the large-scale financing of long-term capital[69]. Investors in infrastructure projects include a diverse range of retail and institutional investors, such as pension funds, insurers, and investment trusts.

67 Bennon and Sharma, 2018.

68 ADB, 2019.

69 When public resources are used, it is critical to design a risk-sharing mechanism to prevent moral hazard and to strike a balance between the public nature of the project and its commercial viability, which is the incentive for private sector participation. For more details on this topic, please refer to Hyun et al., 2008.

### *Box 4. Infrastructure lifecycle, value chain and traditional financing instruments*

The infrastructure lifecycle can be divided into two broad phases - upstream development and downstream or project development. The former is where concepts, policies, and overall plans are developed, and the greatest opportunity resides to influence and change since projects flow from the policies and plans in this stage. In the initial section of the project development phase projects are designed, procurement strategy is defined, limited capital is spent during this stage, and there is a limited opportunity to influence the ideation and pre-feasibility stages. Although the opportunity is limited, this is the stage where the emphasis should be laced in terms of ESG screening. Further down the project development phase (construction, operation and decommissioned) is where contracts have been signed, and most capital is deployed. The land is also purchased, physical structures are in place, and it is very challenging to influence and change.

Figure 5. The infrastructure lifecycle encompasses more than the single project lifecycle and includes decision-making phases that are "upstream" of planning for any specific project(s). The enabling environment is comprised of the institutions, policies, and rules and regulations that govern the planning, delivery, operation, and decommissioning of infrastructure systems. The enabling environment applies to the entire infrastructure lifecycle, although the creation of specific institutions, policies, and rules and regulations necessarily occurs upstream of the lifecycle phases to which they apply. Source: Sustainable Infrastructure Tool Navigator, 2021

For more information about the infrastructure lifecycle please see Annexes B1 and B2 .

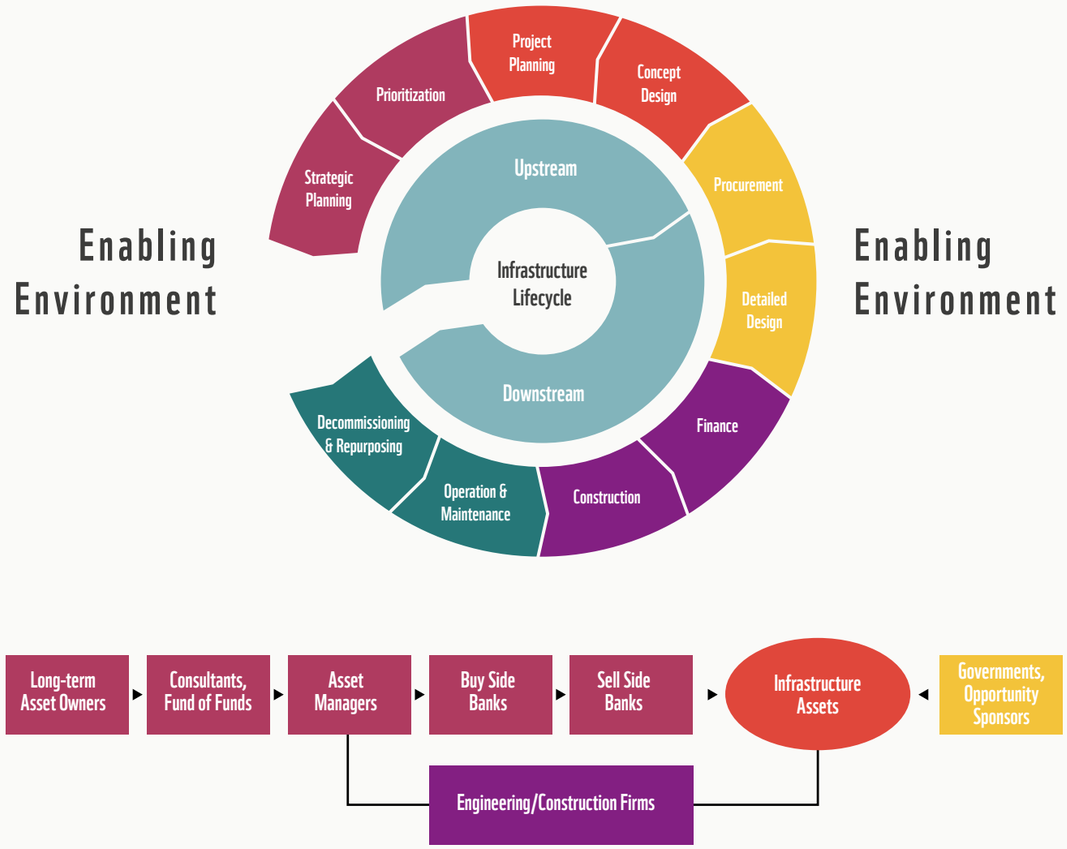



Figure 6. Typical infrastructure investment value chain. Source: Bennon and Sharma, 2018.

Table 6. Taxonomy of instruments and vehicles for infrastructure financing. Source: WWF, adapted from OECD analysis, 2015.

| Modes | | | Infrastructure Finance Instruments | | Market Vehicles | |
|---|---|---|---|---|---|---|
| Asset Category | | Instrument | Infrastructure Project | Corporate Balance Sheet / Other Entities | Capital Pool | Infrastructure Investors |
| Debt | Fixed Income | Bonds | Project Bonds | Corporate Bonds, Green bonds | Bond Indices, Bond Funds, ETFs | Domestic, and international banks |
| | | | Municipal Sub-sovereign bonds | | | Insurance companies |
| | | | Green Bonds, Sukik | Subordinated Bonds | | Infrastructure & pension funds |
| | | Loans | Direct/Co-Investment lending to infrastructure project, Syndicated Project Loans | Direct/Co-Investment lending to infrastructure Corporate | Debt Funds (GPs) | Asset managers |
| | | | | Syndicated Loans, Securitized Loans (ABS), CLOs | Loan Indices, Loan Funds | Sovereign wealth funds |
| | Mixed | Hybrid | Subordinated Loans / Bonds, Mezzanine Finance | Subordinated Bonds, Convertible Bonds, Preferred Stock | Mezzanine Debt Funds (GPs), Hybrid Debt Funds | Bi/Multilateral development banks |
| | | | | | | Export credit agencies |
| | | | | | | Governement & official agencies |
| Equity | | Listed | YieldCos | Listed infrastructure & utilities stocks, Closed-end Funds, REITs, IITs MLPs | Listed Infrastructure Equity Funds, Indices, Trusts, ETFs | Project sponsor |
| | | Unlisted | Direct/Co-Investment in infrastructure project equity, PPP | Direct/Co-Investment in infrastructure corporate equity | Unlisted Infrastructure Funds | International Financial Institutions |

## ESG FACTORS IN INFRASTRUCTURE

**Several parameters are specific to infrastructure and call for the appropriate level of granularity when considering ESG factors.** The most critical parameters include location, type and nature of infrastructure, stage of investment, and expectations from stakeholders.

Furthermore, infrastructure assets face a range of impacts which could affect their technical ability to operate or their profitability. These include external impacts - originating outside the asset (e.g., temperature rise, increased water scarcity, changing regulations, tariffs), and internal - inherent to the asset, which may affect the surrounding environment and communities (e.g., water effluent, quality of life of communities, labour conditions, etc.). In the latter case, we refer to externalities[70,71]. These can, and increasingly will impact an asset's financial performance via various feedback loops (e.g., protests of the surrounding community). Thus, it is important to realize that both directions of impact (impact *on* the asset, and impact *from* the asset) may have financial consequences for investors[72] whether private or public. This is often called *'double materiality'* and it emphasises that a comprehensive approach to risk management should account for how FIs are exposed to ESG-related financial risks but also how they contribute to such risks[73,74]. These potential ESG-triggered financial impacts can and should be estimated and integrated into financial models. While some impacts are more easily quantified than others, there needs to be a conversation around how investors can better incorporate a variety of ESG factors into financial modelling.

70 WWF and B Capital Partners, 2019.

71 LTIA, 2020.

72 These specific ESG-related factors or issues - irrespective of them having an impact *on* or *from* the asset - may have a direct or indirect, positive (business opportunity) or negative (business risk/threat) impact on infrastructure assets. Positive impact may lead to financial gain, negative impact to financial loss. As such, both affect the financial statements of the organisation that holds the assets and their investors one way or the other. WWF and B Capital Partners, 2019.

73 Inspire and NGFS, 2021.

74 Täger, 2021.

Table 7. An inexhaustive list of environment-related ESG factors with potential impact on infrastructure financials.

| FACTOR | DESCRIPTION |
|---|---|
| Air pollution | Gaseous and particulate contaminants that are present in the earth's atmosphere (e.g., PM2.5, $NO_X$ , $SO_X$ ) and which are detrimental to human health and the planet] |
| Biodiversity and habitat loss | Biodiversity is the variability among living organisms from all sources including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part. Habitat is the site (or type of site) where an organism/population naturally occurs and/or the environmental attributes required by a particular species or its ecological niche. Biodiversity loss typically occurs when habitats can no longer support the present species due to invasive activities (e.g., sea bottom trawling, urbanization, fossil fuel harvesting), land-use changes or the effects of global warming (e.g., flooding or drying of wetlands). Protected area downsizing, downgrading and degazettement are also relevant pressures associated with infrastructure development. |
| Climate change effects | Hydrological and climatological - physical impacts of climate change arising from acute (e.g., floods) and chronic risks (e.g., rising sea levels) |
| Greenhouse Gas (GHG) emissions | The contribution to climate change through GHG emissions such as carbon dioxide (CO2), methane, nitrous oxide, and others. Most man-made emissions of CO2, are caused by the burning of fossil fuels, deforestation and other man-induced forest fires leading in turn to global warming and more frequent and extreme weather events) |
| Energy efficiency and sourcing | Energy output divided by energy input (deriving from fossil, renewable, etc.) may have major impacts on the environment and on the cost of running an infrastructure asset) |
| Raw materials and supply chains | Play a key role during the project construction phase; using recycled materials such as steel, can reduce cost and improve energy efficiency; with increasing global competition for raw materials, efficiency becomes an increasingly important metric). |
| Waste and hazardous materials | Such as liquid, solid, gaseous, organic, recyclable and mostly hazardous waste, which requires proper handling to avoid the threat to human health; reduction, reuse, recycling, and waste-to-energy measures are aimed at reducing the amount of landfill waste) |
| Water pollution, depletion, and diversion | Water pollution is the contamination of water bodies (e.g., lakes, rivers, and groundwater) and depleting water quality due to rainwater runoff, untreated wastewater and air pollution leading to acidification of oceans. Depletion of water resources is linked with water and consumption and extraction; water efficiency aims at reducing wastage resulting from a specific process; due to climate change leading to a greater likelihood of droughts in certain areas, water resources become scarcer and water efficiency measures become increasingly important). Diversion refers to the mass movement of water temporarily or permanently to enable construction and operation of infrastructure which can cause a significant change in the flow and water levels in a given water body. |
| Other: noise and vibration, and community well-being | Predicted noise and vibration levels during the site clearance and construction works associated with the proposed development; predicted changes in road traffic noise levels on the local road network during the construction, operational and decommissioning phases; and predicted noise and vibration resulting from operation of the proposed project. Community well-being from any perceived impacts or displacement associated with the infrastructure development. |



## INFRASTRUCTURE -RELATED FRAMEWORK, STANDARDS AND TOOLS FOR ESG ANALYSIS AND REPORTING

Numerous institutions, such as the Sustainability Accounting Standards Board (SASB), the Global Reporting Initiative (GRI), the Task Force on Climate-related Financial Disclosures (TCFD), and the Task Force on Nature-related Financial Disclosures (TNFD) are working to form standards and define materiality to facilitate incorporation of ESG factors into the investment process.

However, it can be hard to navigate the cornucopia of risk management frameworks, valuation/evaluation, and reporting tools out there. While many ESG standards and tools are already available for infrastructure investors and more are being developed and introduced every year, few have been developed specifically for investor needs. The landscape of infrastructure sustainability assessment standards and tools is a crowded space with many, and various options open to investee companies. This creates challenges for investors who need to interpret reported sustainability data and factor it into their analysis and investment decisions. This may be responsible in part for the limited number of ASEAN banks that require their clients to commit to international standards and certification schemes such as the IFC Performance Standards[75].

**ESG schemes for infrastructure investors** can be broadly defined as:

- ESG standards, which are either used as reporting guidelines or certification schemes;
- ESG tool, which are used to produce ESG ratings, scores, or classification; and
- ESG risk management/mapping, scenarios.

Examples of best practices that are widely adopted in infrastructure ESG analysis include (but are not limited to) the Equator Principles[76], IFC Performance Standards[77], SuRe[78] and GRESB[79] (see Figure 7 and Annexes C3, C4 and C5 for more information)

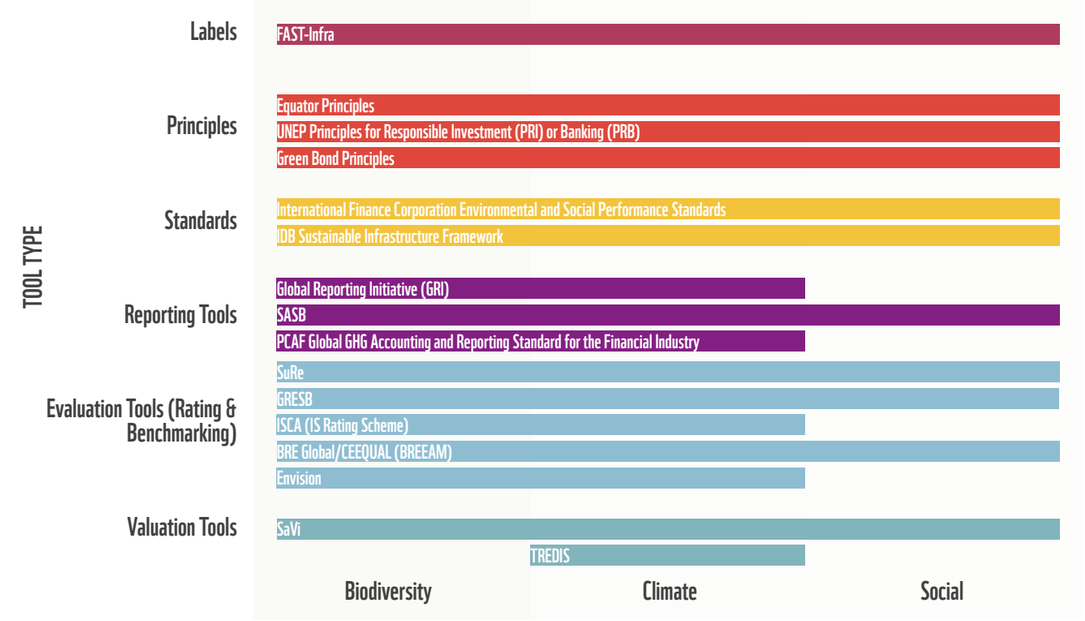



Figure 7. Mapping exercise showing some of the principles, standards, frameworks, and tools most used by DFIs in the context of infrastructure investments. Source: Author's analysis.

75 WWF, Guggenheim Investments, Mott Macdonald, and KPMG, 2020.
76 Equator Principles, undated.
77 IFC, 2021.
78 SuRe®, undated.
79 GRESB, undated.

**DFIs are often financiers of infrastructure projects and play their part in promoting sustainability through due diligence.** Therefore, much of the analysis being done is as part of a screening process before funds are provided to projects. The tools/methodologies chosen by DFIs depend on various key considerations. They can differ in terms of their applicability to different sectors, their level of assessment and their focus on different ESG considerations. Some tools can be more broad-based giving an overall indication of how sustainability can be incorporated into projects in general while others may focus on climate/biodiversity impacts in infrastructure projects.

Infrastructure projects have the potential to augment natural capital and bolster ecosystems allowing for a more symbiotic relationship between human society and the environment. To adopt a more comprehensive approach towards sustainable infrastructure development, a combination of tools that allow for accurate valuation and evaluation should be employed across the infrastructure lifecycle.

The FAST-Infra Sustainable Infrastructure (SI) Label is one step towards putting all these tools and methodologies together in a unified framework[80]. The SI Label rest on the IFC Performance Standards, as well as filling gaps in the current standards, together with making a positive contribution towards a set of criteria drawn from good market practice. The 14 sustainability criteria that underpin the SI label were developed by extensive mapping of leading standards, taxonomies, and principles in the market. Under each criterion, baseline requirements would be the minimum standards that all SI Label infrastructure projects/assets are required to adhere to. Beyond the baseline requirements, there must be a quantifiable positive contribution to a sustainability objective. The strength of the SI Label framework is that stakeholders have the flexibility to use the best available techniques and metrics to demonstrate compliance with the 14 sustainability criteria[81].

## NATURAL CAPITAL, BIODIVERSITY AND ECOSYSTEM SERVICES RISKS AND OPPORTUNITIES FOR INFRASTRUCTURE DEVELOPMENT

**Biodiversity and ecosystem services, which are often collectively referred to as nature, are the foundation of human well-being and economic activity[82].** Biodiversity provides various ecosystem services to humans, including the provision of food, fibre, environmental regulation, and leisure opportunities, as well as offering cultural and religious significance, to which monetary values can be carefully ascribed and which have macroeconomic significance (Box 5). For example, a recent study estimated that ecosystem services alone are worth more than $150 trillion annually — about twice the world's GDP[83].

**But biodiversity is almost universally in a state of decline due to the current model of economic development.** This in turn, threatens the availability of ecosystem services. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) has estimated that one-quarter of species are threatened, and of the estimated 8 million animal and plant species, around 1 million are facing extinction, with the majority of ecosystem and biodiversity indicators in decline[84,85]. In Southeast Asia for example, under a business-as-usual scenario, up to 42% of all species could be lost, of which half would be global extinctions. This translate to 63% of GDP (or US$19.5 trillion), being potentially at risk from biodiversity and nature loss[86]. According to the UK government's Dasgupta Review of the Economics of Biodiversity, "such declines are undermining nature's productivity, resilience and adaptability, and are in turn fuelling extreme risk and uncertainty for our economies and well-being"[87]. The rate of ecosystem degradation, which underlies much of biodiversity loss, is accelerating rather than stabilizing[88].

80 HSBC Global Asset Management, 2021.

81 FAST-Infra Label Framework, 2021.

82 According to the World Economic Forum, over half the world's total GDP – US$44 trillion – is moderately or highly dependent on nature and its benefits or services and, as a result, exposed to risks from nature loss. Source: World Economic Forum, 2020.

83 BCG, 2021.

84 IPBE, 2019. The world's ecosystems have declined in size and condition by 47% globally compared to estimated baselines, and the continued degradation of ecosystem services represents an annual loss of at least US$479 billion per year. Source: UNEP FI, 2021.

85 At global scales, one-third (9,053 of 27,159) of all assessed threatened species (categorized as critically endangered, endangered, or vulnerable; assessed June 14, 2019) on the Red List are threatened by infrastructure, including around half of all threatened amphibians and birds (55% and 46%, respectively). Source: Olav, et al., 2019.

86 This is a higher share than the global average, due to the significant economic contributions of sectors that are highly dependent on nature, including food and agriculture. Source: Temasek, World Economic Forum and AlphaBeta, 2021.

87 Dasgupta, 2021.

88 Moilanen and Kotiaho, 2020.



### *Box 5. What are biodiversity, natural capital and ecosystems services?*

Several terms are associated with the concept of biodiversity including natural capital, nature, ecosystems, and ecosystem services. The difference between each concept, however, is not always clear to the finance community.

**Biodiversity** is defined in the Convention on Biological Diversity (CBD) as the "variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part". This includes variation in genetic, phenotypic, phylogenetic, and functional attributes, as well as changes in abundance and distribution over time and space within and among species, biological communities, and ecosystems.

To clarify, diversity at the level of entire ecosystems, such as wetlands, grasslands, or forests, is a function of the size of the intact ecosystem area, the magnitude of its biomass, and its ability to provide ecosystem services like water regulation or air purification. The variation in species, including plants, animals, and microorganisms involves both richness (number of species) and abundance (population for each species) within each ecosystem, and the distribution of species across ecosystems. Genetic variability is essential to species' ability to adapt to environmental changes and their resilience to external threats, such as diseases.

**Natural capital** is the stock of global renewable and nonrenewable resources in natural ecosystems that provide people with numerous benefits in the form of ecosystem goods and services. It comprises ecosystems and species habitats, water, soil, forests, minerals, and the atmosphere.

**Ecosystem services** are the benefits people obtain from ecosystems. In the Millennium Ecosystem Assessment, ecosystem services were divided into supporting, regulating, provisioning and cultural. This classification, however, has been superseded in the IPBES's assessments by the system used under "nature's contributions to people". This is because IPBES recognises that many services fit into more than one of the four categories. For example, food is both a provisioning service and, emphatically, a cultural service, in many cultures.

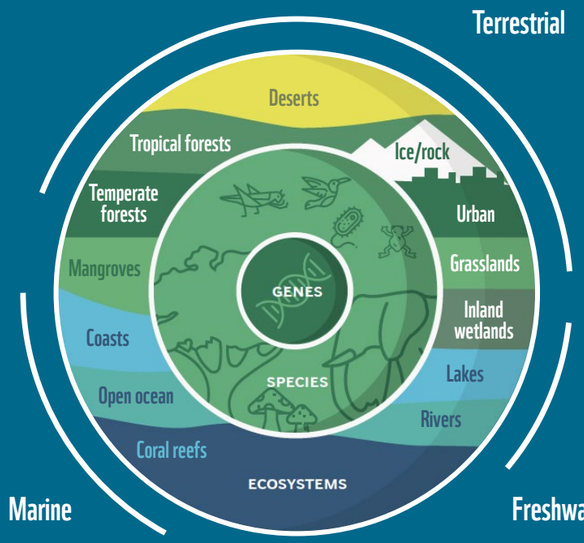



Figure 8. Nature provides ecosystem services, which benefit businesses and society. The assets that underpin these services are called natural capital. Biodiversity is the variety of living components that make up natural capital. It has a role in ensuring the resilience of natural capital assets and securing them for the future. Its loss reduces the quantity, quality, and resilience of ecosystem services and can present risks to investors across many sectors. Sources: IPBES, 2019; IUCN, 2019; and the Group on Earth Observations Biodiversity Observation Network.

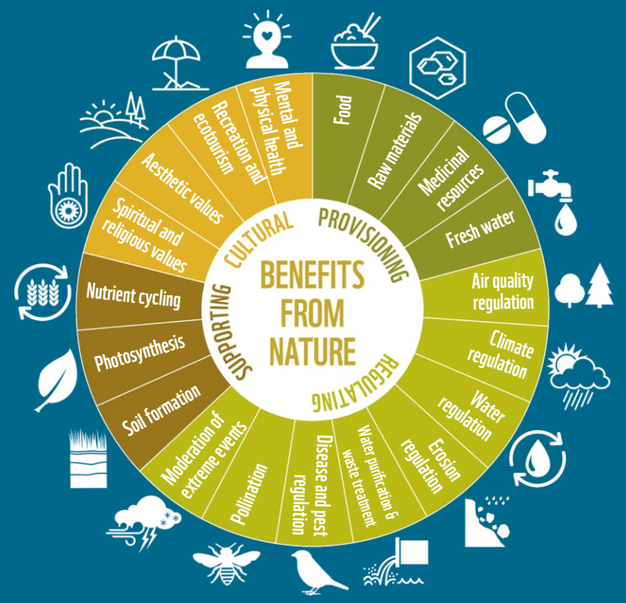



Figure 9. Regulating: natural ecosystems provide services that are essential to environmental stability such as climate regulation (through carbon sequestration), water storage and filtration, air purification, recycling of nutrients, prevention of soil erosion, and control of biological disturbances such as diseases. Cultural: natural ecosystems serve spiritual, heritage, educational, and recreational functions. Supporting: ecosystems provide space for plant, animal, and microorganism species to live, migrate, and procreate; they also support the formation of fertile soil, which is vital for the survival of plants and other organisms, and for food production. Provisioning: this category captures the value of products such as food, timber, and medicinal inputs created within ecosystems. Source: WWF, 2016.

**There are five primary pressures that are causing biodiversity loss.** These are:

1. LAND-USE AND SEA-USE CHANGE;
2. DIRECT OVEREXPLOITATION OF NATURAL RESOURCES;
3. CLIMATE CHANGE;
4. POLLUTION;
5. SPREAD OF INVASIVE SPECIES.

Already, the decline in ecosystem functionality[89] is costing the global economy more than $5 trillion a year[90] in the form of lost natural services[91]. Many business activities — in particular, activities related to resource extraction and cultivation — contribute to the pressures driving biodiversity loss. Currently more than 90% of man-made pressure on biodiversity is attributable to the operations of four major value chains: food, energy, infrastructure, and fashion.

**Infrastructure can have induced impacts on natural capital, biodiversity, and ecosystem services as construction projects open-up previously inaccessible areas to human activity.** These impacts can often be negative, but are also capable of delivering benefits, for example through the provision of protected natural habitats and connecting corridors for species along linear infrastructure, and sustainable drainage systems for mitigating flood risk. Road and river transport complexes present numerous opportunities and benefits for local communities in the form of increased accessibility to markets as well as goods and services such as health and education. They can allow populations living in isolated or difficult terrains to integrate economically, socially, and culturally, increasing vitality and interaction. Linear infrastructure associated with economic activities such as mining and agriculture can allow broader access to electricity and other services, contributing toward delivering the SDGs 7, 9, and 11.

**However, infrastructure development is often one of the major causes of ecosystem degradation and biodiversity loss**[92] and it is projected that the next few decades will see an unprecedented further expansion of it[93]. In fact, infrastructure value chains contribute to about 25% of the pressure on biodiversity[94] (Figure 10).

**Furthermore, meeting the demand for the vast quantities of materials that would be required - such as aggregates, cement, asphalt, and steel, among others - would put upward pressure on raw-resource extraction**, deplete non-renewable resources, degrade freshwater resources, and produce toxic waste that could end up in landfills or water bodies and thus affect terrestrial and marine life. Cement and steel are of particular concern from a climate perspective. Cement alone is one of the most significant GHG emitting materials produced, while steel production requires high energy inputs. Together they are responsible for high levels of embodied carbon in infrastructure - underlining the need to shift away from concrete infrastructure.

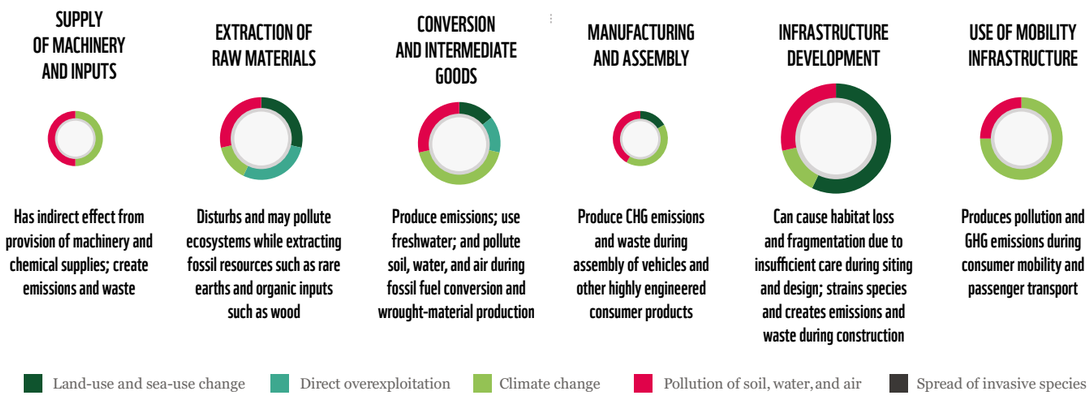



Figure 10. Along the infrastructure value chain, there are various material environmental and social risks in addition to the financial risks that continue to threaten the assets, the performance, value creation and preservation. Source: BCG, 2021.

89 Note that the economic consequences of biodiversity loss can be severe but quantifying them is a complex task. First, knowledge of the interaction between ecosystem services and the economy is limited, partly because an exhaustive overview of ecosystem services on which the economy depends is not available. Second, it is difficult to quantify the impact of biodiversity loss on the supply of ecosystem services. Ecosystems are complex and dynamic systems with tipping points, which can bring about sudden, non-linear changes that are hard to predict, and even the loss of an ecosystem's ability to function. In addition, the loss of an ecosystem service can, through domino effects and feedback loops, have negative consequences for other ecosystem services. Source: De Nederlandsche Bank (DNB) and PBL Netherlands Environmental Assessment Agency, 2020.

90 Estimates are subject to uncertainty, however, they show that the economic value of ecosystem services is considerable. This implies that the loss of ecosystem services can have significant consequences for the economy.

91 Ibid

92 Maxwell et al., 2016.

93 Ermgassen, et al., 2019.

94 BCG, 2021.



**For example, the exploration of mining sites drives habitat conversion;** and the subsequent extraction of raw materials such as sand, rock, and metal ores create both GHG emissions and a high risk of soil, water, and air pollution. Production processes then convert these inputs into building materials, such as cement, and wrought materials — while also creating significant quantities of hard-to-abate emissions of $CO_2$ and air pollutants, and, in the case of metallurgy, requiring large amounts of fresh water. The assembly of infrastructure components and vehicles likewise involves some emissions. At the same time, the associated land clearance may affect slope stability and cause loss of protective vegetative cover which exposes the soil to erosion and uncontrolled runoff. Subsequent, sediment deposition in downstream watercourses reduce stream capacity and can lead to flooding. In the case of hydropower development, dam construction can lead to significant habitat loss (or degradation of habitat) for endangered/protected animals and impact on migration routes or nesting habits (e.g., inundated forests may impact the survival of endangered species). The damage to natural resources may reduce economic productivity, impair essential ecosystem services (such as flood risk reduction, which may become increasingly important in some areas as climate change alters precipitation patterns), or degrade the recreational or cultural value of these resources.

**Another example is linear infrastructure development, which drives land-use change, including the construction of highways, roads, and railways** — across previously pristine ecosystems, and the diversion of natural waterways. Beyond sealing ecosystem areas, such developments often involve fragmenting habitats and opening previously inaccessible areas to exploitation, which can destroy vital mating, feeding, and migration grounds for local and transient animal species. According to the IUCN, almost 40% of global habitat loss is the result of infrastructure expansion. Such issues will become more urgent in the years ahead: the Food and Agriculture Organization of the United Nations (UN FAO) expects that by 2050 an additional 100 million hectares of land — much of it in countries that host vital ecosystems — will be converted to housing, industries, transport networks, and other infrastructure. Already, paved roads have increased by ~12 million km worldwide since 2000, with an additional ~25 million km projected[95] by mid-century.

**Equity is also an issue** as infrastructure is often sited in or near poorer communities who are negatively affected by associated impacts such as air and water pollution, among others. This is an environmental justice issue - particularly in urban areas - that has been even more starkly highlighted during the pandemic. Planned developments could further affect communities that rely on local resources and agriculture for subsistence and livelihoods, adversely impact landscape spatial patterns and local hydrology, cause erosion, and disrupt ecological flows[96].

**DFIs and other FIs tend to disproportionately lend in countries that have relatively high levels of biodiversity, highly resource-intensive economies, and weak environmental regulation**[97]. For example, countries with extensive tropical forest areas such as those in Southeast Asia, are becoming the epicentres of this infrastructure expansion[98], thus threatening many of the world's biologically richest ecosystems[99,100]. Already, globally, 110 million hectares of tropical forest were lost between 2000 and 2012, frequently in the aftermath of infrastructure expansion[101]. This means that there is a large amount of valuable biodiversity, high levels of economic activity that could negatively impact that biodiversity, and a lack of effective rules or incentives to prevent such harm. Therefore, DFIs need not only to mitigate their own potential damage to nature, but also to play a leadership role in helping other FIs to do the same.

**The relationship between biodiversity, natural capital, ecosystem services and the finance sector is indirect and two-way.** The dependence on declining ecosystem services leads to physical risks, and impact on ecosystem services and biodiversity can lead to transition and reputational risks. In other words, it is not only biodiversity-related risks that are material to FIs, but also FIs that are material to biodiversity. Such risks include financial loss due to credit, market and operations risks resulting from negative impacts on biodiversity, through regulation, market access or otherwise. These can also include transition risks from new costs related to inevitable policy responses on biodiversity, and physical risks from the effects of loss of certain species, genetic variety, and key ecosystem services on which their clients' operations depend (Box 6). Physical and transition risks also reinforce each other. For example, the greater the physical risks, the more essential a transition is, but the measures taken are accompanied by transition risks for the economy. Postponing a transition, however, leads to greater physical risks and means that ultimately, a shorter and more abrupt transition period is necessary, which enhances the transition risks[102].

95 Another source estimates that an additional 1.2 million km2 of land will be urbanized between 2000 and 2030 (185% increase), and an additional 3–4.7 million km of roads will be added to the global network by 2050 (22%–34% increase). Source: Meijer et al., 2018.

96 Forman and Alexander, 1998.

97 Finance for Biodiversity (F4B), 2020.

98 Laurance and Burgués-Arrea, 2017; Laurance, et al., 2015.

99 Alamgir et al., 2017.

100 Laurance, Goosem and Laurance, 2009.

101 Hansen, et al., 2013.

102 De Nederlandsche Bank (DNB) and PBL Netherlands Environmental Assessment Agency, 2020.

***Box 6. Harming biodiversity translates to tangible and pervasive risks for FIs.***

**PHYSICAL RISKS.** DFIs are exposed to losses resulting from the declining performance of assets or economic activities that depend upon biodiversity (dependency[103] risk). Physical risks can lead to **credit** and **investment** risks for FIs, as well as **business default** or poor investment results.

- Physical risks are likely to result from the five direct drivers of biodiversity loss (see Section 6.4, paragraph 3). They can be **chronic** (e.g., gradual decline in the number and diversity of keystone and/or foundation species[104] which can cause instability in riparian and other environmentally sensitive areas[105]); or **acute** (e.g., disease spreading due to reduced natural resistance, potentially leading to pandemics and in turn to construction delays); or **both** chronic and acute (e.g., disruption to the water cycle caused by deforestation[106]). They are often **operational**, relating to resource dependency, scarcity, and quality, and tend to be local, although they can quickly spread to multiple sectors and activities and therefore become global.
- A recent study estimated that lending in Asia has the highest level of dependency risk, with US$ 1.56 trillion of assets highly dependent on vulnerable nature, or 50% of the global total. This is driven by two factors. First, it is estimated that more DFI assets are held in Asia than any other region. Second, nature in Asia, alongside Africa, has a relatively higher level of vulnerability relative to other continents with less resource-intensive economies and stronger environmental regulation[107]. Furthermore, lending in Asia also puts the largest amount of nature at risk by a wide margin: US$ 540 billion, or 51% of the global total. This is driven by the larger share of assets held in Asia, but also by the higher intensity with which water is consumed relative to other continents.

**TRANSITION RISKS**. These include government measures, technological developments, litigation and changing consumer preferences aimed at reducing the damage to biodiversity and ecosystems – caused by economic agents that create these impacts – can translate into transition risks if FIs are exposed to these agents directly or indirectly.

- **Reputational risks.** Clients and financiers may withdraw from companies if these companies neglect the risk their environmental externalities may have for their (clients') reputations. This risk occurs in two ways for FIs. On the one hand, clients can choose to opt for a bank with a more sustainable reputation. On the other hand, FIs may also be affected by negative behaviours of their clients. FIs are therefore expected to have an engagement strategy in place to deal with poor client behaviour.
- **Market risk.** FIs can be confronted with a decline in the market value of their investment portfolios if crossing the tipping point of biodiversity leads to large-scale failure of ecosystem services and a resulting loss of production possibilities. As the result of the interconnectedness between such events, and the concentration of activities or sectors in certain regions, crossing the tipping point leads to global systemic risks. These interdependencies are difficult to analyse and discover, also because biodiversity and climate risk factors are not yet integrated into day-to-day risk management.
- **Legal liability risk.** Operations resulting in biodiversity loss may lead to lawsuits by the parties that incur damages. This risk may increase as governments and financial regulators ask for more disclosure and reporting regarding biodiversity impacts. With increasing transparency and companies not always pro-actively raising ESG issues, the risk of being sued for negligence increases.

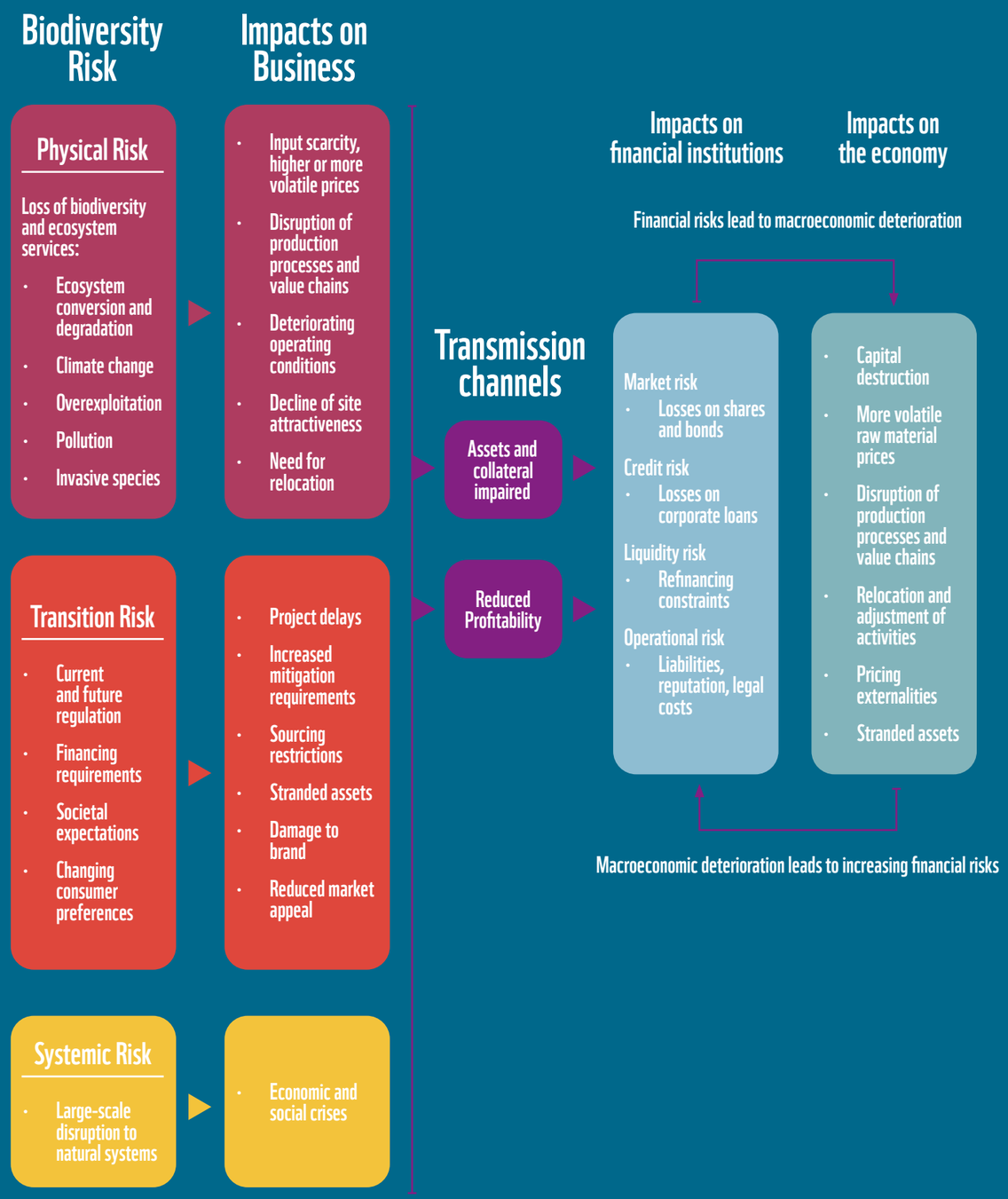



Figure 11. Relationship between the financial sector, business, the economy and biodiversity and ecosystem services risks. Adapted from van Toor et al., 2020.

103 Dependency is a function of the degree of disruption to productive processes if the ecosystem service were to disappear, and the expected resulting financial losses.

104 Keystone species influence the presence and abundance of other organisms through their feeding relationships. Feeding relationships — eating or being eaten — are called trophic interactions. Foundation species exert influence on a community not through their trophic interactions, but by causing physical changes in the environment. These organisms alter the environment through their behaviour or their large collective biomass. Source: Smee, 2010.

105 A classic example is the extermination of the wolfs in Yellowstone National Park, USA. This led to an increase in elk populations, leading to the overgrazing of plants, especially those found in riparian zones. The disappearance of plant species not only caused the loss of habitat for many other animals but also influenced other ecological factors, including stream bank stability, the deposition of organic matter and fine sediment in riparian zones, water temperature regulation via shading, and nutrient cycling. The removal of wolves thus led to the instability of riparian and other environmentally sensitive areas. Source: Wagner, 2010.

106 For example, the loss of mangrove forests through their conversion for coastal development increases the physical risk of coastal flooding.

107 Finance for Biodiversity (F4B), 2020.

***Box 7. Categories of investments that address the impacts in biodiversity***

**Investments with the aim to contribute to ('impact investing'):**

- Investments in the enhancement of existing biodiversity;
- Investments in the restoration of biodiversity to a specific prior state;
- Reduced negative impacts on biodiversity resulting from investments that address one or more of the drivers of biodiversity loss of existing economic activities;
- Avoided negative impacts on biodiversity resulting from investments in the production of energy or resources that replace energy or resources with a higher impact on biodiversity;
- Avoided negative impacts on biodiversity resulting from investments in alternative livelihoods preventing unsustainable resource extraction leading to biodiversity loss; and
- Avoided negative impacts on biodiversity resulting from investments in interventions designed to avert known future risks to biodiversity.

**Investments complying with investment criteria contributing to:**

- Reduced negative impacts on biodiversity resulting from investment criteria addressing one or more of the drivers of biodiversity loss of existing economic activities.

**Investments under engagement contributing to:**

- Reduced negative impacts on biodiversity by addressing one or more of the drivers of biodiversity loss of existing economic activities.

**Insofar, the financial sector has failed to channel large scale capital into biodiversity** (whether conservation, restoration, sustainable use, or other objectives). There are several reasons hypothesised why this is the case, including lack of or limited:

- Understanding of biodiversity among banking professionals;
- Assessment of the materiality of biodiversity loss in the context of banking;
- Guidance and replicable practice banks to follow;
- Measurable and road-tested KPIs to be implement on bank and portfolio level; and
- Understanding of the business case behind biodiversity and ecosystem restoration with which to justify a more strategic approach.

**Considering the risks at play, it is imperative that the financial sector addresses the impacts of its investments on biodiversity**. This requires combining two approaches:

- Investment decisions must include better consideration of biodiversity-related risks and impacts, so that **investments avoid, minimise, restore and when necessary, offset negative impacts** (i.e., apply the mitigation hierarchy; and identify impacts, interdependencies, and risks on biodiversity) or in other words, 'greening finance' [108].
- DFIs should also focus their efforts on impact investing i.e., investing into assets, operations and new projects that can create **a positive impact on biodiversity** or in other words, financing green. Such investments are increasingly termed 'nature positive' (Box 7).

**Many approaches and tools have been developed to help investors and FIs identify, assess, and report on biodiversity- and natural capital- related impacts and dependencies (Box 8)**. For DFIs, which tend to be concerned with measuring the environmental impacts of specific projects, using well-established frameworks such as the Equator Principles or the International Finance Corporation's Environmental and Social Performance Standards or elements of these two which are embedded into their safeguards policies is the most straightforward approach[109]. It is more difficult to do so for a financial portfolio, especially one that is large and well-diversified, or even at a company level. For the latter two, tools such as the Biodiversity Impact Analytics powered by GBS (BIA-GBS®); the Biodiversity Footprint for Financial Institutions (BFFI) developed by ASN Bank of the Netherlands, together with the Dutch sustainability consulting firms CREM and PRé Sustainability; ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure) developed by the Natural Capital Finance Alliance and the UN Environment; Impact Cubed's Portfolio Impact Footprint (PIF); the global biodiversity tool developed by the CDC (the Caisse des Dépôts Group); and UNEP' Portfolio Impact Analysis Tool for Banks can help investors, companies and FIs identify the correlation between environmental degradation and business financial risks[110].

108 World Bank, 2020.

109 Which serve to identify, avoid, and minimize harms to people and the environment. These policies require borrowers to address certain environmental and social risks to receive Bank support for investment projects. Examples of these requirements include conducting an environmental and social impact assessment, consulting with affected communities about potential project impacts, and restoring the livelihoods of displaced people. Source: World Bank, 2016.

***Box 8. Numerous tools, databases, policies, frameworks, and collaborative initiatives have been developed or are under development that concern biodiversity risks***

**Safeguard policies**. DFIs such as the World Bank Group International Finance Corporation (IFC) make investment conditional on procedures which safeguard biodiversity. The IFC formally recognises the importance of biodiversity and sustainable management of living natural resources in its Sustainability Framework. It specifies a set of standards or requirements which require clients to identify, mitigate and manage social and environmental risks for projects receiving direct funding, including risks to biodiversity, ecosystem services and living natural resources. For an overview of a well-developed DFI safeguarding system, please visit Annex C1.

Specifically, the **IFC's Performance Standard 6** (**PS6**) provides detailed guidance to avoid or reduce adverse impacts on biodiversity and living natural resources. It specifies three objectives: "to protect and conserve biodiversity; to maintain the benefits from ecosystem services; [and] to promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities". Towards these ends, PS6 requires clients to assess the direct, indirect, and residual risks to biodiversity in the initial risk-screening process, and to avoid or minimise adverse impacts on biodiversity where risks have been identified.

At the core of most safeguard policies lies the **mitigation hierarchy** which is a framework for managing risks and potential impacts related (but not limited) to biodiversity and ecosystem services. The mitigation hierarchy is used when planning and implementing development projects, to provide a logical and effective approach to protecting and conserving biodiversity and maintaining important ecosystem services. It is a tool to aid in the sustainable management of living, natural resources, which provides a mechanism for making explicit decisions that balance conservation needs with development priorities.

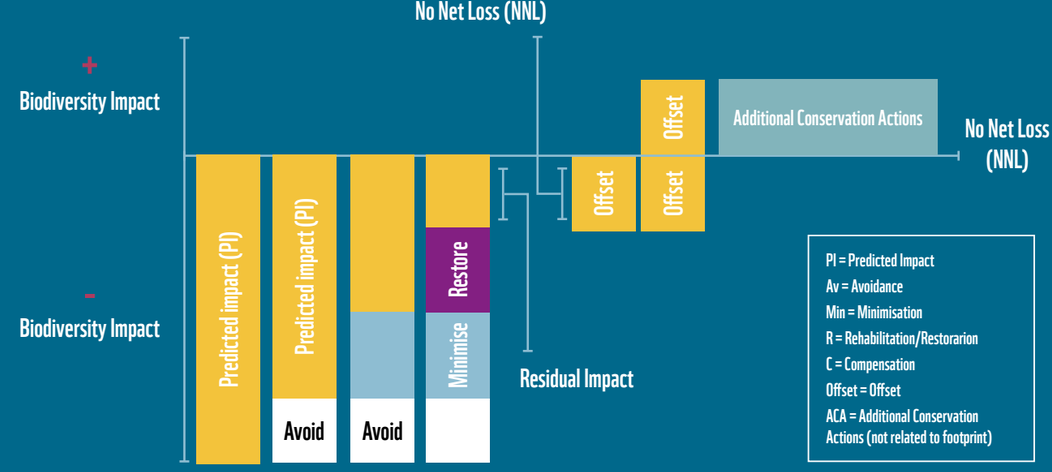



Figure 12. The mitigation hierarchy is not a standard or a goal, but an approach to mitigation planning. It can be used in its own right or as an implementation framework for biodiversity and ecosystem services (BES) conservation goals such as no net loss or net gain/net positive impact (NPI), regulatory requirements and/or internal company standards. It provides a mechanism for measurable conservation outcomes for BES that can be implemented on an appropriate geographic scale (e.g., ecosystem, regional, national, local). Source: Forest Trends, undated.



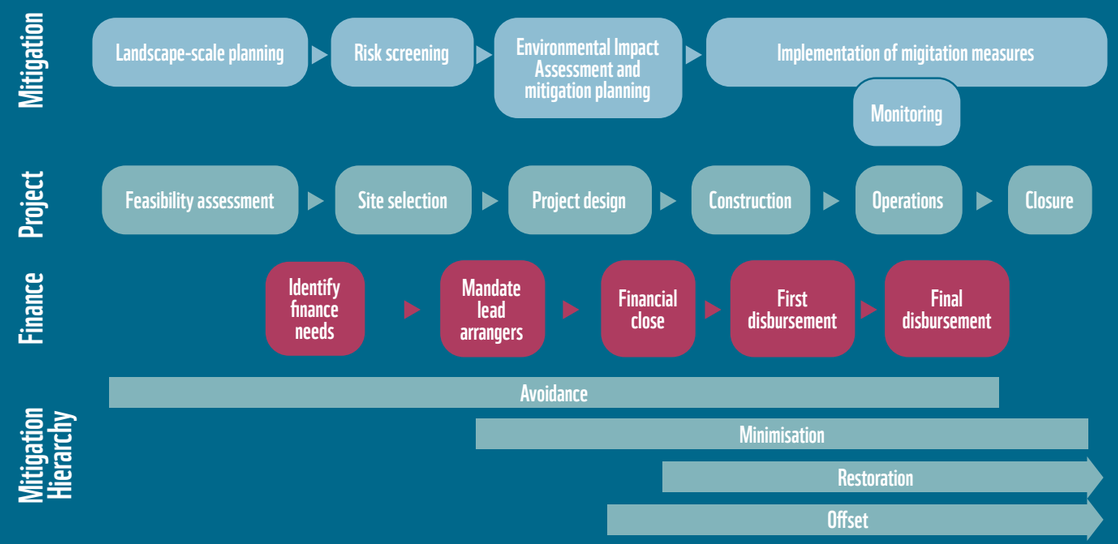



Figure 13. Simplified representation of an infrastructure project, mitigation, and finance timelines, also showing typical implementation timing for the four components of the Mitigation Hierarchy. Partly adapted from CSBI 2013. For new infrastructure developments, the first principle is to avoid intact, functioning ecosystems, which means developments will need to go around, over or under critical ecosystems to avoid unnecessary fragmentation. Large infrastructure networks and nodes, however, can provide compelling opportunities for carefully aligned biodiversity enhancements. But as traditional mitigation approaches based on Environmental Impact Assessments are project specific and not capturing the impacts of infrastructure on a landscape level, they are not sufficient to halt biodiversity loss. With development continuing at a rapid pace throughout the world, a different (i.e., multilevel) approach is required to ensure that infrastructure development is not detrimental to the surrounding environment.

**Risk management tools** include the International Biodiversity Assessment Tool (IBAT), the Natural Capital Finance Alliance's Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE) tool and the Trase forest-risk commodity supply chain database.

**Impact measurement tools** include the Biodiversity Footprint FIs method developed by ASN Bank, a Biodiversity Impact Metric developed by the Natural Capital Impact Group, and a biodiversity impact tool commissioned by a group of four French investment managers, to be developed by two advisory firms.

**Disclosure tools and policies** include the Taskforce on Nature-related Financial Disclosures (TNFD), the EU Sustainable Finance Taxonomy, which will be extended to address biodiversity, and Article 173-vi of France's Energy Transition Law, which has been recently amended to include biodiversity impacts. Thirty-seven FIs, managing €9 trillion in assets, have signed the Finance for Biodiversity Pledge[111], committing to set targets and disclose their annual progress on increasing significant positive and reducing significant negative impacts on biodiversity. The TFND, which should become operational in 2023, seeks to provide a framework for corporates and FIs to assess, manage and report on their dependencies and impacts on nature. When combined with sustainability-related targets for FIs – such as from the forthcoming Science Based Targets for Nature guidance for FIs – it will become possible to determine the degree to which an investment portfolio is aligned with the planetary boundaries.

**Collaboration and coordination initiatives** include the Partnership for Biodiversity Accounting Financials, networks such as the Natural Capital Finance Alliance, the Coalition for Private Investment in Conservation, and EU Business @ Biodiversity.

WWF has recently published two reports which explore the tools and services that provide impact measurement/foot-printing outputs, relevant for portfolio investors[112] and other FIs as well as the approaches by which Public Development Banks can 'green finance' to avoid harm to nature, and 'finance green' to support investments that benefit nature[113]. The Finance for Biodiversity Pledge secretariat has published an overview of finance secto biodiversity initiatives[114]. For more information on best practice for understanding, measuring and reporting on climate and biodiversity risks please visit Annex C2.

111 Finance for Biodiversity Pledge, 2021.
112 WWF, 2021
113 WWF and the Biodiversity Consultancy, 2021.
114 Finance for Biodiversity Pledge, 2021.

**Working with their client and/or customer base, DFIs can turn risks into opportunities** by mitigating impacts on and managing investments in biodiversity in a sustainable way and transitioning to '**biodiversity positive**' investments. At project level, this would mean setting a **net positive impact/net positive gain/net gain** target for biodiversity outcomes in which the impacts on biodiversity caused by the project are outweighed by the actions taken to avoid and reduce such impacts, rehabilitate affected species/ landscapes, and offset any residual impacts[115] . To reach a no-net-loss on a portfolio level, DFIs can use each of the different types of biodiversity- / nature-positive investments (Box 9). To reach a net-positive-gain on biodiversity, a FI needs to invest in the actual increase of biodiversity. The strategy of reaching a no-net-loss or a net-positive-gain lies in the grounding in the mitigation hierarchy, which entails pursuing impact avoidance and reduction, as well as rehabilitation, before resorting to offsetting, and in the suite of tools that has been developed to measure and verify the conservation impacts and gains[116].

***Box 9. In the Asia Pacific, nature-positive infrastructure and built environment opportunities could create over US$1.2 trillion in incremental annual business value in 2030 (together with over 65 million new jobs)[117], while bringing with them a range of biodiversity benefits in key impact areas[118].***

For example, improving energy efficiency in buildings is the largest opportunity, which could help create annual cost savings of US$265 billion in 2030 and generate 21 million new jobs. Improving solid waste management could create an additional revenue opportunity of US$198 billion in 2030 with higher collection and recycling – around two-thirds of the global opportunity. Repurposing land freed from parking for new commercial purposes could generate an annual rental value of US$146 billion in Asia Pacific in 2030.

The Asian Development Bank (ADB) estimates that over 2016-30, there will be a US$600 billion annual transport infrastructure finance gap in its 45 member countries. Green long-range transport is a large market opportunity for using renewable electricity and second- generation liquid biofuels and biogas in the transport sector, which could create up to US$107 billion in additional revenues in Asia Pacific in 2030. For transport infrastructure to be built sustainably, it must minimise the disruption of habitats, reduce associated emissions, and maintain or enhance biodiversity outcomes. This involves shifting away from optimising only for time and distance considerations to integrating positive biodiversity and climate outcomes. It is critical that this shift originate at the planning stage, to avoid fragmentation of intact ecosystems; in design, for example, by including wildlife corridors in sensitive areas; and in construction.

NbS for water supply could save US$51 billion in providing clean and safe drinking water for Asia Pacific's burgeoning urban population in 2030[119]. Reforestation and protection of urban and peri-urban watersheds remains a key solution in Asia Pacific with significant carbon benefits, including avoiding up to 131 MTCO2e per year of emissions from tropical deforestation and sequestering up to 1,015 MTCO2e per year of carbon in soils and forests[120]. Reducing municipal water leakage could create cost savings opportunities worth up to US$38 billion in Asia Pacific in 2030. The opportunity is particularly relevant in megacities and middleweight cities around the region – China accounts for US$15 billion of this opportunity value, low- and middle-income countries in Asia Pacific US$11 billion, and India US$8 billion. Improving resource recovery in extraction can save up to US$162 billion annually in 2030. And fully rehabilitating mines and oil and gas wells to remove contaminants, and developing post- mining local economies, could create a market opportunity for specialist companies worth up to US$31 billion by 2030[121].

115 IUCN, 2016.

116 NPI on biodiversity is realized when the presence of a project or operation in an area ultimately generates positive impacts on biodiversity – impacts that not only balance but are broadly accepted to outweigh, over a quantified timescale, the biodiversity disturbances and damage associated with its activities. Source: Ibid

117 Temasek, World Economic Forum and AlphaBeta, 2021.

118 Note: Nature-positive business models seek to add natural capital back to nature relative to a business-as-usual (BAU) trajectory. These business models include both those that involve direct investment in natural capital (e.g., natural climate solutions, agro-forestry, natural systems for water supply, mine rehabilitation, etc.) and those that reduce our impact on nature relative to a BAU scenario (e.g., circular production models that reduce material demand, alternative proteins, energy efficiency in buildings, etc.). These are inherently different to "green economy" business models or those that generally seek to decarbonise business and economic activities, as these may or may not be pursued by depleting natural capital. However, nature-positive business models by definition do not deplete natural capital while they may or may not contribute to decarbonisation. Thus, some "green economy" business models were excluded from this analysis, including bioenergy with carbon capture and storage (BECCS) and first- generation biofuels, due to their adverse impacts on nature (both involve growing additional crops which require land, water, fertilisers, etc.). Source: Ibid

119 Ibid

120 Ibid

121 Ibid



## CLIMATE RISKS AND OPPORTUNITIES FOR INFRASTRUCTURE DEVELOPMENT

**There is no doubt that climate change is playing a significant role in shaping the future of our economy through a series of tangible extreme weather events such as floods and drought episodes and the rise of the Earth's average surface temperature. Climate change can pose material risks to infrastructure investors and FIs.** The extent to which this translates into risks for infrastructure investment depends upon the interaction of changing climate hazards with exposure (the location of assets) and vulnerability (the propensity or predisposition to be adversely affected)[122]. The inherently large-scale, capex-heavy, and long-term characteristics of infrastructure assets mean they are uniquely exposed to physical risks and challenges.

**Physical risks (acute and chronic, Table 8) related to climate change are becoming a crucial risk category for infrastructure owners and operators.** Natural disasters are already a leading cause of infrastructure disruptions in high-income nations, and climate change is expected to exacerbate these disruptions. Over the past three decades, the number of climate-related natural catastrophic events has almost tripled[123], and Morgan Stanley estimates that approximately two-thirds of all insured natural disaster losses in 2017 were incurred in the property and infrastructure sector[124].

Table 8. Physical risk types according to the Task Force on Climate-related Financial Disclosures (TCFD) risk framework.

| PHYSICAL RISKS | | |
|---|---|---|
|  | **Acute** | Risks driven by discrete extreme weather events, such as hurricanes, floods, or heatwaves |
|  | **Chronic** | Risks driven by longer-term shifts in climate patterns, such as an increase in temperature and rising sea levels |

**Climate change physical impacts can have a material impact on sovereign risk** through direct and indirect effects on public finances (Figure 15). Higher climate risk vulnerability leads to significant rises in the cost of sovereign borrowing[125] and that the magnitude of the effect is much larger for countries highly vulnerable to climate change such as those in Southeast Asia. For example, acute physical risks, such as extreme weather events, and chronic physical risks such as worsening water stress or sea level rises can result in direct damage to operating assets and reduce the production output of borrowers. The reduction in borrowers' operating margins and cash flows and the value of collateral assets can lead to credit downgrades, a higher probability of default, and a reduction in the secondary market value of loans held on bank balance sheets. In more severe situations, borrowers will not be able to meet their debt service obligations, resulting in a higher incidence of nonperforming loans and a higher loss given default due to the reduced value of collateral assets. Financial-sector instability may require public bailouts that could affect the solvency of governments and trigger a "doom loop," where a worsening of the sovereign risk profile and a decline in the prices of government bonds further deteriorate banks' balance sheets[126].

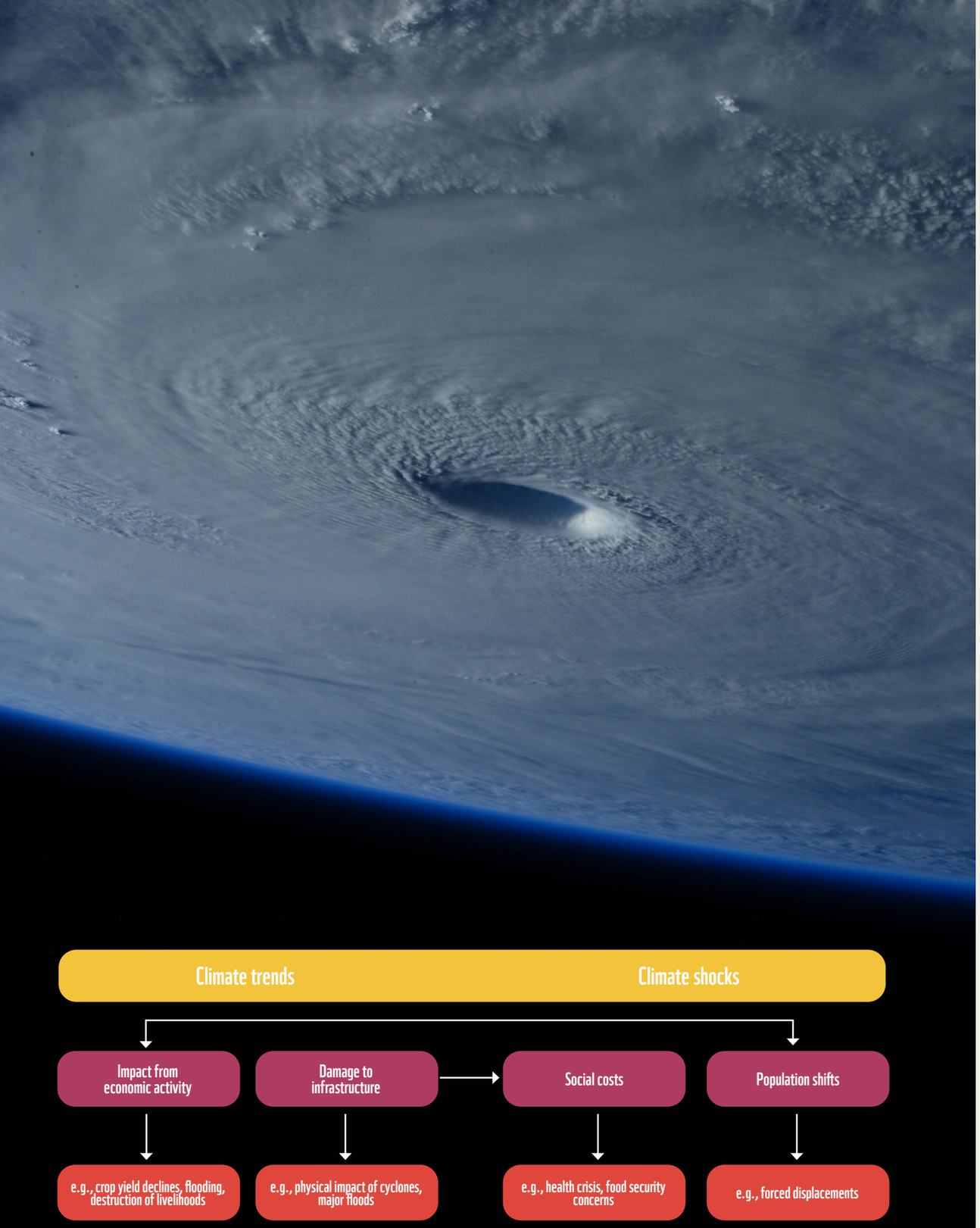
122 OECD, 2018.

123 According to data from MunichRE, climate-related events increased by 2.7 times from 1980 to 2019.

124 Marsh & McLennan Companies, 2020.

125 Volz et al., 2020.

126 Beirne, JRenzhi and Volz, 2021.






***Box 10. Southeast Asia is highly vulnerable to climate change***

Southeast Asian countries are among those most heavily affected by climate change, with devastating impacts on the economy that are increasing at a faster pace than in other regions. For example, sea level rise rates in the Western Pacific Ocean were about three times greater than the global mean during 1993–2012. This is a particular concern for Southeast Asia and especially for the Philippines and Indonesia which are archipelagic states. Even though the vulnerability to climate risks varies significantly across countries, the region constitutes one of the most climate vulnerable in the world where economic impacts of global warming are predicted to be among the largest. For example, more than 152 million people (24% of the population) across Southeast Asia reside in areas that experience flood events, and more than 389 million people (62% of the population) reside in areas that experience drought events.

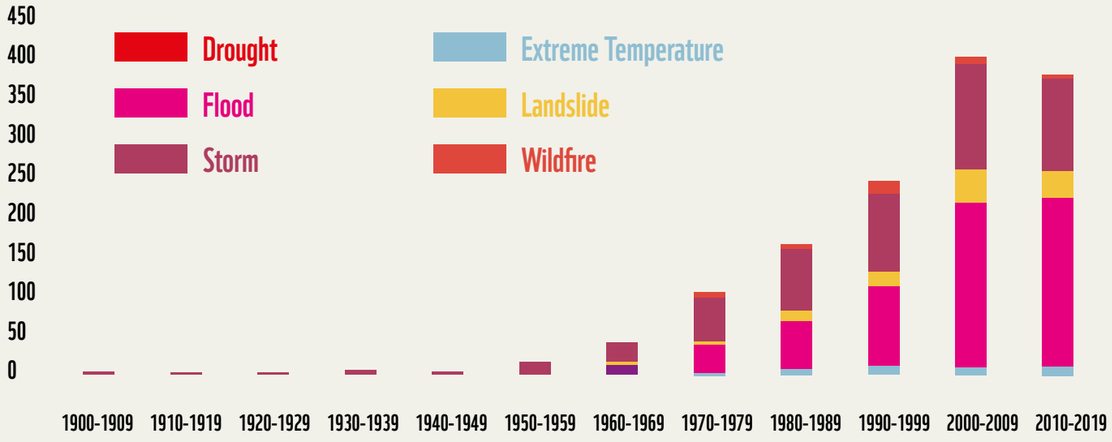



*Figure 15. Historical Occurrences of Extreme Weather Events in ASEAN, 1900–2019. Source: Compiled with data from EM-DAT, 2020.*

The region has also seen an increase in the number and intensity of climate-related disasters and there are numerous multi-hazard hotspots such as the Mekong Delta in Cambodia and Viet Nam[127], the eastern coastline of Viet Nam up to the Red River Delta, the Ayeyarwady (Irrawaddy) Delta in Myanmar, the Chao Phraya Delta in Thailand, Manila[128] and other vulnerable areas across the Philippines, and various populated islands in Indonesia[129]. In the widely-used Climate Risk Index by Germanwatch, which ranks countries according to fatalities and economic losses due to weather-related loss events, four ASEAN countries — Myanmar, the Philippines, Viet Nam, and Thailand — are listed among the 10 countries most affected by climate-related disasters over the period 1999 to 2018, with Cambodia coming close behind[130].

Concerted efforts in adapting to climate change are needed to reduce Southeast Asia's vulnerability to, and impacts of, climate change. The amounts needed to invest in adaptation and resilience will be substantial for all countries in the regions. Failure to make these investments in the near future is likely to result in much greater costs – including in the form of a higher cost of sovereign borrowing. But Southeast Asia is well positioned to address these challenges and capture the opportunities that come from managing climate risk effectively. As the pace and scale of adaptation increase, the region can take advantage of opportunities such as infrastructure investment to embed climate risk into infrastructure design. An effective adaptation plan for the region includes diagnosing risk and enabling a response, protecting people and assets, building resilience, reducing exposure, and financing and insuring. While doing so, stakeholders must address the regressive nature of climate risk[131].

127 Climate change is likely to increase the population affected by fluvial flooding, projected to be in the range of 3–9 million people by 2035–2044 depending on the emissions pathway. Source: ADB, 2020.

128 The Philippines faces some of the highest disaster risk levels in the world, and these are projected to intensify as the climate changes. The country is especially exposed to tropical cyclones, flooding, and landslides. Source: ADB, 2021.

129 Thomalla, Boyland, and Calgaro, 2017.

130 Beirne, Renzh and Volz, 2021.

131 McKinsey Global Institute, 2020.

**Physical climate risks can generate a wide range of losses for infrastructure assets.** These risks can result in unexpected capital and operational expenditures across an asset's lifetime, cutting into returns and diminishing value. Assets without contractual protections [such as availability-based public-private partnership (PPP[132]) contracts or comprehensive force majeure clauses], can also experience serious revenue losses because of physical risk events, and even assets armed with these protections may still find themselves forced into early decommissioning. Illustrations of how physical risks can generate these losses include:

- **Direct operational impacts.** An asset's exposure to physical risks is contextual: its risk exposure depends on asset type, location, lifespan, vintage (with older assets less likely to be engineered for climate change resilience), and interdependencies. Table 9 illustrates variations in the operational impacts of physical climate risks according to a selection of these contextual dimensions — infrastructure sector and risk type. Chief among these impacts is an asset being rendered temporarily or permanently unusable due to damage, reduced efficiency or output, and increased maintenance costs. These impacts can have a severe effect on asset profitability[133].
- **Widespread portfolio impacts.** Understanding the risk landscape can help identify where — and how — multiple segments of a portfolio may be disrupted by a single physical climate risk. For example, water supply risks arising from droughts, heatwaves, or chronic temperature escalations can have widespread effects. Water and sewage infrastructure providers stand to face both reputational and revenue risks. Segments of the energy sector are also extremely vulnerable to water supply risk: water shortages from climate change have a direct impact on hydro and thermoelectric power output and on maintenance costs at power plants that rely on water reservoirs to serve as a coolant.
- **Interdependent climate risks.** Such risks emerge when a physical climate event does not impact an asset directly; rather, it impacts an adjacent community or linked infrastructure network, rippling into the asset in question. The intensification of interconnections between assets has the potential to magnify the effects of any single natural disaster and generate risk multipliers across a wide range of interlinked assets[134].

Table 9. Selected physical climate risk impacts on core infrastructure sectors. This table focuses on the direct impacts of each risk type, and therefore do not include the indirect effects chronic risks can have on acute risks. A drought can manifest as a chronic risk in the form of a multiple-season or multiple-year drought or a permanent change in water availability. Source: OECD, IFC, World Bank, Marsh & McLennan Advantage.

| | Chronic risks | Acute Risks | | | |
|---|---|---|---|---|---|
| **Sector** | **Sea level rise** | **Temperature rise** | **Drought/Heatwave** | **Storm/Flood** | **Wildfire** |
| Energy | Inundation of assets | Coolant losses | | Network outages | |
| | | Hydropower output reduction | | | |
| | | Transmission and distribution efficiency loss | | | |
| Telecoms | | Distribution network failure | | Network failure/Damage to assets | |
| | | Coolant losses | | | |
| Transport | | Melting/buckling of roads/rail | | Traffic disruptions | |
| | | | Water-based traffic disruptions | | |
| Water and sewage networks | | Increased need for treatment | | | |
| | Increased desalinisation requirements | Water source shortage | | Liabilities/fines for overflow | Water source shortage |
| | Increased water storage requirements | | | | |
| Impacts | Physical damage | Efficiency/output loss | Maintenance cost increase | | |

134 Marsh & McLennan Companies, 2020.



**Infrastructure assets also face unexpected dynamics from the regulatory, legal, market, technological, and reputational risks generated by the transition away from fossil fuels** (Table 10). For example, new national and multilateral government initiatives (such as fiscal support for green energy and commitments to "net-zero" emissions targets) will accelerate the transition and expose traditional energy infrastructure investors to multiple transition risks if they fail to adapt. Carbon Tracker estimates that 42% of today's global coal power plants already run at a loss, a number that could rise to 72% by 2040. As governments and international organizations look to legislate reductions in carbon emissions and increased resource efficiency, infrastructure assets beyond the energy sector face challenges. Air travel, shipping, and water distribution will need to confront inevitable changes in both demand for their services and the cost structures underpinning them. Costs will also rise for projects as they adapt to meet new low-emissions rules: The International Maritime Organization has committed, for example, to reducing shipping emissions by 2050 by 50% from 2008 levels. This move will have important cost implications for port operators as they seek to minimize emissions from both idling and active vessels passing through their facilities. Expectations around minimising waste and consumption will also affect construction and procurement on projects. With urban infrastructure consuming 40% of the world's resources annually, scrutiny by governments and users over the use of resources will increase across a project's life cycle, from construction to maintenance.

Table 10. Transition risk types according to the Task Force on Climate-related Financial Disclosures (TCFD) risk framework. Source: Press and Marsh & McLennan Advantage.

| | TRANSITION RISKS |
|---|---|
| **Market** | Unpredictable shifts in the inputs for infrastructure development (financial and non-financial) and changes in the quantity and nature of infrastructure demanded by governments and users |
| **Policy** | Government policies or financial programs linked to the energy transition that affect the competitiveness of infrastructure assets or longevity of their returns |
| **Legal** | Risks from climate-related litigation, such as injury claims from physical loss events, failure to disclose climate risks, or unjust enrichment from or impairment of public trust resources |
| **Technology** | New climate-related technologies threaten to directly replace existing assets, indirectly endanger usership/ revenue, create opportunity costs in efficiency losses, or leave new markets underutilised. |
| **Reputation** | Risks from shareholders, government, consumers, or the public (such as through social organizations or grassroots movements) challenging corporations' or investors' social license to operate |

**The pressure to minimize emissions and maximize resource efficiency will take shape through the interplay of a range of transition risks.** Infrastructure investors will need to prepare for the complex, multidimensional risks these dynamics can produce in the long term, including far-reaching policy shocks, stranded assets, and an uncertain subsidy landscape.

- **Far-reaching policy shocks.** Policy adjustment will serve as a driver of many transition risks. Between 1997 and 2017, the number of global climate change laws increased twentyfold[135]. Governments are legislating new initiatives and reforms favouring the green transition, a trend that is likely to trigger additional transition risks for infrastructure investors.
- **Stranded assets.** The transition to a low-carbon global economy poses serious "stranded asset" risk (i.e., the possibility that a portion of existing assets tied to long-term financial agreements may lose economic value well ahead of their anticipated useful lives). Policy shifts and market dynamics have intensified stranded asset risk by accelerating innovation and helping low-emissions technology become price-competitive. Climate-conscious consumers have also raised the spectre of reputational risk for companies with exposure to high-emissions infrastructure. Reputational damage erodes companies' social license to operate, quickening the obsolescence of their assets as governments, consumers, and shareholders drive up business costs or close their wallets to their services. As a result, major infrastructure assets stand to be left "stranded" in the coming decades. The International Renewable Energy Agency (IRENA). estimates that up to US$700 billion in power asset value might be lost by 2050 due to asset stranding — 82%

135 LSE, 2017.

of which will be in coal assets[136]. Over the long term, gas-fired power plants and gas pipelines may also find themselves on the front line of stranded asset risk. Gas has long been referred to as an important "transition fuel" due to its low emissions relative to coal and oil, as well as its ease of distribution in emerging markets. However, climate scientists have noted that reliance on natural gas will prevent many nations from meeting their Paris Agreement targets.

- **Uncertain subsidy landscape.** This major policy risk is rooted in technological advancement and market dynamics. Innovations including solar photovoltaic conversion efficiency, wind turbine improvements, and lithium-ion batteries, as well as the unexpected rush of new projects and competition in recent years, have allowed for example, renewable prices to fall and compete with those of fossil fuels leading several governments to re-evaluate the case for renewable subsidies.

**The stable and long-term returns offered by the infrastructure asset class are under increasing pressure.** As the global economy adapts to both physical changes in the Earth's climate, as well as to the transition towards a low-carbon operating environment, infrastructure investments stand to face new levels of loss and disruption. Developing a nuanced understanding of both the physical and transition risk landscape will be crucial for infrastructure investors. By translating these risks into balance sheet effects and, ultimately, strategic decisions, investors will be better able to select long-term investments that retain their value and yield stable returns.

## BIODIVERSITY AND CLIMATE CHANGE CONVERGENCE

**Climate and biodiversity are intrinsically linked as climate change is one of the underlying drivers of habitat and biodiversity loss, while the deterioration of ecosystems and their services contributes to rising greenhouse gas emissions.** And healthy ecosystems underpin the resilience of people and nature to climate change impacts. Not only is nature fundamental to our societies and economies but it also functions as a 'biological insurance policy. Therefore, achieving global goals for addressing one cannot go without achieving those for the other. This is why the synergies between climate change and biodiversity loss two are a key issue of the international negotiations towards COP15 on Biodiversity and COP26 on Climate Change.

**Research on NbS (Box 11) has shown that ecosystem restoration can contribute much to climate change adaptation and mitigation whilst fostering and maintaining biodiversity**. There is also a growing appreciation in the finance sector of the investment opportunity brought about by NbS, which have been confirmed by a series of case study as capable to deliver excellent return on investment[137]. Some MDBs have even recognised that the economic recovery from COVID-19 is an opportunity to both tackle the climate crisis and build higher societal resilience through nature. The truth is that NbS often provide cost-effective approaches that could contribute to achieving several of the SDGs: they create employment while simultaneously protecting nature, mitigating climate change, and making human societies safer, healthier, and more resilient.

**For the Asian DFIs, NbS are a particularly advantageous investment, and the Asia Pacific region** would enjoy an outsized benefit from robust investments in NbS. As detailed in previous chapters, Southeast Asia is one of the most vulnerable regions to both environmental and climate hazards. At the same time, the region hosts more than 20% of all plant and animal species and four of the world's biodiversity hotspots. It is also home to the biggest blue carbon stock in the world, with the largest areas of mangrove swamps and seagrass meadows found in Indonesia and the Philippines. This, along with the 500 million hectares of tropical forests, represents significant potential for absorbing excess carbon dioxide from the environment. The protection of tropical forests in the region alone may result in $27.5 billion worth of return-on-investment every year.

136 Marsh & McLennan Companies, 2020.
137 Naturvation, 2020.



### *Box 11. Nature-based solutions (NbS)*

NbS are interventions that are designed to address major societal challenges (food security, climate change, water security, human health, disaster risk and social and economic development) by using nature (ecosystems and ecosystems services) sustainably[138]. The concept of NbS has gained recognition in the past decade as an overarching concept for green and blue infrastructure, ecosystem-based adaptation, carbon storage and sequestration, ecological/natural infrastructure, urban forests, ecological restoration, aimed at achieving human and ecological benefits, synergistically improving well-being and biodiversity.

NbS refers specifically to place-based interventions, as opposed to policy actions, and can be applied in both rural and urban environments. It is important to distinguish NbS from business-as-usual conservation work. Conservation focuses on securing nature and biological diversity, using a range of approaches including protected areas, species conservation, and policy and advocacy to ensure that species and nature can survive. NbS focus on using nature to help people by addressing societal challenges, whilst protecting nature. There are overlaps between the two: NbS is an approach that can be used in conservation, and conservation action is essential to maintain the nature used in NbS. However, they are not synonymous. NbS interventions must be explicitly designed to address an identified societal challenge and be able to show how it is doing so through monitoring of robust indicators. Thus, NbS is a tool for social development that has biodiversity benefits.

NbS that address climate are a subset of NbS, addressing only one of the 6 IUCN identified societal challenges. For WWF, NbS for climate change are: "ecosystem conservation, management and/or restoration interventions intentionally planned to deliver measurable positive climate adaptation and /or mitigation impacts that have direct positive implications for human development and as a minimum, do not harm biodiversity" (Figures 16 and 17).

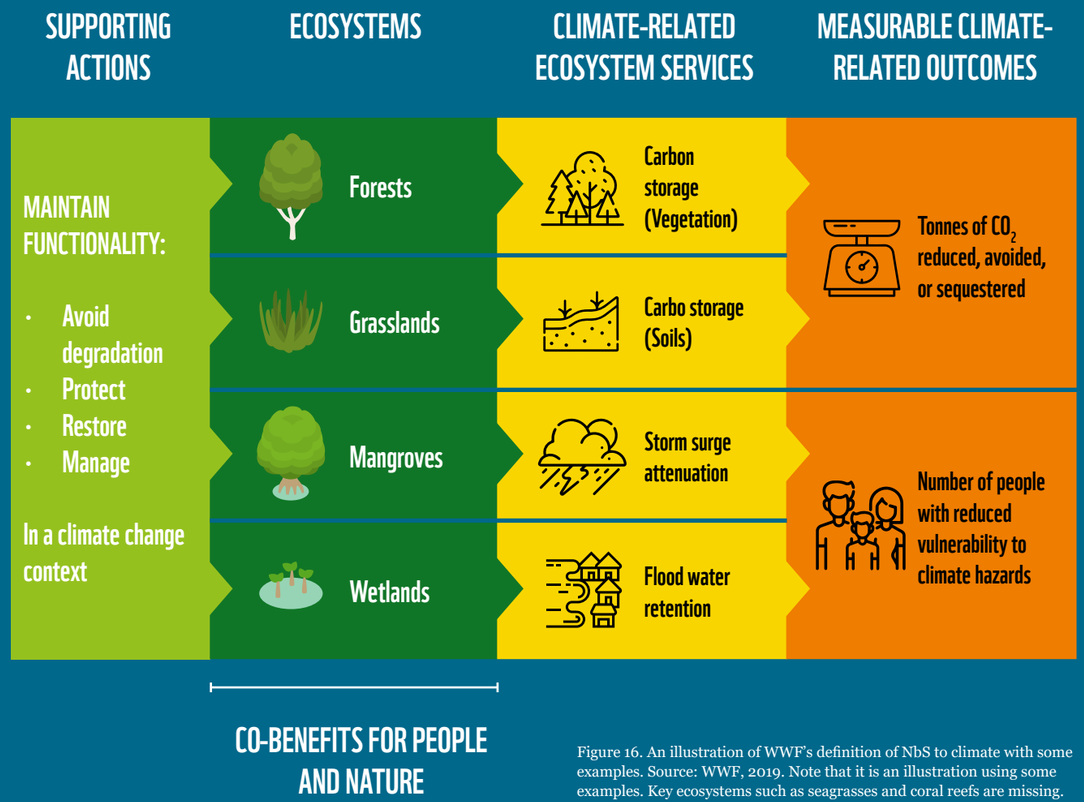


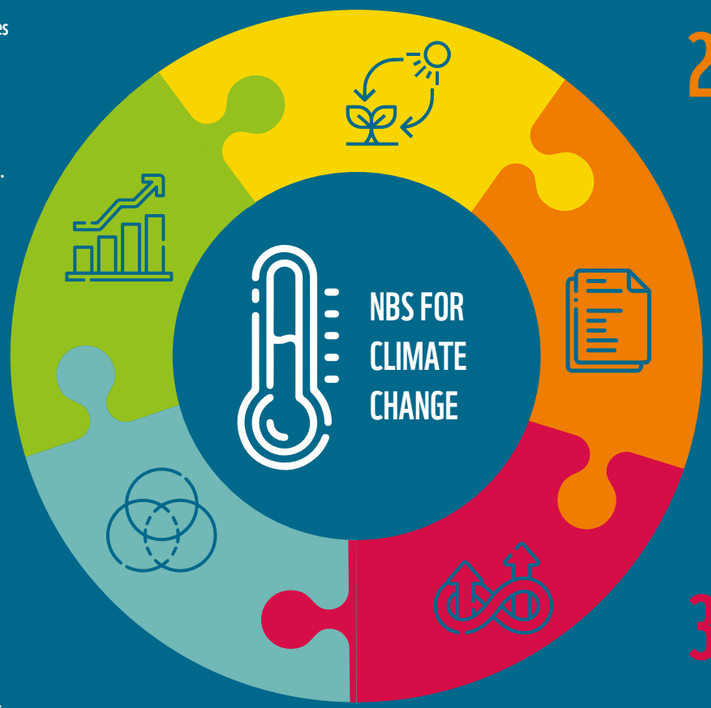

Figure 16. An illustration of WWF's definition of NbS to climate with some examples. Source: WWF, 2019. Note that it is an illustration using some examples. Key ecosystems such as seagrasses and coral reefs are missing.

138 The IUCN defines NbS as, "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits ". Source: IUCN, undated.

**1** RESULT IN INCREASED CLIMATE AMBITION AND ECOSYSTEM FUNCTIONALITY. Nature-based solutions interventions contribute increased climate change adaptation and/or mitigation rather than compensating for low ambition in other sectors, ensuring that needed energy, food, urban and infrastructure net zero transformations support one another. Improving ecosystem funcionality invonves assessing how climate change will affect nature and taking steps to better manage these risks.

**5** MEASURABLE AND TRACEABLE: Outcomes can be quantified and attributed to interventions through robuts monitoring, evaluation and reporting frameworks.

**2** INFORMED BY SCIENCE: uses the best available climate, biological and social sciences to set achievable and measurable targets.




**4** CO-DESIGNED AND CO-IMPLEMENTED WITH INDIGENOUS PEOPLES AND LOCAL STAKEHOLDERS as both a way to understand their most pressing challenges as well as building co-responsibility.

**3** SYNERGISTIC: Help reduce and/or avoid emissions and/ or reduce human vulnerability while conserving nature and trade-offs among other societal goals as well as avoiding adverse impacts on biodiversity e.g. through broad, single-species restoration

Figure 17. To meet the definition stated earlier, WWF has identified 5 key principles for NbS for climate change. Source WWF, 2020.

The IUCN Global NbS Standards provide a framework for ensuring that several key considerations are taken into account when developing NbS. The ones below are of specific concern which we would like to highlight.

- The potential impacts on gentrification and displacement of indigenous and poor communities should be considered upfront. These should be avoided, and when needed, managed observing the highest existing international standards of social inclusion and informed consent.
- Carbon credits generated by well-planned NbS projects should align with jurisdictional approaches and not be considered appropriate offsets unless they are additional to a 1.5°C decarbonisation trajectory informed by the Science Based Targets initiative or another credible reference.
- Commercial forest plantations are not considered a nature-based solution. They are generally monocultures and do not provide the biodiversity net gains which are a precondition of v interventions.
- A successful NbS intervention in one place cannot necessarily be directly transplanted to other contexts and regions. NbS results will be determined by the natural, cultural, socioeconomic and policy contexts in which applied.



## COVID-19 IMPLICATIONS FOR INFRASTRUCTURE DEVELOPMENT

**The COVID-19 pandemic has brought added urgency and complexity to the infrastructure issue.** It is now widely accepted that COVID-19, biodiversity loss and climate change have common origins: the broad-based degradation of nature. Many recent infectious diseases have animal origins (zoonotic) linked to unsustainable patterns of development, including deforestation, mining, urban expansion, and intensive agriculture. COVID-19 has accelerated the need to internalize environmental and societal issues in our development models, be it in our modes of production and/or consumption.

**Recovery plans are unprecedented in their scope and scale, and it is essential that they are similarly unprecedented in their ambition** to shape a future that puts us on the path to a more sustainable and resilient world, rather than continuing a damaging business-as usual trajectory or exacerbating it. The requests for urgent economic recovery plans in developing and emerging countries have brought DFIs, including MDBs (e.g., the World Bank and regional banks such as the ADB), to release very significant financial recovery packages and call for debt release and/or moratoriums. This nevertheless means that it is necessary, now more than ever, to make sure that DFIs align their increased portfolios with biodiversity conservation principles, tools, and objectives. **Governments worldwide have already allocated trillions of dollars in economic recovery packages**[139] that involve significant investments in infrastructure as a means of stimulating the economy[140]. These investments represent an unprecedented opportunity to reduce dependence on fossil fuels, protect and create natural capital[141], and increase resilience to future crises while simultaneously closing the global infrastructure gap and stimulating the economy[142].

**Well-targeted green stimulus measures can generate more jobs and better growth than brown alternatives, however they require proper design and delivery, as well as the right mindset.** Spending on renewables and energy efficiency, for example, creates five times more jobs per 1 million USD invested than spending on fossil fuels[143]. Furthermore, green recovery could create 395 million jobs by 2030 globally. The green transport sector alone could generate up to 15 million jobs, and investment in renewable energy could lead to up to 63 million jobs worldwide by 2050[144]. Investments in green infrastructure can become a central point in climate-resilient economic recovery due to its vast job creation potential. Similarly, investing in climate resilient infrastructure in developing countries can create 4.2 trillion USD in benefits, with a return of 4 USD for every 1 USD invested[145]. And green recovery measures could put countries on a more orderly course to achieve net-zero goals and limit future costs and risks associated with other paths. However, a large proportion of recovery spending is still being invested in unsustainable sectors[146,147] (Box 12).

### *Box 12. COVID-19 recovery in numbers*

According to OECD, out of a total of $1950 billion spent so far, only $336 billion have been allocated to environmentally positive recovery measures, which is evenly matched by non-green measures (those with negative or "mixed" environmental impacts). The bulk of green measures represents grants or loans (making up around 37% of the 680 measures in the database), tax reductions or other subsidies (17%), and regulatory changes at around 11%. More than 60% of green measures are sector-specific and, they target energy and surface transport (comprising 20% and 16% of the total respectively)[148]. This is good news since these sectors account for a high proportion of GHG emissions in many countries and are often good candidates for quick rollouts (e.g., renewable electricity projects and electric vehicle infrastructure).

On the other hand, measures for key sectors like aviation and industry show overwhelming balance towards mixed and negative categories[149]. Climate change mitigation is by far the most common environmental dimension impacted by the recovery measures tracked (nearly 90% of funding), both positively and negatively, and about equally split. In synergy with climate measures, the next most common dimension impacted is air pollution (with around a third of total funding, again evenly split). In contrast, other environmental dimensions feature much less strongly. Biodiversity accounts for less than 10% of the allocated funding. Water is also poorly represented, accounting for around 8% of positive measures in both funding and measures. And waste and recycling are hardly represented at all[ibid].

139 Vivid Economics, 2021.
140 Davisson and Losavio, 2020.
141 The World Forum on Natural Capital defines natural capital as the "world's stocks of natural assets which include geology, soil, air, water, and all living things". Natural capital yields sustainable flows of valuable goods and services. For more information see Costanza and Daly, 1992.
142 International Monetary Fund, 2020.
143 Garrett-Peltier, 2017.
144 OECD, 2021.
145 Hallegatte, Rentschler and Rozenberg, 2019.
146 International Institute for Sustainable Development, 2021.
147 OECD, 2020.
148 OECD, 2021.
149 Ibid



# RESULTS AND DISCUSSION

*This chapter presents the results from the study in more detail focusing on the six assessment pillars: purpose, policies, processes, people, products, and portfolio as well as on barriers and enablers. A case study on NbS further exemplifies the issues and opportunities of concern.*

## PURPOSE

*This section looks at mandates and sustainability strategies, E&S stakeholder engagement and knowledge dissemination, participation in sustainable finance and infrastructure initiatives, and general motivations for ESG integration.*

Most DFIs (>85%) referenced sustainability and/or the SDGs in their public documents (e.g., annual reports) and acknowledged the economic and societal risks associated with climate change (Figure 18). In comparison, far fewer (40%) acknowledged the risks associated with biodiversity loss. This corroborates with the survey results, where most DFIs stated to have mandates[150] that relate to the SDGs and/or sustainability, although social and economic considerations, as they relate to accelerating infrastructure development or financing strategic sectors, dominate over environmental ones[151]. Climate (57%), and biodiversity (43%) follow next, with the latter being the least embedded 'topic' into the strategies, vision, and mission statement of DFIs.

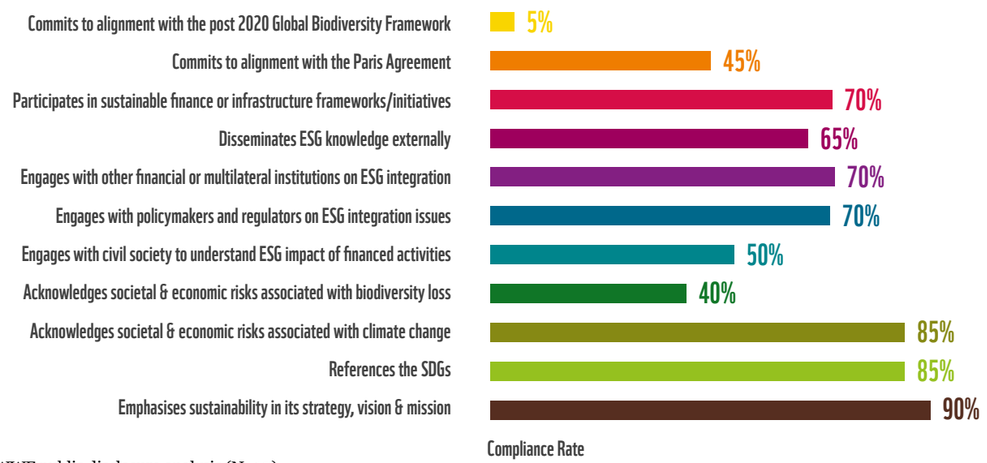



Figure 18. WWF public disclosure analysis (N=10).

150 Green investment is highly compatible with recovery priorities, as it can drive fast job creation, create new economic opportunities, and have multiple other benefits
151 DFIs' formal mandates are established in legal founding documents (Articles of Association) and mostly focus on economic and social goals. Only a few mention environmental protection as part of their mandate.

This has also been exemplified by the fact that the importance of positive economic returns and social outcomes for investments outweigh positive outcomes for biodiversity and climate change (Figure 19).

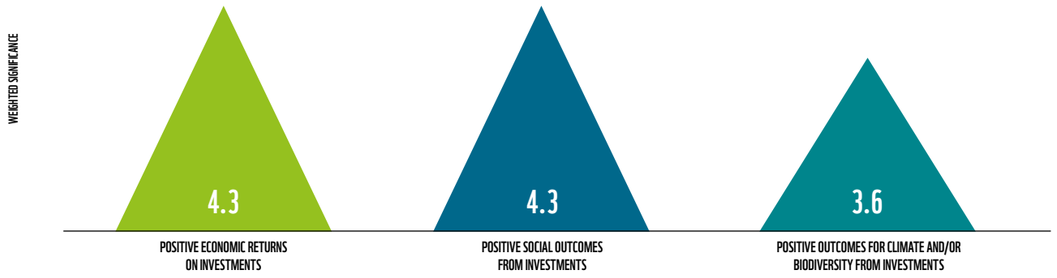



Figure 19. Note: Survey respondents were asked to rate the importance of various investment outcomes (on a scale of 1 = not considered to 7 = extremely significant). A weighted average was then taken to obtain the above data. Source: WWF/ADFIAP survey (N=6).

All DFIs have targets covering general topics such as to increase the total gross loan portfolio under key development thrusts, for example infrastructure and logistics, environmental initiatives, social services, community development, and Micro, Small and Medium Enterprises (MSMEs). Fewer (63%) have clear sustainability-linked target/s (e.g., climate or biodiversity finance, renewable energy and/or energy efficiency financing targets), accompanied by key performance indicators (Figure 20). Of those with targets, most are focused on climate finance and social responsibility. Targets that include biodiversity are lacking except for one DFI, which affirmed to have targets related to the blue economy, including on sustainable fisheries and tourism, ecosystem management, pollution control, and sustainable coastal infrastructure (e.g., green ports). This corroborates with most interviews which stated that defining biodiversity and quantifying related risks, impacts and benefits is a challenge, which in turn hinders mainstreaming[152] including target-setting and financing. DFIs also expressed their concern in ensuring that double counting does not occur and maintaining environmental integrity is assured when considering the biodiversity finance coming from climate finance.

Two thirds of DFIs indicated that they have an implementation strategy with clearly defined operational priorities to act upon the above-mentioned targets. However, the disclosure analysis indicated a smaller score for this criterion, suggesting in turn that these implementation strategies may lack detail on environmental sustainability.

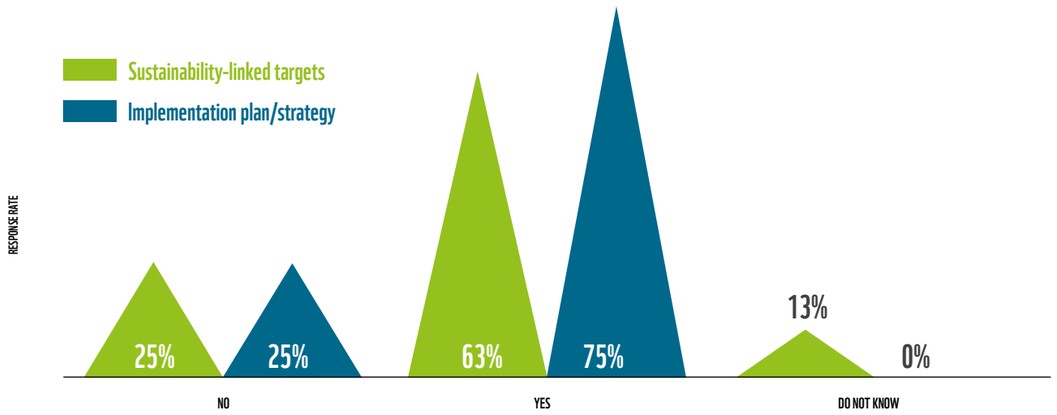



Figure 20. Note: Survey respondents were asked if their institution has any sustainability-linked target/s (e.g., climate or biodiversity finance targets, renewable energy and/or energy efficiency financing targets) and if their institution has an implementation plan/strategy with clearly defined operational priorities to act upon these commitments. Source: WWF/ADFIAP survey (N=8).

152 The CBD defines the mainstreaming of biodiversity as "integrating or including actions related to conservation and sustainable use of biodiversity at every stage of the policy, plan, programme and project cycle, regardless of whether international organizations, businesses or governments lead the process". Source: CBD, undated.



"BIODIVERSITY IS NEW, AND WE ARE AT THE STAGE OF DEFINING WHAT WE MEAN BY IT AND HOW DO WE GET IT MAINSTREAMED ACROSS ALL OF OUR PROJECTS. WE CAN IDENTIFY PROJECTS THAT ARE CONTRIBUTING TO BIODIVERSITY, BUT WE DON'T HAVE IT AS A MAINSTREAMED APPROACH."

Two thirds of DFIs, engage regularly with policymakers, and other financial or multilateral institutions on E&S risks and sustainability-related issues compared to only half that regularly engage with the civil society.

While 65% of DFIs tend to disseminate knowledge related to E&S risks and opportunities or wider sustainability considerations across and outside of their organisations, the quality of content, amount of detail, release frequency of publications, and the effectiveness and diversity of dissemination channels varies greatly across institutions. For example, larger DFIs have developed research institutes, which are used to channel knowledge products bi-monthly, monthly, or quarterly and provide intellectual input for policymakers, whereas less-resourced DFIs rely on corporate social responsibility (CSR) or to a lesser extent, on sustainability reports, released annually or every couple of years.

Most DFIs participate in sustainable finance initiatives such as UNEP FI Principles for Responsible Banking, UNEP FI Sustainable Blue Economy Finance Principles and IFI Working Group on Climate Change among others (Figure 21). Half of DFIs have received accreditation[153] from the Green Climate Fund - meaning that they have been seen to have specialised capacities in driving climate action and are major conduits of international funds from multilateral and bilateral institutions for ODA programmes and grants (Figure 22). This in turn indicates that there is willingness across the DFIs to make a commitment to align all financial flows with the Paris Agreement and thus mitigate climate change, but this is proving a significant organisational challenge.

In contrast, the willingness to make a similar commitment to align financial flows with the post-2020 Global Biodiversity Framework to be adopted at the COP15 of the CBD is almost non-existent across DFIs. This is due in part to the lack of an overarching goal for biodiversity (i.e., corresponding to the 1.5°C warming limit for climate), understanding of the (environmental and financial) scope covered by biodiversity (as well as associated risks and opportunities, and a clear and standardised approach for tracking biodiversity finance, and few client projects that come in with embedded biodiversity elements. Furthermore, the efforts needed to integrate climate considerations as well as to address the economic and social challenges associated with COVID-19 may thus be constraining DFIs from starting on a similar process for nature.

**"BIODIVERSITY HAS A WIDE COVERAGE - WHAT SHOULD WE FOCUS ON? IF WE ARE GOING TO SAY THAT THE FOCUS IS ON PROTECTING THE ENVIRONMENT, AND THE CONSERVATION OF SPECIES, LANDSCAPES ETC - THAT WOULD BE A NARROW VIEW, I THINK. IF WE CONSIDER HUMAN COMMUNITIES AS WELL, THEN THERE IS A LOT OF OPPORTUNITIES THAT COULD BE EXPLORED."**

153 During the accreditation process, an applicant entity's policies and procedures, track record, and demonstrated capacity to undertake projects or programmes of different financial instruments and environmental and social risk categories are assessed against the standards of the Green Climate Fund. The result of the accreditation process will specify the project or programme activity size; fiduciary functions, which will shape how it operates using the Fund's resources (grants, loans, equity, and guarantees); and the highest category of environmental and social risk of its intended projects. Source: Green Climate Fund, undated.



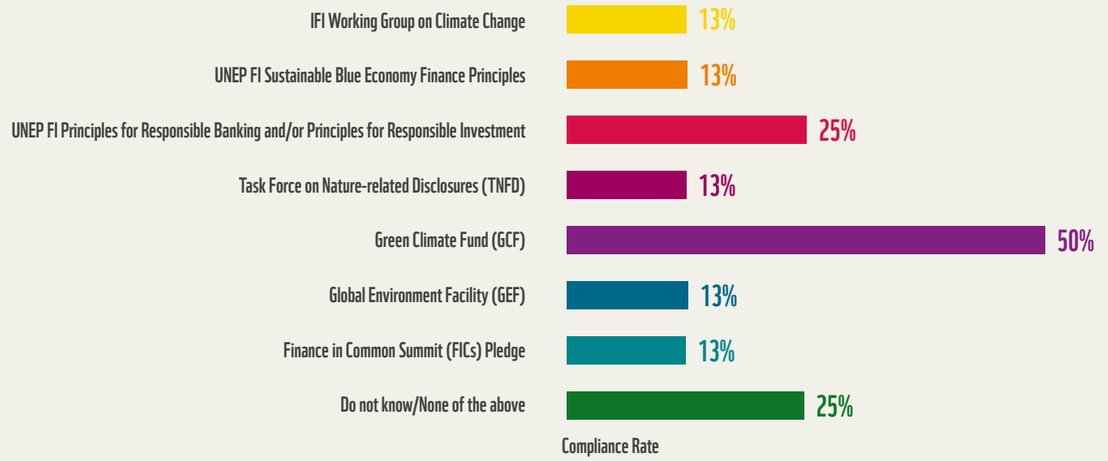



Figure 21. Note: Survey respondents were asked whether their organisation is a member/supporter/signatory/witness or accredited entity of any broader forum or commitment related to climate, biodiversity and/or the environment. Source: WWF/ADFIAP survey (N=8).

Over 70% of DFIs indicated that government regulation and guidelines, followed by investor or counterparty preference and brand reputation are the most important factors driving their ESG integration efforts (Figure 22). This is not surprising as DFIs are specialised development organisations that are majority owned by one or more national government and are charged with a political mandate. This limits their freedom in terms of their own agenda-setting and decision-making as they must follow prescribed policies and law. It is worth noting that bilateral DFIs have historically served to implement government foreign development and co-operation policies whereases multilateral DFIs usually have greater financing capacity and provide a forum for close co-operation between governments.

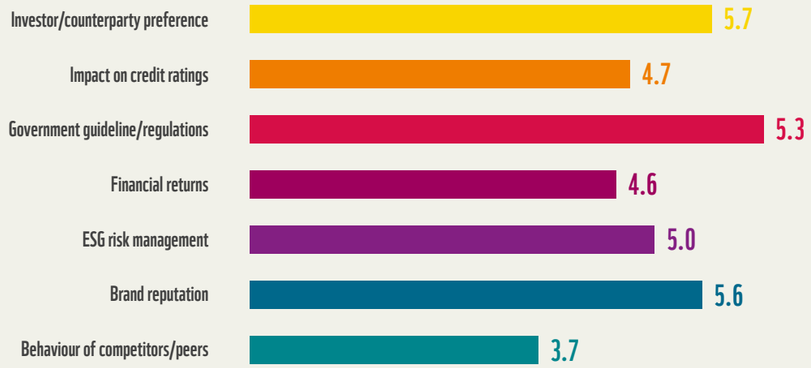
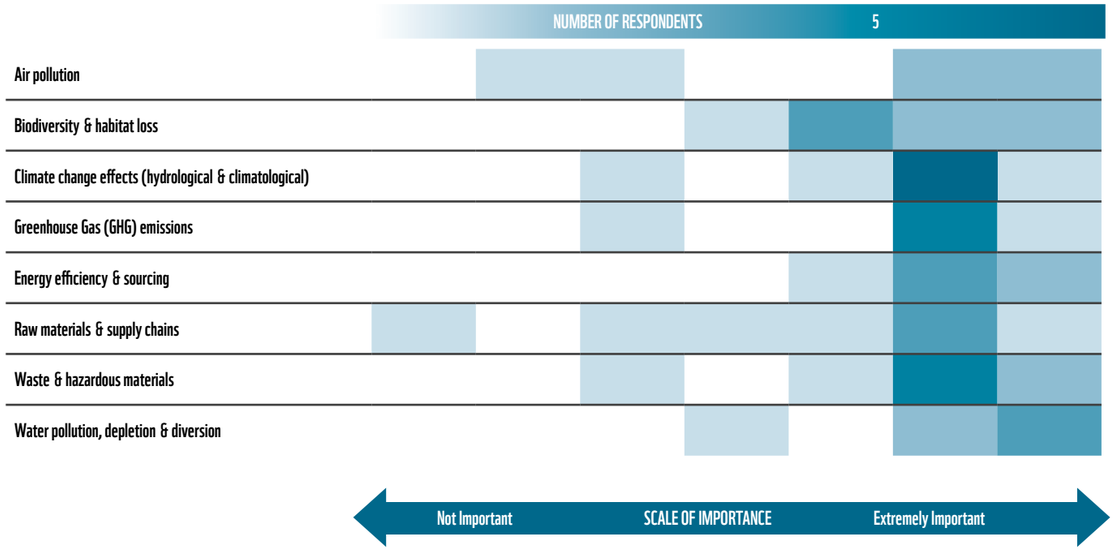



Figure 22. Note: Survey respondents were asked to rate the importance of factors driving their organization's integration of environmental risks and opportunities (on a scale of 1 = not considered to 7 = extremely significant). A weighted average was then calculated to obtain the data above. Source: WWF/ADFIAP survey (N=7).

Generally, the vast majority of DFIs agree that the physical effects of climate change is the most important factor influencing their infrastructure investments. This is in line with the fact that many have explicit targets/strategies relating to climate change. Most DFIs also agree that GHG emissions, and waste and hazardous materials are also very important. These are closely followed by energy efficiency and sourcing, and raw materials and supply chain issues. Interestingly, issues associated with water pollution, depletion and diversion have been rated as extremely important by some DFIs. This is probably because the water sector is highly regulated with some jurisdictions requiring project developers to offset the impact of water projects. Despite this however, biodiversity and habitat loss issues are the least important environmental factors to DFI's infrastructure investments (Table 11).

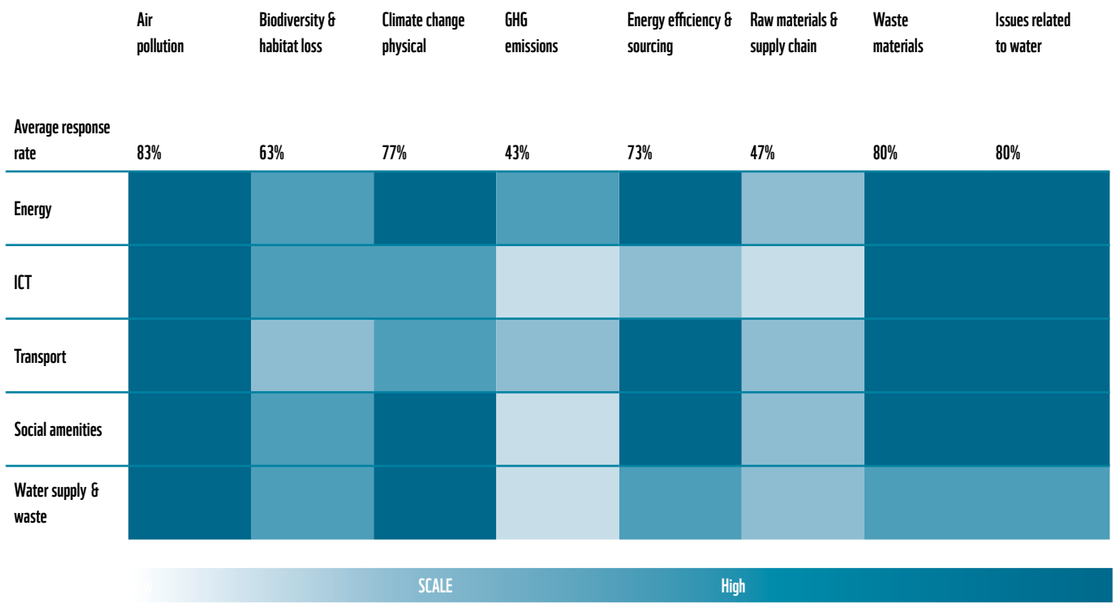
Table 11. Note: Survey respondents were asked to rate the importance of the following environmental factors to their organization's infrastructure investments (on a scale of 1 = not important to 7 = extremely important). Source: WWF/ADFIAP survey (N=8). Note: Colour shades represent the number of respondents and scale is measured from left to right.




Looking specifically at the infrastructure sub-sectors (i.e., energy, transport, waste, water, information and communications technology (ICT), and social amenities) the most important factor for DFIs across all sub-sectors of the infrastructure spectrum is air pollution, followed by waste and water-related issues (Table 12). This is unsurprising as over the past couple of decades, Asia has experienced economic growth, characterised by rapid urbanization and industrialization, changing demographics, and increasing consumption and demand for resources. This has contributed in turn to significant environmental degradation and waste generation. The challenge faced by many governments in the region has been in identifying and implementing innovative and dynamic policy approaches that are effective at improving environmental quality (e.g., managing air, water, and land pollution) while sustaining development gains (e.g., assuring water demand).

Climate change physical impacts are mostly applied to energy, social and water infrastructure. These are typical public goods and services requiring strong business continuity practices, leading DFIs to consider physical climate risks such as sea level rise, storms, and wildfires as part of their risk mitigation strategy. GHG emissions are mostly considered in energy and transportation projects, with modest applications in other infrastructure sub-sectors. This could be due to weak or inexistent policies to limit GHG emissions across activities and countries with due consideration to national circumstances (something which effective risk management demands), existing ongoing support to carbon-intensive investments, and/or lack of internal capacity or incentive for valuation[154]. Furthermore, reducing GHG emissions across financing activities in line with national or sector pathways is not mandated by DFIs. In addition, utilities, thermal generation (i.e., the burning of fossil fuels for energy production) and transport are the primary sources of GHG emissions in East and Southeast Asian economies. Besides investing in cleaner technologies, the mitigation of emissions is usually linked to energy and resource efficiency which has been improving more slowly in these countries than in other parts of developing Asia or the world, with coal and oil rising as sources of primary energy[155].

Table 12. Note: Survey respondents were asked to indicate the environmental factors that they apply to each specific infrastructure sub-sector. Source: WWF/ADFIAP survey (N=6).




## POLICIES

*This section explores public statements on specific ESG issues and sectors as well as E&S and/or safeguard policies.*

Generally, most DFIs consider E&S issues as part of a negative screening process applied during the due diligence phase, but these are not embedded into the financial analysis of projects. These E&S policies usually incorporate national regulation and, in some cases, follow certain internationally recognised principles and standards – although quite often the DFIs are not official signatories of these schemes due to associated (actual and perceived) costs (e.g., to do with the application process, third party reviews etc.). Given that many of the DFIs co-finance with other multilateral agencies, there is an incentive to limit the burden on clients and promote standardisation (i.e., to avoid different standards). Thus, the E&S policies of the surveyed DFIs tend to be aligned with those from other DFIs (usually MDBs). This in turn allows for successful co-financing schemes.

For example, half of the DFIs' E&S policies tend to include minimum requirements, recommendations or principles that converge with those of other DFIs and private sector entities (e.g., IFC Performance Standards -PS, Green Climate Fund Investment Framework, JICA's New Guidelines for Environmental and Social Considerations) and/or are based on internationally recognized standards for best E&S risk management practices such as the Equator Principles, Global Reporting Initiative Standards or the International Organization for Standardization (ISOs).

Most DFIs do not have clear, comprehensive, or ambitious policies for specific sensitive issues such as deforestation, the protection of oceans, seas and marine resources, and financing of coal-powered projects (Figure 23). Less than half of the DFIs have sector-specific requirements and policies as well as up-to date exclusionary criteria that would include for example fossil fuel investments. Many DFIs however, have released public statements indicating a halt to financing, of for example, new coal projects, however in many cases, this has yet to be officially translated to policy.

154 Some DFIs factor in $CO_2$ tons avoided and very few apply a shadow carbon price, and only in the context of specific programmes such as the Clean Development Mechanism. Regarding the former, an emission factor is applied which is usually based on the department of energy's emission factor for the grid of a particular country. Other than that, there is also an economic contribution arising from the replacement of the equivalent barrels of fuel, allowing some DFIs to quantify the equivalent foreign exchange savings. The equivalent power that is generated and contributing to the grid also bolsters electricity supply and the addition of clean power also helps economically. Finally, there is also the impact on employment to consider.

155 The region has experienced rapid economic growth in recent years, and regional GHG emissions have rapidly increased, at nearly 5% per year over the last 2 decades. Source: ADB, 2015.

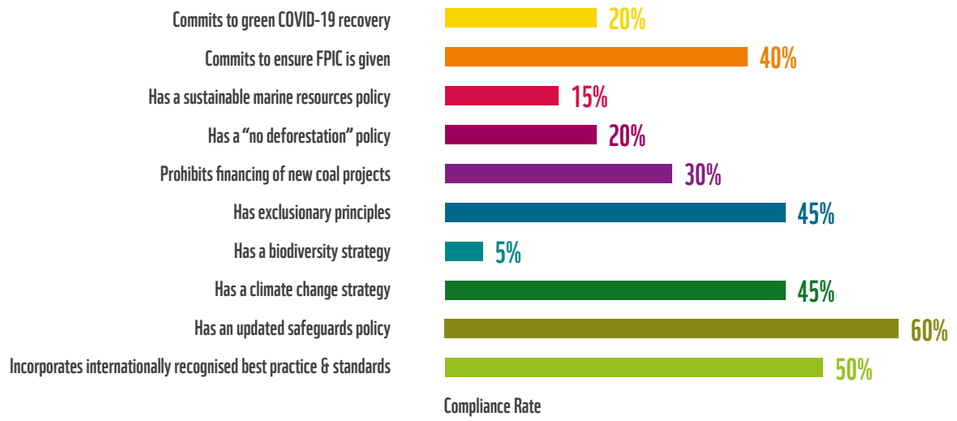



Figure 23. Source: WWF public disclosure analysis (N=10).

## SAFEGUARDS POLICIES

Safeguard policies (which inform what DFIs will or won't finance) are the main mechanism used by DFIs for managing E&S risk. In fact, 75% of DFIs apply a formal safeguard framework for assessing and managing climate change risks to all (50%) or some (25%) of their investments (Figure 24). In contrast, only half (51%) apply a formal safeguard framework for assessing and managing biodiversity risks to all investments (38%) or some of their investments (13%). DFIs also think that the safeguards framework for managing climate risks is better applied in practice than the safeguards framework for managing biodiversity risks.

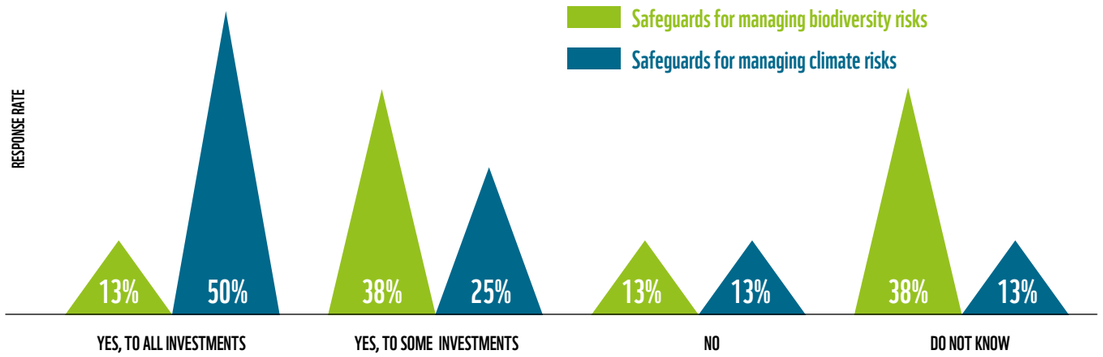



Figure 24. Note: Survey respondents were asked if they apply a formal safeguard framework/policy for assessing and managing climate change and biodiversity risks respectively. Source: WWF/ADFIAP survey (N=8).

Generally larger DFIs have their own safeguard framework, while less-resourced DFIs have adopted the IFC's PS[156] or rely on an environmental assessment process, usually aligned with typical government/national regulation (e.g., an environmental impact assessment process), which is more about ensuring that project impacts are within *acceptable limits of harm* rather than demonstrating positive contribution[157]. When asked more specifically about climate and biodiversity considerations in their safeguards, about half of the DFIs were not sure what principles, standards, and frameworks their climate-related safeguards are anchored on. For those that knew, half of them are based on the World Bank and IFC PS (Figure 25).

156 IFC Performance Standards (PS) are the most used standards for performance in key environmental and social activities and have been adopted, and sometimes adapted by many DFIs, along with the Exclusions lists, which set out those activities or sectors in which the IFC or any of the DFIs are unwilling to participate. Each DFI, including the IFC, then requires borrowing institutions to report on their performance in the use of the borrowed funds, how the appropriate performance standards have been applied, etc.

157 Positive contribution refers to the measurable, positive contribution to a sustainability objective, over and above the baseline requirements that sustainable infrastructure assets shall demonstrate.



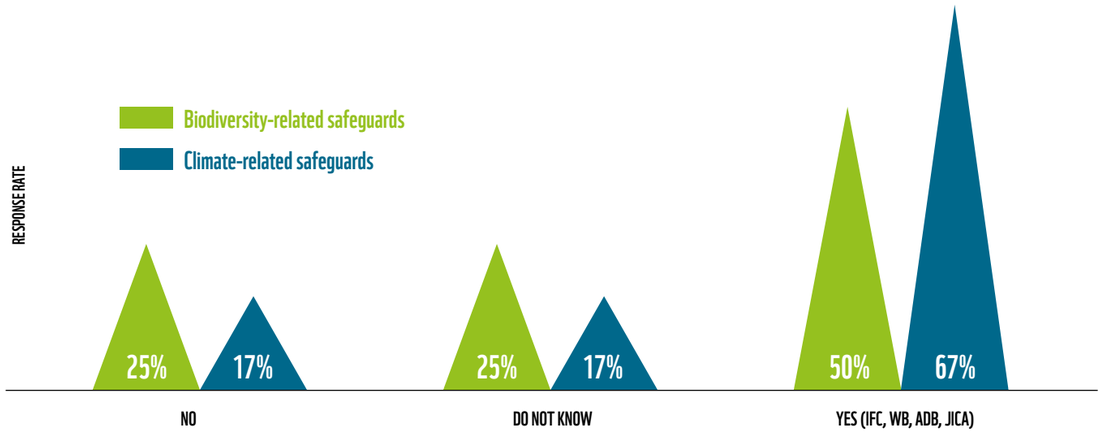



Figure 25. Note: Survey respondents were asked if their biodiversity- and climate-related safeguards are based on the framework of one of the MDBs or another DFI (N=8 climate-related and N=6 biodiversity-related safeguards).

With regard to climate risks, and from those DFIs that indicated that their frameworks are not based on those of other DFIs, two thirds stated that their safeguards comprise process-based requirements in some circumstances (e.g., supporting National Adaptation Plans) and requirements related to defined climate change criteria and thresholds. Only half of DFIs have 'No go' provisions in some circumstances (e.g., not financing projects within World Heritage Sites, no go countries, client blacklists, and exclusion lists). Regarding biodiversity, most DFIs (67%) have safeguards that are based on the framework of one of the MDBs (IFC, WB, ADB, JICA). This means, in theory at least, that the DFIs use for example, the IFC PS 6, which is currently regarded as international best practice for biodiversity, and which requires projects affecting *critical habitats* to achieve a *net gain* of biodiversity through impact mitigation[158].

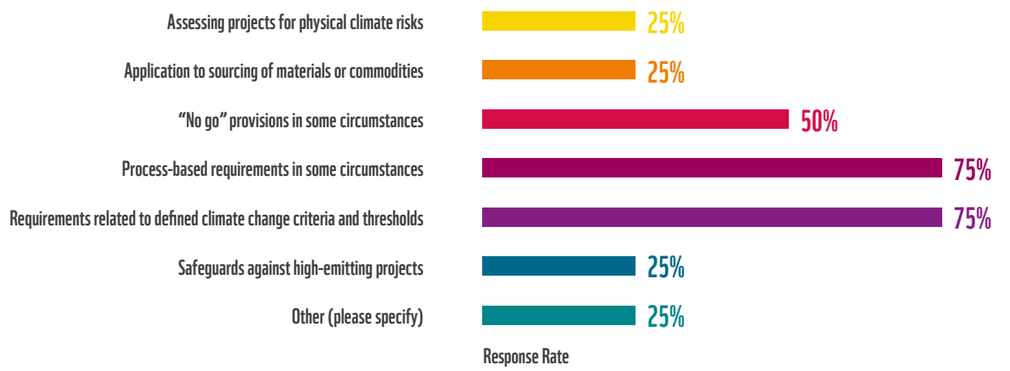



Figure 26. Note: Survey respondents were asked, what key elements does their safeguards framework include if it's not based on an MDB? Source: WWF/ADFIAP survey (N=4).

The investments that benefit the most from both climate- and biodiversity- related safeguard considerations comprise project and corporate lending (Figure 27). This was expected as these types of investments are central to the activities of DFIs. However, corporate lending investments seem to benefit more from biodiversity-related safeguards than climate-related safeguards, possibly due to lower requirements/existing regulation, given that climate has been in the limelight in recent years.

158 IFC's Performance Standard 6 on Biodiversity and Sustainable Management of Living Natural Resources (dating from 2012, with guidance updated in 2019) is widely influential among both public and private banks, and adopted by the 115 Equator Principles Financial Institutions.

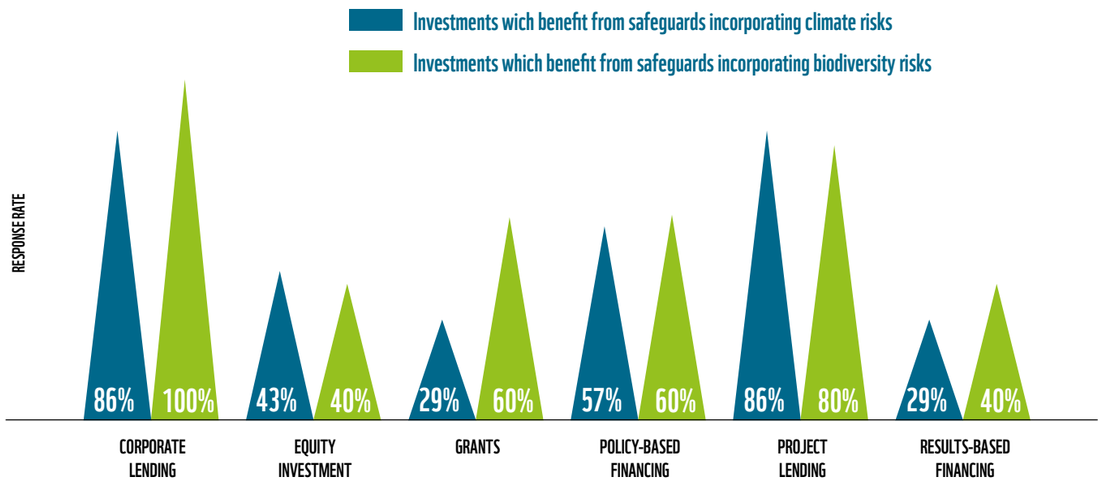



Figure 27. Note: Survey respondents were asked, what key elements does their safeguards framework include if it's not based on an MDB? Source: WWF/ ADFIAP survey (N=4).

Some DFIs indicated that biodiversity risk due diligence is already integrated into their decision-making since it is a component of the environmental assessment process (which is required to ensure *compliance with pre-existing regulations and guidelines),* but they also acknowledge that this does not adequately encompass the collection of data on the impact on biodiversity. Other DFIs are only now starting to come up with an E&S risk management framework and relevant indicators to manage biodiversity and climate change risks.

**"WE INCORPORATE BIODIVERSITY CONSIDERATIONS DURING THE PROJECT LOAN EVALUATION PHASE. AS PART OF DUE DILIGENCE, WE SCREEN FOR THE E&S IMPACTS OF THE PROPOSED PROJECTS. APART FROM THE FINANCIAL VIABILITY OF THE PROJECT, WE CHECK FOR COMPLIANCE WITH THE E&S POLICIES OF THE GOVERNMENT."**

**"THE POLICIES THAT WE HAVE RIGHT NOW, ENCOMPASS BIODIVERSITY DUE DILIGENCE. FOR EXAMPLE, WE INVESTIGATE WHETHER A PROJECT WILL BE IN A PROTECTED AREA WITH RICH BIODIVERSITY. THE STANDARDS THAT WE ARE APPLYING RIGHT NOW ARE ALIGNED WITH NATIONAL POLICIES AS WELL AS THAT OF OTHER ORGANISATIONS LIKE THE WORLD BANK."**

Over 60% of DFIs perform regular updates to revise and strengthen risk screening efforts (e.g., internal reviews, provision of additional information to inform the design of better tools, and the incorporation of elements of best practice) and 25% are unaware/not sure about this aspect. According to the interviews, most DFIs make changes when there are developments in international best practices/local government regulations. A few DFIs which are currently in the process of updating their safeguard policies with respect to climate and/or biodiversity risks are looking to incorporate a performance standard model, better screening and categorisation of projects, potential exclusions for areas of high biodiversity value, more explicit requirements on no-net loss or net gain or cover priority biodiversity features, as well as explicit requirements regarding management plans and the consideration of biodiversity offsets. This is hoped to be achieved by working with partners to build coalitions of support around these areas, thus getting a knock-on effect in terms of people realizing what is good practice.

Despite encouragement from the large MDBs, adopting more rigorous outcome-based requirements for safeguards *(i.e., net gain* for biodiversity or *net-zero* or *zero carbon* for climate) would be new for many national DFIs. Most acknowledged that although this is desirable, their lack of capacity (finance, staffing and knowledge) regarding these topics (particularly in what concerns biodiversity), and project-level data quality and availability issues may hinder adoption. This is further complicated by resource limitations to providing support for the implementation of safeguards to clients who undertake DFI projects (i.e., intermediaries, mainly in the context of private sector operations). Financial intermediation projects present special challenges from a safeguard perspective. This is because DFIs do not have direct oversight of or strong leverage in relation to subprojects, because these are often unknown when a financial intermediary is appraised, and funds are dispersed widely to many subprojects and financial intermediation financing can entail several layers of intermediation that complicate social and environmental risk management. One interviewee mentioned that there needs to be more consequences around implementation.

## CLIMATE AND BIODIVERSITY MAINSTREAMING, POLICIES AND STRATEGIES

Half of the DFIs have a climate change strategy, a roadmap or have shown interest and taken steps to develop one (e.g., seeking external support to develop a strategy that is aligned with international best practice such as TCFD reporting). However, there is great variation in terms of ambition and detail. Very few DFIs, have a fully-fledged, climate change strategy that includes SMART[159] indicators, and implementation evidence for deep decarbonisation (i.e., a pathway which gets the economy to net-zero emissions by 2050) and resilience[160]. For those that do have a climate strategy, the *do-no-harm* principle and a clear timeline for Paris alignment are missing. Many DFIs however, have sector-specific or overarching green financing policies and/ or programmes that incorporate a climate 'lens' and are being used as proof for climate action planning. This may imply that some DFIs view, climate change risks for example, as opportunities to finance projects that seek to mitigate their impacts.

159 SMART stands for Specific, Measurable, Achievable, Relevant and Time-Bound.

160 For a DFI to have a comprehensive climate strategy it must cover both mitigation and resilience and it must mention climate change and Paris Agreement alignment explicitly rather than "green growth" or the "green economy" and refer to the principle of "do no harm". The climate strategy must incorporate both deep decarbonisation and resilience as well as a roadmap for alignment with a 1.5°C scenario, and strong evidence of implementation. Source: E3G, undated. 'Deep decarbonisation' refers to a pathway which gets the economy to zero net emissions by 2050, and requires a transformation in energy, transport, and all other sectors of the economy. Source: WEF, 2015.

No DFI has a standalone biodiversity strategy, however one is working on a biodiversity roadmap. Majority of DFIs don't know or don't have the mandate or resources to go about developing one. This is because biodiversity is viewed as complex and complicated, has no straightforward metrics and boundaries and no clear national or corporate targets, and the systemic risk posed by biodiversity loss is not well or widely understood. Furthermore, the disruption caused by the COVID-19 pandemic and historically low interest rates, may deter some DFIs from taking on additional challenges.

Generally, the more resourced DFIs have an overarching, time-bounded strategy designed to expand on their vision and mission and to respond to a region's or strategic sector's changing needs. Such a strategy may mention climate change and enhancing environmental stability as an operational priority but the

Climate change is more mainstreamed[161] than biodiversity and it is generally easier to talk about and act upon, however this may occur at the expense of biodiversity as some interviewers noted an artificial distinction. This is because there are more sources of information in doing analysis on climate change and it has become a mainstream topic in many governments/ministries of finance. As a previous WWF study indicated: the climate movement is now led by many central banks and mandated by governments, to progress from self-regulation to formal regulation of the finance sector. This might include requirements to strengthen banks' boards by including people who have knowledge of climate risk regulation, setting minimum requirements regarding project design and implementation of overall risk management, and requirements on disclosure. For DFIs, this means going beyond safeguards to integrate climate into their own financial risk. This requires them to develop risk metrics and quantified stress tests – then review risk management frameworks and include climate considerations on a more structural basis.

Some DFIs stated that often, the discussion with their stakeholders starts from climate change before moving onto biodiversity. As a result, DFIs feel unwilling or unable to take on significant biodiversity commitments before they have integrated their climate ones.

161 Climate mainstreaming implies a shift from financing climate activities in incremental ways, to making climate change – both in terms of opportunities and risk – a core consideration and a "lens" through which institutions deploy capital. Progress on mainstreaming may be driven by any or all political direction, enlightened leadership, staff support within institutions, investor values, and/or public scrutiny. Source: Mainstreaming Climate in Financial Institutions, undated.

"IN TERMS OF SCALE, CLIMATE IS LARGER IN SCOPE COMPARED TO BIODIVERSITY. BIODIVERSITY CAN BE LOCAL IN TERMS OF EFFECT, BUT CLIMATE WOULD BE BIGGER IN TERMS OF SCALE AND THAT'S HOW I DISTINGUISH THE TWO. I'M NOT SAYING THAT BIODIVERSITY IS LESS IMPORTANT THAN CLIMATE. BUT THIS IS PERHAPS WHY WE SEE MORE FOCUS IN DEALING WITH CLIMATE CHANGE. CLIMATE AFFECTS EVERY NATION REGARDLESS OR BORDERS AND WE REALLY MUST CONTRIBUTE TO REDUCING GHG EMISSIONS AND THE SCALE IS LARGER."

"IT IS EASIER TO TALK ABOUT CLIMATE CHANGE BECAUSE THIS IS NOW A MAINSTREAM TOPIC IN THE MINISTRY OF FINANCE. OUR MINISTER OF FINANCE WAS ELECTED AS THE CHAIR OF THE COALITION FOR CLIMATE CHANGE AND OUR COUNTRY WOULD LIKE TO PROMOTE CLIMATE CHANGE. THERE IS GREATER EMPHASIS ON CLIMATE CHANGE AT BOTH NATIONAL AND STATE LEVEL".

## PUBLIC CONSULTATION POLICIES

Most civil society consultation policies depend on existing country regulations, DFIs only follow through with what is required. Quite often public consultation is not done by the DFI, but by the project proponent and only if it is required by law. Generally, less resourced DFIs don't have a lot of experience in implementing public consultation. For projects supported by MDBs such as the World Bank, this process is more comprehensive. Furthermore, because countries are often leading the consultation process, there can be challenges when some countries are not as open as others. There are mechanisms in place to address this issue but there is considerable divergence between what is possible in theory and what happens in a real situation.

For more resourced DFIs that follow the IFC PS or have their own safeguards framework, consultation is mandatory for projects which trigger resettlement or land acquisition. These are generally labelled as category A type projects which lead to significant E&S impacts. There are also projects with no impacts, in which case, stakeholder engagement is not mandatory. However, all projects also require a grievance recourse mechanism. Thus, if the public or a community feels that they have been affected, they can approach the client to have those grievances addressed. If this is unable to solve the problem, they can turn to the DFI. This is also tied in with public information disclosure.

## COVID-19 POLICIES

Commitment to green COVID-19 recovery[162] is weak and often confused with green assistance[163]. DFIs have been focusing on providing short-term COVID-19 assistance and relief as opposed to long-term green recovery measures. They also noted many challenges in terms of financing. For example, some projects did not push through because of movement restrictions. The economy was also severely affected, and 'new expansions' had to be delayed. The revenue streams of some infrastructure companies suffered in 2020 and 2021, impacting in turn the projects on the ground. Governments have been pump priming the economies and DFIs complemented that by supporting project contractors.

Still, half of the DFIs made a public statement on green recovery. Furthermore, half of the DFIs felt that COVID-19 did not change the application of their safeguards policy, or the way E&S risks are monitored and assessed (Figure 28).

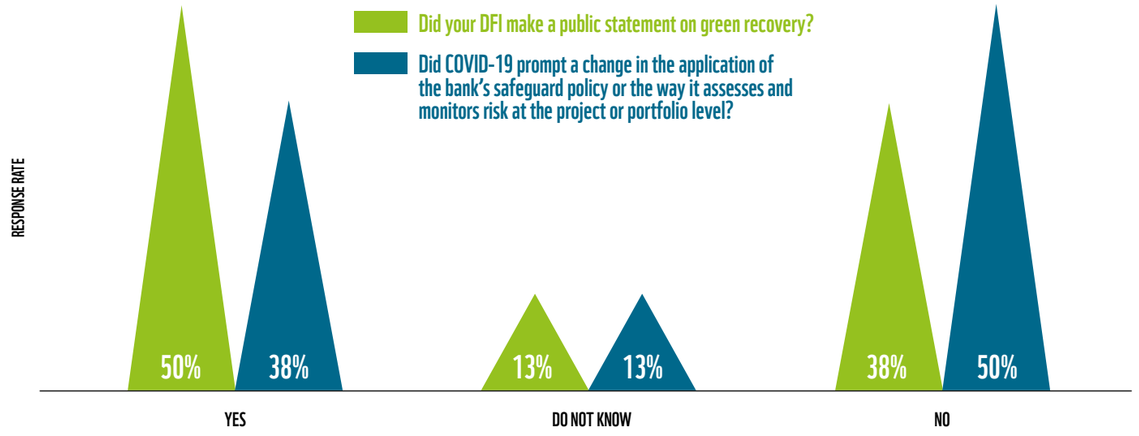



Figure 28. Note: Survey respondents were asked: i) whether COVID-19 prompt a change in the application of the bank's safeguard policy or the way it assesses and monitors risk at the project or portfolio level and ii) whether the DFI made a public statement on green recovery. Source: WWF/ADFIAP survey, (N=8).

The emergence of zoonotic diseases brought some increased focus on biodiversity and the importance of healthy coexistence with nature. COVID-19 has catalysed conversations on green recovery and is generally seen as an enabling factor for putting countries on a more orderly course to achieve the global goals for climate and biodiversity and limit future costs and risks associated with other paths. The key is to ensure that a lot of what is being discussed in terms of enabling factors for investment projects is also included in economic analysis.

**"IT IS CHALLENGING DURING THIS TIME. WE WANT TO BUILD BACK BETTER BUT THERE ARE OTHER PRIORITIES, AND WE TRY OUR BEST TO MITIGATE ENVIRONMENTAL IMPACTS. HOWEVER, WE CAN ONLY DO SO TO AN EXTENT SINCE ECONOMIC RECOVERY IS THE PRIORITY. IN TERMS OF BUILDING BACK BETTER AND ALIGNING WITH THE PARIS AGREEMENT, WE DO WHAT WE CAN."**

**"THE LESSON WE MUST LEARN IS THAT WE CANNOT TAKE NATURAL ECOSYSTEMS FOR GRANTED BECAUSE THEY ULTIMATELY HAVE AN IMPACT ON US. THERE MUST BE INCREASED RECOGNITION OF HABITAT AND WILDLIFE CONSERVATION, AND WE MUST COMPLY WITH MECHANISMS TO PROTECT BOTH NATURE AND US FROM CONTAMINATION LEADING TO VECTOR-BORNE DISEASES."**

162 I.e., medium- to long-term measures that enhance, and do not adversely affect, environmental sustainability and well-being, combining an emphasis on restoring growth and creating jobs with the achievement of environmental goals and objectives.

163 I.e., emergency support operations and/or measures that will help countries business respond to immediate health consequences of the pandemic.

"I WAS ABLE TO READ SOME PARTS OF THE REPORT OF THE NATIONAL ECONOMIC DEVELOPMENT AUTHORITY. ONE PRIORITY WAS BIODIVERSITY. I THINK WE SHOULD JUMP ON THE FACT THAT IT WAS RECOGNISED. GIVEN THAT THE COST OF COVID-19 AROSE FROM WILDLIFE, THERE WAS AN INCLINATION TOWARDS INCREASED PROTECTION OF NATURAL ECOSYSTEMS SUCH THAT THERE WOULD BE A CLEAR LINE BETWEEN HUMAN AND NATURAL ECOSYSTEMS. THE REASON FOR COVID-19 WAS CROSS-SPECIES CONTAMINATION AND THE GOVERNMENT REALISED THAT WE MUST LEAVE WILDLIFE ALONE."

HOWEVER, THIS INCREASED AWARENESS OF BIODIVERSITY WAS OVERSHADOWED BY HEALTH SPENDING AND MITIGATING THE ECONOMIC IMPACT ASSOCIATED WITH COVID-19. THE RISK FOR CLIMATE AND BIODIVERSITY BEING DOWNGRADED IN THE LIST OF PRIORITIES FOR COUNTRIES REMAINS HIGH.

"THERE HAS BEEN A SHIFT TOWARDS A HUGE INCREASE IN HEALTH SPENDING. I THINK IT'S $9B THAT HAS GONE TOWARDS SUPPORTING VACCINE ROLL-OUT PROGRAMS. THAT HAS MEANT SHIFTING AWAY FROM PROJECTS FOCUSED ON IMPROVING NATURE OUTCOMES. THERE IS A RISK THAT SOMETHING THAT HAS ALWAYS BEEN A LOW PRIORITY HAS BECOME AN EVEN LOWER PRIORITY[164]. THERE ALSO HAS BEEN A DIFFERENCE BETWEEN THE DIRECT BUDGET SUPPORT THAT WAS GIVEN AS OPPOSED TO THE LONGER-TERM MEASURES."

164 In total, USD 17.28 trillion has been spent on COVID rescue and recovery efforts. As of May 2021, a comparatively paltry USD 60.79 billion in pandemic spending has promoted natural capital. Source: UNEP and GIZ, 2021.

Furthermore, due to COVID-19, some projects stalled and there has been reallocation of budgets, but infrastructure has not been postponed. There has been an increased focus on supporting social infrastructure sectors (e.g., healthcare) and such investments have pushed through despite the economic downturn. In fact, some DFIs have set-up new social teams to look at this issue.

**"ON INNOVATION, WE STILL LOOK AT PRODUCT DEVELOPMENT. WE PROVIDE LOCAL GOVERNMENTS VERY CONCESSIONAL RATES TO ACCELERATE INFRASTRUCTURE. DUE TO COVID-19, THERE MAY BE A REALLOCATION OF BUDGET, BUT INFRASTRUCTURE CANNOT BE POSTPONED. OUR PRIORITY IS ON HOW WE CAN SAVE PEOPLE DURING THIS PANDEMIC. SEVERAL FACILITIES ARE USED TO BUILD EXTENSION OF HOSPITALS ETC. WE ARE ALSO FOCUSED ON KEY SOCIAL AREAS LIKE TRANSPORT ACCESSIBILITY AND ACCESS TO WATER. THESE PROJECTS ARE IN LINE WITH OUR MANDATE ON SUSTAINABILITY."**

There is an unaddressed issue of growing sovereign debt as one interviewee pointed out. Could this be an opportunity for achieving two wins: reducing the cost of capital to developing countries while at the same time encouraging particularly biodiversity rich countries to invest more extensively in managing various aspects of nature? We are all familiar with the *debt-for-nature swap*[165] (financial mechanisms that allow portions of a developing country's foreign debt to be forgiven, in exchange for commitments to invest in biodiversity conservation and environmental policy measures) agenda now going back several years, and the conditionality, both dual and performance related, attached to debt in previous years. The opportunity we have over the short term, is to insert a biodiversity component in the discussion and not drive conditionality, but to push developed countries to offer a reduced cost of capital in moving more debt towards those countries in return for a degree of biodiversity co-benefit.[166]

165 The concept of debt-for-nature swaps was first introduced by Thomas Lovejoy, vice president of the World Wildlife Fund, in 1984 in response to the deteriorating tropical rain forests and mounting debt obligations in developing countries, especially in Latin America. Through a debt-for-nature swap, the debtor country's debt stock was reduced in exchange for commitments of the debtor government to protect nature in varying forms. Source: Green Finance and Development Center, 2021. A recent project example of a debt for climate and nature swap is the US$27 million investment in the Seychelles in 2018 for climate resilience, fishery management, biodiversity conservation and ecotourism. While this swap is small-scale, it indicates that there is interest and feasibility in conducting new swaps. Source: Steele and Patel, 2020.

166 Conservation Finance Alliance, 2020.



**"I THINK THERE IS A RISK THAT SOME COUNTRIES (E.G., PICKED UP BY THE FINANCE BIODIVERSITY ALLIANCE) ARE GOING INTO DEBT. CAN WE ADDRESS OR DO WE NEED TO BEGIN TO ADDRESS DEBT FOR NATURE SWAPS? THIS IS SOMETHING BEING RAISED WITHIN SOME OF THOSE COUNTRIES WHERE THIS IS AN ISSUE AND IS IMPORTANT FOR THE GREEN RECOVERY DISCUSSION. UNLESS THE ISSUE OF DEBT IS LOOKED AT IN THE CONTEXT OF *BUILDING BACK BETTER*, WE ARE ONLY GOING TO BE LOOKING AT A PART OF THE PICTURE."**

DFI have indicated an increased interest (particularly from governments) in thematic green finance such as green, blue, Islamic, SDG or other sustainability-themed bonds[167]. For example, some governments want to raise money that is earmarked for blue and green projects[168]. This is an area where some DFIs have specialised facilities and are able to support countries in developing thematic bonds. Furthermore, targets related the climate are still holding up with some DFIs indicating that COVID-19 has not derailed the focus on climate. In fact, the number of countries announcing pledges to achieve net-zero emissions over the coming decades has continued to grow during the pandemic. However, the pledges by governments to date – even if fully achieved – fall well short of what is required to bring global energy-related carbon dioxide emissions to net-zero by 2050 and give the world an even chance of limiting the global temperature rise to 1.5 °C[169].

167 Thematic bonds are traditional fixed income instruments which allow investors to finance specific investment themes such as climate change, health, food, education, access to financial services and target specific Sustainable Development Goals (SDGs) through investing. Source: UNDP SDG Finance Sector Hub.

168 Governments and supranational bodies such as the European Union and the African Development Bank issued almost all of 2020's social bonds to fund pandemic healthcare and relief efforts. These were attractive not only because of the way the proceeds were going to be used, but also for their high credit ratings. Source: UNDP SDG Finance Sector Hub, undated.

169 IEA, 2021.

## PROCESSES

*This section looks at how DFIs are assessing climate and biodiversity risks at project level.*

Just under half of DFIs screen projects for climate physical risk and only about a third do so for climate transition risk. Furthermore, only 38% of DFIs screen projects for biodiversity risks and less than half use science-based tools[170] for these tasks (Figure 29). Classification of projects[171] based on impact fared a little better (but still less than half of DFIs do it). Interviews have indicated that DFIs incorporate climate physical risk into project assessment[172] but not so much transition risk[173]. This is because, physical risk screening is part of project evaluation policy where for example natural hazards are considered. However, this is not done at portfolio level yet.

**"DURING THE E&S DUE DILIGENCE, WHEN A PROJECT IS PROPOSED FOR A LOAN, WE CATEGORISE IT ACCORDING TO A RISK LEVEL. AS OF NOW, WE ARE FOLLOWING THE GOVERNMENT'S CATEGORISATION/ENVIRONMENTAL ASSESSMENT POLICY ASIDE FROM THE STANDARDS OF THE MULTILATERALS THAT WE PARTNER WITH OR THE BEST PRACTICES THAT WE TRY TO EMULATE."**

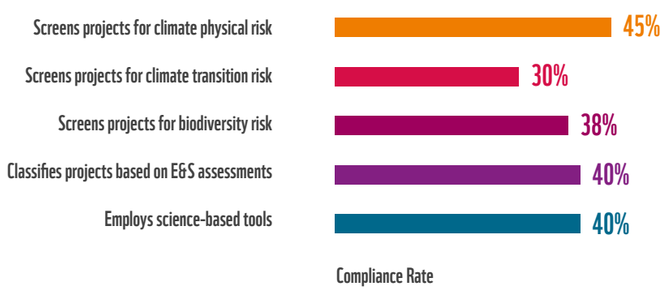



Figure 29. Source: WWF public disclosure analysis (N=10).

170 This includes risk-screening tools such as the Integrated Biodiversity Assessment Tool (IBAT) in support of impact avoidance, the Footprint for Financial Institutions (BFFI), CDC Biodiversité's Global Biodiversity Score, Data Basin (a science-based mapping and analysis platform), eBird (which compiles bird observers' records), Global Forest Watch.

171 A project classification system usually enables tracking, capturing, analysing, and reporting on the trends and nature of the operations of a DFI) with respect to investment sectors and subsectors, strategic agendas, drivers of change, poverty, and environmental or location impacts.

172 The incorporation of climate risk generally involves screening, but its application varies. For example, larger DFIs tend to apply this upstream, including at the country partnership strategy level to identify climate change risks for regions, sectors, and communities. Smaller DFIs look at the project boundary level.

173 Larger DFI apply climate risk screening to their investments, with a more detailed Climate Risk and Adaptation assessment undertaken for projects that are assessed to be at medium or high risk.



Metrics used to measure impact are often focused on climate impacts. Data is also often not collected by the DFIs themselves but based on governmental data/reporting from project developers. There is a lack of understanding over the kind of metrics DFIs can use to track biodiversity impact. Furthermore, metrics may not be that important given that most DFIs are conducting yes/no evaluations rather than financial valuation. This is also related to the fact that many DFIs find it easier to talk and act about climate. There are clearer targets to reach and ways to measure how far projects are from achieving those targets.

**"WE RELY ON GOVERNMENT REGULATION AND A PROJECT'S ENVIRONMENTAL DOCUMENTS PROVIDED BY THE CLIENT. WE DO A REVIEW ON THOSE DOCUMENTS, AND WE TRY TO CONFIRM THE DATA THAT IS PRESENTED IN ENVIRONMENTAL DOCUMENTS."**

DFIs tend to be sub-sector agnostic when it comes to screening for E&S risk, but they use internal in-house experts to provide technical assistance regarding subsectors. However, when specific ESG tools are applied to infrastructure sub-sectors, transport seems to be more advanced in this regard with some DFIs analysing whether particular (transport) projects are in a biodiversity hotspot and/or in or near wildlife corridors. Transport also seems to be an area of 'growth' with regard to integrating supply chain aspects into the risk analysis. One DFI for example, is doing a foresight study to look at where transport should be moving towards, what kind of solutions should they invest in, and how these projects should consider environmental and biodiversity considerations while considering supply chain aspects.

There is an increased focus on the *operation* phase of the infrastructure lifecycle during the bank's due diligence process. As the financiers, DFIs focus on how the infrastructure operation phase would be affected. Therefore, at this phase, measures should have been taken to ensure not just the financial viability of the project but also its operational feasibility. Part of the solutions put forward to the project proposer are engineering-based which in turn can identify natural hazards or vulnerability.

The survey results indicated that a more than a third of DFIs (38%) are not clear of the distinction between climate physical and transition risks or are unaware whether their DFI considers both risk types in their infrastructure investment decisions (Figure 30). At the same time, an equal number of DFIs, (38%) does consider climate change physical and transition risks and only 13% of DFIs consider physical risk exclusively in investment decisions.

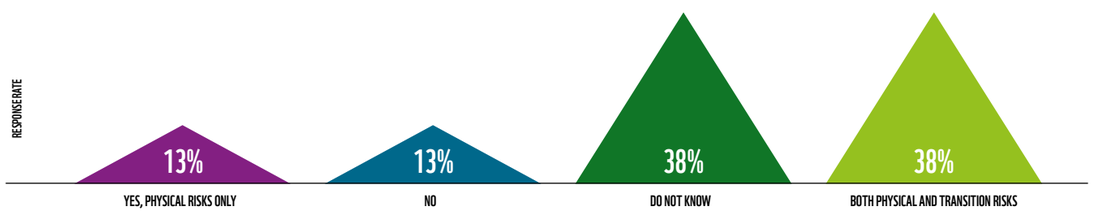



Figure 30. Note: Survey respondents were asked if their organisation considers climate change physical and transition risks (as defined by the Task Force on Climate-Related Financial Disclosures e.g., acute, and chronic risks, and policy, legal, technology, market, and reputation risks respectively) in investment decisions. Source: WWF/ADFIAP survey (N=8).

Regarding project level assessment of climate physical acute and chronic risks, a considerable portion (63%) of DFIs does not consider these risks at all (38%) or do not have the resources to assess them (25%). Only a quarter of DFIs review both types of risk. (Figure 31)

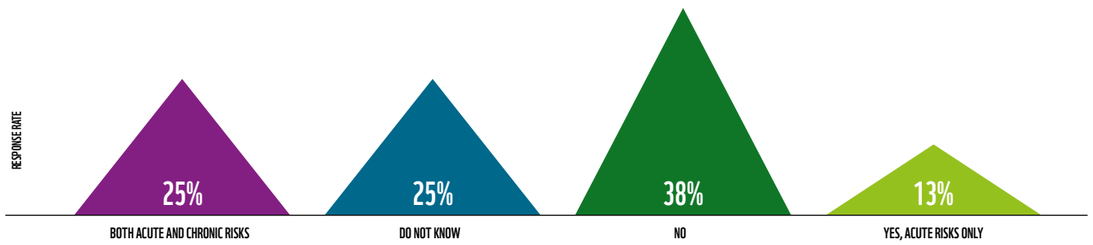



Figure 31. Note: Survey respondents were asked if their DFI assessed physical climate risk [i.e., both the impacts from specific events (acute risks) like hurricanes or floods, and those emerging from longer-term changes (chronic risks) like changes in temperature and precipitation leading to drought, land degradation, and sea level rise] at project level? Source: WWF/ADFIAP survey (N=8).

Furthermore, only a quarter of DFIs do not consider biodiversity risk in investment decisions. The rest consider both dependency risk and impacts on biodiversity (25%) or one or the other (25% respectively).

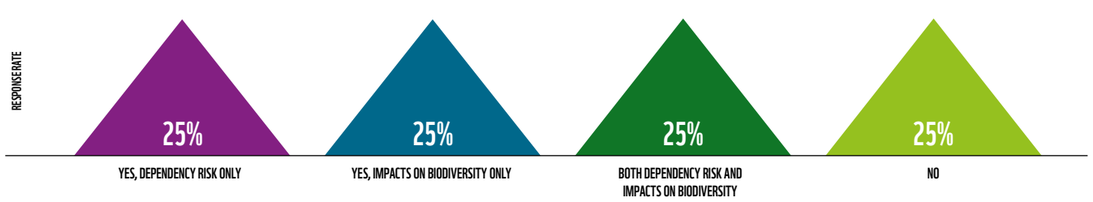



Figure 32. Note: Survey respondents were asked if their organisation consider biodiversity risks in investment decisions? (i.e., dependency risk = dependencies on the ecosystem goods and services that biodiversity generates, either directly and/or within supply chains, and impacts on biodiversity = risks associated with societal relationships, reputation, marketing, laws, regulations, and access to finance; for FIs, key biodiversity risks include risk of default by clients, lower returns from investees, and increasing insurance liabilities). Source: WWF/ADFIAP survey, (N=8).

A majority of DFIs consider climate change and biodiversity risks during early screening (Figure 33). This is consistent with the fact that many DFIs incorporate E&S considerations as part of project evaluation where they decide if a project meets the minimum requirement as part of their safeguards policy. While 67% of DFIs tend to consider climate risks during monitoring and evaluation such as by tracking an invested asset's (ESG) performance (which informs follow-up actions like investment rebalancing, divestment, or engagement), only 43% do so for biodiversity risks. This is probably due to the greater ease of measuring climate risks post-investment.

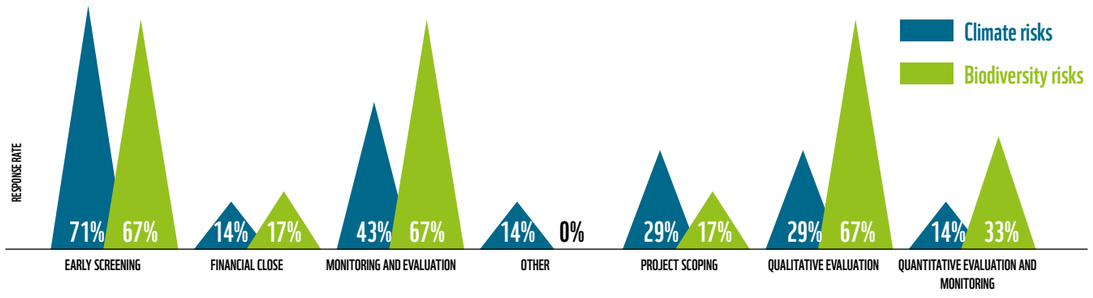



Figure 33. Note: Respondents were asked to indicate the stages at which they incorporate climate-related and biodiversity-related risks respectively. Source: WWF/ADFIAP survey, (N=6 for climate risks, and N=7 for biodiversity risks).



The assessment of climate physical and transition risks benefits from a clearer methodology and more sources of information compared to the assessment of biodiversity risks and impacts; hence it has seen wider adoption and standardisation, which has ultimately improved transparency.

**"CURRENTLY ON THE CLIMATE SIDE, WE ARE QUITE TRANSPARENT. WHEN THERE IS A CLEAR METHODOLOGY, THE BANK IS TRANSPARENT. THE CHALLENGE ON THE BIODIVERSITY SIDE IS GETTING CONSENSUS ON BOTH UNDERSTANDING WHAT WE MEAN BY IMPACT AND WHAT WE MEAN BY RISK. I THINK THAT IT WILL TAKE TIME TO APPLY SOMETHING UNTIL WE ARE CLEAR ABOUT IT."**

The information required for due diligence seems to come from various sources (Figure 34). However, DFIs don't tend to use commercially available tools, analytics, and geospatial datasets for climate physical risk assessment but rather government, proprietary, research and data released by NGOs and universities or other locally available resources.

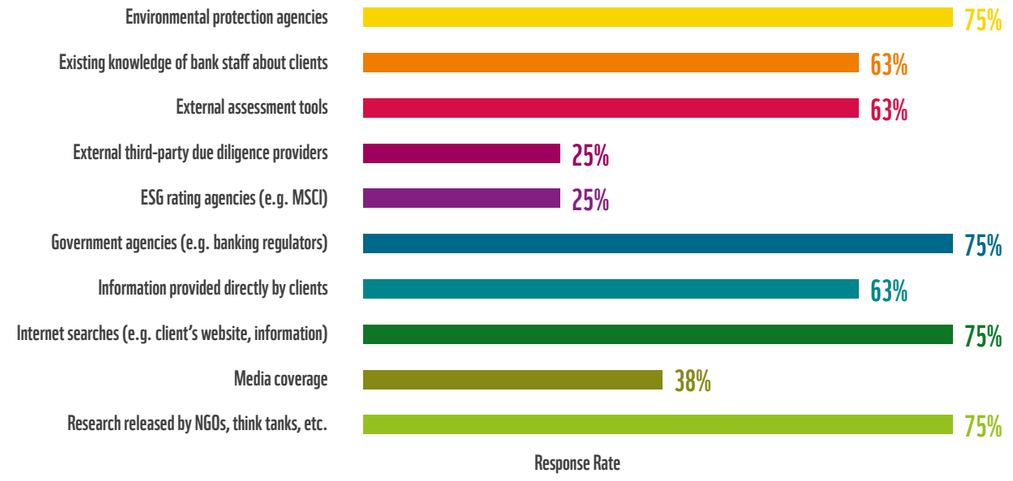



Figure 34. Note: Survey respondents were asked which sources of information do they use when undertaking due diligence pertaining to climate change? Source: WWF/ADFIAP survey (N=8).

As for specific measuring and reporting methods and standards[174] such as i) screening tools to review or verify information at the project level, or ii) accounting tools for assessing and reporting performance against specific indicators or sustainable development goals – half of DFIs use the UN SDGs, and 38% use the International Capital Market Association (ICMA)'s Green Bond Principles, International Finance Corporation (IFC)'s Environmental and Social Performance Standards (PSs) respectively. Very few to none use infrastructure specific tools and schemes. The reasons for this include the fact that these schemes are not required/mandated, not relevant, or applicable, and DFI lack internal expertise and awareness of the tools as well as resources.

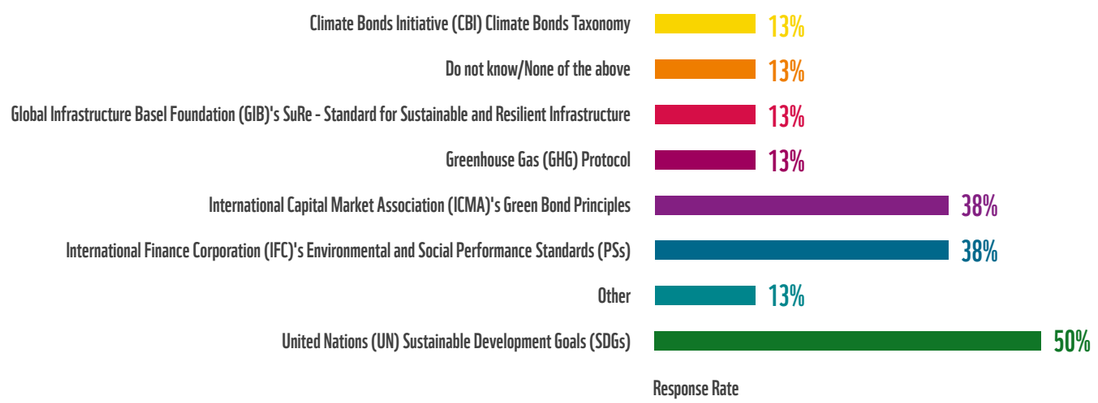



Figure 35. Note: Survey respondents were asked if they use any of the above-mentioned measuring and reporting methods and standards such as i) screening tools to review or verify information at the project level, or ii) accounting tools for assessing and reporting performance against specific indicators or sustainable development goals? Source: WWF/ADFIAP survey (N=8).

174 The sustainability standards in the study have been grouped at a very high level as either project screening tools or accounting tools based on the degree to which they are focused on accounting or performance rating at the project level vs aggregate accounting or reporting information at the portfolio level or across projects. These two general categories are useful for comparing the different types of tools available to infrastructure investors, but at the same time does not capture some of the nuances and differences between the various standards included in each category. We acknowledge that the types of standards looked at in this report are very different in nature and making comparability assessments can be very challenging.



"WHEN WE DO E&S ASSESSMENT, WE COME UP WITH A TEMPLATE SO THAT WE CAN DO IT IN A STANDARDISED MANNER ACROSS PROJECTS. THAT MATRIX CONSISTS OF AN ASSESSMENT OF THE PROJECT SITE (E.G., IS THE PROJECT LOCATED IN A NATURAL HABITAT/PROTECTED AREA?). IF SO, WE CONSIDER IF ANY INTERVENTION/ REGULATION NEEDS TO BE PUT IN PLACE TO PROTECT BIODIVERSITY. WHEN WE INVESTIGATE THE IMPACT ON THE CLIMATE, WE USE EXISTING DATA FROM THE GOVERNMENT AND PRIVATE RESEARCH INSTITUTIONS/ UNIVERSITIES. OUR TEMPLATE FOLLOWS THAT OF THE WORLD BANK AND IFC PS AND IT WAS ASSESSED BY THE IFC TO BE COMPLIANT WITH THE EQUATOR PRINCIPLES 3 YEARS AGO. HOWEVER, WE DID NOT PURSUE TO BECOME AN EQUATOR PRINCIPLES MEMBER BECAUSE IT REQUIRES RESOURCES TO APPLY."

Most DFIs (57%) do not know what tools/methods can be used to manage biodiversity risks/impacts. Only 29% indicated that they are aware or have used mapping tools [e.g., Integrated Biodiversity Assessment Tool (IBAT), Artificial Intelligence for Ecosystem Services (ARIES), Integrated Valuation of Ecosystem Services and Trade-offs (InVEST), Co$ting Nature] (Figure 36). Some DFIs expressed their concerns regarding the integration of such data into project appraisal due to for example, the unsuitability geospatial data scales.

**"SINCE 2020, WE HAVE BEEN TRYING TO DO SOME ANALYSIS TO ENSURE THAT PROJECTS DO NOT AFFECT PROTECTED AREAS, AND WHEN THEY DO AFFECT SUCH AREAS, THERE ARE NECESSARY MITIGATION MEASURES IN PLACE. WE ALSO TRIED TO USE THE INTEGRATED BIODIVERSITY ASSESSMENT TOOL (IBAT) TO ADD MORE DATA TO OUR REVIEWS. THIS TOOL HAS BEEN HELPFUL IN CERTAIN OCCASIONS. HOWEVER, IT HAS VERY BROAD GEOSPATIAL DATA. IN CONTRAST, OUR PROJECTS ARE SOMETIMES VERY SMALL IN SCALE, WHICH MAKES IT IS HARD TO INTEGRATE THIS KIND OF DATA INTO ASSESSING THE IMPACTS OF A PROJECT."**

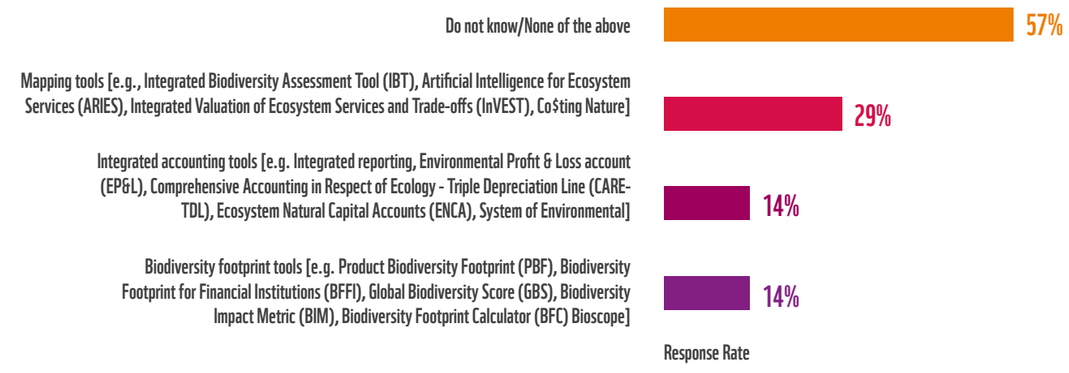



Figure 36. Note: Survey respondents were asked what specific tools, methods, or datasets (if any) they use to assess and manage biodiversity risks and impacts (negative or positive), at the project or portfolio level. Source: WWF/ADFIAP survey, (N=7).

## MEASURING THE POSITIVE IMPACT OF CLIMATE AND BIODIVERSITY INVESTMENTS

DFIs understand that climate and biodiversity have a symbiotic relationship in the sense that they are both related to natural ecosystems. However, given the challenges, DFIs find it is easier to measure the positive contributions of their investments to climate because they can measure both the direct and indirect impact of for example, a renewable energy project. When building a solar or wind farm, for example, the return on investment (ROI) is straightforward as it delivers an immediate revenue stream (the economic benefit), a quantifiable $CO_2$ reduction (environmental benefit) and it will provide a defined number of homes with power (the social benefit). However, for biodiversity, although DFIs may have an idea of what biodiversity is supposed to be, theoretically, but in a practical sense, and looking at the scope of their portfolios and projects, it becomes apparent that there are indirect impacts which DFIs are not able to measure at present. The best examples that DFIs can provide are forest projects, but there are other activities associated with projects that may have indirect benefits for biodiversity, but DFIs are unable to measure.

**"BIODIVERSITY IS TOUGHER. HOW DO YOU VALUE THE ECOSYSTEM SERVICES PROVIDED? HOW DO YOU FINANCE THESE PROJECTS THAT WILL LEAD TO A NET-POSITIVE IMPACT? WHAT ARE THE METRICS ONE CAN USE?"**

Biodiversity-positive investments is new for DFIs' operations. For example, when it comes to the private sector operations of DFIs, biodiversity is dealt with from a *do no harm* angle. One DFI indicated that there is a barrier related to the mindset/culture of the organisation when it comes to incorporating biodiversity into the financial risk analysis of projects. Biodiversity is seen as more of a risk factor as opposed to a growth opportunity. This in turn creates bias against doing new types of projects which are generally more sustainable. There is a bigger opportunity to incorporate a clearer risk profile and to grow more biodiversity-positive businesses and this message is only just beginning to be picked up. DFIs are not aware whether a funded project touches particularly on biodiversity. It is a matter of awareness, unlike climate change projects where 'templates' are already available. Some respondents indicated that there is no template for them to confidently help the bank confirm when it is actively funding projects that protect biodiversity. To be intentional about it, DFIs need the right information to guide them in their decision-making process and develop a clear strategy on how they can improve their biodiversity-related activities". A few DFIs have started to act on this, by working with other DFIs to find ways to evolve from a safeguard approach (trying to mitigate the impact of projects) to climate- or biodiversity-positive projects (e.g., carbon negative – meaning that the amount of $CO_2$ emissions projects remove from the atmosphere is bigger than the amount of $CO_2$ emissions they put into the atmosphere, and achieving biodiversity net-gain whereby projects achieve an increase in the biodiversity assets of the area found in or adjacent to their location at the outset).

But there needs to be development in the ways positive impact to biodiversity can be measured before DFIs can start to identify projects that 'do good'. There are technical, financial, and operational challenges associated with measuring and demonstrating biodiversity value and in aggregating small investment units and bundling benefits, with, yet limited data or scalable metrics. More specifically, DFIs find it challenging to collect monetary information on a project basis. For example, natural capital accounting suffers from a lack of technical expertise and capacity within DFIs as most of their resources are focused more on safeguards. To address this, various DFI departments would need to be incentivised to incorporate natural capital more systematically into what they are doing. Furthermore, they would need support to better understand the kind of tools and methodologies available for this purpose. However, since DFIs are financing institutions and not project management companies that monitor projects from beginning to end, they are highly dependent on other parties to provide the data. Gathering monetary data on project performance is challenging, especially for a DFI which is bounded by constraints. Coupled with the fact that they cannot make it too strenuous for clients to access their financial services, DFIs are incentivised to lessen the conditions on the provision of loans.

"WE STARTED WITH THE CONCEPT OF *DO NO HARM*. WE ARE TRYING TO MOVE BEYOND COMPLIANCE, TOWARD THE CONCEPT OF DOING GOOD, AND THUS LOOK AT THE E&S BENEFITS OF PROJECTS AND HIGHLIGHT BENEFITS. HOWEVER, THE CHALLENGE LIES IN HOW TO MEASURE THESE BENEFITS. MAYBE IF YOU CAN COME UP WITH A STANDARDISED MATRIX OF PROGRAMME OUTCOMES THAT CAN BE USED BY ALL FINANCING INSTITUTIONS, WE CAN HAVE A BETTER (COMMON) INDICATOR OF PERFORMANCE. AS YOU KNOW, PROJECTS HAVE DIFFERENT LEVELS OF ACCOMPLISHMENT; SOMETIMES WE JUST HIGHLIGHT THE OUTPUT INDICATOR WITHOUT KNOWING THE OUTCOME INDICATOR OF OUR PROJECTS. HOW SHOULD WE MEASURE THIS IMPACT?"



## PEOPLE

*This section explores the responsibilities for ESG, staff competency and performance evaluation.*

For more than half of DFIs, the board and/or senior management is responsible for ESG implementation and management of climate change risks. Similarly, half of the DFIs have a dedicated ESG team and provide training to staff on ESG related issues (Figure 37). This has been confirmed by the survey as well (Figure 38). For 40% of DFIs, the board has ultimate oversight of sustainability-related issues or is responsible for approving and implementing the institution's sustainability policy. Despite this, governance structures at the surveyed DFIs are still insufficient to ensure an adequate response to the biodiversity and climate crisis.

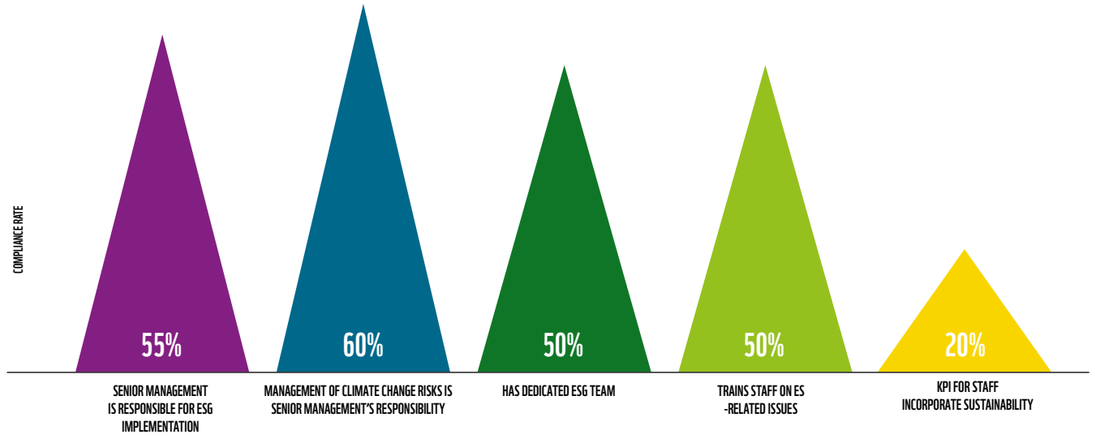



Figure 37. Source: WWF public disclosure analysis (N=10).

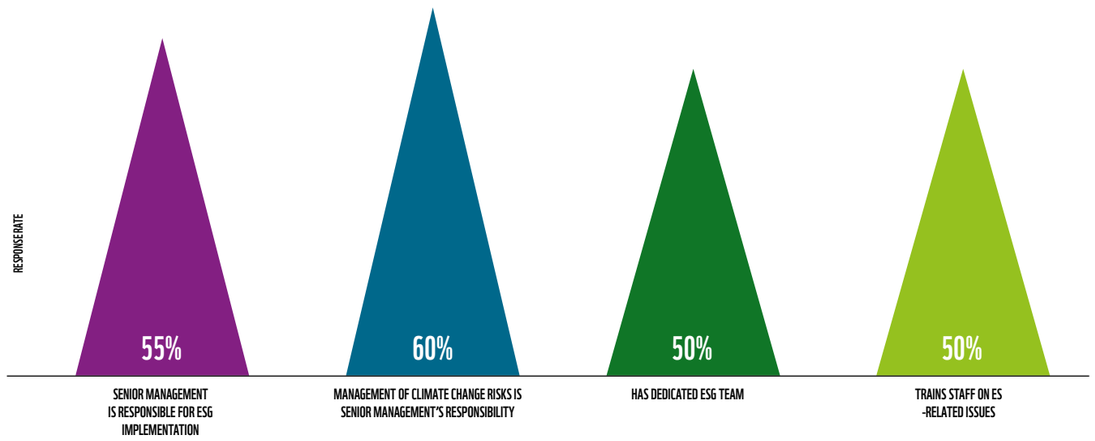



Figure 38. Note: Survey respondents were asked who has ultimate oversight of sustainability issues (e.g., management of climate change and biodiversity risks and opportunities) within the bank and/or is responsible for approving and implementing the bank's sustainability policy. Source: WWF/ADFIAP survey (N=8).

Incorporating ESG issues into staff KPIs was rarer among DFIs (perhaps due to an inability to quantify performance). This may be due to the negative screening nature of E&S policies. If the main concern is ensuring that projects comply with a certain baseline target, there is little incentive to do more than what regulations mandate and hence setting KPIs[175] based on this will prove to be a challenge. There may also be difficulties in the measurement of certain aspects of sustainability (biodiversity), making it hard to quantify this into KPIs.

175 Examples of KPI may include renewable energy rate, efficiency resource rate total direct and indirect GHG emissions by weight, waste reduction rate, % of reusable or recycled material.

## “WE ALREADY HAVE THE SUSTAINABLE FINANCE FRAMEWORK, AND IT IS APPROVED BY THE BOARD. ONE OF THE COMMITMENTS IS TO COME UP WITH A PERFORMANCE INDICATOR OF HOW EMPLOYEES CONTRIBUTE TO SUSTAINABLE DEVELOPMENT. HENCE IT IS PART OF THE APPRAISAL PROCESS.”

Training of staff on ESG issues is in its infancy, with only recent regulations/attempts to train staff on an interest basis. Training is also very general - not to a level where staff may be able to value impacts/risks (particularly biodiversity, NbS-related). Where available, staff who are directly involved in dealing with sustainability issues (88%) received some form of training (Figure 39). Training is conducted both internally and by external parties and usually takes place annually for 63% of DFIs. Many DFIs conduct this training online, perhaps due to the new norm brought about by COVID-19.

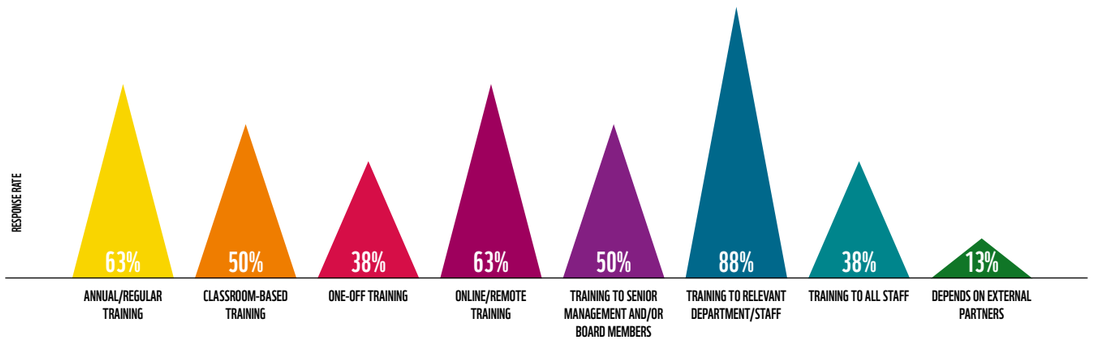



Figure 39. Note: Survey respondents were asked what type of capacity building activities their institution undertakes regarding environmental risk management. Source: WWF/ADFIAP survey (N=8).

More than a third of DFIs (38%) hire consultants to carry out climate change and/or biodiversity risk assessment and a quarter use their safeguards team for this purpose (Figure 40).

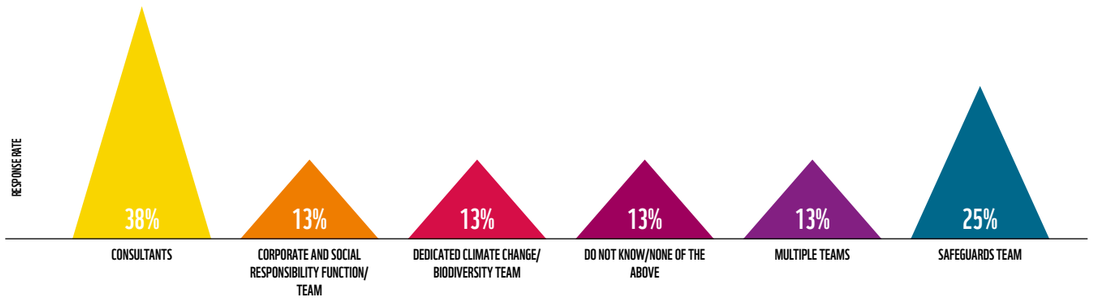



Figure 40. Note: Survey respondents were asked if their organisation uses dedicated and non-dedicated resources for climate change and/or biodiversity risk assessment. Source: WWF/ADFIAP survey (N=8).



Among those that use internal resources to effectively implement environmental safeguards and manage climate and biodiversity risk, two thirds rate their technical expertise as satisfactory, but roughly half of DFIs believe that their available capacity (personnel and specialised technical expertise) is not satisfactory. Personnel capacity seems to be a key concern for DFIs (Figure 41). Even for those that said they had ‘satisfactory personnel capacity’; most were only just covering requirements. Specialized technical expertise was a little more satisfactory but exhibited similar trends with scope for improvement.

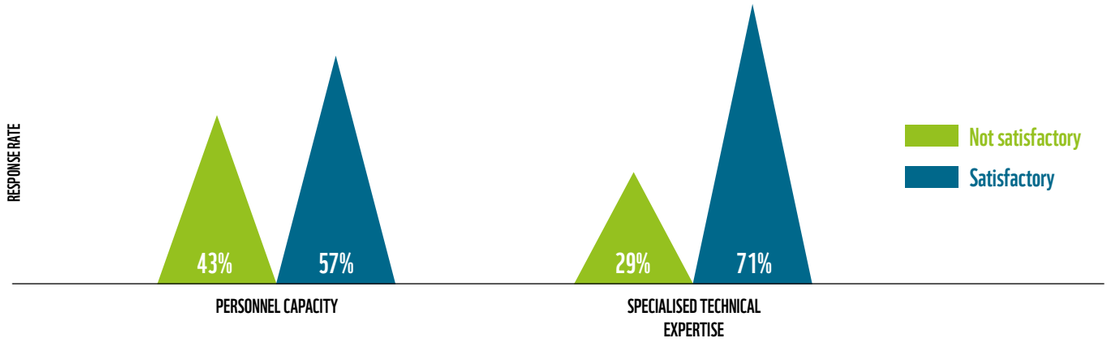



Figure 41. Note: Survey respondents were asked to rate the personnel capacity and specialised technical expertise available in their institution for effectively implementing environmental safeguards and managing climate and biodiversity risk (on a scale of 1 = entirely inadequate to 7 = fully covering requirements). Ratings above 4 were deemed as satisfactory and ratings of 4 and under were deemed as unsatisfactory in the above classification. Source: WWF/ADFIAP survey (N=7).

Training tends to occur on general E&S issues but lacks a focus on biodiversity risk, natural capital and NbS because the latter is not justified/required, and/or awareness of these topics is limited and/or subject matter experts (e.g., environmental economists with sufficient biodiversity background) are lacking. Training also tends to occur in partnership with other DFIs (which may provide funds or send speakers) and the appetite across DFIs for training opportunities (on biodiversity, NbS) is very high as depicted by the interviews.

## “THERE IS INTEREST AMONG DFIs IN ENSURING THAT WE WORK WITH THOSE WHO HAVE EXPERIENCE IN THE NBS SPACE SO THAT WE CAN CONSOLIDATE OUR EXPERIENCES AND CONTINUE TRAINING.”

There is a need to consolidate capacity across DFIs particularly regarding areas related to biodiversity. For example, one DFI exemplified that there is relevant capacity spread across different teams. A NbS working group has been set up to bring together people that focus on for example the urban sector space and water to consolidate capacity and build momentum. If such initiatives are coupled with specific training on managing E&S risks, DFIs will be able to identify and relate these to financing programmes.

**"WE NEED TRAINING TO BE EXPOSED TO THE NEW IDEAS OF MANAGING E&S RISKS. IF EVERYONE IS AWARE OF THESE NEW CONCEPTS, WE WILL BE ABLE TO IDENTIFY AND RELATE THEM TO OUR FINANCING PROGRAMME. RIGHT NOW, AWARENESS IS NOT BANK-WIDE, AND WE HAVE LOCAL UNITS IN SPECIFIC AREAS OF THE COUNTRY, AND WE NEED TO BRING THIS AWARENESS NOT JUST TO THESE UNITS BUT TO OUR CLIENTS/PARTNERS IN THE COUNTRYSIDE."**

## PRODUCTS

*This section looks at ESG integration in DFIs' products and services.*

Almost all DFIs offer green financial products and services (e.g., green bonds, sustainability-linked loans, impact financing) that support the mitigation of E&S issues (e.g., climate change, water scarcity and pollution, deforestation) (Figure 42).

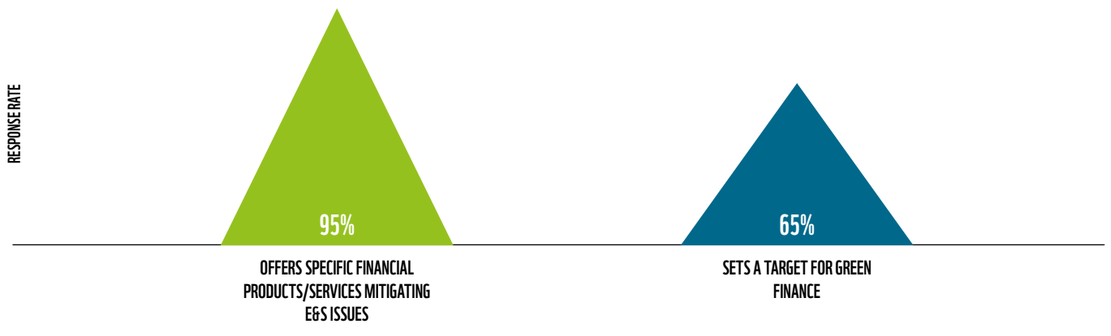



Figure 42. Source: WWF public disclosure analysis (N=10).

For example, some DFIs have recently released sustainability bonds which performed beyond expectations and are hoping to offer a second tranche for that. DFIs generally see the issuance of green debt as a good initiative that it is planned to continue. For some DFIs that have become Green Climate Fund (GCF) - accredited, they started coming up with projects on marine protected areas, which in turn they believe will address biodiversity considerations. One DFI that has been involved in blended financing for a long time (primarily in agricultural projects) is now looking to expand into projects tackling climate change. However, it highlighted that the blend of grant and loan is not sustainable (due to poor investment climate, lack of investable opportunities, lack of tailored approach and low risk appetites of DFIs), and some credit discipline is required.

There is a wider range of instruments used in financing investments for climate (bonds and loans, equity) than compared to biodiversity (Figures 43 and 44). Debt finance (86%) (i.e., particularly green loans and bonds) is the most predominant instrument used for financing climate change opportunities followed by grants (57%) and technical assistance (43%). For the former, more than a third of institutions (38%) use ICMA's Green Bond Principles, or the Climate Bond's Initiatives Standards (the latter to a lesser extent, 13% of DFIs).

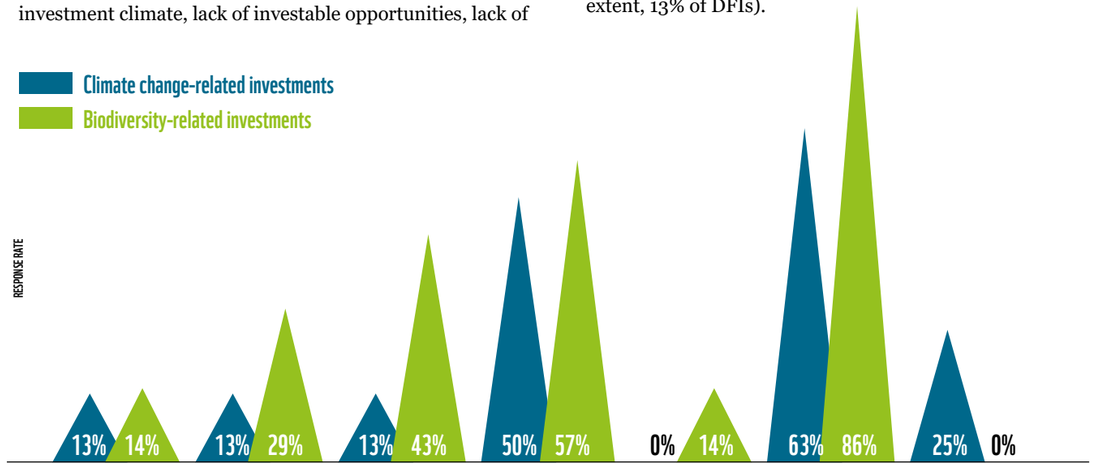



Figure 43. Note: Survey respondents were asked about the main financial and non-financial instruments that they use/provide for climate and biodiversity-related investments respectively. Source: WWF/ADFIAP survey, (N=7 for climate-related investments and N=8 for biodiversity-related investments).

Similarly, DFIs (63%) also use debt finance followed by grants (50%) for biodiversity, ecosystem services and/or natural capital investments (Figure 43). More specifically, 43% of DFIs use biodiversity/sustainability-linked loans followed by green/conservation bonds for biodiversity and/or land conservation or restoration (29%)

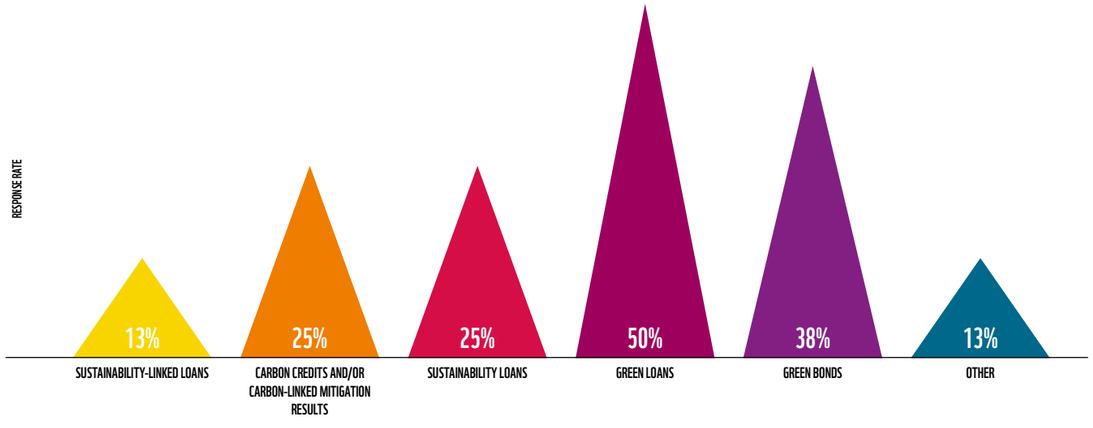



Figure 44. Note: Survey respondents were asked whether they provide or use any climate-specific financial instruments. Source: WWF/ADFIAP survey, (N=8).

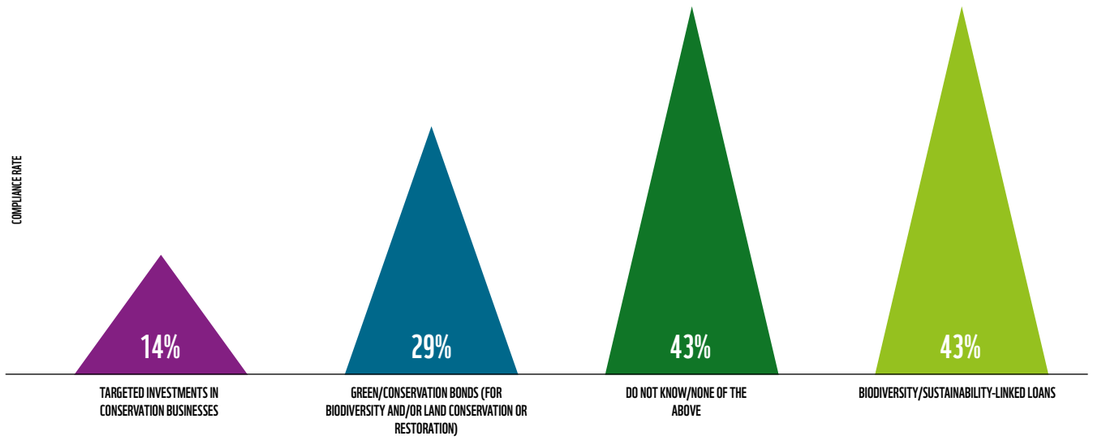



Figure 45. Note: Survey respondents were asked if they use any of the above-mentioned financial instruments for investments in biodiversity, ecosystem services and/or natural capital. Source: WWF/ADFIAP survey, (N=7).

With regard to approaches for the alignment with the Paris temperature goal, most DFIs (38%) are supporting and enhancing Long-Term Strategies (LTSs)[176] and Nationally Determined Contributions (NDCs) (Figure 46).

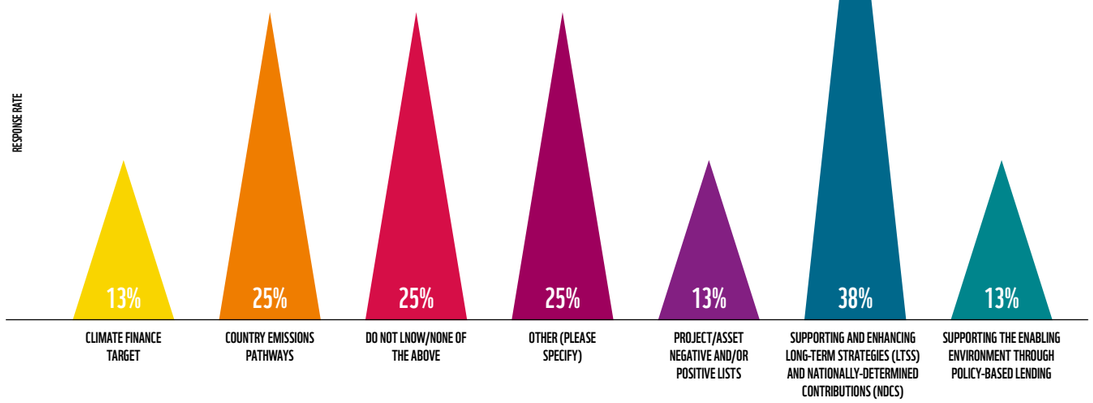



Figure 46. Note: Survey respondents were asked if they use any of the above-mentioned financial instruments for investments in biodiversity, ecosystem services and/or natural capital. Source: WWF/ADFIAP survey, (N=7)[177].

As to actual funded technologies, DFIs have invested in all the classic examples. However, renewable energy and waste systems seem to dominate followed by water. Low-emission public transport, low-carbon/green buildings and energy and resource efficiency also scored high (Figure 47). NbS and data infrastructure attracted much less investment, possibly due to the lack of understanding over NbS as well as the kind of infrastructure development that is a priority in these countries. Roughly 40% of DFIs acknowledged that they have invested in fossil fuel assets while close to 90% indicated that they have investments in solar energy and hydropower.

176 Long-term strategies are countries' mid-century long-term low GHG emissions development strategies. They are central to achieving the goal of reaching net-zero global emissions, limiting warming, and preventing some of the worst impacts of climate change. Source: WRI, undated. Long-term strategies have important links to other provisions of the Paris Agreement and are particularly relevant for updating successive, more short-term nationally determined contributions (NDCs). Source: WRI, 2019.

177 NDCs are in effect pledges or targets whereas country emission pathways are in effect scenarios of how these targets might be achieved.



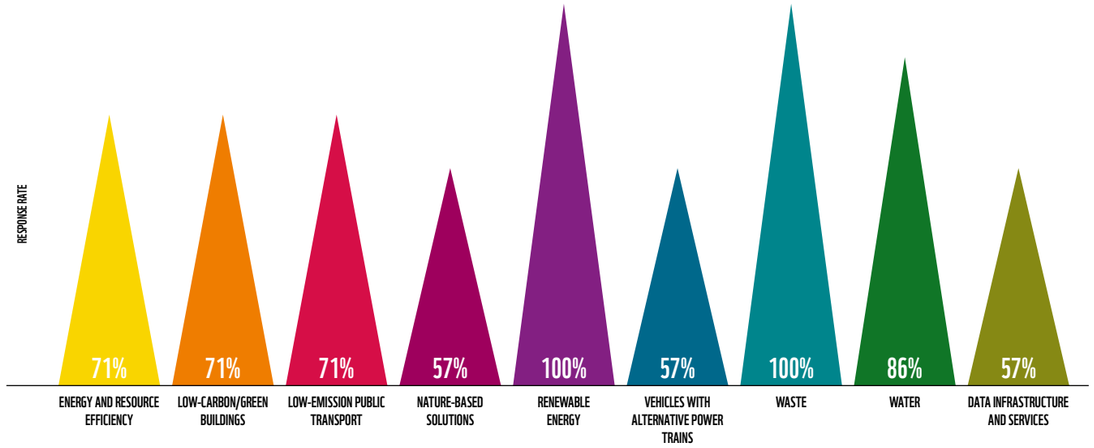



Figure 47. Note: Survey respondents were asked whether their organisation is investing in the above-mentioned climate-related opportunities. Source: WWF/ADFIAP survey, (N=7)[178].

Most DFIs (63%) state that they make investments that contribute to the conservation, sustainable use and restoration of biodiversity, ecosystem services or natural capital. Two thirds of DFIs use infrastructure-related approaches and 57% promote sustainable natural resource use (Figure 48). This is not surprising given their mandate is to accelerate infrastructure development hence most of the projects that they encounter will be of this nature.

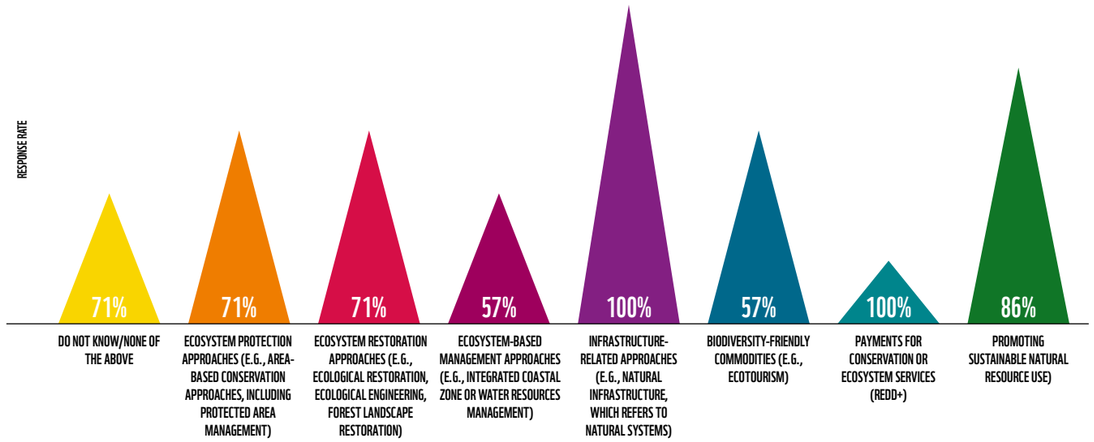



Figure 48. Note: Survey respondents were asked if they are using any of the following types of investments that directly benefit biodiversity, ecosystem services and/or natural capital. Source: WWF/ADFIAP survey, (N=7).

Investments for biodiversity were often directed towards water security and sustainable livelihoods. This shows emphasis on a community-based approach towards the projects that these DFIs finance.

178 Disclaimer: Please note that the histogram does not capture the true size of DFIs' climate-related and energy lending. The reality is that lending for climate-related opportunities constitute a relatively small fraction for most DFIs. Renewable energy projects for example, is a rather recent investment choice which has been growing since 2015. The Asia Pacific region has been experiencing increased deployment of renewable generation technologies such as solar photovoltaic systems and wind farms, and the maturing of a broad range of clean energy supply systems, intelligent controls, and new types of financial and market instruments and business models. Source: ADB, 2021.

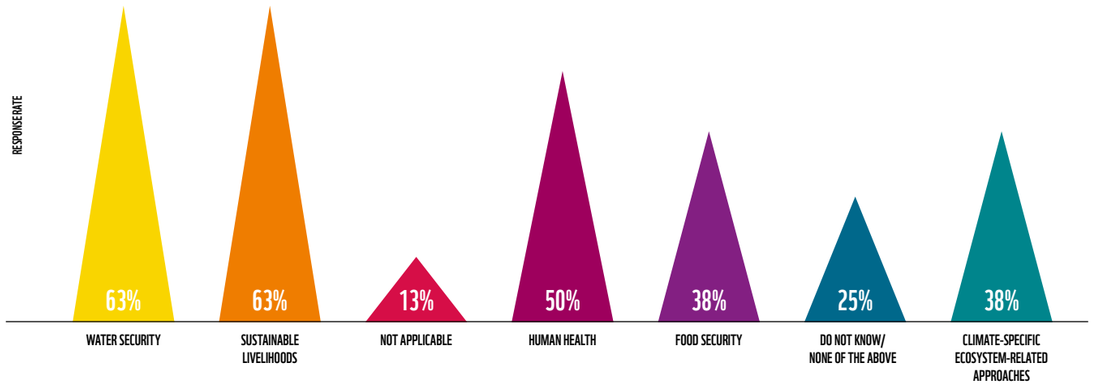



Figure 49. Note: Survey respondents were asked for the investments that indirectly benefit biodiversity (e.g., improvements for biodiversity, such as more sustainable forestry and fewer emissions to water), ecosystem services and/or natural capital, what are the main targets of these investments. Source: WWF/ADFIAP survey, (N=8).

A considerably smaller number (65%) of DFIs have allocated specific pools of capital or set/disclosed targets to increase the share of their green financing (i.e., that support in turn activities with a positive environmental impact). For example, regarding whether DFIs participate in any target-setting initiatives for biodiversity or any initiatives with relevance to the assessment of net-positive biodiversity impacts, from those that responded (N=5), 60% do not know and/or are not participating in such initiatives. The DFIs (N=3) that did not respond are also likely to not be participating. One reason that has been echoing throughout the interviews is that DFIs need to be able to define biodiversity first to confidently set a target for it and subsequently fund it. Thus, it is unsurprising that half of the DFIs do not know whether there is an intention to start using or increase the use of biodiversity investment or investing in NbS and/or natural infrastructure.

Many DFIs do not understand what a NbS is and/or how to finance it. They also believe that NbS-type projects entail additional costs that aren't required by regulations hence it is difficult to justify them. At most such projects are done as part of CSR initiatives and or because of the need to minimise the impact to the environment, some traditional infrastructure projects may include design elements that will be respectful of nature. But given the fact that most financed projects are siloed in as traditional infrastructure[179], it is hard to start implementing NbS on a large scale unless environmental considerations can be valued and actively considered in project design[180]. Furthermore, some DFIs have a very specific scope in the kind of projects they can finance (e.g., agriculture). For these DFIs, implementing NbS can be challenging and may not be applicable.

## "FINDING THE RIGHT WAY IN WHICH WE CAN FINANCE SUCH SOLUTIONS IS A CHALLENGE. PLEASE CLARIFY WHAT NBS IS? IS A FOREST A NBS"?

DFIs have also indicated that there is a lack of awareness, expertise, codes, and standards to quantity NbS benefits. The main challenge lies in effectively monetizing the wide range of NbS co-benefits and leveraging future returns for sustainable financing. It is also often the lowest priority when countries are looking for funding. In addition, there is a perceived 'giant leap' from delivering a traditional infrastructure project to a NbS.

179 Most DFIs are focusing on key infrastructure sub-sectors such as energy, water, transport, cross border projects, hence they don't have a specific sector dedicated to NbS.

180 It is worth noting through, that due to the requirements to minimise the impact on the environment, DFI may be developing infrastructure projects which that include design elements that will be 'respectful of nature' (e.g., incorporate nature-based features).



"PERSONALLY, I AM NOT FAMILIAR WITH THE DIFFERENCE BETWEEN NBS AND BIODIVERSITY. TO ME IT'S THE SAME. BUT I DON'T REALLY KNOW THE TECHNICALITY OF IT BECAUSE AT THE VERY BASIC LEVEL WE HAVE NOT REALLY BROKEN GROUND ON THE BIODIVERSITY IMPACT, AND MUCH LESS SO ON NBS."

"THERE IS A LACK OF CLEAR STANDARDS AND WE HAVE ONLY SOME CONTRACTORS WHO ARE FAMILIAR WITH NBS. THAT IS WHY WE HAVEN'T HAD PEOPLE COMING FORWARD OFFERING THOSE SOLUTIONS. THERE IS A NEED TO THINK DIFFERENTLY. WE MUST BE CLEAR OF WHAT ISSUE WE ARE TRYING TO ADDRESS, AND THIS GOES BACK TO METRICS."

"IT IS EASY TO FUND INFRASTRUCTURE TRADITIONALLY BUT FINDING A WAY TO PREVENT FOREST DESTRUCTION IN A WAY THAT FITS FINANCING MODELS HAS BEEN CHALLENGING."

To overcome some of these barriers, one DFI for example has set up a Natural Capital Lab to incentivise the costing of nature and to better see the costs and benefits of taking a NbS approach. This also complements ongoing work on expanding relevant capacity and trying to provide more compelling projects and business examples. This links back to accounting and incorporating the benefits that a NbS provides into project appraisal and developing innovative finance that can help with scaling up NbS projects. Urban and water sectors see the biggest potential for NbS as two DFIs explained in interviews:

**"FOR EXAMPLE, IN CHINA LARGE LANDSCAPE APPROACHES HAVE BEEN APPLIED AND INVOLVED PAYMENT FOR ECOSYSTEM SERVICE AT A RIVER BASIN LEVEL. THERE IS AN OPPORTUNITY FOR REPLICATION OF THESE APPROACHES, BUT THEY REQUIRE AN ENABLING ENVIRONMENT. IN CHINA, THE INSTITUTIONAL SET-UP ALLOWS FOR THAT IN A WAY THAT IS NOT IMMEDIATELY REPLICABLE IN OTHER JURISDICTIONS."**

"Water projects are also areas where it is easier to see the benefits of NbS and highlight good examples, making it easier for people to understand. One DFI is looking to develop a network of contractors who have expertise in this space.

For example, the Netherlands Water Partnership[181] brings together contractors who are experts in NbS and builds capacity and dialogue with those who can deliver on these projects.

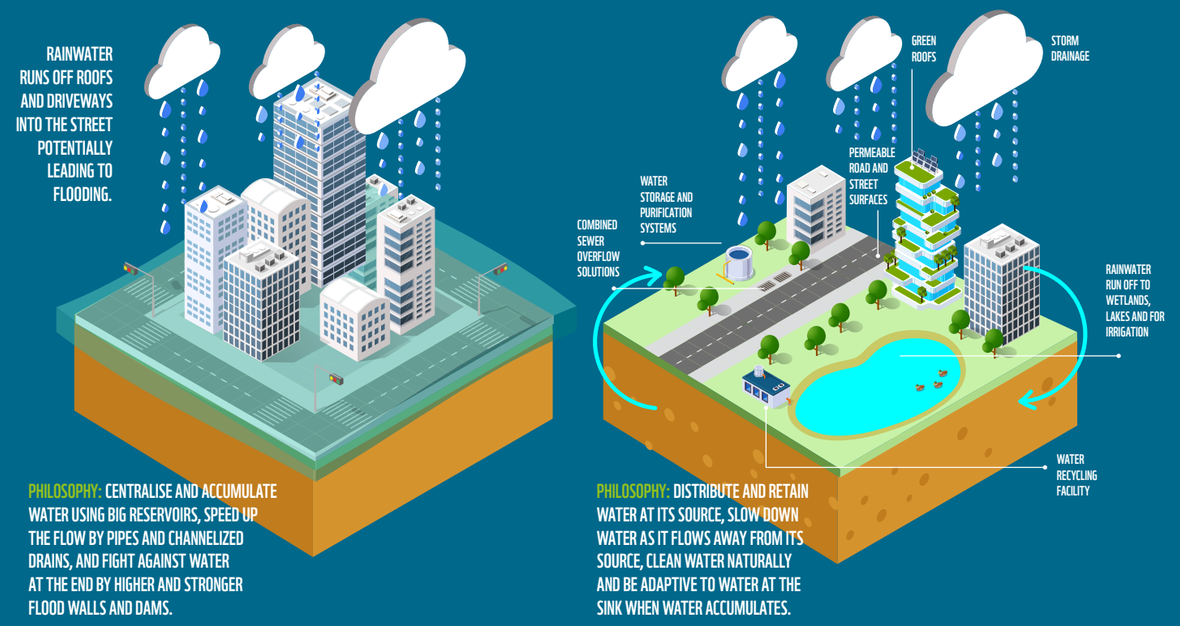
**ONE AREA THAT PEOPLE ARE EXCITED ABOUT IS WORK DEVELOPING PARTICULARLY IN CHINA AROUND SPONGE CITIES. THAT IS A PARTICULAR BIG GROWTH OPPORTUNITY AND AN AREA WHERE WE'VE HAD QUITE A LOT OF INTEREST, PARTICULARLY LOOKING AT CLIMATE AND DISASTER RESILIENT WATER INFRASTRUCTURE."**

181 Note: NWP is a strong network of Dutch water organisations, working worldwide on co-creating future-proof solutions and catalysing global water impact. Source: Netherlands Water Partnership, undated.



### *Box 12. China's Sponge Cities*

The sponge city concept was developed in 2014 to address urban water management challenges relating to both scarcity and abundance in China. It promotes integrated urban water resources management especially of rainwater and stormwater. This helps cities to resolve urban flooding and waterlogging, improve water storage and discharge capacity, enhance water quality, and alleviate heat island effects through NbS. This is achieved by applying the concept's six technical measures: infiltration, retention, storage, purification, utilization, and discharge[182].




China is piloting a sponge city program in 30 cities including Pingxiang in Jiangxi Province. Pingxiang is a mountainous city with a population of nearly 2 million that has witnessed a rise in the frequency and severity of floods since 1998. Major floods between 1998 and 2014 affected more than 496,000 people, caused the collapse of more than 2,600 houses, and resulted in significant economic losses in agriculture. Funded by a DFI loan, the Jiangxi Pingxiang Integrated Rural-Urban Infrastructure Development Project helps protect floodplains, restore wetlands, create wider green spaces along rivers and enhances ecology and erosion protection through fortifications and green embankments with native plants. Through such initiatives, the project aims to address in a connected manner key challenge of flooding, river pollution, untreated wastewater, and lack of rural-urban linkages and flood risk partnership arrangements. The embankments and wetlands along rivers will be rehabilitated and landscaped, increasing flow capacity and cleansing rainwater runoff. Rural embankments are planned as agriculture shelterbelts with edible crops and flood-resilient farming is promoted through training for farmers in advanced methods of organic crop growing.

So far, several key points emerge as ingredients to the successful delivery of a Sponge City Programme:

- Applying whole-process management in waterlogging prevention;
- Integrating sponge projects in planning with the collaboration of different city departments;
- Developing localized strategies and technical standards; and
- Establishing a fundraising mechanism and engaging communities in awareness raising, planning, disaster preparedness and risk- and benefit sharing.

182 Grow Green Project, 2021.

## JILIN YANKI LOW-CARBON CLIMATE-RESILIENT HEALTHY CITY PROJECT, CHINA

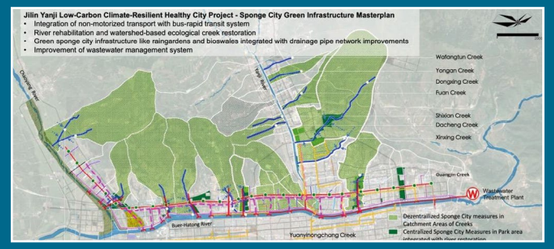
***Improved resilience through systemic integration of grey and green infrastructure, transport infrastructure and advanced modelling***

**Challenges:**

- New district with open spaces
- Pluvial flooding due to limited drainage
- Concrete creek without self-cleansing function
- Storm water includes first flush and infiltration water drain directly to creek
- Creek pollution

**Solution:**

- Sponge city into open space
- Storm water drains into creek after cleansing and detention with Sponge city measures
- Ecological restoration of creek




*Source: ADB, 2021*

### *Promoting various fundraising mechanisms*

The municipal governments are encouraged to actively promote various fundraising methods and establish a collaborative mechanism to share risks and benefits between the government and social capital (capital from private enterprises and state-owned companies)[183]. This mechanism allows the market to play a role in the allocation of resources under the supervision of the local municipal government. For instance, public-private partnerships (PPP) and franchising are ways to encourage social capital to participate in the investment, construction, and management of sponge cities. PPP can reduce the expenditures on construction and relieve fiscal pressure for the government and bring innovative designs and operations management to improve the quality of the infrastructure[184]. Under the franchise granted by local governments, social capital should be responsible for the design, fundraising, bidding for construction and operation of the project within the agreed terms of the partnership. The right to use assets and the management right will be transferred to the municipal government or entrusted to authorized companies after the expiration of the contract. Secondly, at provincial levels, governments should increase investments in sponge city construction, and at city levels, municipal governments should prioritize the construction projects of sponge cities in their annual financial budgets and construction plans. Finally, governments at all levels should stimulate financial institutions, like banks, to increase credit support and provide mid- and long-term loans for sponge city projects.

To work, the PPP model must include performance evaluation indicators (see below), in addition to technical and socioeconomic performance indicators such as project quality qualification rate, project budget saving rate, construction safety compliance rate, etc. These performance evaluation indicators may include the following:

- Environmental benefit index: reduction rate of urban runoff, increase in ecological green space and permeable surfaces, annual reduction rate of urban waterlogging, ecological shoreline restoration rate, rainwater treatment utilization rate, groundwater level maintenance rate, etc;
- Social benefit index: increased number of people with access to green space for recreation, respite, and entertainment, increase in local employment in operation and maintenance of the green infrastructure etc;
- Economic benefit index: amount of savings from reduced flood damages control and rescue costs, amount of reduced economic losses from avoided urban flood disasters, and fees from sewage treatment; and
- Public satisfaction index: local residents' satisfaction with the environmental improvement after the project is implemented[185].

183 Ibid.
184 Ibid.
185 China Public Private Partnership Centre, 2020.



# PORTFOLIO

*This section explores ESG risk assessment and mitigation approaches at portfolio level, and disclosure of ESG risk exposure and targets.*

The disclosure analysis suggests that less than half of DFIs periodically review their portfolio exposure to E&S risks (e.g., biodiversity loss, deforestation, water scarcity, or human rights violations), climate-related physical and/or transition risks) and/or disclose the results and methodology used (Figure 50). Whereas the survey indicated that only 13% of DFIs periodically review their exposure to climate physical and transition risks. Reporting is generally more advanced for climate impacts. No DFI yet promotes an integrated biodiversity and climate change investment strategy or reporting framework.

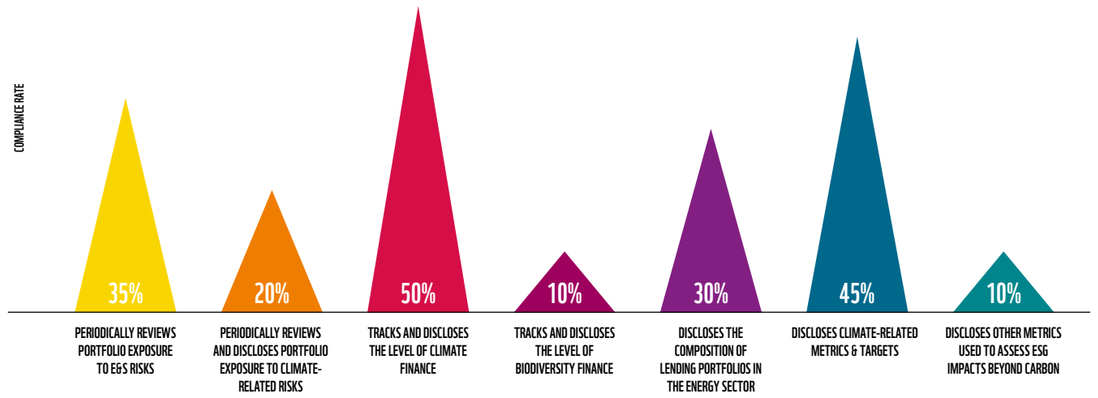



Figure 50. Source: WWF public disclosure analysis (N=10).

Most DFIs (57%) follow the GRI Sustainability Reporting Guidelines but this only picks up on operational issues. Almost a third (29%) of respondents were unaware what reporting and disclosure tools their DFIs use and only one DFIs indicated that they follow the TCFD recommendations for reporting on climate-related financial information (Figure 51).

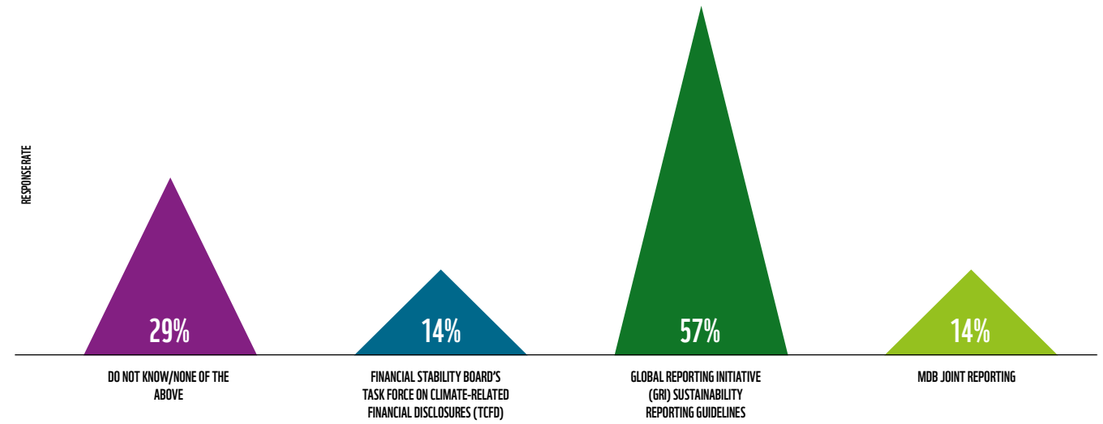



Figure 51. Note: Survey respondents were asked if they use any of the following international frameworks, standards, and initiatives for disclosing/reporting climate-related risks and opportunities. Source: WWF/ADFIAP survey, (N=7).

A majority of surveyed DFIs (63%) either do no track (50%) or do not know (13%) whether they actively track climate finance (Figure 52). Those that do (larger DFIs), use the Joint MDB Framework and Principles for tracking climate finance[186]. This in turn suggests that some DFIs have projects classified as climate mitigation and/or adaptation or require specific components in projects to be adapted in response to predicted changes in climate change. Half of DFIs track the composition of their energy lending portfolio. Although, many DFIs said that there was reduced financing for fossil fuel-related projects, not all track or could provide the exact breakdown of their energy lending portfolio, suggesting that the shift toward a low-carbon economy is still in the initial stages. In contrast, a vast majority (88%) of DFIs do not track (63%) the level of investment that supports biodiversity, ecosystem services and natural capital goals or simply do not know (25%).

Some DFIs are concerned that there is a rush to label investments as either 'good or bad, particularly in what concerns energy infrastructure and biodiversity. This is a complex 'space' which makes it hard to identify the 'levers' that could have a transformative effect but would not be classified as biodiversity-positive despite helping the transition towards more biodiversity-positive practice.

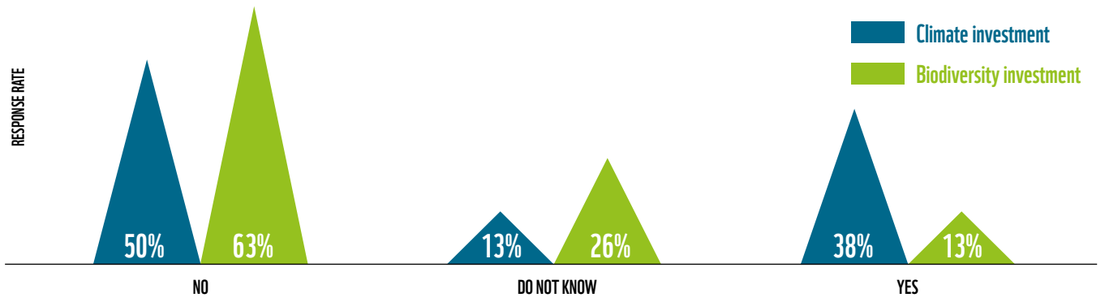



Figure 52. Note: Survey respondents were asked if they track the level of climate- and biodiversity-related investment respectively. Source: WWF/ADFIAP survey, (N=8).

Awareness is generally very poor with at least half of the DFIs having little understanding of the various standardized tools for biodiversity, ecosystem services and natural capital transparency and disclosure (Table 13). Information on accounting for biodiversity financing is also scarce probably because as of today, there is no widely agreed voluntary guidance to facilitate the reporting on biodiversity finance[187].

Table 13. Note: Survey respondents were asked to rate the extent to which your DFI is aware of the following standardized tools for biodiversity, ecosystem services and natural capital transparency and disclosure (on a scale of 1 = very unaware to 7 = fully aware). Source: WWF/ADFIAP survey, (N=7).

| Scale | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Response rate | 37% | 25% | 7% | 2% | 22% | 0% | 7% |
| Taskforce for Nature-related Financial Disclosures (TNFD) (not finalised yet) | | | | | | | |
| The Biological Diversity Protocol by the Biodiversity Disclosure Project | | | | | | | |
| The System of Environmental-Economic Accounting—Ecosystem Accounting | | | | | | | |
| The Platform for Biodiversity Accounting Financials | | | | | | | |
| Global Reporting Initiative (GRI) Sustainability Reporting Guidelines for Biodiversity | | | | | | | |
| The International Integrated Reporting Council (IIRC) (Natural Capital) | | | | | | | |
| | Low | | | LEVEL OF AWARENESS | | | High |

186 A common set of principles used to track and disclose global climate adaptation and mitigation finance commitments by MDBs and International Development Finance Club (IDFC) members.

187 Only a few banks globally report their biodiversity financings, using OECD DAC Rio markers. A scoring system of three values is used, in which official development finance activities reported to the DAC are screened and "marked" as either (i) targeting the conventions as a "principal" objective (score "2") or (ii) as a "significant" objective (score "1"), or (iii) not targeting the objective (score "0")18. DAC members generally report 100% of finance marked as "principal objective" (marker 2), but when it comes to marker 1 ("significant" objective), DAC members use different shares (%) of finance.



## BARRIERS AND ENABLERS TO THE INTEGRATION OF CLIMATE AND BIODIVERSITY CONSIDERATIONS IN INFRASTRUCTURE FINANCING

There are a lot more enablers for assessing and managing climate change risks as compared to biodiversity risks. For example, the availability of technical expertise among staff, and efficient and effective incentives and regulations are some of the most common enablers, particularly for addressing climate change through investments (Figure 53).

DFI indicated that pressure from stakeholders seems to be more from the climate perspective, rather than biodiversity. This is because the former has clearer targets based on well-known metrics, whereas the latter is characterised by a lack of understanding over the kind of methodologies DFIs can use to value impacts. Most institutions don't have mandates and targets that are focused on biodiversity, but rather targets for specific sectors. For example, one DFI indicated that climate-related investment projects are much more related to mitigation. Such a project may have a positive biodiversity impact, but the DFI has no way to calculate it.

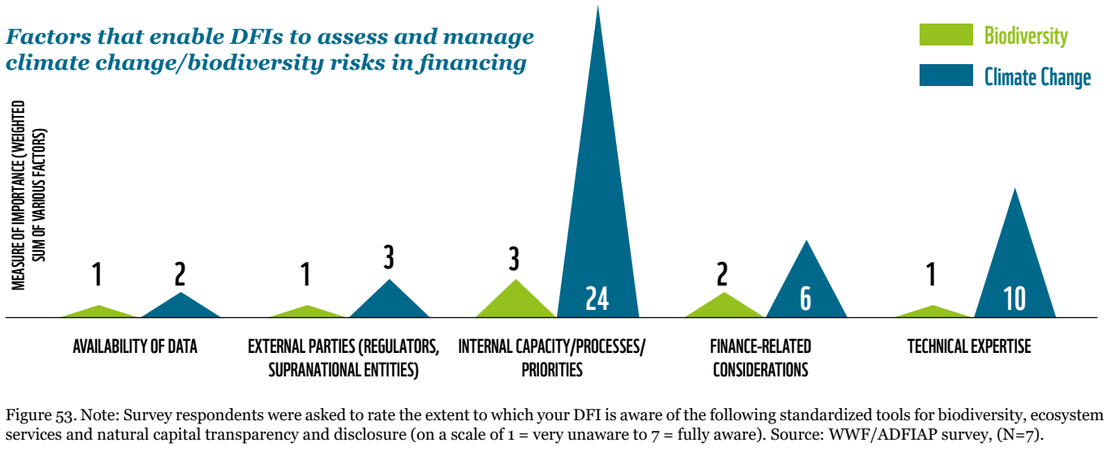



Figure 53. Note: Survey respondents were asked to rate the extent to which your DFI is aware of the following standardized tools for biodiversity, ecosystem services and natural capital transparency and disclosure (on a scale of 1 = very unaware to 7 = fully aware). Source: WWF/ADFIAP survey, (N=7).

There are more barriers for biodiversity investments as compared to climate investments. For both, availability of data and technical expertise among staff are the key barriers. Furthermore, the area that is lagging the most is biodiversity risk assessment, particularly in terms of understanding or translating the risk into financial terms, where there is a lack of consensus (Figure 54). There remains a sense in the finance world that biodiversity is dealt with in nature-specific projects only. Although this is changing, there is a need to have a better understanding that all projects affect biodiversity. This comes down to defining adequately biodiversity, and some DFIs are working with other MDBs to develop a common approach to identifying impacts[188].

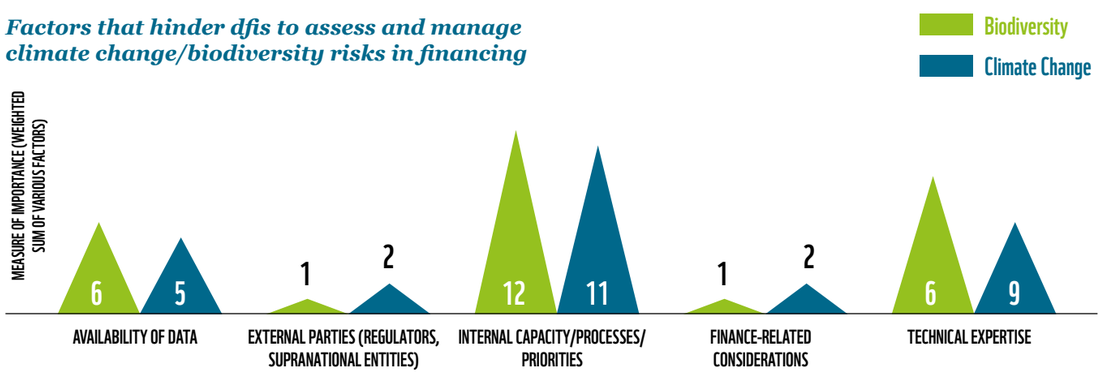



Figure 54. Note: Survey respondents were asked about factors that have constrained their ability to assess and manage climate change and biodiversity risks in financing. Source: WWF/ADFIAP survey, (N=7).

188 There is of interest in initiatives that are still in development (e.g., EU taxonomy) in terms of being able to identify impacts.

Regarding barriers to reporting, improper resourcing is a key reason. In fact, very few DFIs track and disclose the level of biodiversity finance invested in due to a lack of staffing, data or technical knowledge about the tools and methodologies available as well as the kind of metrics used to measure and report on biodiversity risks and financing. For those that do, they receive support from external bodies such as the GRI. Data availability is also a key reason, as it is often dependent on project developers and is not within the control of DFIs. This translates to increased cost and effort for a DFI, impacting in turn the quality of reporting:

**"THE WILLINGNESS OF PROJECT DEVELOPERS TO SHARE DATA DIRECTLY AFFECTS OUR REPORTING ABILITY SINCE OUR METHODOLOGY DEPENDS ON THIS DATA. THIS IS SOMETIMES VIEWED AS ADDITIONAL EFFORT/COST. PERHAPS WE NEED TO HELP THEM IN THE PREPARATION OF THIS DATA. TO SOLVE THIS PROBLEM, WE SET UP AN ANNUAL DISCUSSION WITH THE DEVELOPER REGARDING ENVIRONMENTAL SAFEGUARDS AND WHY IT IS IMPORTANT TO COLLECT AND REPORT THE DATA TRANSPARENTLY."**

The areas which most DFIs are planning to develop are in updating sector policies and strategies (86%) and supporting governments in developing enabling environments (71%).


Figure 55. Note: Survey respondents were asked to select which initiatives that concern the integration of climate and biodiversity risks, and opportunities is your DFI planning to develop or improve over the next three years. Source: WWF/ADFIAP survey, (N=7).



DFIs play a key role in catalysing private finance done through risk sharing mechanisms with the private sector and providing incentives for private sector finance. Especially for projects where the benefit to society is clear, there is much scope to increase financing in these infrastructure projects. But, as one DFI indicated, although this is important, and there is a lot of talk about catalysing private finance, many DFIs end up catalysing public finance instead and carrying most of the risk. To address this issue, changes are needed to increase private sector capacity within DFIs. Another important enabler is ensuring that projects have clear revenue models and definition, and that they are scalable and replicable. Because there are also different expectations on the returns from these kinds of investments, the DFI and private sector approach must be balanced with simultaneous government reforms (e.g., regulations incentivizing changes in investing) or in other words, the need to create blended finance together with creating an enabling environment.

DFIs must help the private sector overcome certain challenges such as the low bankability of some projects as well as risk. Thanks to their developmental mission and public funding, DFIs have, by definition, a higher risk tolerance and a longer investment horizon. Thus, DFIs can call upon the guarantees of the state and are free from the short-term constraints of private investors. Therefore, they have the capacity to make long-term investments at attractive rates in markets, sector, or projects to which the private sector finds too risky to commit. One way forward is through technical assistance and de-risking mechanisms as two DFIs practically exemplified in the interviews:

**"FOR EXAMPLE, WE RECEIVED SEVERAL PROJECTS IN RENEWABLE ENERGY THAT ALREADY HAD A LICENSE FROM THE GOVERNMENT, BUT THEY HAD TROUBLE ACCESSING LENDING FROM BANKS. WE PROVIDED TECHNICAL ASSISTANCE (E.G., LEGAL, TECHNICAL, AND FINANCIAL REVIEW) SO THAT THE PROJECT CAN RECEIVE A LOAN FROM A BANK. ANOTHER EXAMPLE IS DE-RISKING PROJECTS. IN AREAS LIKE GEOTHERMAL, THERE IS A HIGH INTEREST TO PARTICIPATE BUT THE RISK IS VERY HIGH AS WELL. THAT'S WHY WE WORK WITH THE GCF AND WORLD BANK, SO THAT 50% OF THE LOAN CAN BE FORGIVEN IF THEY CANNOT FIND A SUITABLE SITE FOR THE GEOTHERMAL SITE. THIS ENCOURAGES PRIVATE INVESTMENT IN THIS AREA."**

“ONE PROJECT I COULD SHARE IS IN THE WATER SUPPLY SECTOR. IN THE PAST, PRIVATE BANKS WERE NOT COMFORTABLE FINANCING WATER DISTRICTS. OUR DFI IMPLEMENTED A WATER REVOLVING FUND TO ENTICE PRIVATE BANKS TO COME IN. THERE IS A SORT OF GUARANTEE PROVIDED BY THE FUND AND THERE IS A MECHANISM THAT ALLOWS FOR SOME CONCESSION IN TERMS OF THE LENGTH OF TIME FOR THE INVESTMENT. SINCE PRIVATE BANKS CAN ONLY FUND FOR A SHORT PERIOD OF 7-10 YEARS, THERE IS AN EXIT MECHANISM WHERE PRIVATE BANKS CAN PROVIDE FUNDS FOR THAT PERIOD AND THE DFI WILL TAKE THEM OUT SHOULD THEY WANT TO DO SO. OUR ROLE HAS NOW SHIFTED FROM THE PRIMARY FUNDER TO A ROLE OF JUST COMPLEMENTING INVESTMENT WHERE IT IS NEEDED. THIS SHOWS HOW DFIS CAN CATALYSE INVESTMENT IN THE WATER SECTOR.”

## CHALLENGES TO PUBLIC-PRIVATE PARTNERSHIPS (PPPS)

Regarding PPPs, DFIs have indicated two main challenges. The first is related to the legal aspects or the maturity of the sector in terms of regulation. Setting up a PPP in, for example, road infrastructure, may be straightforward. However, in other sectors, the regulatory framework might need enhancement. DFIs can influence governments to improve on regulation. For example, in the waste management sector, one DFI has been making recommendations to the government about the kind of regulation needed to increase the bankability of waste projects.

The second challenge is fiscal capacity, which depends on the ability of the government to provide payments. Mutual payment structures need to be attractive enough (or bankable) and Government Corporate Councils need to demonstrate a strong commitment and fiscal capacity. Furthermore, it is important that the private sector (or the special purpose vehicle) is the one controlling the project. Public entities often have regulations that are not flexible enough for the implementation of projects. There are specific requirements, for example, on procurement. The private sector, however, is more flexible and may be able to do this more efficiently. It also takes time for PPP projects to be arranged, hence immediate implementation is hard to accomplish. With appropriate mechanisms and agreements between the public and private sectors, success may be achieved.

# CONCLUSION

This study explored how climate- and biodiversity-related ESG risks and opportunities have been incorporated into the decision-making processes and policies by a group of DFIs in Southeast and East Asia, mostly active in the infrastructure investment space. It employed a mixed-methods approach involving secondary research, a survey, and semi-structured interviews. An assessment framework was used covering ten criteria covering six areas of inquiry (i.e., purpose, policies, processes, people, products, and portfolio) frequently used to assess the integration of sustainability at the organisation level. The research team mapped the sustainability commitments of DFIs, and assessed their safeguard frameworks, sector and thematic strategies, policies, products, internal processes, and staff resources, including disclosure and reporting, all designed to prevent damage to biodiversity and climate. Furthermore, it looked at evidence for positive contributions in either projects or financial products designed to benefit climate and biodiversity directly, or that provided environmental co-benefits through reducing the pressures on biodiversity, typically through climate change mitigation or adaptation.

The results indicated that there is room for improvement across all areas, and it may be needed more in some than in others. The DFIs showed most progress with the *products* pillar of the assessment framework, followed by relatively good compliance with the *purpose* and *people* pillars. There is room for improvement regarding the *policies* and *processes*, and the least progress was identified with the *portfolio* pillar.

Although many DFIs acknowledge the relevance of climate- and biodiversity- related risks, robust integration into traditional types of risk assessment is still incomplete. Disclosures and/or target-setting in relation to DFIs exposures to carbon-related assets or biodiversity-related dependencies are still low. While DFIs are actively looking to scale up green financing, they still face structural barriers, and the variety of approaches impedes comparability.

The most important factors driving the ESG integration efforts of DFIs were government regulation and guidelines, investor or counterparty preference, and brand reputation. Physical climate risks and GHG emissions were cited by many DFIs as the most important factors assessing infrastructure investments whereas biodiversity and habitat loss issues are the least important environmental factors. Looking more specifically across all infrastructure sub-sectors, the most significant environmental factor is air pollution, followed closely by waste- and water-related issues. Physical climate risks are mostly applied to energy, social and water infrastructure whereas GHG emissions are predominately considered in energy and transport projects.

Most DFIs use ESG factors in the context of a qualitative negative screening rather than integrating them into financial models. Less than half tend to screen projects for climate physical risk and only about a third do so for climate transition risk. The reality is that most DFIs do not yet have the capacity (finance, staffing or knowledge) to adequately address biodiversity and adopting more rigorous outcome-based requirements for safeguards (net gain for biodiversity or net-zero or zero carbon for climate) would be new for many DFIs.

On COVID-19, DFIs have been focusing on providing short-term assistance and relief as opposed to long-term green recovery measures. Health spending and mitigating the economic impact associated with the pandemic became top priority.

While the first step for DFIs is to *do no harm* with their investments, the ultimate aim must be to move beyond negative ESG screening and progress towards sustainability-themed business lines which facilitate the achievement of the SDGs and other national commitments relating to climate change and biodiversity loss. DFIs should always be aiming to redirect finance to investments which benefit biodiversity and the climate through their respective mandates. Limiting investment activities which are harmful to biodiversity, or the climate will be insufficient to reverse erosion of planetary boundaries which provide a safe operating space for economic prosperity.

# FUTURE RESEARCH

The study identified several areas for future research as follows:

- The multitude of ecosystem services and the many forms of biodiversity require more thorough analysis. The consequences for the financial sector from the loss of many of the existing ecosystem services have not yet been studied. In addition, there are relationships between different ecosystem services that deserve further research. In this context, future work could focus on the interaction between climate change and the loss of biodiversity in more detail and evaluate the implications for DFIs and other FIs.
- Measuring and valuing natural capital risks and impacts, on biodiversity, is a huge challenge. Businesses are struggling to identify approaches to measure their biodiversity performance that are on the one hand practical and pragmatic and on the other hand meaningful and relevant. This also applies to FIs who are looking for suitable ways to assess the biodiversity performance of their infrastructure portfolios on one hand and their projects on the other. Thus, it is critical that the investment community and DFIs understand what suitable approaches, methodologies and datasets are available for measuring biodiversity gains without offsets for infrastructure[189].
- Future research could expand the selection of covered ESG factors such as to include waste, water/circular economy, and air pollution more specifically. It could also expand the list of DFIs to encompass more of Asia and/or replicate the study to cover other continents such as Africa and Europe.
- Future research could also dive deeper into infrastructure project financing issues and best practices. These could include exploring how ESG is factored into project valuation, how infrastructure companies offset carbon, whether the environmental impact assessments carried out by infrastructure companies are up to global standards like the Equator Principles, and comparing the good sustainable infrastructure project financing practices used by DFIs.

189 Such requirements have been recommended in new private-sector led initiatives such as FAST-Infra. Future research could map and compare existing methodologies and test a pragmatic decision-making framework to select the most suitable measurement approaches for the infrastructure context.

# RECOMMENDATIONS

Our unsustainable production and consumption have created interconnected crises. A new sustainable development pathway to which infrastructure investment is critical is required to address existential problems such as climate change and biodiversity loss. Central to this is aligning infrastructure investment to the principles of sustainable development. DFIs have an important role to play, incubating high quality projects addressing national sustainable development priorities and leveraging private as well as international public finance.

## DFIS

The assessment framework employed in this study can be used to provide recommendations as to how the potential of DFIs can be realised.

***On 'Purpose' we recommend DFIs to engage more meaningfully with shareholders and stakeholders, such as by participating in commitment-based sustainable finance initiatives such as UNEP FI Principles for Responsible Banking, gaining Green Climate Fund accreditation, and adopting international best practice.***

**INCREASE MANDATES.** DFIs should proactively seek mandate enhancements and clarifications from their respective governments/shareholders to integrate ESG considerations into their founding statutes, overall goals, target sectors, and the geographical scope of their activities. This could include using the NDC, NAP, LEDS and NBSAP process to develop sustainability themed business lines, especially where linkages to climate change and biodiversity issues exist. Making these changes will help to ensure sustainability within the economic system – a necessary condition for long-term national growth prospects. Additionally, it will enable DFIs to stay up to date with the constant developments being made in the topic area.

**CONSOLIDATE DEFINITIONS.** On defining sustainable infrastructure, which in turn informs strategies, policies and investment decisions we recommend DFIs to use the following criteria grouped along four dimensions, each containing a set of key components:

- **ENVIRONMENTAL** - mitigates climate impact, protects biodiversity, and promotes wildlife connectivity, enhances ecosystem services, and maintains and restores ecosystems, increases climate/disaster resilience, mitigates air and water pollution.
- **SOCIAL** - includes vulnerable populations in planning processes and meets their needs, improves quality of life, and reduces poverty, preserves areas of cultural value, and recognizes human rights.
- **INSTITUTIONAL** - supports effective governance of local institutions.
- **ECONOMIC** - ensures financial viability, including accurate valuation of ecosystem services, supports economy through growth and jobs.

**SET CLEAR GOALS.** DFIs should develop and implement climate- and biodiversity-positive institutional commitments and update their mandates respectively. One way they could start is by incorporating explicit climate- and biodiversity-positive goals into COVID-19 recovery finance.

***On 'Policies' we recommend DFIs to recognise the linkages between efforts to address climate change, biodiversity loss and socioeconomic development***

More specifically DFIs should:

**Align their safeguard policies with international best practice.** DFIs should take a strategic approach on the alignment of their safeguard policies with the Paris Agreement and the post-2020 Global Biodiversity Framework. This would imply looking at the space around how to set long term strategic priorities for investments but also operationalisation at the project level and the linkage between the two. As an example of best practice, please see the Inter-American Development Bank's (IDB) updated integrated policy framework to manage environmental and social risks.

**Prioritise clients based on ESG.** On the investment side, DFIs must work to develop and implement policies for what they demand of their clients (e.g., financial intermediaries as well as corporate clients). These policies should require for example, all counterparts with significant direct or indirect GHG emissions to commit to credible transition plans, backed up with capacity building and advisory services, and eventually DFIs should only work with those clients that have done so.

**Develop sector-specific polices.** DFIs should develop robust sector-specific policies that apply at project and corporate levels, and where applicable, require clients to comply with multi-stakeholder sustainability standards and certification schemes (see the European Investment Bank's *Energy Lending Policy* as an example of best policy practice for the energy sector).

**Develop a fossil fuels policy aligned with the latest climate science,** including a transition timeline and use asset-level data and geospatial tools to assess risks associated with climate change and natural capital degradation and measure impacts of their financing activities

**Learn from COVID-19 to strengthen policies** and better cope with future ESG risk challenges.

- For example, DFIs could use the crisis to investigate direct and indirect effects of external triggers, and thus plan for similar transmission channels for future ESG risks. This requires the adoption of frameworks and policies for operational resilience to not only to preserve business continuity, but also to enable them to permanently adjust to changing conditions.
- They should also recognise that biodiversity loss tends to disproportionately impact vulnerable members of society. Thus, DFI must link social and biodiversity targets and policies in their development planning.

***On 'Processes' we recommend DFIs to establish a holistic E&S risk management framework that integrates all material climate- and biodiversity-related risks***

More specifically DFIs should:

**Incorporate all climate- and biodiversity-related risks** into a risk taxonomy and understand the transmission channels to existing financial risks.

**Conduct materiality assessment** on the exposure of assets, liabilities, and operations to climate-and biodiversity-related risks. When assessing exposure to climate-related risks, DFIs should consider both short term and long-term impact of these risks (see IDB's Disaster and Climate Change Risk Assessment Methodology for IDB Projects as example of best practice). Furthermore, they should assign appropriate E&S risk scores or levels for each of the impact indicators. This would require the consideration of factors such as the likelihood and materiality of the impact-based risks, consideration of stakeholders' interests and national priorities/targets. The assessment should also include, where relevant, an analysis of the severity of the environmental risk, as well as capacity, commitment, and track record of the client (and where applicable, intermediaries) in managing such risk. Transactions with higher environmental risk should be subjected to in-depth due diligence, which may include site visits and independent review by environmental risk specialists. The E&S risk scores must then be in prioritised risk scoring (for selected sectors/industries/countries and territories).

**Assess the effectiveness of existing E&S risk management framework** to manage climate-and biodiversity-related risks.

**Ensure that risk management is supported with appropriate data**[190], tools and metrics, and/or indicators for different categories of risks or E&S pillars. Where the metrics and/or indicators are 'policies', DFIs should ensure that such policies are supported with time-bound programmes, targets, management accountability and oversight.

**Adopt sustainable infrastructure standards.** At a minimum, DFIs must adhere to and adopt the IFC PS and the Equator Principles. They should also look to adopt more infrastructure asset specific standards such as such as SuRe Standard for Sustainable and Resilient Infrastructure, GRESB Infrastructure Asset Assessment, FAST-Infra Label, Sustainable Asset Valuation (SAVi), ENVISION Rating system among others (see Annexes C4 and C5 for a more detailed overview of considerations for choosing an infrastructure standard and/or ESG valuation or evaluation tool).

**Review infrastructure design processes.** DFIs should promote design processes that start with demand and needs assessment followed by climate risk and environmental/ecological and social impact assessment. This must then be followed by alternative design options assessment and comparison using a broad cost-benefit analysis that both internalises external environmental and social costs of the options, and fully accounts for and quantifies the multiple ecosystem services, translating the social and environmental benefits and co-benefits of NbS options.

- DFIs should **support developing countries to prepare codes, standards, and methods for quantifying for NbS benefits.**
- MDBs and more resourced DFIs should **help promote best-practice biodiversity and climate safeguards** among the less resourced DFIs through a variety of knowledge dissemination channels and capacity building sessions.

190 Note. DFIs should require clients and project developers to share all data deriving from environmental assessments.

*On 'People' we recommend DFIs to provide mandatory training on climate- and biodiversity- related issues at all levels – board, senior management, and all staff*

**Match targets with implementation needs.** First and foremost, DFIs should ascertain the required costs, technical skills, and capacities to effectively implement climate and biodiversity risks into risk management.

**Ensure clear accountability for meeting targets.** DFIs should also ensure that governing and decision-making bodies are aware of climate change and biodiversity issues as they relate to institution mandates so that they can provide accountability and oversight.

DFIs should **make ESG-related training programmes mandatory** for boards, senior management, and all staff.

**Staff appraisal and training should consider performance relating to E&S issues.** Specialized technical expertise should be made available – especially relating to specialist tools and frameworks – which adequately prepares staff to value impacts/risks (particularly regarding biodiversity and NbS). Making these changes will ensure staff capacity and clear allocation of responsibilities to different departments and senior management with respect to implementing policies and processes.

*On 'Products' we recommend DFIs to promote systemic change for more climate and biodiversity-positive financing*

**Scale up support for NbS.** DFIs should also expand the scope of their infrastructure investments and create a specific sub-sector dedicated to NbS. This will in turn complement and help reduce infrastructure needs, by leveraging the services provided by nature.

- DFIs should also issue more concessional finance products that in turn could contribute to an enabling environment for the implementation and scaling up of NbS and other biodiversity-positive projects. These interventions must address the barriers that inhibit the flow of funds and fast-track the development of an investment pipeline.
- DFIs must also scale up NbS in climate strategies—e.g., restoring carbon- and species- rich ecosystems such as mangroves and wetland as these will be essential to help address climate change and biodiversity loss at the same time.

DFIs should **address the factors that lead to unsustainable blended finance.** For example, they must ensure that blended transactions: support alignment with, and ownership of, the national development agenda; comply with high standards of transparency and accountability; promote the fair allocation of risks and rewards; apply rigorous ESG standards; promote local participation; do not widen disparities or inequalities – gender, income or regional – within a country; and ensure a focus on the empowerment of women[191, 192].

**Support national risk management.** Given Asia Pacific's particularly high vulnerability to climate physical risks, DFIs have a special role in supporting the governments of vulnerable countries to better address climate-related sovereign risks and strengthen adaptive capacity and macro financial resilience. Building on their respective strengths, DFIs should continue to provide technical assistance and training, support surveillance and risk monitoring, provide finance for adaptation and resilience investment, help develop innovative insurance solutions (e.g., parametric insurance), and provide emergency lending and crisis support.

To reduce the risks for private investors and improve the bankability of projects, DFIs must **ensure that all financed projects, including NbS, have clear revenue models** and are both scalable and replicable.

*On 'Portfolio' we recommend DFIs to enhance sustainability disclosure, particularly the impact assessment and reporting of climate- and biodiversity- related risks*

DFIs should **strengthen the assessment and reporting of climate– and biodiversity-related financial risks** at portfolio level. They must identify the exposure of their portfolios to biodiversity- and climate-related risks in a timely manner, since in-depth understanding of these risks informs adequate risk management.

- For example, DFIs should identify the physical, transition and reputational risks resulting from the loss of biodiversity and understand the extent to which, and the timescale over which, these risks lead to financial risks and contribute to the total risk profile. Scenario analyses and stress tests can be useful here, even if there are only limited data available. So does the adoption of standards for measuring and reporting on biodiversity risks. Through proper due diligence, qualitative credit conditions and engagement, DFIs can take measures to limit their exposure to risks resulting from biodiversity loss, for example when setting their strategy.
- To aid their quest, DFIs should look to internationally recognized frameworks (e.g., TNFD) or reporting standards to choose metrics by which to report.

DFIs **need to better understand whether their clients operate in, or plan to operate in, areas of high biodiversity value.** Whilst numerous biodiversity designations exist, during the diligence screening process, some of the key (although not exhaustive) indicators of high biodiversity value that DFIs should look for include:

- Nationally or regionally designated Protected Areas;
- Internationally Recognized Sensitive Areas: UNESCO Natural World Heritage Sites; UNESCO Man and the Biosphere Reserves; Key Biodiversity Areas; Wetlands designated under the Convention on Wetlands of International Importance (the Ramsar Convention);
- The habitat of: Threatened species (in the Critically Endangered; Endangered and Vulnerable categories in the IUCN Red List of Threatened Species); Endemic or range-restricted species; Migratory and/or congregatory species; Highly threatened and/or unique ecosystems; Climate threatened species and ecosystems; Key evolutionary processes; and Species of stakeholder concern;
- A useful starting point is the ENCORE open-source database on environmental risks, opportunities and exposures and impacts. Other tools[193] include IBAT, SPOTT, Global Canopy Trase.Earth, Trase Finance, and Forest 500, ASN: Biodiversity Footprint for Financial Institutions, and CDC/Carbon4 Finance: GBS-Biodiversity Impact Assessment. While not a substitute for local "on the ground data", these tools are an important building block to help DFIs establish SMART targets for measuring, reporting, and verifying biodiversity-related impacts.

Regarding climate, DFIs need to **improve tracking methodologies** (incl. portfolio alignment, climate scenario analysis, and stress testing) **to include the non-Paris-aligned share of portfolios**, as well as expanding emissions disclosure to report on absolute emissions. This must include scope 3 of portfolio emissions for priority sectors (fossil fuels, mining, and automotive according to the TCFD), including finance intermediated through domestic FIs in emerging markets.

To enable a systematic shift in the way climate and biodiversity risks are addressed within the infrastructure asset class requires the cooperation of a wide range of stakeholders including governments, industry bodies, private financial institutions and investors, academic institutions, NGOs and CSOs to address barriers and harness opportunities. Therefore, we suggest below recommendations to other stakeholders.

## GOVERNMENTS, POLICYMAKERS, AND FINANCIAL REGULATORY AUTHORITIES

**We recommend governments to enhance and expand the political mandates of DFIs and related regulatory frameworks so that they better reflect climate and biodiversity ambitions.** They should direct DFIs to effectively integrate climate and biodiversity into their respective strategies and investment policies.

For example, governments should translate country environmental sustainability commitments (such as climate net-zero pledges) into the political mandates of DFIs to better integrate ESG considerations into their founding statutes, overall goals, and target sectors as well as the geographical scope of their activities.

- Governments should demand that the safeguards of DFIs are strengthened by including performance standards and adding exclusions. Examples of exclusions include: any projects resulting in deforestation, degradation of critical habitats, logging in forests that are not sustainably managed, fossil fuel extraction etc.
- Governments should require DFIs to stress test their balance sheets to quantify climate and biodiversity risks. The means that risk management staff would conduct a systematic review of the DFIs portfolio through a climate and biodiversity risk lens, identify high-risk projects and monitor them regularly. Where needed, governments should require DFIs to boost internal capability to effectively manage and mitigate climate and biodiversity risks.
- Governments must step up their engagement with DFIs and other aligned actors to expand the pool of bankable, sustainable infrastructure projects, increase their risk-return profile, and attract financing from private investors.
- Financial regulatory authorities should create and strengthen financial mechanisms (bonds, incentives) and regulatory frameworks (reporting or disclosure) to support the wider uptake and scaling of efforts by individual private sector actors on biodiversity preservation.

191 OECD, 2019.

192 In recognition that blended finance is a multi-stakeholder concept, the OECD has supported broader co-ordination work with other actors in the blended finance field and launched the Tri Hita Karana Roadmap. The roadmap establishes a shared value system amongst a slew of international actors, including DFI, private sector actors, CSOs, and think tanks to deliver on five action areas: practice, mobilisation, transparency, inclusive markets, and impact.

193 Note that these tools can only be used as a proxy for robust data collected on the ground. They can serve as a starting point but must not be used as a reliable source of impact on biodiversity as they are primarily based on modelling.

- Recognising the vulnerability to climate change physical of Asia Pacific, governments should seek to develop regional and international disaster financing mechanisms and risk-pooling arrangements for better managing climate disasters. They should also report on green infrastructure losses under the Sendai Framework for Disaster Risk Reduction[194].

- In the light of the UN Convention on Biological Diversity (COP-15) meeting in Kunming, China, and the UN Framework Convention on Climate Change (UNFCCC) COP26 meeting in Glasgow, Scotland, governments must recognise and act on biodiversity and natural capital investment opportunities. One way to facilitate this is through the development of national biodiversity goals and by putting biodiversity conservation at the heart of decision making and at the top of the national agenda. They could also send a clear market signal through the provision of subsidies and incentives that reward the restoration of biodiversity and sustainable resource use.

- Governments should enhance information disclosure, data collection and sharing of best practices to improve sustainable infrastructure planning particularity as this related to biodiversity.

    - They should require from project developers more detailed/quantifiable and comparable data on biodiversity (including through natural capital assessment) to form a part of environmental impact assessment, which will aid both DFIs and overall transparency of projects.

    - They should also direct DFIs to disclose their biodiversity impact at both portfolio and project levels.

Finally, governments must overcome existing governance issues such as weak institutional arrangements, lack of adequate financial resources, and lack of capacities for monitoring, reporting, and validating quantitative indicators for implementing NbS-related policies and programs. The need for measurable targets and other stronger commitments for developing NbS must be presented in each country's NDCs, or their self-determined pledge of measures towards limiting global warming and increasing climate resilience.

## CSOs, NGOs AND ACADEMIC INSTITUTIONS

CSOs and NGOs should **help to improve the awareness of DFIs about the financial materiality and implications of biodiversity loss** for both projects and business levels. This is where initiatives such as Asia Sustainable Finance Initiative (ASFI) can provide a one-stop shop where DFIs can obtain deep knowledge on the latest sustainable finance research, tools, regulations, and guidelines, reporting standards and more. ASFI can also help to build the capacity of boards/senior management and staff via training workshops, online learning, and research to strengthen the three lines of defence on ESG issues, as well as to understand global sustainable finance landscape and regulations, risk management tools and sustainability standards. ASFI may also advise DFIs on the use of science-based standards and tools for performing portfolio-wide assessments/scenario analysis, to manage risk and align portfolios with the objectives of the Paris Agreement and other planetary boundaries. It can work with DFIs to develop green/blue financial solutions that have measurable impacts, science-based criteria, and appropriate safeguards in place to minimize potential negative E&S impacts. This will support DFIs to capture business opportunities and mobilize capital to meet the significant financing needs for the transition to a sustainable, low-carbon economy.

CSOs and NGOs should work **with DFIs, governments, academia, and the private sector to develop and pilot best practices** as well as credible templates that DFIs can use both to identify projects that benefit biodiversity and to confidently assess and compare positive outcomes. They should also help DFIs to develop clearer definitions of what qualifies as a NbS. This in turn would encourage investment through better-evidenced business cases for investors, and suitable policymaking with governments putting the supporting policy ingredients in place.

The civil society should **support DFIs to develop a collective platform for natural capital 'accelerators'** and investment funds and/or replicate the models already employed by other leading actors in this space such as the European Investment Bank (EIB) and Inter-American Development Bank.

CSOs can also working with DFIs to translate their safeguards policies into country planning processes (e.g., in-country policy reform and the metrics that is needed to make it work as well as capacity building, etc.).

## PRIVATE FINANCIAL INSTITUTIONS (BOTH INVESTORS AND BANKS)

**Private sector actors must strengthen the enabling frameworks for syndicated lending.** They must also increase support for DFIs (e.g., NDBs) in the preparation and mobilization of investments in climate and biodiversity action.

- For example, the FAST-Infra initiative is setting up a Sustainable Infrastructure Warehouse Financing Facility (SIWFF)[195] to directly finance eligible NDBs for on-lending to domestic sustainable infrastructure projects. According to this proposal, commercial banks will finance NDBs, allowing them to lend against sustainable infrastructure projects domestically. The NDBs will take on construction risk, while SFF funders will take on the NDB risk.

Private actors must encourage collaboration and/or partnerships to share knowledge. They should seek to draw on professional practice ecosystems within the sustainability space to share knowledge and innovate on best practice.

- One area where private investors could improve on and support the DFIs with is in the application of common financial or ecosystem-based valuation methods to prioritise, for example, different climate resilience options under conditions of uncertainty. For this, they must increase their awareness of tools and methodologies to analyse the financial value of climate-resilient projects, particularly the value they generate in their co-benefits and avoided losses.

To ensure the successful delivery of PPPs, the private sector actor must be responsible for designing and implementing infrastructure projects. While the public partner is responsible for identifying, screening, and appraising PPP projects. The project outputs and outcome are monitored by both parties. This means that the private partner needs to have the relevant skills and partnerships in place to integrate best practice into infrastructure investment, design, operation, and maintenance.

194 The Sendai Framework for Disaster Risk Reduction 2015-2030 outlines seven clear targets and four priorities for action to prevent new and reduce existing disaster risks: (i) Understanding disaster risk; (ii) Strengthening disaster risk governance to manage disaster risk; (iii) Investing in disaster reduction for resilience and (iv) Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation, and reconstruction. Source: UNDRR, 2015.

195 SIWFF is a syndication structure allowing participation from a range of financial institutions in emerging markets. To help address the difference in risk profiles between projects under construction and operating projects, the SIWFF will be set up as a blended finance structure to lend alongside a select group of financial institutions, both public and private. Once the loan portfolio at the warehousing facility reaches a certain size/diversification, it will be sold/securitized. Source: Climate Policy Initiative, 2021.

# CALL TO ACTION

**Infrastructure and urban areas are still being built in many parts of Southeast and East Asia.** This gives the region a chance to ensure that what goes up is more resilient, avoids impacts on biodiversity and is better able to withstand heightened risk – whether climate or biodiversity -related. At the same time, key economies in the region, such as China and Japan, are leading the world in technologies, from electric vehicles and renewable energy to nature-based sponge-city infrastructure, that are necessary to adapt to and mitigate climate change, and to protect and enhance biodiversity. There are plenty of challenges. First, the funds required to invest in these solutions are significant. Second, navigating any transition, especially one that shifts whole industries towards decarbonisation and biodiversity-positive outcomes, will not be easy. But if Asia keeps its spirit of innovation and determination, it could lead the world in at least one of its principal challenges.

**The DFIs in this study have a unique opportunity and responsibility to shape the way infrastructure is delivered in the region.** Given their public mandates, authority, and supervision, combined with their significant scale in terms of assets and financing, they are perfectly placed to actively contribute to the Paris Agreement and the post-2020 Global Biodiversity Framework. They can play a catalytic role both in setting ambitious targets towards climate neutral- and biodiversity-positive infrastructure and supporting the implementation of agreed actions. Beyond simply mobilizing resources by unlocking public finance and leveraging private finance, DFIs can strongly influence all sectors of society, including governments, clients, and private capital, to further mainstream climate and biodiversity in all relevant public and private decision-making.

But to do so, **DFIs need to adopt an adequate framework for delivering sustainable infrastructure.** Such a framework must acknowledge the heterogeneity of infrastructure, thereby providing only overarching and not prescriptive guidance. At the same time, it must help DFIs to safeguard both their investments and the environment (Figure 56). It should also approach E&S risks in a structured manner. But while the first step for DFIs is to 'do no harm' with their investments, the ultimate aim must be to move beyond negative ESG screening and progress towards sustainability-themed business lines which facilitate the achievement of the SDGs and other national commitments related to climate change and biodiversity. This framework should also guide DFIs on how to redirect finance to investments which benefit biodiversity and the climate through their respective mandates. The framework below is an initial attempt to combine all the above-mentioned considerations. It can be developed further and integrated with the six assessment pillars. DFIs may use this framework to benchmark each of their purpose, policies, processes, people, products, and portfolio pillars against industry best practice. Finally, the framework can be further enhanced with the Quality Infrastructure Principles[196], particularly Principles 3: Integrating Environmental Considerations in Infrastructure Investments, and 4: Building Resilience against Natural Disasters and Other Risks.

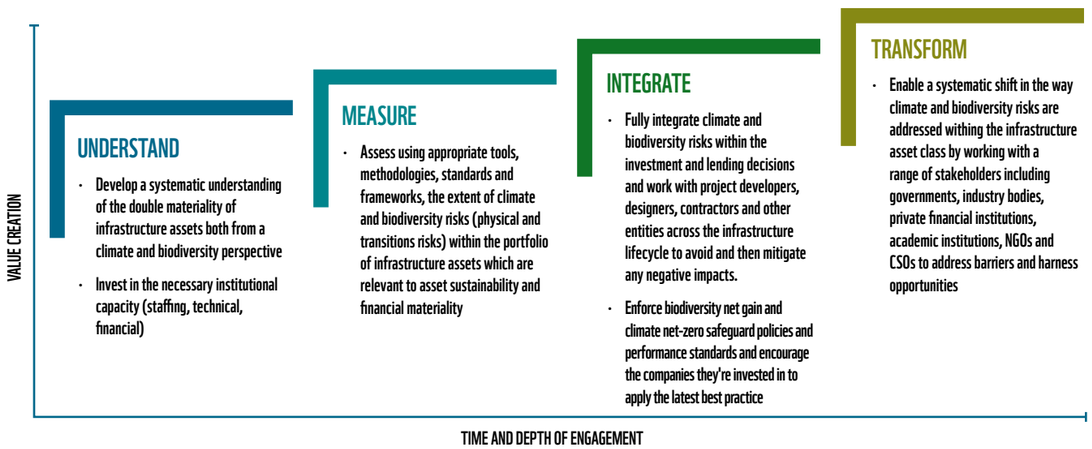



Figure 56. Suggested framework for enabling DFIs to deliver sustainable infrastructure. Adapted from WWF-India, 2021.

196 G20 Principles for Promoting Quality Infrastructure Investment, undated.



# ABBREVIATIONS

| | |
|---|---|
| ADB | Asian Development Bank |
| ADFIAP | Association of Development Financing Institutions in Asia & the Pacific |
| APAC | Asia Pacific |
| ASEAN | Association of Southeast Asian Nations |
| ASFI | Asia Sustainable Finance Initiative |
| BECCS | Bioenergy with carbon capture and storage |
| BES | Biodiversity and Ecosystem Services |
| BRI | Belt and Road Initiative |
| CBD | Convention on Biological Diversity |
| CDC | Caisse des Dépôts Group |
| COP15 | Fifteenth meeting of the Conference of the Parties to the Convention on Biological Diversity |
| COP26 | Twenty-six meeting of the Conference of the Parties to the United Nations on Climate Change |
| CPI | Consumer Price Index |
| CSR | Corporate Social Responsibility |
| DFI | Development Financial Institution |
| ENCORE | Exploring Natural Capital Opportunities, Risks and Exposure |
| ESG | Environmental, Social and Governance |
| E&S | Environmental and Social |
| EU | European Union |
| FAO | Food and Agriculture Organization of the United Nations |
| FAST-INFRA | Finance to Accelerate the Sustainable Transition-Infrastructure |
| FI | Financial Institution |
| FSC | Forest Stewardship Council |
| GCF | Green Climate Fund |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GHG | Greenhouse Gas |
| GIIN | Global Impact Investing Network |
| GRESB | Global Real Estate Sustainability Benchmark |
| GRI | Global Reporting Initiative |
| IBAT | International Biodiversity Assessment Tool |
| ICMA | International Capital Market Association |
| ICT | Information and Communications Technology |
| IDB | Inter-American Development Bank |
| IFC | International Finance Corporation |
| IFI | International Financial Institutions |

| | |
|---|---|
| IPBES | Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services |
| IPCC | Intergovernmental Panel on Climate Change |
| IRENA | International Renewable Energy Agency |
| ISO | International Organization for Standardization |
| IUCN | International Union for Conservation of Nature |
| LEDS | Low Emission Development Strategies |
| LTS | Long-Term Strategies (LTSs) |
| MDB | Multilateral Development Bank |
| MSMEs | Micro, Small and Medium Enterprises |
| NAPs | National Adaptation Plans |
| NBSAP | National Biodiversity Strategy and Action Plan |
| NbS | Nature-based Solutions |
| NDB | National Development Bank |
| NDCs | Nationally Determined Contributions |
| NNL | No Net Loss |
| NOx | Nitrogen Oxides |
| NPI | Net Positive Impact |
| OECD | Organisation for Economic Co-operation and Development |
| PDBs | Public Development Banks |
| PM2.5. | Particulate matter (2.5) |
| PPP | Public-Private Partnership |
| PRC | People's Republic of China |
| ROI | Return on investment |
| SASB | Sustainability Accounting Standards Board |
| SBTN | Science Based Targets Network |
| SDGs | Sustainable Development Goals |
| SGPC | Stanford Global Projects Center |
| SI | Sustainable Infrastructure |
| SIWFF | Sustainable Infrastructure Warehouse Financing Facility |
| SME | Small and Medium Enterprise |
| SOx | Sulphur Oxides |
| SUSBA | Sustainable Banking Assessment tool |
| TCFD | Taskforce on Climate-related Financial Disclosures |
| TNFD | Taskforce on Nature-related Financial Disclosures |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNESCAP | Economic and Social Commission for Asia and the Pacific of the United Nations |
| UNFAO | Food and Agriculture Organization of the United Nations |
| UNFCCC | UN Framework Convention on Climate Change |
| WWF | World Wide Fund for Nature |



# DEFINITIONS & GLOSSARY OF KEY TERMS

## INFRASTRUCTURE-RELATED DEFINITIONS

There are several terms that are frequently used to describe various aspects of sustainable infrastructure but have different usages among different stakeholders. The following definitions are intended to provide clarity on how these terms are used in this report.

**Infrastructure** comprises physical assets (also referred to as hard infrastructure) plus the knowledge, institutions, and policy frameworks (also referred to as soft infrastructure) in which they exist and that enable them to function. These include both built, or grey, infrastructure in all sectors, and natural, or green, infrastructure[197].

The term **social infrastructure** is generally used to refer to those systems that deliver services upon which the health and well-being of societies depend. This includes services related to healthcare, education, housing, water and sanitation, rule of law, culture, and recreation, among others[198].

**Economic infrastructure** generally refers to those systems that underpin the economy, including but not limited to energy (generation, transmission, and distribution systems), water supply and waste management (dams, irrigation, desalination, distribution, sewerage, solid waste/sanitation), transportation (roads, bridges, tunnels, ports, airports), and information and communication technology (fixed, wireless). In many cases the lines between social and economic infrastructure are not well defined, since a given infrastructure system may serve both social and economic functions. For this reason, it is helpful to differentiate between social and economic infrastructures based on the needs they service, rather than on the type of service provided or the type of asset or system being used[199].

**Sustainable infrastructure** (sometimes also called green infrastructure) systems are those that are planned, designed, constructed, operated, and decommissioned in a manner that ensures economic and financial, social, environmental (including climate resilience), and institutional sustainability over the entire infrastructure lifecycle. In order words, it helps put the world on a path towards sustainable and inclusive growth, in line with global agendas, particularly the Sustainable Development Goals and Paris Climate Agreement[200]. Sustainable infrastructure can include built infrastructure, natural infrastructure or hybrid infrastructure that contains elements of both[201].

For **WWF**, **sustainable infrastructure** encompasses environmental, social, institutional, and economic dimensions such as enhancing, protecting, and restoring ecosystems; reducing our dependence on fossil fuels; increasing resilience to climate and other risks; serving all stakeholders; improving quality of life and addressing poverty; supporting the effective and equitable governance of local institutions; and strengthening economies through growth, jobs, and a holistic view of the full life-cycle costs of the project. Thus, it integrates science-based and inclusive planning, nature and climate risk, mitigation, and resilience analysis, and applicable nature-based solutions (NbS).

Other terms commonly (but inconsistently) used when discussing sustainable infrastructure include ecological infrastructure, natural infrastructure, green infrastructure, and NbS. While relevant, these terms are not synonymous with sustainable infrastructure, rather, they refer to specific aspects of it (i.e., environmental components of sustainable infrastructure, see Figure 1 below).

197 UNEP, 2021
198 Ibid
199 Ibid
200 McKinsey Centre for Business and Environment, 2016.
201 UNEP, 2021

**Natural infrastructure** (also sometimes called ecological infrastructure, environmental infrastructure, or green infrastructure) refers to a "strategically planned and managed network[s] of natural lands, such as forests and wetlands, working landscapes, and other open spaces that conserves or enhances ecosystem values and functions and provides associated benefits to human populations"[202]. Natural infrastructure can be either naturally occurring or naturalized, but the defining feature is that it is actively managed; if it is not actively managed it is simply "nature"[203]. Natural infrastructure can function on its own or be used to complement built infrastructure, and elements of natural infrastructure can be incorporated into the design of built infrastructure (e.g., green roofs and walls), resulting in hybrid infrastructure (also referred to as grey-green infrastructure).

**Nature-based solutions (NbS)** are "actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits"[204]. NbS are not limited to infrastructure but are highly relevant. NbS for infrastructure include the use of natural and hybrid infrastructure to meet infrastructure service needs (e.g., protecting a natural watershed to ensure drinking water quality).

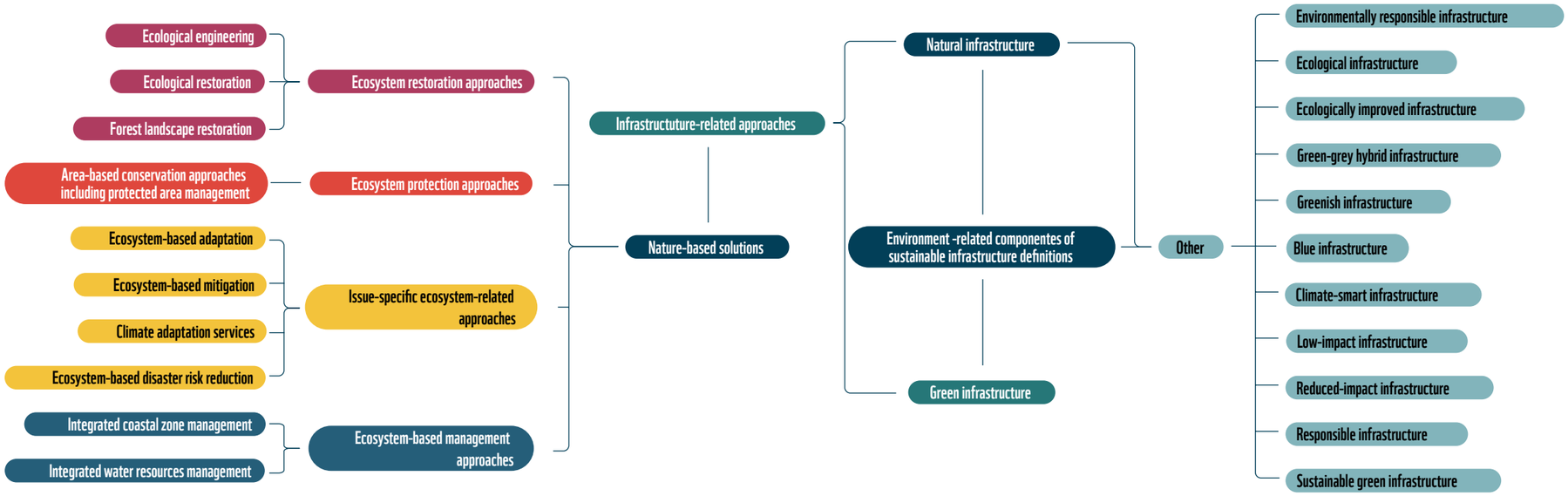



Figure 57. Environment-related components of sustainable infrastructure definitions. Source: Author.

It is also useful to make the distinction between **greenfield vs. brownfield infrastructure. Greenfield projects** are known as development or primary projects. They often start from "nothing", i.e., they generally correspond to assets constructed for the first time in a specific location (e.g., the construction of a new highway). Uncertainty may stem from cost and demand sides. On the cost side, these projects must pass the construction phase. On the revenue side, and depending on the project framework, uncertainty may stem from the demand for the infrastructure and the associated price.

**Brownfield projects** are understood as operational or secondary projects. In contrast to greenfield projects, they are already operational or rely on existing infrastructure. For example, they may operate the reconstruction, renovation, or expansion of an asset. As such, the risks associated with the early phases of greenfield projects are outdated; the remaining risks are operational, regulatory and market risks. Compare for instance the construction of a new Concentrated Solar Power plant with the addition of one more unit within the plant.

Therefore, the distinction between brownfield and greenfield infrastructure lies in their different level of risk and ultimately, their maturity. The first will thus tend to attract risk averse investors while the latter is more appropriate for investors that will participate in shaping the project in the start-up phase to ensure its value grows and possibly generates higher returns[205]. Furthermore, greenfield projects may expect new environmental or social impacts / may be more significant whereas brownfield projects may expect less environmental or social impacts / redesign or retrofit to improve environmental or social conditions.

## OTHER DEFINITIONS

**Biodiversity** is the variability among living organisms from all sources, including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems (Convention on Biological Diversity).

**Biodiversity compensation represents** actions taken to compensate for negative impacts to biodiversity caused by developments, which may include financial compensation for affected stakeholders. Compensatory actions generate gains that are not necessarily quantified, or equivalent in type or magnitude to losses, and as such are more general than "biodiversity offsetting."

**Biodiversity offsets** are off-site projects intended to restore degraded habitats or prevent the degradation or loss of those habitats to compensate for an operation's residual impacts on biodiversity features that cannot be addressed through avoidance, minimization, and rehabilitation.

**Biodiversity positive investments** are investments in interventions resulting in net biodiversity conservation gain, either through averted loss and/or degradation of biodiversity and improving protection status, or through positive management actions (restoration, enhancement) that improve biodiversity condition.

**Biophysical value** is a measure of the importance of components of nature (living being or non-living element), of the processes that are derived from the interactions among these components, or those of particular properties of those components and processes.

**Debt-for-nature swaps** are financial mechanisms that allow portions of a developing country's foreign debt to be forgiven, in exchange for commitments to invest in biodiversity conservation and environmental policy measures.

**Development finance institutions (DFIs)** are public banks, accountable to governments, and their purpose is to facilitate sustainable development. They include i) national DFIs: a single country owns the institution and finance is directed domestically; ii) bilateral DFIs: a single country owns the institution, and it directs finance flows internationally; and iii) multilateral DFIs: the institution has multiple shareholder countries and directs finance flows internationally[206].

**Ecological connectivity** is the unimpeded movement of species and the flow of natural processes that sustain life on Earth.

**Ecosystem** is a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

**Ecosystem services** represent the benefits people obtain from ecosystems. According to the original formulation of the Millennium Ecosystem Assessment, ecosystem services were divided into supporting, regulating, provisioning and cultural. This classification, however, is superseded in IPBES' assessment of nature's contributions to human systems, which considers the following services: basic life support for humanity (regulating), material goods (material) and spiritual inspiration (non-material).

**Environment impact assessment** is the process of identifying, predicting, evaluating, and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.

**Environmental assessment** is a generic term covering various types of assessment processes, such as environmental impact assessment, strategic environmental assessment, sociocultural analysis, environmental analyses, and environmental audits.

202 Benedict and McMahon, 2006.
203 Roy, 2018
204 IUCN, 2016
205 LTIA. 2020.
206 UNEP, WEF, Economic of land degradation Initiative and Vivid Economics, 2021.

**ESG integration** is defined as "the explicit and systematic inclusion of ESG factors in investment analysis and investment decisions**.** It aims to assess long-term financial risks and opportunities related to ESG issues as a core component of building a resilient and sustainable portfolio for the specific purpose of enhancing long-term risk-adjusted returns. In the context of infrastructure investments, ESG requires investors to take a wider view, which provides insights into the long-term prospects of projects. Therefore, an ESG approach may provide investors with a benchmark to judge the overall quality and spectrum of the project's opportunities and risks.

**Foundation species** exert influence on a community not through their trophic interactions, but by causing physical changes in the environment. These organisms alter the environment through their behaviour or their large collective biomass.

**Key biodiversity area** is a globally important site that is large enough or sufficiently interconnected to support viable populations of the species for which it is important; areas are selected based on the presence of globally threatened species, the presence of restricted-range species, congregations of species that concentrate at particular sites during some stage in their lifecycle, and the presence of biome-restricted[207] species assemblages.

**Keystone species** influence the presence and abundance of other organisms through their trophic interactions.

**Mitigation hierarchy** is framework for mitigating biodiversity losses from development by sequentially avoiding biodiversity impacts wherever possible, minimizing impacts where impacts are unavoidable, restoring following the impact if impacts are time bound, and finally offsetting any residual impacts to biodiversity.

**Natural capital** are the assets that underpin ecosystem services - the stock of renewable and non-renewable resources that combine to give a flow of benefits to people.

**Natural habitats** are biophysical environments where the ecosystem's biological communities are formed largely by native plant and animal species and where human activity has not essentially modified the area's primary ecological functions.

**Natural resources** are assets (raw materials) occurring in nature that can be used for economic production or consumption.

**Nature** is the non-human world, including co-produced features. Within the context of science, it includes categories such as biodiversity, ecosystems, ecosystem functioning, evolution, the biosphere, humankind's shared evolutionary heritage, and biocultural diversity. Within the context of other knowledge systems, it includes categories such as Mother Earth and systems of life.

**Nature positive approach** enriches biodiversity, stores carbon, purifies water and reduces pandemic risk. In short, a nature positive approach enhances the resilience of our planet and our societies.

**Nature's contributions to people (NCP)** are all the positive contributions or benefits, *and* occasionally negative contributions, losses, or detriments, that people obtain from nature. It resonates with the use of the term ecosystem services and goes further by explicitly embracing concepts associated with other worldviews on human–nature relations and knowledge systems (*e.g.,* 'nature's gifts' in many indigenous cultures).

**Net biodiversity gain** refers to the fact the impact of the investment is positive compared to a reference situation and is based on the sum of positive and negative impacts resulting from the investment. The focus on net impact is in line with the approach of existing impact-finance initiatives, including the 'Principles for positive impact finance', the 'Platform Carbon Accounting Financials' and the IRIS+ methodology of the 'Global Impact Investing Network' (GIIN).

"**No net loss" (NNL) policy** is applied at various spatial scales aiming to achieve a minimum of no net loss in biodiversity across all impacts of development. NNL policies are often operationalized in practice through application of the "mitigation hierarchy."

**Planetary boundaries:** The Stockholm Resilience Centre outlines nine processes that regulate the stability and resilience of the Earth. Planetary boundaries are thresholds within which humanity can continue to develop and thrive for generations to come. Crossing these boundaries increases the risk of generating large-scale abrupt or irreversible environmental changes.

**Safeguards** are the sum total action(s) that can be taken to assure that environmental and social values are protected during linear infrastructure planning and project development. They provide policy makers, government agencies, financiers, engineers, and planners with the information and tools they need to apply the appropriate environmental and social protections for infrastructure development.

**Sovereign risk** is the risk that a government will become unable or unwilling to meet its debt obligations.

207 Species whose distributions are largely or wholly confined to one biome. *Applies to species with distributions of greater than 50,000km*$^2$. Source: Biodiversity A to Z, undated.



# REFERENCES


ADB and World Scientific. 2020. Financing Infrastructure in Asia. Available here.

ADB Institute. 2018. Financing Infrastructure in Asia and the Pacific Capturing Impacts and New Sources. Available here.

ADB. 2015. Southeast Asia and the Economics of Global Climate Stabilisation. Available here.

ADB. 2017. Asia Bond Monitor. Manila (June). Available here.

ADB. 2017. Meeting Asia's Infrastructure Needs. Manila. Available here.

ADB. 2017. Sustaining Development through Public–Private Partnership. Asian Development Outlook Update. Manila. Available here.

ADB. 2018. Closing the Financing Gap in Asian Infrastructure. Available here.

ADB. 2019. Infrastructure Financing in Asia Book. Chapter 7 Infrastructure Bond Market Developments in Asia: Challenges and Solutions. Available here.

ADB. 2021. Climate Country Risk profile: Indonesia. Available here.

ADB. 2021. Climate Country Risk profile: Philippines. Available here.

ADB. 2020. Climate Country Risk profile: Vietnam. Available here

ADB. 2021. Energy Policy Supporting Low-Carbon Transition in Asia and the Pacific. Available here.

ADB.2021. Available here.

Alamgir, M., Campbell, M. J., Sloan, S., Goosem, M., Clements, G. R., Mahmoud, M. I., & Laurance, W. F. 2017. Review Economic, Socio-Political and Environmental Risks of Road Development in the Tropics. *Current Biology*, *27*(20), R1130–R1140. Available here.

BCG. 2021. The Biodiversity Crisis is a Business Crisis. Available here.

Beirne, J., N. Renzhi, and U. Volz. 2021. Bracing for the Typhoon: Climate Change and Sovereign Risk in Southeast Asia. ADBI Working Paper 1223. Tokyo: Asian Development Bank Institute. Available here.

Benedict, M. A. and McMahon, E. T. 2006. Green Infrastructure: Linking Landscapes and Communities. 2nd ed. Washington, DC, USA: Island Press. Available here.

Bennon, M. and Sharma, R. 2018. State of the practice: Sustainability standards for infrastructure investors. Available here

Biodiversity A to Z. undated. Biome-restricted species. Available here.

Caisse des Dépôts Group. 2019. Global Biodiversity Score: A Tool to Establish & Measure Corporate & Financial Commitments for Biodiversity. Available here.

Carbon4Finance and CDC Biodiversité. 2021. The Biodiversity Impact Analytics (BIA) Database powered by the GBS®. Available here.

CDC Biodiversité. Undated. Global Biodiversity Score. Available here.

China Public Private Partnership Center. 2020. Using PPP Model to Promote Sponge City Construction. Available here.

Climate Policy Initiative. 2021. Fast Infra. Available here.

Coalition for Private Investment in Conservation. Undated. Available here.

Conservation Finance Alliance. 2020. Coronavirus and the Conservation Finance Community. Available here.

Convention on Biological Diversity. 1992. Available here.

Costanza and Daly. 1992. Natural Capital and Sustainable Development. Conservation Biology.1992; 6(1): 37-46. Available here.

Biodiversity Consultancy and Cross Sector Biodiversity Initiative, 2017. A cross-sector guide for implementing the Mitigation Hierarchy: Executive summary and Overview. Available here.

Dasgupta, P. 2021. The Economics of Biodiversity: The Dasgupta Review. London: HM Treasury. Available here.

Data Basin. Undated. Available here.

Davisson, K. and Losavio, J. 2020. How Sustainable Infrastructure Can Aid the Post-COVID Recovery. Available here:

DBS Bank. 2017. Green Finance Opportunities in ASEAN. November. Available here.

De Nederlandsche Bank (DNB) and PBL Netherlands Environmental Assessment Agency. 2020. Indebted to nature: Exploring biodiversity risks for the Dutch financial sector. Available here.

E3G. Undated. E3G Public Bank Climate Tracker Matrix – MDBs. Available here.

eBird. Undated. Available here.

Equator Principles. Undated. Available here

Ermgassen, Sophus & Baker, Julia & Griffiths, Richard and Strange, Niels and Struebig, Matthew & Bull, Joseph. 2019. The ecological outcomes of biodiversity offsets under "no net loss" policies: A global review. Conservation Letters. Available here.

FAST-Infra Label Framework. 2021. Public Consultation document. Available here.

Finance for Biodiversity (F4B). 2020. Aligning Development Finance with Nature's Needs: Protecting Nature's Development Dividend. Available here.

Finance for Biodiversity Pledge. 2021. Finance and Biodiversity Overview of initiatives for financial institutions. Available here.

Forest Trends. Undated. The Mitigation Hierarchy. Available here.

Forman and Alexander. 1998. Roads and Their Major Ecological Effects. Available here.

G20 Principles for Promoting Quality Infrastructure Investment. Available here

Garrett-Peltier, H. 2017. Green versus brown: Comparing the employment impacts of energy efficiency, renewable energy, and fossil fuels using an input-output model. Economic Modelling. 61: 439-447. Available here.

Global Forest Watch. Undated. Available here.

Global Green Growth Institute. 2015. Infrastructure Finance in the Developing World. Challenges and Opportunities for Multilateral Development Banks in 21st Century Infrastructure Finance. Available here.

Global Impact Investing Network (GIIN). 2018. The Landscape for Impact Investing in Southeast Asia. Executive Summary. Available here.

Global Infrastructure Hub. 2021. Global forecasts: Infrastructure investment at current trends and need. Available here.

Green Climate Fund. Undated. Entity accreditation. Available here.

Green Finance and development Center. 2021. Debt-For-Nature Swaps: A Triple-Win Solution for Debt Sustainability and Biodiversity Finance in the Belt and Road Initiative (BRI)? Available here.

GRESB. Undated. About. Available here.

GrowGreen.2021. Using Nature to Reshape Cities and Live with Water: An Overview of the Chinese Sponge City Programme and Its Implementation in Wuhan. Available here.

GRI Standards. Undated. A Short Introduction to the GRI Standards. Available here.

Guggenheim Investments, Stanford Global Projects Center and WWF. 2018. State of the Practice: Sustainability Standards for Infrastructure Investors. Available here.

EU Commission. EU Business @Biodiversity. 2021. Available here.

EU Commission. 2021. EU taxonomy for sustainable activities. Available here.

Hallegatte, S., Rentschler, J. and Rozenberg. J. 2019. Lifelines: The Resilient Infrastructure Opportunity. Washington, DC, USA: World Bank. Available here.

Hansen, M. C., Moore, R., Potapov, P., and Hancher, R. 2013. High-resolution global maps of 21st-century forest cover change. Science 342, 850–853. Available here.

Hilton, S. and Lee, JM J. 2021. Assessing Portfolio Impacts - Tools to Measure Biodiversity and SDG Footprints of Financial Portfolios. Gland, Switzerland: WWF.

HSBC Global Asset Management, 2021. FAST-Infra; a public-private initiative to raise private investment in developing world sustainable infrastructure. Available here.

Humphrey, C. 2015. Infrastructure Finance in the Developing World. National Development Banks and Infrastructure Provision: A Comparative Study of Brazil, China, and South Africa. Global Green Growth Institute and Intergovernmental Group of Twenty-Four. Available here.

Hyun, S. 2018. Infrastructure Finance: Enhancing Returns to Attract Private Sector Investors. ADBI-Bank of Thailand Conference. Bangkok.

Hyun, S., T. Nishizawa, and N. Yoshino. 2008. Exploring the Use of Revenue Bond for Infrastructure Financing in Asia. JBICI Discussion Paper. No. 15.



IBAT. 2020. Screening for biodiversity risk in the finance sector. Briefing note. Available here.

IEA. 2021. Net Zero by 2050. A Roadmap for the Global Energy Sector. Available here.

IFC. 2021. Environmental and Social Performance Standards. Available here.

Impact Cubed. Undated. Portfolio Impact Footprint (PIF). Available here.

Inspire and NGFS. 2021. Occasional Paper: Biodiversity and financial stability: exploring the case for action. Available here.

Integrated Biodiversity Assessment Tool (IBAT). Available here.

International Institute for Sustainable Development. 2021. Energy Policy Tracker. Available here.

International Monetary Fund. 2020. How a Collective Infrastructure Push Will Boost Global Growth. Available here.

International Union for Conservation of Nature. 2016. Defining Nature-based Solutions. IUCN Resolution WCC-2016-Res-069-EN. Available here.

IPBES. 2019. Global Assessment Report on Biodiversity and Ecosystem Services. Summary note, available here.

IPBES. 2021. Glossary. Available here

IPCC. 2014. Synthesis Report (SYR) of the IPCC Fifth Assessment Report (AR5), Available here.

IUCN. 2016. Net Positive Impact on biodiversity. The conservation case. Available here.

IUCN. 2019. Red List of Threatened Species (2019 update). Available here.

IUCN. Undated. Nature-based Solutions for people and planet. Available here.

Jiajun Xu, Xiaomeng Ren, and Xinyue Wu. 2019. Mapping Development Finance Institutions Worldwide: Definitions, Rationales, and Varieties. Institute of New Structural Economics Peking University. Available here.

Joint Climate Finance Tracking Group of multilateral development banks (MDBs) and Common Principles for Climate Mitigation Finance Tracking and International Development Finance Club (IDFC). 2021. Available here.

Kompas, T., Pham, V.H., and Che, T.N. 2018. The Effects of Climate Change on GDP by Country and the Global Economic Gains from Complying with the Paris Climate Accord. Earths Future 6(8), 1153–1173. Available here.

Laurance, W. F., and Burgués-Arrea, I. 2017. Roads to riches or ruin? Science 358, 442–444. Available here.

Laurance, W. F., Goosem, M. and Laurance, S. G. W. 2009. Impacts of roads and linear clearings on tropical forests. Trends in Ecology & Evolution 24, 659–669. Available here.

Laurance, W. F., Sloan, S., Weng, L. and Sayer, J. A. 2015. Estimating the environmental costs of Africa's massive "Development Corridors". Current Biology 25, 3202–3208. Available here.

Long-term Infrastructure Investors Association (LIIA) and EY. 2020. ESG Handbook. Available here.

London School of Economics (LSE). 2017. More countries are backing their Paris pledges with national laws. Available here.. 2017. More countries are backing their Paris pledges with national laws. Available here.

Long Term Infrastructure Investors Association (LITA). 2020. Environmental, Social and Governance Handbook for Long Term Investors in Infrastructure. Available here.

Mainstreaming Climate in Financial Institutions. Undated. What is climate mainstreaming? Available here.

Marsh & McLennan Companies. 2020. Global Risks for Infrastructure. Available here.

Maxwell, S., Fuller, R., Brooks, T. *et al.* Biodiversity: The ravages of guns, nets, and bulldozers. *Nature* 536, 143–145 (2016). Available here.

McKinsey Centre for Business and Environment. 2016. Financing change: How to mobilize private sector financing for sustainable infrastructure, January. Available here.

McKinsey Global Institute. 2020. Climate risk and response in Asia Future of Asia. Available here.

Meijer, J., Huijbregts, M.A., Schotten, K., and Schipper, A. 2018. Global patterns of current and future road infrastructure. Environ. Res. Lett. 13 (2018) 064006. Available here.

Moilanen, A. and Kotiaho J. S. 2020. Three ways to deliver a net positive impact with biodiversity offsets, 35(1), 197–205. Available here.

Natural Capital Finance Alliance. Undated. Available here.

Natural Capital Finance Alliance. Undated. Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE). Available here.

Naturvation. 2020. Briefing paper. Review of Economic Valuation of Nature-based Solutions in Urban Areas. Available here.

Netherlands Enterprise Agency, ASN Bank, CREM and PRé Sustainability. 2021. Biodiversity Footprint for Financial Institutions Exploring Biodiversity Assessment. Available here.

Netherland Water Partnership (NWP). Undated. Available here.

OECD. 2017. Investing in Climate, Investing in Growth: A Synthesis. Paris, France. Available here.

OECD. 2018. Annex 18. Rio markers. Available here.

OECD. 2018. Climate-resilient Infrastructure. Available here.

OECD. 2019. Blended Finance in the Least Developed Countries. Available here.

OECD. 2020. Biodiversity and the economic response to COVID-19: Ensuring a green and resilient recovery." OECD Policy Brief; 28 September. Available here.

OECD. 2021. COVID-19 and greening the economies of Eastern Europe, the Caucasus, and Central Asia. Available here.

OECD. 2021. Infrastructure Investment. Available here.

OECD. 2021. Spotlight on green recovery measures. Available here.

OECD. Undated. Development Finance Institutions and Private Sector Development. Available here.

OECD. Undated. Development Finance Institutions: Profitability Promoting Development. Available here.

OECD. Undated. Tri Hita Karana Roadmap. Available here.

Olav, S., Emil, S., Utamiputri, P., Bennun, L., Edwards, S., & Bull, J. W. 2019. Perspective The Role of 'No Net Loss' Policies in Conserving Biodiversity Threatened by the Global Infrastructure Boom. *One Earth*, *1*(3), 305–315. Available here.

Partnership for Biodiversity Accounting Financials (PBAF). Undated. Available here.

Roy, D. 2018. The Multiple Benefits of Natural Infrastructure. International Institute for Sustainable Development Blog; 27 August 2018. Available here.

Saha, D. 2018. Low Carbon Infrastructure: an essential solution to climate change? World Bank Blogs; 18 April 2018. Available here.

Science Based Targets for Nature. 2020. Initial Guidance for Business. Available here.

SIIA, HSBC, and KPMG. 2020. Financing Sustainable Infrastructure in ASEAN. Available here.

Smee, D. 2010. Species with a Large Impact on Community Structure. Nature Education Knowledge 3(10):40. Available here.

Steele, P., and Patel., S. 2020. Tackling the triple crisis Using debt swaps to address debt, climate, and nature loss post-COVID-19. IIED. Available here.

SuRe®. Undated. The Standard for Sustainable and Resilient Infrastructure. Available here

Susantono, B. 2018. How to Finance Asia's Infrastructure Gap. The Jakarta Post. Available here.

Sustainable Infrastructure Tool Navigator. Undated. Available here.

Taskforce on Nature-related Financial Disclosures (TNFD). Undated. Available here.

Täger, M. 2021. 'Double materiality': what is it and why does it matter? Grantham Research Institute on Climate Change and the Environment. Available here.

Temasek, World Economic Forum and AlphaBeta. 2021. New Nature Economy: Asia's Next Wave. Available here.

Thomalla, F., Boyland, M., and Calgaro, E. 2017. Disasters and development in Southeast Asia Toward equitable resilience and sustainability. Routledge Handbook of Southeast Asian Development. 1st Edition. Available here.

Trase. Undated. Forest-risk commodity supply chain database. Available here.

UNDP SDG Finance Sector Hub. 2021. Thematic Bond Framework. Available here.

UNDRR. 2015. Sendai Framework for Disaster Risk Reduction 2015-2030. Available here.

UNEP FI. 2020. Portfolio Impact Analysis Tool for Banks. Available here.

UNEP FI. 2021. Biodiversity Target-setting. Principles for Responsible Banking. Available here.

UNEP FI Principles for Responsible Investment, Mirova and Institutional Investors Group on Climate Change (IIGCC). Undated. French Energy Transition Law. Global Investor Briefing. Available here.

UNEP, WEF, The Economics of Land Degradation Initiative and Vivid Economics. 2021. State of Finance for Nature. Available here

UNEP, GIZ and Green Fiscal Policy Network. 2021. Investing In Natural Capital for A Greener and Fairer Recovery. Available here.



UNESCAP. 2020. The Asia Pacific Disaster Report (APDR). Available here.

United Nations Environment Programme. 2021. International Good Practice Principles for Sustainable Infrastructure. Nairobi. Available here.

United Nations. Undated. Sustainable Development Goal 15. Department of Economic and Social Affairs Sustainable Development. Available here.

Vivid Economics. 2021. Greenness of Stimulus Index. Available here.

Volz, U., J. Beirne, N. Ambrosio Preudhomme, A. Fenton, E. Mazzacurati, N. Renzhi and J. Stampe. 2020. Climate Change and Sovereign Risk. London, Tokyo, Singapore, and Berkeley, CA: SOAS University of London, ADB Institute, WWF Singapore, and Four Twenty-Seven. Available here.

Wagner, S. C. 2010. Keystone Species. *Nature Education Knowledge* 3(10):51. Available here.

World Bank. 2018. The MDBs' alignment approach to the objectives of the Paris Agreement: working together to catalyse low-emissions and climate-resilient development. Available here.

World Bank. 2020. Mobilizing Private Finance for Nature. Available here.

World Bank. 2020. What are Public Private Partnerships? Available here.

World Bank. 2016. Review and Update of the World Bank Safeguard Policies. Available here.

World Economic Forum. 2015. What's the path to deep decarbonization? Available here.

World Economic Forum. 2020. Press Release Available here.

WRI. 2019. Climate Action for Today and Tomorrow: The Relationship between NDCs and LTSs. Available here.

WRI. Undated. What is a Long-term Strategy? Available here.

WWF. 2016. Living Planet Report 2016. Risk and resilience in a new era. WWF International, Gland, Switzerland. Available here.

WWF and B Capital Partners. 2019. Guidance Note: Integrating ESG factors into financial models for infrastructure investments. Available here.

WWF and Cadmus Group. 2019. Valuing Sustainability in Infrastructure Investments: Market Status, Barriers and Opportunities A Landscape Analysis. Available here.

WWF and HSBC. 2018. Greening the Belt and Road Initiative. Available here.

WWF and Oliver Wyman, 2020. Incorporating sustainability into infrastructure. How climate and nature-related factors are applied in the investment process. Available here.

WWF and Oliver Wyman. 2020. Incorporating Sustainability into Infrastructure. Available here.

WWF and The Biodiversity Consultancy 2021. Public development banks and biodiversity. How PDBs can align with the Post-2020 Global Biodiversity Framework. Paris, WWF France. Available here.

WWF, KPMG and Mott MacDonald and Guggenheim Partners. 2020. Measuring Sustainability in Infrastructure Investment A Case Study Assessment of Selected Standards and Tools. Available here.

WWF. 2021. Integration of environmental risks in infrastructure investments in India: A business case for financial institutions. Available here.

Yusuf, A.A., and Francisco, H. 2009. Climate Change Vulnerability Mapping for Southeast Asia. Economy and Environment Program for Southeast Asia. Available here.

# ANNEX

# A. METHODOLOGY

## 1. ASSESSMENT FRAMEWORK SCORING

| | | Description of score | | |
|---|---|---|---|---|
| | **Sub-indicators** | **0** | **0.5** | **1** |
| **1) Purpose - Sustainability strategy, stakeholder engagement and knowledge dissemination** | | | | |
| 1.1 | Is there a clear reference to sustainability in the DFI's mandate, strategy and long-term vision and/or mission (specify which)? | No reference | Implicit reference | Explicit reference seen in more than 1 aspect |
| 1.2 | Is there a clear reference to sustainable development goals (SDGs) in the DFI's strategy or vision? | No reference | Implicit reference | Explicit reference to SDGs |
| 1.3 | Does the DFI explicitly acknowledge the societal and economic risks associated with climate change? | No reference | Implicit reference | Explicit reference to risk due to climate change |
| 1.4 | Does the DFI explicitly acknowledge the societal and economic risks associated with biodiversity loss? | No reference | Implicit reference | Explicit reference to risk due to biodiversity loss |
| 1.5 | Does the DFI engage with civil society and/or non-governmental organisations to understand the ESG impacts of its activities (e.g., discuss E&S issues such as climate change, water risk, deforestation and biodiversity loss, ocean sustainability, human and labour rights)? | No engagement or intention of engagement | Intention of engagement | Explicit engagement |
| 1.6 | Does the DFI engage with regulators and policy makers on ESG integration and/or sustainable finance topics? | No engagement or intention of engagement | Intention of engagement | Explicit engagement |
| 1.7 | Does the DFI engage with other financial or multilateral institutions to develop new financial products, knowledge or enabling conditions for ESG integration etc? | No engagement or intention of engagement | Intention of engagement | Explicit engagement |
| 1.8 | Does the DFI disseminate knowledge related to E&S risks, opportunities across and outside of the organisation? (incl. outreach events to raise awareness on good E&S practices) | No dissemination of knowledge external parties | Intention of dissemination with no clear action | Explicit dissemination of knowledge |
| **2) Purpose - Participation in sustainable finance and infrastructure initiatives** | | | | |
| 2.1 | Does the DFI participate in relevant commitment-based initiatives or frameworks for sustainable infrastructure such as UNEP Finance Initiative? | No participation at all | Some participation but not part of some key frameworks/initiatives | Participates in most of the key initiatives and frameworks |
| 2.2 | Has the DFI made or showed willingness to make a commitment to align all financial flows with the Paris Agreement? | No mention | Some commitment towards climate financing | Implied when part of UNEP FI or Explicit mention of strategies aligned with Paris Agreement |
| 2.3 | Has the DFI made or showed willingness to make a commitment to align all financial flows with the post-2020 Global Biodiversity Framework to be adopted at the COP15 of the Convention on Biological Diversity (CBD)? | No mention | Some commitment towards protecting biodiversity | Explicit mention of strategies which align with the CBD |
| **3) Policies – Public statements on specific ESG issues** | | | | |
| 3.1 | Do the DFI's E&S policies include minimum requirements/ recommendations based on internationally recognized standards for best E&S practices (e.g., IFC Performance Standards, RSPO, FSC, etc.)? | No minimum requirements/How requirements are incorporated are not clear | Some form of standards but not well aligned with internationally recognised standards | Policies are based on internationally recognised standards |
| 3.2 | Does the DFI have an up-to-date safeguards policy with respect to climate and/or biodiversity risks? | No mention | Some mention of safeguards policy but it is not constantly/recently reviewed | Up to date with recent publication |
| 3.3 | Does the DFI have a climate change strategy? (e.g., explaining that climate change is incorporated into investment decision-making) | No mention | Overall strategy has some mention of tackling climate change | Specific mention of strategies to tackle climate change |
| 3.4 | Does the DFI have a biodiversity/nature or other relevant strategy? (e.g., explaining that water risk, and/or deforestation and biodiversity loss is incorporated into investment decision-making)? | No mention | Overall strategy has some mention of protecting biodiversity | Specific mention of strategies to protect biodiversity |
| 3.5 | Does the DFI have exclusionary principles covering activities the DFI will not support (i.e., 'no go' provisions), taking into account ESG considerations? (e.g., projects located in, or having negative impacts on protected areas or UNESCO World Heritage Sites) | No mention | There is a no-go list, but it is not clear what it is based on | Explicit no-go list with clear criteria |
| 3.6 | Does the DFI prohibit the financing of new coal-fired power plant projects? | No formal coal exclusion policy | Mentions limited financing | Specifically prohibits |
| 3.7 | Does the DFI have a no deforestation policy across the portfolio? | No formal deforestation policy | Some restriction of investment that may be linked with deforestation | Specifically prohibits |
| 3.8 | Does the DFI have a policy or statement explaining that the sustainable use of oceans, seas and marine resources (or recognition of risk to marine/ocean resources) is incorporated into investment decision-making? | No mention | Some exclusion policies that protect marine resources | Specific strategy/ framework to protect marine resources |
| 3.9 | Does the DFI have a commitment to ensure that Free Prior and Informed Consent (FPIC) is given before investing in projects? | No mention | Generic safeguard policy for consent | Specific process ensuring FPIC |
| 3.10 | Is there a clear reference to green COVID-19 recovery? OR has the DFI made a public statement on a green recovery (i.e., measures that enhance, and do not adversely affect, environmental sustainability and well-being, combining an emphasis on restoring growth and creating jobs with the achievement of environmental goals and objectives)? | No reference | Focus is on COVID-19 assistance rather than green recovery | Facilitated long-term recovery with a focus on sustainability |
| **4) Policies – Public statements on specific sectors** | | | | |
| 4.1 | Does the DFI have sector policies or sector-specific requirements for environmentally or socially sensitive industries (e.g., energy, oil & gas, mining, transport infrastructure)? | No sector-specific requirements | Only have sector-specific requirements in a limited number of sectors or sector-specific requirements are implied | There are sector-specific requirements |
| 4.2 | Does the DFI periodically review and update its E&S policies? | No | Not clear/frequent | Yes |

| | Sub-indicators | Description of score 0 | 0.5 | 1 |
|---|---|---|---|---|
| **5) Processes - Assessing climate and nature risks at project level** | | | | |
| 5.1 | Does the DFI screen projects for physical climate risk? (e.g., using Equator Principles 4 or other guidance) | No mention | Yes, but criteria could be more robust and based on more frameworks/ screening techniques | Specific criteria for screening based on robust and internationally recognised frameworks |
| 5.2 | Does the DFI screen projects for transition risk? (e.g., Paris Alignments and/or carbon shadow price) | No mention | Yes, but criteria could be more robust and based on more frameworks/ screening techniques | Specific criteria for screening based on robust and internationally recognised frameworks |
| 5.3 | Does the DFI screen projects for biodiversity risk (dependency risk and/or impacts on biodiversity)? | No mention | Yes, but criteria could be more robust and based on more frameworks/ screening techniques | Specific criteria for screening based on robust and internationally recognised frameworks |
| 5.4 | As part of the approval process does the DFI classify its projects and transactions based on E&S risk assessment (e.g., high, medium and low risk)? | No mention | There is an assessment of risk but not into clear categories with clear implications | Yes, with clear implications of having different risk assessments |
| 5.5 | Does the DFI employ science-based tools, methodologies or criteria to assess project risks or opportunities? (e.g., does the DFI defined key metrics for monitoring E&S performance of portfolios/projects such as greenhouse gas emissions, water consumption) | No mention | Requires an assessment of impact but not with clear metrics or how to incorporate these metrics to assess risk | Yes |
| **6) People - Responsibilities for ESG** | | | | |
| 6.1 | Is senior management responsible for the implementation of the DFI's ESG strategy? | No mention | Some mention of senior management's involvement | Specific committees are formed, specific members of senior management/ the board are responsible for ESG strategy |
| 6.2 | Do senior management's responsibilities include management of climate change risks and opportunities relevant to the DFI's activities? | No mention | Some mention of senior management's involvement | Actions are sanction by senior management |
| **7) People - E&S staff competency and performance evaluation** | | | | |
| 7.1 | Does the DFI have a dedicated ESG team to implement E&S policies and procedures? | No mention | Intention to create such a job scope | Yes |
| 7.2 | Does the DFI train its staff on E&S policies and implementation processes? (e.g., incl. senior staff training on sustainability issues) | No mention | Some training that may touch on relevant areas/ not all levels of staff are trained | Training specific to E&S policies and implementation processes |
| 7.3 | Are sustainability-related criteria part of the staff appraisal process and/or integrated into KPIs for its staff? | No mention | Sustainability-related criteria play a role but not explicit/clear to what extent | KPI is closed linked to sustainability-related metrics |

| | Sub-indicators | Description of score 0 | 0.5 | 1 |
|---|---|---|---|---|
| **8) Products - ESG integration in products and services** | | | | |
| 8.1 | Does the DFI offer specific financial products and services (e.g., green bonds, sustainability-linked loans, impact financing) that support the mitigation of E&S issues (e.g., climate change, water scarcity and pollution, deforestation)? | No mention | Some mention of sustainability related financial products | Many financial products that support the mitigation of E&S issues |
| 8.2 | Does the DFI allocate specific pools of capital or set targets to increase the share of its financing that supports activities with a positive environmental impact? (i.e., do they set a target for green finance)? | No mention | Broad SDG targets, implicit targets for share of green financing | Yes |
| **9) Portfolio - ESG risk assessment and mitigation at portfolio level** | | | | |
| 9.1 | Does the DFI periodically review its portfolio exposure to E&S risks (e.g., biodiversity loss, deforestation, water scarcity, or human rights violations)? | No | Not clear/frequent | Yes |
| 9.2 | Does the DFI periodically review its portfolio exposure to climate-related physical and/or transition risks, using scenario analysis, and disclose the results and methodology used? | No | Not clear/frequent | Yes |
| **10) Portfolio - Disclosure of ESG risk exposure and targets** | | | | |
| 10.1 | Does the DFI track and disclose the level of 'climate finance' invested in? | No | Yes, but could be more detailed | Yes |
| 10.2 | Does the DFI track or disclosure the level of investment that supports biodiversity goals? | No | Yes, but could be more detailed | Yes |
| 10.3 | Does the DFI disclose the composition of its lending portfolios in the power generation (e.g., fossil fuel vs. renewable energy) and upstream energy exploration and production (e.g., conventional vs. unconventional oil & gas, coal) sectors? | No | Yes, but could be more detailed | Yes |
| 10.4 | Does the DFI disclose climate-related metrics (GHG emissions or carbon intensity of its portfolio)? | No | Yes, but could be more detailed | Yes |
| 10.5 | Does the DFI disclose other metrics and targets used to assess and manage the ESG impacts of its portfolio beyond carbon (e.g., biodiversity risk, water risk, deforestation, human rights, etc)? | No | Yes, but could be more detailed | Yes |

# 2. ONLINE QUESTIONNAIRE

## 1. ORGANISATIONAL DETAILS

This short section asks for introductory information about your organisation. Including this information will help our analysis, but answers will be used anonymously and not linked back to you or your organisation.

What's is your institution name? (Optional) [add free-form large text comment field]

What type of DFI best characterises your institution? (Please tick all that apply)

a. Bilateral
b. Multilateral
c. National
d. Regional
e. Sub-national
f. Other (please specify)

## 2. OVERARCHING ENVIRONMENTAL (ESG) CONSIDERATIONS

*This section asks for general information about your bank's approach to managing environmental risks and opportunities in its lending and investment activities. This includes the commitments that your organisation has made to address the risks and opportunities related to sustainability, general approaches to investment outcomes for climate and biodiversity, environmental factor relevance to infrastructure investments as well as your institution's internal processes related to sustainability oversight, human resources, and internal processes related to training and capacity building.*

### 2.1 Environmental Commitments

Does your DFI have a mandate related to (Please tick all that apply):

a. environmental sustainability in general?
b. Sustainable Development Goals?
c. climate?
d. biodiversity?

Does your institution have any sustainability-linked target/s (e.g., climate or biodiversity finance targets, renewable energy and/or energy efficiency financing targets etc)? (Yes/No/Do not know; If yes, please specify) [add free-form large text comment field]

Is your organisation a member/supporter/signatory/witness or accredited entity of any broader forum or commitment related to climate, biodiversity and/or the environment?

a. Finance in Common Summit Pledge
b. Finance for Biodiversity Pledge
c. Global Environment Facility (GEF)
d. Green Climate Fund (GCF)
e. Task Force on Climate-related Financial Disclosures (TCFD)
f. Informal Working Group of the Task Force on Nature-related Disclosures (TNFD)
g. UNEP Finance Initiative (FI) Principles for Responsible Banking and/or Principles for Responsible Investment
h. UNEP FI Sustainable Blue Economy Finance Principles
i. Other (please specify)
j. None of the above



Does your institution have an implementation plan/strategy with clearly defined operational priorities to act upon these commitments? (Yes/No/Do not know)

### 2.2 Investment Outcomes for Climate and Biodiversity

Please rate the importance of the following investment outcomes for your DFI? (on a scale of 1 = not considered to 7 = extremely significant)

a. Positive economic returns on investments
b. Positive social outcomes for investments
c. Positive outcomes for climate and/or biodiversity from investments

For infrastructure investments, what level of direct financial return does your DFI usually require? (Please tick all that apply)

a. No set requirement (returns may be negative)
b. Positive returns at lower than commercial rates
c. Return of original investment
d. Usual commercial rates
e. Varies according to context
f. Other (please specify)
g. Do not know

### 2.3 ESG factor relevance to infrastructure investments

Please rate the importance of factors driving your organization's integration of environmental risks and opportunities? (on a scale of 1 = not considered to 7 = extremely significant)

a. Behaviour of peers/competitors
b. Brand reputation
c. ESG risk management
d. Financial returns
e. Government guideline/regulations
f. Impact on credit ratings
g. Investor/counterparty preference
h. Don't know

Please rate the importance of the following environmental factors to your organization's infrastructure investments (on a scale of 1 = not important to 7 = extremely important).

a. Air pollution [gaseous and particulate contaminants that are present in the earth's atmosphere (e.g., PM2.5, $NO_x$, $SO_x$) and which are detrimental to human health and the planet]
b. Biodiversity and habitat loss [the former is the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. Habitat is the site (or type of site) where an organism/population naturally occurs and/or the environmental attributes required by a particular species or its ecological niche. Biodiversity loss typically occurs when habitats can no longer support the present species due to invasive activities (e.g., sea bottom trawling, urbanization, fossil fuel harvesting), land-use changes or the effects of global warming (e.g., flooding or drying of wetlands)]
c. Climate change effects (hydrological and climatological) [physical impacts of climate change arising from acute (e.g., floods) and chronic risks (e.g., rising sea levels)]
d. Greenhouse Gas (GHG) emissions (the contribution to climate change through GHG emissions such as carbon dioxide, methane, nitrous oxide and others. Most man-made emissions of carbon dioxide are caused by the burning of fossil fuels and deforestation leading in turn to global warming and more frequent and extreme weather events)
e. Energy efficiency and sourcing [energy output divided by energy input (deriving from fossil, renewable, etc.) may have major impacts on the environment and on the cost of running an infrastructure asset)

f. Raw materials and supply chains (play a key role during the project construction phase; using recycled materials such as steel, can reduce cost and improve energy efficiency; with increasing global competition for raw materials, efficiency becomes an increasingly important metric).
g. Waste and hazardous materials (such as liquid, solid, gaseous, organic, recyclable and mostly hazardous waste, which requires proper handling to avoid the threat to human health; reduction, reuse, recycling, and waste-to-energy measures are aimed at reducing the amount of landfill waste)
h. Water pollution, depletion, and diversion [water pollution is the contamination of water bodies (e.g., lakes, rivers and groundwater) and depleting water quality due to rainwater runoff, untreated wastewater and air pollution leading to acidification of oceans. Depletion of water resources is linked with water and consumption and extraction; water efficiency aims at reducing wastage resulting from a specific process; due to climate change leading to a greater likelihood of droughts in certain areas, water resources become scarcer and water efficiency measures become increasingly important). Diversion refers to the mass movement of water temporarily or permanently to enable construction and operation of infrastructure which can cause a significant change in the flow and water levels in a given water body]
i. Other (noise and light pollution, vibrations etc)

Please indicate the environmental factors that your bank applies to each specific infrastructure sub-sector? (Please tick all that apply)

| | Air pollution | Biodiversity & habitat loss | Climate change effects | GHG emissions | Energy efficiency & sourcing | Raw materials & supply chains | Waste & hazardous materials | Water pollution, depletion & diversion |
|---|---|---|---|---|---|---|---|---|
| a. Energy | | | | | | | | |
| b. Information and communication technology | | | | | | | | |
| c. Transport | | | | | | | | |
| d. Social | | | | | | | | |
| e. Water supply and waste | | | | | | | | |

## 2.4 Governance

Who has ultimate oversight of sustainability issues (e.g., management of climate change and biodiversity risks and opportunities) within the bank and/or is responsible for approving and implementing the bank's sustainability policy (Board, CEO)? (Please specify) [add free-form large text comment field]

Does your organisation use dedicated and non-dedicated resources for climate change and/or biodiversity risk assessment? (If yes, please tick all that apply).

a. Consultants
b. Corporate and social responsibility function/team
c. Dedicated climate (or biodiversity) risk function/team
d. Front line business
e. Multiple teams (please specify)
f. Other (please specify)

Are environmental sustainability-related criteria part of the staff appraisal process and/or integrated into staff key performance indicators? (e.g., linking climate strategy-related goals to executive compensation?) (Yes/No/Do not know)



## 2.5 Capacity Building and Training

Please rate the a) personnel capacity and b) specialised technical expertise available in your institution for effectively implementing environmental safeguards and managing climate and biodiversity risk (1 = entirely inadequate to 7 = fully covering requirements)

What type of capacity building activities does your institution undertake with regard to environmental risk management? (Please tick all that apply)

a. Annual/regular training
b. Classroom-based training
c. One-off training
d. Online/remote training
e. Training to senior management and/or Board members
f. Training to relevant department/staff (e.g., risk department, relationship managers or specialist sustainable lending team only)
g. Training to all staff
h. Other (please specify)

How is training led?

a. Internally
b. By an external provider
c. Both
d. Do not know/Not applicable

# 3. CLIMATE CHANGE RISKS AND IMPACTS

*This section explores how climate change risks and impacts are addressed in investment decisions. This includes your organisation's use of safeguards and risk management tools and methods throughout the investment decision process.*

## 3.1 General

Does your organisation consider climate change physical and transition risks (as defined by the Task Force on Climate-Related Financial Disclosures (e.g., acute and chronic risks, and policy, legal, technology, market and reputation risks respectively) in investment decisions?

a. Yes, physical risks only
b. Yes, transition risks only
c. Both physical and transition risks
d. No
e. Do not know

If you answered yes above, at what stage in investment decisions is climate-related risk considered? (Please tick all that apply)

a. Early screening (excluding a list of prohibited practices, products and/or services or countries, sectors, and companies due to less acceptable ESG exposure)
b. Financial close
c. Monitoring and evaluation (tracking an invested asset's ESG performance, which informs follow-up actions like investment rebalancing, divestment, or engagement)
d. Project scoping
e. Qualitative evaluation (measuring ESG performance qualitatively using standards, frameworks, and tools to inform investment decisions)
f. Quantitative evaluation and monitoring (translating the impact of ESG factors into quantifiable financial metrics, this is then accounted for in the modelling of the cashflow, and the cost of financing e.g., cost-benefit analysis)
g. None of the above

Which sources of information does your institution use when undertaking due diligence pertaining to climate change? (Please tick all that apply)

a. Environmental protection agencies
b. Existing knowledge of bank staff about clients
c. External assessment tools
d. External third-party due diligence providers
e. ESG rating agencies (e.g., MSCI)
f. Governmental agencies (e.g., banking regulators)
g. Information provided directly by clients
h. Internet searches (e.g., client's website information)
i. Media coverage
j. Research released by NGOs, think tanks, etc.
k. Other (please specify)

## 3.2 Climate Change Safeguards

Does your organisation apply a formal safeguard framework/policy for assessing and managing climate change risks? (Please tick all that apply)

a. Yes, to all investments
b. Yes, to some investments
c. No
d. Do not know

If you answered yes above, please specify which type of investments benefit from safeguards (Please tick all that apply)

a. Corporate lending
b. Equity investment
c. Grants
d. Policy-based financing
e. Project lending
f. Results-based financing

Is this safeguard framework based on the framework of one of the multilateral development banks (MDBs) or another DFI? (Yes/No/Do not know – If yes, please specify which MDB/DFI) [add free-form large text comment field]

If no, what key elements does this framework include? (Please tick all that apply):

a. Assessing projects for physical climate risks (e.g., typhoons, sea-level rise, heatwaves)
b. Application to sourcing of materials or commodities (i.e., supply chains)
c. 'No go' provisions in some circumstances (e.g., no financing projects within World Heritage Sites, no go" countries, client exclusion lists)
d. Outcome-based requirements in some circumstances (e.g., net-zero)
e. Process-based requirements in some circumstances (e.g., supporting National Adaptation Plans)
f. Requirements related to defined climate change criteria and thresholds
g. Safeguards against high-emitting projects
h. Other (please specify)

Are there regular updates being made to revise/strengthen risk screening efforts? (e.g., internal reviews, provision of additional information to inform the design of better tools, and the incorporation of elements of best practice) (Yes/No/Do not know; If yes, please specify which).

Please rate how fully do you think your DFI's safeguards framework for assessing and managing climate change risks is applied in practice at your organisation (from 1 = very limited application to 7 = fully applied in all financing decisions).



## 3.3 Climate Change Risk Management Methodologies

Does your bank assess physical climate risk [i.e., both the impacts from specific events (acute risks) like hurricanes or floods, and those emerging from longer-term changes (chronic risks) like changes in temperature and precipitation leading to drought, land degradation, and sea-level rise] at the project level? (Please specify)

a. Yes, acute risks only
b. Yes, chronic risks only
c. Both acute and chronic risks
d. No
e. Do not know

If you answered yes above, does your bank use any of the following commercially available tools, analytics and geospatial datasets for physical risk assessment? (Please tick all that apply)

a. Climate Central [e.g., Coastal Risk Screening Tool, Surging Seas Risk Finder, Portfolio Analysis Tool (PAT)]
b. GFDRR (ThinkHazard)
c. Jupiter (FloodScore™, HeatScore™)
d. KNMI (Climate Explorer)
e. NOAA (Historical hurricane tracks)
f. PCA (Global Drought Risk platform)
g. PREP (PREPdata)
h. Swiss Re (CatNet©)
i. UNEP / UNISDR (Global Risk Data)
j. World Bank (Climate Change Knowledge Portal)
k. WRI (Aqueduct Floods)
l. WWF Water Risk Filter
m. Other (please specify)

Does your institution use any of the following measuring and reporting methods and standards such as a) screening tools to review or verify information at the project level, or b) accounting tools for assessing and reporting performance against specific indicators or sustainable development goals? (Please tick all that apply)

a. BRE's CEEQUAL (version 6)
b. CDC's Code of Responsible Investing
c. Climate Bonds Initiative (CBI) Climate Bonds Taxonomy
d. Envision's Sustainable Infrastructure Framework
e. Equator Principles (version 4)
f. EU Sustainable Finance Taxonomy
g. Global Infrastructure Basel Foundation (GIB)'s SuRe®: Standard for Sustainable and Resilient Infrastructure
h. Greenhouse Gas (GHG) Protocol (e.g., Product Standard or Lifecycle Assessment, Corporate Accounting, Mitigation Goal Standard, Community-Scale GHG Emission Inventories, Policy and Action Standard, Corporate Value Chain (Scope 3) Standard and Project Protocol)
i. GRESB's investor-driven Global ESG Benchmark for the Infrastructure Sector
j. Infrastructure Sustainability Council of Australia (ISCA) - Infrastructure Sustainability (IS) rating scheme
k. International Capital Market Association (ICMA)'s Green Bond Principles
l. International Finance Corporation (IFC)'s Environmental and Social Performance Standards (PSs)
m. International Finance Corporation (IFC)'s Operating Principles for Impact Management
n. PCAF Global GHG Accounting and Reporting Standard for the Financial Industry
o. Sustainability Accounting Standards Board (SASB) – Infrastructure Standard
p. UN Sustainable Development Goals (SDGs)
q. Other (please specify)

For the standards and frameworks that you did not select, what is the reason for it? (Please specify) [add free-form large text comment field]

Does your bank periodically review its portfolio exposure to climate physical risks? (Yes/No/Don't Know). If yes, please specify which methodological approach is your bank using. [add free-form large text comment field]

Does your bank periodically review its portfolio exposure to climate transition risks? (Yes/No/Don't Know). If yes, please specify which methodological approach is your bank using (e.g., environmental stress tests, climate change scenario analysis etc). [add free-form large text comment field]

If applicable, which approach is your bank using to support alignment with the Paris temperature goal? (Please tick all that apply)

a. Climate finance target
b. Country emissions pathways
c. Decision tree combining several tools (including country & sector decarbonisation pathways)
d. GHG accounting + temperature goal
e. GHG accounting + sector emissions targets
f. GHG accounting + emissions benchmarks
g. GHG accounting + shadow carbon pricing
h. Setting standards for financial institutions worldwide through financial intermediaries
i. Supporting the enabling environment through policy-based lending
j. Supporting and enhancing Long-Term Strategies (LTSs) and Nationally-Determined Contributions (NDCs)
k. Project/asset negative and positive lists
l. Other (please specify)

## 4. CLIMATE CHANGE FINANCING OPPORTUNITIES

*This section explores climate financing instruments. Such investment supports the transition to a low-carbon and climate-resilient economy by enabling mitigation actions (e.g., the reduction of GHG emissions), and adaptation initiatives (e.g., promoting the climate resilience of infrastructure as well as generally of social and economic assets)*

What are the main financial and non-financial instruments that your DFI provides or uses for financing climate change opportunities? (Please tick all that apply).

a. Debt finance such as senior debt (project loans or credit lines), subordinated debt (mezzanine or quasi-equity finance), concessional loans ('soft loan') or loans blended with grants, revolving funds and refinancing schemes (asset-backed securities), special purpose loans
b. Equity (listed infrastructure equity, infrastructure funds, thematic/targeted private equity structure and funds)
c. Grant or grant-based instruments
d. Risk management instruments (credit guarantee or off-taker credit risk, partial credit guarantee, performance risk guarantee, revenue guarantee and structured finance)
e. Non-financial technical assistance [Project Development Assistance (PDA), Technical Assistance (TA)]
f. Other (please specify)

Has your bank provided or used any of the following climate-specific financial instruments? (Please tick all that apply).

a. Carbon credits and/or carbon-linked mitigation results
b. Debt-for-climate swaps (a variant of the debt-for-nature swaps)
c. Green bonds (a fixed-income instrument specifically earmarked to raise money for climate and environmental projects)
d. Green loans (the funds are committed to environmental or climate projects)
e. Sustainability bonds (i.e., where the proceeds will be exclusively applied to finance or re-finance a combination of both green and social projects)
f. Sustainability-linked bonds (are structurally linked to the issuer's achievement of climate or broader SDG goals, such as through a covenant linking the coupon of a bond)
g. Sustainability-linked loans (which link interest rates to key sustainability performance indicators)
h. Other (please specify)

Is your organisation investing in any of the following climate-related opportunities? (Please tick all that apply)

a. Data infrastructure/products and services (e.g., development of new products, low-emission goods and services such as for remote power system management and/or GHG emission reductions, adaptation and/or disaster risk reduction services such as early-warning systems)
b. Energy and resource efficiency (e.g., improved production processes and operating efficiency)
c. Low-carbon/green buildings [e.g., greenfield, existing buildings, and retrofit of buildings/facilities for residential; health; education; and commercial purposes (e.g., storage, processing facilities, cold storage); and other buildings/facilities using low-carbon technologies and/or sustainable products]
d. Low-emission public transport (e.g., electric and/or hybrid for public/inter-urban rail, freight, multi-modal transport)
e. Nature-based solutions (utilisation of existing or rebuilt natural landscapes – such as forests, floodplains, and wetlands – that provide ecosystem services, as standalone and/or as part of a built infrastructure solutions (e.g., climate mitigation or resilience benefits)
a. Renewable energy (e.g., access to new technologies, renewable energy sources such as solar, wind, and geothermal, incentive schemes, and carbon markets)
b. Vehicles with alternative powertrains (e.g., electric cars)
c. Water (e.g., low-emission water, wastewater, and/or sewage supply and/or recycling systems, including treatment, storage, transportation, distribution, and monitoring)
d. Waste (e.g., improved solid waste management including solid waste collection, storage, processing, treatment recycling transport and disposal)
e. Other (please specify)

More specifically, and concerning energy generation and energy efficiency, is your bank investing in any of the following opportunities? (Please tick all that apply)

a. Bioenergy
b. Building energy efficiency
c. Energy efficiency in Small and Medium-Sized Enterprises (SMEs)
d. Fossil fuel
e. Geothermal
f. Hydropower
g. Solar energy
h. Wind
i. Other (please specify)

## 5. BIODIVERSITY RISKS AND IMPACTS

*Congratulations you are more than halfway through this questionnaire. There are only a couple of sections left. This section explores how biodiversity risks and impacts (e.g., ecological risks associated with biodiversity-related ecological impacts as well as the dependencies linked to biodiversity loss or ecosystems degradation; liability risks, where parties that have suffered biodiversity-related loss or damage seek compensation for those they hold responsible; and risks related to achieving transformative change for biodiversity, including regulatory risks, market risks and financial risks) are addressed in investment decisions. This includes your organisation's use of biodiversity safeguards and risk management tools and methods throughout the investment decision-making process.*

### 5.1 General

i. Does your organisation consider biodiversity risks (i.e., dependency risk = dependencies on the ecosystem goods and services that biodiversity generates, either directly and/or within supply chains, and impacts on biodiversity = risks associated with societal relationships, reputation, marketing, laws, regulations, and access to finance? For financial institutions, key biodiversity risks include risk of default by clients, lower returns from investees, and increasing insurance liabilities in investment decisions. (Please specify)

a. Yes, dependency risk only
b. Yes, impacts on biodiversity only
c. Both dependency risk and impacts on biodiversity
d. No
e. Do not know

ii. If you answered yes above, at what stage in investment decisions is biodiversity-related risk considered? (Please tick all that apply)

a. Early screening (excluding a list of prohibited practices, products and/or services or countries, sectors, and companies due to less acceptable ESG exposure)
b. Financial close
c. Monitoring and evaluation (tracking an invested asset's ESG performance, which informs follow-up actions like investment rebalancing, divestment or engagement)
d. Project scoping
e. Qualitative evaluation (measuring ESG performance qualitatively using standards, frameworks and tools to inform investment decisions)
f. Quantitative evaluation and monitoring (e.g., translating the impact of ESG factors into quantifiable financial metrics, this is then accounted for in the modelling of the cashflow, and the cost of financing e.g., cost-benefit analysis)
l. None of these
m. Other (please specify)

## 5.2 Biodiversity Safeguards

Does your organization apply a formal safeguard framework for assessing and managing biodiversity risks?

a. Yes, to all investments
b. Yes, to some investments
c. No
d. Do not know

If you answered yes above, please specify which type of investments benefit from safeguards. (Please tick all that apply)

a. Corporate lending
b. Equity investment
c. Grants
d. Policy-based financing
e. Project lending
f. Results-based financing

Is this safeguard framework based on the framework of one of the MDBs or another DFI? (Yes/No/Do not know/Not applicable. If yes, please specify which MDB/DFI)

If no, what key elements does this framework include (Please tick all that apply)

a. Application of the mitigation hierarchy (avoid, minimise, restore/rehabilitate, offset)
b. Application to sourcing of materials or commodities (i.e., supply chains)
c. Consideration of ecosystem services
d. Identification of Protected Areas or other sensitive sites
e. 'No go' provisions in some circumstances (e.g., not financing projects within World Heritage Sites, red-lining investments in areas of high biodiversity, or refraining from financing sectors in which a bank lacks specialist knowledge
f. Outcome-based requirements in some circumstances (e.g., No Net Loss or Net Gain for biodiversity features)
g. Process-based requirements in some circumstances (e.g., Biodiversity Action Plans)
h. Requirements related to defined biodiversity criteria and threshold
i. Use of compensation or offsets where necessary to address residual impacts on biodiversity
j. Other (please specify)

Please rate how fully do you think your DFI's safeguard framework for assessing and managing biodiversity risks is applied in practice at your organisation (from 1 = very limited application to 7 = fully applied in all financing decisions).



## 5.3 Biodiversity Risk Management Methodologies

What specific tools, methods or datasets (if any) is your DFI using to assess and manage biodiversity risks and impacts (negative or positive), at the project or portfolio level? (Please tick all that apply)

a. Absolute ecological performance tools [e.g., One Planet Approaches (OPA), Future Fit Business Benchmark, Science-based Targets Network (SBTN)]
b. Biodiversity footprint tools [e.g., Product Biodiversity Footprint (PBF), Biodiversity Footprint for Financial Institutions (BFFI), Global Biodiversity Score (GBS), Biodiversity Impact Metric (BIM), Biodiversity Footprint Calculator (BFC) Bioscope]
c. Integrated accounting tools [e.g., Integrated reporting (<IR >), Environmental Profit & Loss account (EP&L), Comprehensive Accounting in Respect of Ecology - Triple Depreciation Line (CARE - TDL), Ecosystem Natural Capital Accounts (ENCA), System of Environmental-Economic Accounting (SEEA)]
d. Mapping tools [e.g., Integrated Biodiversity Assessment Tool (IBAT), Artificial Intelligence for Ecosystem Services (ARIES), Integrated Valuation of Ecosystem Services and Trade-offs (InVEST), Co$ting Nature]
e. Monetary tools [e.g., Guide to Corporate Ecosystem Valuation, Corporate Guidelines for the Economic Valuation of Ecosystem Services (GVces)]
f. Qualitative and Quantitative Tools [Business and Biodiversity Interdependence Indicator (BBII) Corporate Ecosystem Services Review (ESR), Toolkit for Ecosystem Service Site-Based Assessment (TESSA)]
g. Other tools, methods, metrics and datasets (see IUCN SSC Species Monitoring Specialist Group and Global Wildlife Conservation Database of Biodiversity Data Sources for Conservation Monitoring) (please specify)
h. None of the above

# 6. BIODIVERSITY FINANCING OPPORTUNITIES

*This section explores biodiversity financing opportunities (i.e., the expenditure that contributes – or intends to contribute – to the conservation, sustainable use and restoration of biodiversity)[208]. By biodiversity, we mean the variability among living organisms from all sources including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are apart. This includes variation in genetic, phenotypic, phylogenetic, and functional attributes, as well as changes in abundance and distribution over time and space within and among species, biological communities, and ecosystems[209].*

*In scope, we also include investments that i) support ecosystem services (i.e., the benefits people obtain from ecosystems such as supporting, regulating, provisioning and cultural services), ii) natural capital (i.e., the world's stocks of natural assets which include geology, soil, air, water and all living things), iii) landscapes (i.e., land that contains a mosaic of ecosystems, including human-dominated ecosystems) and iv) seascapes (i.e., spatially heterogeneous areas of the coastal environment such as intertidal, brackish that can be perceived as a mosaic of patches, a spatial gradient, or some other geometric patterning. For example, the tropical coastal "seascape" often includes a patchwork of mangroves, seagrass beds, and coral reefs that produces a variety of natural resources and ecosystem services)[210].*

Is your DFI making investments that contribute to the conservation, sustainable use and restoration of biodiversity, ecosystem services or natural capital? (Yes/No/Do not know/Not applicable).

Is your organisation participating in any of the following target-setting initiatives for biodiversity or any initiatives with relevance to the assessment of net-positive biodiversity impacts (i.e., where the impacts on biodiversity caused by a project are outweighed by the actions taken to avoid and reduce such impacts, rehabilitate affected species/landscapes and offset any residual impacts (IUCN, 2016)? (Please tick all that apply)

a. Biodiversity Return on Investment Metric, BRIM (IUCN, 2018)
b. Business and Biodiversity Offsets Program (BBOP, 2012)
c. Coalition for Private Investment in Conservation (CPIC)
d. Convention on Biological Diversity (CBD)'s post-2020 global biodiversity framework
e. EU Business & Biodiversity Platform / CoP F@B
f. Global Apex Goal for Nature (Zero Net Loss of Nature from 2020, Net Positive by 2030, Full Recovery by 2050 Science-Based Targets for Nature (SBTN)
g. IRIS+, Global Impact Investing Network (GIIN)

208 OECD, 2020
209 IPBES, 2021
210 Ibid

h. Positive Impact Finance for Business & Biodiversity (CoP F@B)
i. Principles for positive impact finance (UNEP FI, 2018)
j. UN Sustainable Development Goals (14 and 15)
k. Other (please specify)
l. Do not know/not applicable

Is your DFI using any of the following types of investments that directly benefit biodiversity, ecosystem services and/or natural capital? (Please tick all that apply)

a. Biodiversity-friendly commodities (e.g., ecotourism)
b. Ecosystem-based management approaches (e.g., integrated coastal zone or water resources management)
c. Ecosystem restoration approaches (e.g., ecological restoration, ecological engineering, forest landscape restoration)
d. Ecosystem protection approaches (e.g., area-based conservation approaches, including protected area management)
e. Infrastructure-related approaches (e.g., natural infrastructure, which refers to natural systems – wetlands, forests and coral reefs – that provide essential services and benefits to society, such as flood protection, erosion control and water purification)
f. Payments for conservation or ecosystem services (REDD+)
g. Promoting sustainable natural resource use
h. Other ecosystem or species protection (please specify)
i. Do not know/not applicable

For any investments that indirectly benefit biodiversity (e.g., improvements for biodiversity, such as more sustainable forestry and fewer emissions to water), ecosystem services and/or natural capital, what are the main targets of these investments? (Please tick all that apply)

a. Climate-specific ecosystem-related approaches (e.g., ecosystem-based adaptation, ecosystem-based mitigation, climate adaptation services, ecosystem-based disaster risk reduction)
b. Human health
c. Food security
d. Research and/or monitoring and/or information/data management (biodiversity analytics)
e. Sustainable livelihoods
f. Water security
g. Other (please specify)
h. Do not know/not applicable

What are the main financial and non-financial instruments your DFI provides or uses for biodiversity, ecosystem services and/or natural capital investments? (Please tick all that apply)

a. Debt finance such as senior debt (project loans or credit lines), subordinated debt (mezzanine or quasi-equity finance), concessional loans ('soft loan') or loans blended with grants, revolving funds, and refinancing schemes (asset-backed securities), special purpose loans (green bonds)
b. Equity (listed infrastructure equity, infrastructure funds, thematic/targeted private equity structure and funds)
c. Grant or grant-based instruments
d. Risk management instruments (credit guarantee or off-taker credit risk, partial credit guarantee, performance risk guarantee, revenue guarantee and structured finance)
e. Non-financial technical assistance (workshops, training, project preparation)
f. Other (please specify)
g. None of the above
h. Do not know/not applicable

Has your bank used any of the following financial instruments for investments in biodiversity, ecosystem services and/or natural capital? (Please tick all that apply)

a. Biodiversity/sustainability-linked loans
b. Biodiversity offsets (measurable conservation outcomes resulting from actions that compensate for significant residual adverse biodiversity impacts arising from development projects)
c. Blue bonds (funds committed to marine or water projects, such as investing in the transition to sustainable fish stock)



d. Debt-for-nature swaps (agreement that reduces a developing country's debt stock or service in exchange for a commitment to protect nature)
e. Green/conservation bonds (for biodiversity and/or land conservation or restoration)
f. Nature performance bonds (tied to measurable targets for restoring wetlands, protecting forests, and reducing threats to wildlife and plant species, but allows for general use of proceeds)
g. Pay-for-success structures (social and development impact bonds, which are results-based financing contracts that finance the up-front delivery of social services)
h. Targeted investments in conservation businesses
i. Water quality trading and offsets
j. Other (please specify)
k. Do not know/not applicable

Does your DFI have an intention to start using, or increase the use of biodiversity investment or investing in nature-based solutions/natural infrastructure? (Yes/No/Do not know/Not applicable). If yes, why does your bank has this intention: [add free-form large text comment field]

## 7. DISCLOSURE AND REPORTING

*Congratulations, you are approaching the end of this questionnaire! This short section asks questions about disclosure and reporting of climate change and biodiversity risks and impacts (either negative or positive). Reporting means that the information is made publicly available.*

### 7.1 Climate Change Reporting

Does your DFI use any international frameworks, standards and initiatives for disclosing/reporting climate-related risks and opportunities? (Please tick al that apply)

a. Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD)
b. Global Reporting Initiative (GRI) Sustainability Reporting Guidelines
c. International Integrated Reporting Council (IIRC)
d. Climate Disclosure Standards Board
e. Sustainability Accounting Standards Board (SASB)
f. Other (please specify) MDB Joint Reporting

Does your DFI track the level of 'climate finance' invested in? (Yes/No/Do not know/Not applicable). If yes, what methodology does your institution use for tracking climate finance (e.g., OECD Rio Markers for Climate, UNFCC National Communications)? [add free-form large text comment field]

Does your institution monitor and track the composition of its energy lending portfolio as part of sustainability goals and strategy? (Yes/No/Do not know/Not applicable)

### 7.2 Biodiversity Reporting

*Note: As highlighted in a report by the CBD Secretariat, there is currently no agreed voluntary guidance to facilitate the reporting on biodiversity finance[211]. To date, only a few banks report their biodiversity financing, using OECD DAC Rio markers.*

Does your DFI track the level of investment that support biodiversity, ecosystem services and natural capital goals? (Yes/No/Do not know/Not applicable). If yes, what methodology does your institution use for tracking biodiversity finance (e.g., OECD Rio Markers for Biodiversity)? [add free-form large text comment field]

211 CBD Secretariat, 2020

Please rate the extent to which your DFI is aware of the following standardized tools for biodiversity, ecosystem services and natural capital transparency and disclosure? (on a scale of 1 = very unaware to 7 = fully aware)

a. Task-force for Nature-related Financial Disclosures (TNFD)
b. The Biological Diversity Protocol by the Biodiversity Disclosure Project
c. The System of Environmental-Economic Accounting—Ecosystem Accounting
d. The Platform for Biodiversity Accounting Financials
e. Global Reporting Initiative (GRI) Sustainability Reporting Guidelines for Biodiversity (GRI 304)
f. The International Integrated Reporting Council (IIRC) (Natural Capital)

## 8. BARRIERS AND ENABLERS

*This section explores the challenges and constraints as well as the enabling conditions faced by your organisation which can affect the assessment and management of climate change and biodiversity risks and impacts as well as the scaling up of financing for biodiversity- and climate-related projects.*

What factors have constrained and/or enabled your DFI's ability to assess and manage climate change and biodiversity risks in financing? (Please associate each factor with a type of risk from the two columns depending on whether you consider it to be a barrier or an enabler)

| Factors | Barrier | Enabler |
|---|---|---|
| a. Availability of data | | |
| b. Availability of technical expertise among staff | | |
| c. Availability of technical expertise among consultants | | |
| d. Available staff time | | |
| e. Capacity to monitor implementation | | |
| f. Concessional finance | | |
| g. Efficient and effective incentives, regulations | | |
| h. Existence and adequacy of safeguard framework | | |
| i. Financial resourcing | | |
| j. Innovation in developing projects with sufficient scale, cash flow and returns | | |
| k. international tools, best practices, and frameworks | | |
| l. Institutional mandate and/or financing policy | | |
| m. Knowledge of relevant assessment tools and methods | | |
| n. Leverage to improve implementation when not satisfactory | | |
| o. Mechanisms for de-risking | | |
| p. Perceived materiality/importance of risk | | |

If applicable, please select which initiatives that concern the integration of climate and biodiversity risk and opportunities is your DFI planning to develop or improve over the next three years? (Please tick all that apply)

a. Acquire better quality data
b. Developing new financial instruments
c. E&S integration in more asset sectors
d. Enhance the number of E&S practices
e. Ensure compliance with best practice/standard-setting bodies (e.g., TCFD, SuRe etc)
f. Join sustainability commitments
g. Mainstream biodiversity across lending portfolios
h. Mainstream climate across lending portfolios
i. Strategic application of Official Development Assistance (ODA) funds
j. Support governments in developing enabling environments
k. Update or develop new sector policies/strategies
l. Other (please specify)

## 9. COVID-19

*This section explores briefly explores how COVID-19 has impacted your bank's lending activities and recovery policies.*

How did COVID-19 impact your bank's lending operations and overall ESG implementation process? Did the crisis prompt a change in the application of the bank's safeguard policy or the way it assesses and monitors risk at the project or portfolio level? (Yes/No/Do not know; if yes, please specify)

Did your DFI make a public statement on a green recovery (i.e., measures that enhance, and do not adversely affect, environmental sustainability and well-being, combining an emphasis on restoring growth and creating jobs with the achievement of environmental goals and objectives)? (Yes/No/Do not know; if yes, please provide evidence)

Do you have any other feedback on this questionnaire or further notes to your answers? [add free-form large text comment field]

# 3. SEMI-STRUCTURED INTERVIEW PROTOCOL

For a more in-depth investigation of the DFIs' ESG integration strategies and to present compelling case studies, the following interview protocol was used.

## Climate and Biodiversity ESG Integration Processes / Safeguards and Risk Management

1. How far do you feel climate and biodiversity (ESG) factors are currently mainstreamed in your DFI's financing decisions?
2. Which phases of the infrastructure project cycle (e.g., pre-design, design, construction, operation, decommissioning) are most at risk from climate (acute and chronic) physical impacts and biodiversity dependencies[212] respectively?
    a. Does your DFI apply tailored ESG tools to specific infrastructure sub-sectors (e.g. energy, transport, telecommunications etc)? Please specify
3. What metrics does your DFI use for measuring climate/biodiversity impacts, if any?
4. Could you share any examples of projects or infrastructure investments which demonstrate best-in-class ESG evaluation of climate and biodiversity factors that we could analyse as case studies?

212 Dependency risk = dependencies on the ecosystem goods and services that biodiversity generates, either directly and/or within supply chains.

5. With regard to ESG valuation, does your DFI link climate and biodiversity risks and opportunities to specific items in the financial model? If yes, please explain how.

6. The safeguards of some MDBs and large DFIs have moved to outcome requirements for biodiversity (no net loss or net gain).[213] However, most DFIs rely on an environmental assessment process, aligned with typical Government regulation - which is more about acceptable limits of harm.

    a. In your opinion - what are the most important practical steps that your DFI could take to improve the effectiveness of safeguards for climate and biodiversity?

    b. What would encourage or support your DFI to adopt more rigorous, outcome-focused safeguards?

7. Does your DFI find it easier to talk about and act on climate compared to biodiversity?

    a. Are there any lessons for biodiversity integration from your DFI's actions on climate?

8. Is your DFI aware of Nature-based Solutions (NbS)? They are often talked about as a way to integrate biodiversity and climate actions into infrastructure projects for tackling climate change and environmental degradation.

    a. What potential do you see for NbS to act as a bridge between climate and biodiversity for DFI financing[214]?

    b. Which NbS approaches have the most potential for scaling up and what needs to be done to achieve this?

## Reporting and Transparency

1. What share of your Bank's portfolios is currently exposed to activities in sectors affected by the transition to a low carbon economy?

    a. What is your Bank's portfolio's technology mix in climate-relevant sectors expected to look like in five years based on current investment plans?

2. In the case that your DFI does not report/disclose environmental risks and impacts and/or environmental strategy, why is that and what are the key constraints?

    a. What resources would help your Bank to achieve greater transparency?

3. How much public consultation takes place with civil society/community before a decision on an infrastructure investment is made?

## Barriers and Enablers

4. Concern and action for biodiversity seems to be lagging (behind climate action) in the finance sector[215], despite overwhelming documentation of the scale of biodiversity loss and the risks this poses.

    a. With regards to financing commitments, what challenges does your DFI face in setting similar commitments for biodiversity as it did for climate? (or in expanding biodiversity-positive investments?

5. Did your DFI identify any enabling factors to integrating climate and biodiversity considerations during the due diligence process for assessing environmental risks in lending activities?

    a. What about barriers?

    b. What resources would be helpful for your Bank to better integrate climate and biodiversity factors into its investments?

6. What are the main challenges that your DFI faces in training staff across the organisation on sustainability and climate- and biodiversity-related topics?

    a. How could these challenges be overcome?

7. Does your DFI see itself as having an important role to play in catalysing private finance?

    a. How much importance does your DFI place in both setting an example and catalysing a climate and biodiversity-positive approach for private finance?

    b. What does your DFI see as the main challenges in scaling up 'blended finance'[216] and how could these challenges be overcome?

    c. What does your DFI think it's required to improve (PPPs) in Asia?

## COVID-19 Financing

8. If applicable, how has COVID-19 changed your Bank's approach to infrastructure investing?

9. What do you see as the risks and opportunities for climate and biodiversity from COVID-19 recovery finance?

10. What could DFI do to ensure that COVID-19 recovery financing 'builds back better' for our climate and biodiversity? (i.e., align the economic recovery post-Covid-19 with the Paris Agreement and the anticipated Kunming Agreement, and thus be consistent with 1.5°C warming above pre-industrial levels as well as halting and reversing the loss of biodiversity)

## Conclusions

11. Any there any other insights or practical recommendations you would like to share for moving towards climate- and biodiversity-positive financing?

213 Note to interviewer: no-net loss/net gain outcomes require rigorous application of the mitigation hierarchy and using offsets where necessary. Governments are also moving towards such policies which will be required to achieve the targets expected to be in the CBD post-2020 framework.

214 Looking to the future, investment in NbS ought to at least triple in real terms by 2030 and increase four-fold by 2050 if the world is to meet its climate change, biodiversity, and land degradation targets. This acceleration would equate to cumulative total investment of up to USD 8.1 trillion, and a future annual investment rate of USD 536 billion. Forest-based solutions alone would amount to USD 203 billion/year, followed by silvopasture with USD 193 billion/ mangrove restoration USD 0.5 billion/year. Source: UNEP. 2021.State of Finance for Nature.

215 The latest UNEP report on the State of Finance for Nature found that approximately USD 133 billion/year currently flows into NbS (using 2020 as base year), with public funds making up 86 per cent and private finance 14 per cent. The total volume of finance flowing into nature is considerably smaller than the flow of climate finance. Currently, diversity is too abstract for most stakeholders in the finance sector to incorporate it into their core business and develop products to invest in biodiversity or opportunities deriving from it. The main reason given for this is the lack of accessible knowledge in a language that is comprehensible for the sector and the lack of communication with the environmental sector. Source: UNEP. 2021. State of Finance for Nature

216 Note to interviewers: 'Blended finance' – where DFIs catalyse nature-positive private sector investment, for example through technical support, concessionary loans or guarantees.

# B. INFRASTRUCTURE LIFECYCLE

## 1. THE FULL INFRASTRUCTURE LIFECYCLE STARTS AT THE POLICY FORMULATION STAGE AND RUNS THROUGH TO OPERATIONS AND DECOMMISSIONING

**Upstream development** | **Project delivery** | **Funds approved** ▼ | **Operations begin** ▼

| | Policy formation | Strategy/ master planning | Portfolio management | Fundraising | Ideation / Pre-feasibility | Feasibility | Execution | Operations/ Decom-missioning |
|---|---|---|---|---|---|---|---|---|
| **Description of phase** | Define major policies including:<br>• Environmental regulations<br>• Asset and infrastructure management<br>• Capital planning<br>• Economic development incentives<br>• Procurement and contracting<br>Collect & maintain database of environmental impact<br>Collect & maintain database of environmental impact | Develop sector plan (often at government or government-monopoly level)<br>Determine asset-class focus for investors<br>Conduct strategic environmental assessment<br>Engage with key stakeholders | Develop pipeline or source projects<br>Develop metric to assess projects | Identify sources and types of funding (equity vs debt)<br>Raise funds for project pipeline (e.g., government bonds, investor fund raising)<br>Other marketing and fundraising activities | Identify most viable options and assess alternatives<br>Identify and prepare execution consortia<br>Utilize environmental data to perform initial impact assessments<br>Engage with key stakeholders | Identify specific project and strategy<br>Decide on public vs. private funding model<br>Execute project financing<br>Define procurement strategy<br>Perform detailed environmental impact assessments | Carry out project on time and on budget | Monitor risks and mitigate<br>Return site to original condition |
| **Key players** | Government ministries<br>Advocacy organizations investors | Government ministries<br>Technical advisors<br>Advocacy organizations<br>Developers Investors | Governement ministries<br>Technical advisors<br>Advocacy organizations<br>Investors | Government ministries<br>Advocacy organizations<br>Development banks<br>Developers<br>Investors | Developers<br>Banks<br>Engineering & Construction companies<br>Private equity | Developers<br>Commercial and Development banks<br>Engineering & Construction companies<br>Private equity | Developers<br>Commercial and Development banks<br>Engineering & Construction companies<br>Private equity | Operators<br>Investment companies<br>SVF. Pension plans. insurance<br>Engineering & Construction companies<br>Private equity |

## 2. TYPICAL INFRASTRUCTURE PROJECTS FOLLOW SIX PHASES WITH ACTIVITIES THAT EVOLVE ACROSS THE PROCESS

**Funds approved** ▼ | **Operations begin** ▼

| | Ideation | Pre-feasibility | Feasibility | Execution | Operations/ Maintenance | Decomissioning |
|---|---|---|---|---|---|---|
| **Scope** | Identify key stakeholders<br>Initiate formation of consortium | Form consortium | Oversee execution to achieve funding | Oversee execution of commitment to all stakeholders | | |
| **Design & Engineering** | Perform benchmarking for cost estimates for high-level estimate<br>Identify technology options | Complete 20-40% of engineering plan Refine cost estimates | Complete 40-60% of engineering plan<br>Finalize cost estimates | Complete 100% of engineering Construct project according to plan | Perform routine maintenance | Perform ideation to feasibility phases for decommissioning |
| **Risk Assessment** | Define all possible risks | Prioritize risks by likelihood Develop mitigation plan | Identify all key risks Further develop mitigation plan | Monitor risks and mitigate | Monitor risks and mitigate | Perform risk assessment |
| **Commercial** | Develop preliminary procurement strategy | Refine and develope procurement strategy including EPC | Procurement strategy defined Negotiate and sign major contracts including EPC | Procure according to contracts EPC delivery according to contract | Execute operations | Identify and select contractors |
| **Financing** | Develop high-level business case | Perform initial fundraising | Finalize and execute fundraising | Inject capital | Pay out debt Distribute dividends | Identify and acquire funding |
| **Regulatory approvals & permitting** | Perform initial assessment | Pursue approvals and permits | Acquire all approvals and permits | Comply with regulations and permits | Comply with regulations and permits | Acquire approvals and permits |
| **Environmental & social** | Perform initial assessment | Perform initial assessment | Perform detailed assessment and develop detailed plans | Execute on plans and report impact regularly | Monitor impact | Perform assessment and develop plan |

# C. BEST PRACTICES

## 1. KEY ELEMENTS OF A WELL-DEVELOPED SAFEGUARD SYSTEM TYPICAL OF A MAJOR MDB

| Element | Description |
|---|---|
| Safeguard Policy | Sets high level E&S objectives. Compliance is mandatory. |
| Performance Standards (PS) / Requirements (PR) | Sets out specific performance requirements. Compliance is mandatory. DFIs typically have a suite of PS/PRs covering a range of E&S topics including biodiversity. These are updated periodically (e.g., 5-10 years). Examples include EBRD PR6, IFC PS6. They are typically risk-based and tend to prescribe expected outcomes but not prescribe how outcomes should be achieved.<br>Broad performance standard may also be accompanied by more specific and prescriptive Environment, Health and Safety (EHS) Guidelines that set out minimum requirements for individual activities and sectors, for example, maximum permitted concentrations of pollutants in emitted water. EHS Guidelines typically include a mix of minimum requirements (which are mandatory) and guidelines for which compliance is not mandatory. |
| Guidance | More detailed guidance to inform proper application of PS/PRs. Guidance, not policy (compliance expected is not mandatory if the objectives of the PS are met). Updated more frequently (e.g., 2-5 years). Examples include IFC PS6 GN6. |
| Risk categorisation | Initial desktop assessment (may include site visit). Carried out when a lender is first considering financing a project. Consequently, project is categorised as e.g.:<br>Category A – High Risk. Requires intensive Due Diligence process.<br>Category B – Medium Risk.<br>Category C – Low Risk. |
| Environmental and Social Action Plan (ESAP) | The lender's ESAP will require the project to produce a set of assessments and plans that demonstrate compliance with the requirements of the relevant PS/PRs. For biodiversity this may include:<br>Assessments e.g., Critical Habitat assessment (CHA), residual impact assessment (RIA)<br>Action Plans e.g., Biodiversity Action Plan (BAP)<br>Management Plans e.g., on-site Biodiversity Management Plan (BMP)<br>Monitoring Plans e.g., Biodiversity Monitoring & Evaluation Plan (BMEP)<br>If biodiversity offsets are necessary, the project will be required to produce additional assessments and plans such as e.g., an Offset Strategy, Offset Feasibility Assessment, Offset Implementation Plan, etc. The documentation required by the lender depends upon the risk categorisation:<br>For lower-risk projects, documentation requirements will be simpler and compliance with PS/PRs may often adequately be demonstrated in the Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) that is produced as part of the permitting process.<br>For higher-risk projects, standard ESIAs are typically not sufficient to demonstrate compliance with PS/PRs and additional stand-alone plans (as listed above) may be required.<br>The project will be expected to document and implement these actions through an Environmental and Social Management System (ESMS). |
| Independent Environmental and Social Consultant (IESC) | The lender hires an IESC (typically a group of topic-matter experts rather than a single individual) to provide independent review of a project's compliance with the lender's PS/PRs. The IESC will review project assessments and plans and conduct periodic site visits prior to the loan agreement and during the period of the loan agreement to ensure that the project's assessments and plans, and implementation of such plans, is in compliance with the lender's PS/PRs. |
| Ombudsman | The Ombudsman is part of the lender's grievance mechanism. Its role is to investigate individuals' complaints against the lender independently and impartially. |



## 2. FORUMS, COMMITMENTS, INITIATIVES, TOOLS AND STANDARDS FOR UNDERSTANDING, MEASURING AND REPORTING ON CLIMATE AND BIODIVERSITY RISKS

| Name | Type | Focus | Finance focus | Financial institutions membership (where applicable) | Users/Developers |
|---|---|---|---|---|---|
| Biodiversity Footprint for Financial Institutions (BFFI) | Tool | Biodiversity | Yes | Netherlands finance institutions | ASN Bank, CREM, PRé |
| Biodiversity in Good Company | Initiative | Biodiversity | No | Private banks - mainly German | None |
| BIOFIN - the Biodiversity Finance Initiative UNDP | Initiative | Biodiversity | Yes | Countries | n/a |
| Business for Nature | Forum | Biodiversity | No | Mainly other sustainability forums/ initiatives | None |
| Climate Disclosure Standards Board | Standard | Climate | No | No members | n/a |
| Club B4B | Forum | Biodiversity | No | Private banks | Caisse de Depots (CDC) France |
| Coalition for Private Investment in Conservation (CPIC) | Forum | Biodiversity | No | Private Investors | EIB |
| Convergence | Forum | Blended Finance | Yes | Private investors | IFC, DFC, FinDev Canada, DBSA |
| Cross-sector Biodiversity Initiative | Forum | Biodiversity | No | EPFIs, three MDBs | EBRD, IDB, IFC |
| Exploring Natural Capital Opportunities, Risks and Exposure (ENCORE) | Tool | Natural Capital | Yes | Financial institutions | n/a |
| Finance for Biodiversity Pledge | Commitment | Biodiversity | Yes | Mainly private banks | Caisse de Depots (CDC) France |
| Financial Centres for Sustainability | Forum | Sustainability | Yes | Financial centres | None |
| Global Biodiversity Score (GBS) | Tool | Biodiversity | Yes | Financial institutions | CDC Biodiversité, tested by BNP Paribas Asset Management, Mirova and the AFD, and six corporate issuers. |
| Global Forest Watch (GFW) | Tool | Deforestation | No | Multiple commodity producers/processors Used by investors in dialogue | |
| Global Impact Investing Network | Forum | Sustainability | Yes | Private investors, PDBs, private banks and insurers | 7 PDBs |
| Global Reporting Initiative | Standard | Reporting - sustainability | No | Some private banks | EIB, KfW |
| Integrated Biodiversity Assessment Tool (IBAT) | Initiative/ Metric | Biodiversity | No | Insurance industry Project finance and private equity firms | Word Bank |
| International Integrated Reporting Council | Forum | Reporting - sustainability | No | Private banks, investors | World Bank |
| International Platform on Sustainable Finance | Forum | Green investment | Yes | Governments. PDB observers | EBRD, EIB, EDFI observers |
| Natural Capital Finance Alliance | Forum | Natural capital | Yes | Companies and private banks | None |
| Net Environmental Contribution (NEC) | Tool | Sustainability | Yes | Companies and private banks | Sycomore, Quantis, iCare & Consult, Lita Co, and Swen Capital Partners |

| Name | Type | Focus | Finance focus | Financial institutions membership (where applicable) | Users/Developers |
|---|---|---|---|---|---|
| One Planet Business for Biodiversity | Forum | Biodiversity | No | (Commodities-based companies) | None |
| Operating Principles for Impact Management | Standard | Social and environmental impact | Yes | Investors and PDBs | c. 18 MDBs and bilateral DFIs |
| Partnership for Biodiversity Accounting Financials (PBAF) | Forum | Biodiversity | Yes | Netherlands finance institutions | FMO |
| Satelligence | Tool | Deforestation | No | Private investors and the food industry | |
| Science-based Targets Initiative | Commitment/ Initiative | Climate | No | Private banks | FMO road-tested 2019 guidance |
| Species Threat Abatement and Recovery (STAR) | Tool/Metric | Biodiversity | Yes | | IUCN |
| Sustainability Accounting Standards Board | Standard/ Foundation | Reporting - sustainability | No | Investment Advisory Group - private investors | None |
| Sustainability policy transparency toolkit (SPOTT) | Tool | Geo-spatial Commodities: palm oil and timber | Yes | Palm oil producers / processors<br>Finance sector (investors) interested in a dialogue with investee companies | |
| Task Force for Climate-related Financial Disclosures | Standard | Climate | Yes | A range of financial institutions | 11 DFIs |
| Task Force for Nature-related Financial Disclosures (informal working group) | Informal Working Group | Biodiversity | Yes | Private and public banks | 5 DFIs |
| Transparent supply chains for sustainable economies (TRASE FINANCE) | Initiative | Most relevant to deforestation and trade finance | Yes | Producer and consumer country governments<br>Commodity traders | |
| UN Global Compact | Commitment | Sustainability | No | Private banks | 5 DFIs |
| UNEP Finance Initiative | Standard/ Forum | Sustainability | Yes | Mainly private banks | c. 20 DFIs |
| We Mean Business Coalition | Forum | Sustainability | No | Private banks | None |
| World Business Council for Sustainable Development | Forum | Sustainability | No | Some private banks | None |



## 3. INFRASTRUCTURE TOOLS THAT COVER THE THEMES OF CLIMATE CHANGE AND BIODIVERSITY

| Name | Sector/s | Lifecycle Phase(s) | Type |
|---|---|---|---|
| C40 Cities Finance Facility - An ecological infrastructure and socio-ecological toolkit | Natural Infrastructure | Strategic Planning, Prioritization, Project Planning | Guidelines |
| IDB Climate Resilient Public Private Partnerships: A Toolkit for Decision Makers | | Strategic Planning, Project Planning, Procurement | Project Preparation Tools |
| C40 Cities Finance Facility - Estimating Climate Impacts: A Guidebook on GHG Emissions Impact Analysis | Tools applicable to all sectors | Project Planning | Guidelines |
| IUCN's Global Standard for Nature-based Solutions | Natural Infrastructure | Strategic Planning, Project Planning, Concept Design, Detailed Design | Standards |
| MobiliseYourCity Emissions Calculator | Transportation | Strategic Planning, Project Planning, Concept Design, Detailed Design | Modelling Tools |
| World Bank - Adaptation Principles: A Guide for Designing Strategies for Climate Change Adaptation and Resilience | Tools applicable to all sectors | Enabling Environment, Strategic Planning, Prioritization, Project Planning, Concept Design, Procurement, Finance, Detailed Design, Construction, Operation and Maintenance, Decommissioning/Repurposing | Guidelines, Principles |
| GFDRR - ThinkHazard! | Tools applicable to all sectors | Strategic Planning, Prioritization, Project Planning, Concept Design, Procurement, Finance, Detailed Design, Construction, Operation and Maintenance | Modelling Tools |
| National Infrastructure Systems Model (NISMOD-Int) | Tools applicable to all sectors | Strategic Planning | Modelling Tools |
| AfDB - Environmental and Social Assessment Procedures (ESAP) | Tools applicable to all sectors | Enabling Environment, Strategic Planning, Prioritization, Project Planning, Concept Design, Procurement, Finance, Detailed Design, Construction, Operation and Maintenance, Decommissioning/Repurposing | Guidelines |
| UN, EC, FAO, OECD, World Bank - System of Environmental Economic Accounting (SEEA) Experimental Ecosystem Accounting – Manual | Tools applicable to all sectors | Strategic Planning, Project Planning | Guidelines |
| EPA - Visualizing Ecosystems for Land Management Assessment (VELMA) Model | Natural Infrastructure | Operation and Maintenance | Modelling Tools |
| Stanford University - Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST) | Natural Infrastructure | Strategic Planning | Modelling Tools |
| Climate-ADAPT - European Climate Adaptation Platform - Urban Adaptation Support Tool (UAST) | Urban Planning | Operation and Maintenance | Guidelines |
| Vermont Transportation Resilience Planning Tool (TRPT) | Transportation | Project Planning, Concept Design, Finance, Detailed Design, Construction, Operation and Maintenance | Project Preparation Tools |
| SuRe Standard: Sustainable and Resilient Infrastructure | Tools applicable to all sectors | Project Planning, Concept Design, Detailed Design, Construction, Operation and Maintenance, Decommissioning/Repurposing | Rating Systems |
| SITES Rating System | Urban Planning, Natural Infrastructure | Strategic Planning, Prioritization, Concept Design, Detailed Design, Construction, Operation and Maintenance | Rating Systems |
| EO100 Standard for Responsible Energy | Energy | Project Planning, Concept Design, Detailed Design, Construction | Principles |
| ENVISION Rating system | Tools applicable to all sectors | Project Planning, Concept Design, Detailed Design, Construction, Operation and Maintenance, Decommissioning/Repurposing | Rating Systems |
| World Bank Environmental and Social Framework | Tools applicable to all sectors | Prioritization, Project Planning, Concept Design, Procurement, Finance, Detailed Design, Construction | Guidelines |
| Climate Bonds Standard | Tools applicable to all sectors | Finance | Standards |

## 4. CONSIDERATIONS FOR CHOOSING AN INFRASTRUCTURE ESG SCHEME OR STANDARD

| Consideration | SuRe® | BREEAM / CEEQUAL | GRESB Infra | ISCA | Envision | Equator principles | IFC PS |
|---|---|---|---|---|---|---|---|
| Project stage | Planning, design, financing | Planning and design | Financing | Planning, design, financing | Planning and design | Financing | Financing |
| Geographic focus | Global | Primarily Europe | Global, focus on EMEA/NA | Primarily Australia/NZ | Primarily North America | Global | Global |
| Level of assessment | Asset level | Asset level | Asset and fund levels | Asset level | Asset level | Asset level | Asset level |
| ISEAL compliant | Yes* | No | No | No | No | No | No |
| If no: third party verified | Yes | Yes | Low – spot check | Yes | Yes | No | No |
| Infrastructure specific | Yes | Yes | Yes | Yes | Yes | Project finance | No |
| Sub-sector specific | No | No | No | No | No | No | No |
| Aggregation | No | No | Yes | No | No | No | No |
| Track record | Limited pilots | 300+ projects (since 2003) | 22 trillion AUM (since 2016) | 60+ projects (since 2012) | Available since 2015 | Multiple years | Multiple years |
| Public availability | Yes | Significant detail | Significant detail | Yes | Yes | Yes | Yes |

## 5. CONSIDERATIONS FOR CHOOSING AN INFRASTRUCTURE EVALUATION OR VALUATION ESG TOOL

| | Name | Types of Assets | Primary User Type(s) |
|---|---|---|---|
| Evaluation Tools | GRESB Infrastructure Asset Assessment | Energy, Water, Waste, Transportation, Telecom, Data, Social, Real Estate | Financial Investors, Managers, Operators |
| | Envision | Energy, Water, Waste, Transportation, Landscape, Information | Procuring Entities, Developers |
| | SuRe | Energy, Water, Waste, Transport, Communication, Social, Food Systems, Mining | Procuring Entities, Developers, Financial Investors |
| | RepRisk | 34 sectors (including beyond infrastructure) | Companies, Investors, Governments, NGOs |
| | CEEQUAL | Infrastructure, civil engineering, public spaces, and landscaping | Governments, Developers/Designers |
| | ISCA Tools (Planning, Design & As-Built, and Operations) | Energy, Water, Waste, Transportation, Information | Governments, Developers/Designers, Operators/Owners |
| Valuation Tools | SAVi | Energy, Buildings, Roads, Water, Natural Capital (under development) | Procuring Entities, Financial Investors |
| | TREDIS | Transportation | Procuring Entities, Developers |
| | Autocase | Buildings and Project Sites | Procuring Entity, Developers |
| | Zofnass Economic Process Tool | Energy, Water, Waste, Transport, Landscape, Information | Procuring Entity, Developers |






354 Tanglin Road #02-11, Tanglin Block Tanglin International Centre Singapore 247672
Tel. +65 6730 8100