# VBIAF SECTORAL GUIDE: CONSTRUCTION & INFRASTRUCTURE (C&I)

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## ACKNOWLEDGMENTS

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## DEFINITIONS

| Term/s Used | Definition |
|---|---|
| Corporate Value Intent (CVI) | The FI's VBI commitment, which forms the basis for the formulation of all policies and systems from the front office to the back office, including customer service, marketing, product development, risk management, treasury, compliance, finance, human resource and information technology. |
| Double-Materiality | The double materiality approach identifies a company's impact on the environment and society as well as the environment and society's impact on the company. This is achieved through making reference to a company's development, performance and position (thus indicating financial materiality), and reference to the impact of the company's activities (which indicates environmental and social materiality), while noting that these two risk perspectives overlap and are increasingly likely to do so in the future[1]. |
| Environmental Impact Assessment (EIA) | EIA is a study to identify, predict, evaluate and communicate information about the impacts of a proposed project on the environment including the surrounding community, and to detail out the mitigating measures prior to project approval and implementation, and is a statutory requirement under certain legislations. The assessment covers the whole life cycle of project i.e., project planning, project development, operations up to decommissioning/abandonment phases. |
| Environmentally Sensitive Areas (ESAs) | ESAs are identified and recognised to ensure sustainable management of resources, as well as to maintain the sustainability of our natural surroundings. Malaysia's National Physical Plan (NPP) clearly defines ESAs according to our environmental, physical, cultural and climate contexts. The NPP strictly advises that ESAs remain untouched and should be conserved or sustainably managed depending on the type, characteristic and level of sensitivity and importance. ESAs are ranked in three categories.<br><br>**RANK 1** ESAs: No development, agriculture or logging should be permitted for an altitude above 1,000m except for low-impact nature tourism activities, and for research and education purposes. Areas ranked in this category include the existing and proposed protected areas, as well as important habitats such as turtle landing sites, salt licks, important plant areas, limestone outcrops and natural wetlands of high conservation value.<br><br>**RANK 2** ESAs: These include other forests and wetlands outside protected area and areas with an altitude of between 300m and 1,000m. Sustainable logging and low-impact tourism are allowed, but no physical development and agriculture activities are permitted.<br><br>**RANK 3** ESAs: These include all marine parks, catchment zones for water intake and groundwater recharge, as well as areas with critical and significant risk of erosion, and areas with an altitude of between 150m and 300m. Minimal and strictly controlled development may be allowed in these areas depending on the type and intensity of the projected impact and constraints. |

[1] Guidelines on Reporting Climate-Related Information, European Commission, EU, 2019

| Term/s Used | Definition |
|---|---|
| High Carbon Stock (HCS)[2] | High Carbon Stock forest are forests that have been identified using the High Carbon Stock Approach (HCSA) Toolkit. High Carbon Stock approach is a methodology that distinguishes forest areas for protection from degraded lands with low-carbon and biodiversity values that may be developed. The amount of carbon and biodiversity stored within an area of land varies according to the type of vegetative cover. The HCS Approach stratifies the vegetation in an area of land into six different classes using analyses of satellite data and ground survey measurements. These six classes are: High Density Forest, Medium Density Forest, Low Density Forest, Young Regenerating Forest, Scrub, and Cleared/ Open Land. |
| High Conservation Value (HCV)* | According to High Conservation Value Resource Network (HCVN), HCV is a biological, ecological, social or cultural value of outstanding significance or critical importance. HCVs are classified into six categories: HCV 1: Species diversity; HCV 2: Landscape-level ecosystems and mosaics; HCV 3: Ecosystems and habitats; HCV 4: Ecosystem services; HCV 5: Community needs; and HCV 6: Cultural values. |
| Impact-based Risk Assessment | A comprehensive approach to identify and categorise impacts, both positive and negative to the value of the FI's financing and/or investment assets, also enabling them to determine the most appropriate risk management tools. |
| Impact-based Risk Management | Inclusion of an impact-based dimension to the existing credit risk management practices (base approach) to include towards managing various risks. In other words, it considers the implication of the financing and investment activities funded by the FIs on the stakeholders based on the principles and strategies established in accordance with its CVI and the broader goal of a sustainable and resilient future. |
| Life Cycle Assessment (LCA) | An evaluation of various stages of business and its supply chain – from design to construction to operations and decommissioning. |
| Nature-based Solutions | 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". NbS are not limited to infrastructure but are highly relevant. Nature-based solutions for infrastructure include the use of natural and hybrid infrastructure to meet infrastructure service needs[3] (e.g., protecting a natural watershed to ensure drinking water quality). |
| Nature-Positive | Halting and reversing nature loss (The global goal for nature stipulates a target for a nature-positive by 2030). |
| Net-Zero | Net zero emissions are achieved when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period. Where multiple greenhouse gases are involved, the quantification of net zero emissions depends on the climate metric chosen to compare emissions of different gases, such as global warming potential, global temperature change potential, and others, as well as the chosen time horizon (most commonly net-zero by 2050 latest)[4]. |

[2] Corporate Website, highcarbonstock.org | hcvnetwork.org, HCV Resource Network and HCS Approach, 2020

[3] International Good Practice Principles for Sustainable Infrastructure, United Nations Environment Programme, 2021

[4] IPCC, 2018: Annex I: Glossary [Matthews, J.B.R. (ed.)]. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of

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|---|---|
| Onboarding | The onboarding process in the context of both existing and new customers includes both evaluation of FI's customer' orientation to sustainability or ESG aspects, which is undertaken through due diligence, in keeping with regulatory, mandated and voluntary principles, standards and criteria. |
| Policy Statement/s | FIs internal financing/investment policy statement/s on the sector, guiding their risk appetite as well as their risk management processes. |
| Remedies & Exit Procedures | Mechanisms and options available for FIs to take exceptions to policies and procedures, corrective actions, resolution tactics, and pre-emptive strategies to safeguard interests, cut financial losses, and remain resilient. |
| Value-Based Intermediation (VBI) | An intermediation function that aims to deliver the intended outcomes of Shariah (Maqasid al-Shariah) through practices, conduct and offerings that generate positive and sustainable impact to the economy, community and environment, consistent with the shareholders' sustainable returns and long-term interests. |

strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press

## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| **BNM** | Bank Negara Malaysia |
| **CB** | Certification Body |
| **CITES** | Convention on International Trade in Endangered Species |
| **EC** | Energy Commission |
| **EIA** | Environmental Impact Assessment |
| **EIC** | Energy Industry Council Malaysia |
| **ESG** | Environmental, Social and Governance |
| **ESIA** | Environmental & Social Impact Assessment |
| **FIs** | Financial institutions |
| **FPIC** | Free, Prior and Informed Consent |
| **GHG** | Greenhouse Gas |
| **HBV** | High Biodiversity Value |
| **HCS** | High Carbon Stock |
| **HCV** | High Conservation Value |
| **IPCC** | Intergovernmental Panel on Climate Change |
| **ISCC** | International Sustainability and Carbon Certification |
| **IUCN** | International Union for Conservation of Nature |
| **JAS** | Jabatan Alam Sekitar (Department of Environment) |
| **JKKP** | Jabatan Keselamatan dan Kesihatan Pekerjaan (Department of Occupational Safety and Health) |
| **KBA** | Key Biodiversity Area |
| **KPDNHEP** | Kementerian Perdagangan Dalam Negeri dan Hal Ehwal Pengguna (Ministry of Domestic Trade and Consumer Affairs) |
| **MITI** | Ministry of International Trade and Industry |
| **MISC** | Malaysian International Shipping Corporation |
| **MMHE** | Malaysia Marine and Heavy Engineering |
| **MS** | Malaysian Standard |
| **NC3BUR2** | Malaysia 3rd National Communication and 2nd Biennial Update Report to UNFCCC |
| **NGO** | Non-governmental organisation |
| **OSH** | Occupational Safety and Health |
| **PD** | Probability of default |
| **PERKESO** | Pertubuhan Keselamatan Sosial (Social Security Organisation/SOCSO, Malaysia) |
| **PPE** | Personal protective equipment |
| **SCC** | Supply Chain Certification |
| **SEDA** | Sustainable Energy Development Authority Malaysia |
| **SEIA** | Social and Environmental Impact Assessment |
| **SPOTT** | Sustainability Policy Transparency Toolkit |
| **TCFD** | Task Force on Climate-related Financial Disclosures |
| **UNDRIP** | United Nations Declaration on the Rights of Indigenous Peoples |
| **UNEP FI** | United Nations Environment Programme Finance Initiative |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **UNPFII** | United Nations Permanent Forum on Indigenous Issues |
| **VBI** | Value-based intermediation |
| **VBIAF** | Value-based intermediation Financing and Investment Impact Assessment Framework – Guidance Document |
| **WHO** | World Health Organisation |

## DISCLAIMERS

This document only serves as a guidance to the industry. Any views, findings, interpretations, conclusions or information provided in this document are a result of the collaboration between the institutions identified above and hence, do not necessarily represent the official policy of the said institutions unless otherwise stated, nor does reference to or citing of trade names or commercial processes, constitute endorsement, recommendation or preference by the said institutions.

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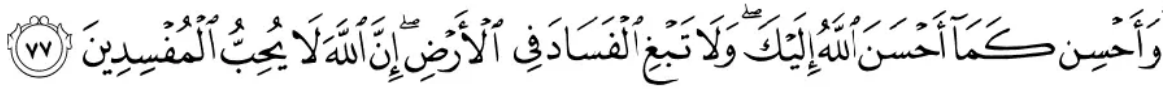
## A. FOREWORD: FROM THE CHAIRMAN




***Wa ahsin kamaaa ahsana Allaahu ilaika wala tabghi alfasada fee alardi inna Allaha la yuhibbu almufsideena***

*And do good as Allah has done good to you. And desire not corruption in the land. Indeed, Allah does not like corrupters. (Al-Qasas:77)*

**Businesses can be a powerful force for good. With their collective networks and influence and through responsible practices and behaviour they can contribute to greater good of people and the planet. The biggest hurdle is to not look for a 'reason' to do good, but make doing 'good' a reason for being. The good we want to see in the world is the good we should demonstrate while pursuing business motives. The good of business or the business of good – both are really the foundation that will help shape a socially-just and an environmentally-sustainable world.**

The Construction & Infrastructure (C&I) sector has been a point of influx with rapid urbanisation, evolving social and environment priorities, and availability of capital in the near term. These are also reshaping the sector in terms of its focus and shift towards achieving operational resilience, affordability of infrastructure, adoption of new technologies and sustainability.

The Malaysian C&I Sector significantly contributes to the nation's economic development. It provides the much-needed support to the economy by forward and backward linkages with other sectors of the economy. In other words, higher construction productivity benefits all sectors of the economy due to the inter-relations of business investment with C&I in some way or the other. The sector, following its sluggish performance in 2020 due to the pandemic, is set to recover and grow by 14.6%[5] in 2021 due to the acceleration and revival of major infrastructure projects, coupled with affordable housing projects. The civil engineering subsector will continue to be the main driver of the construction sector.

The Malaysian Construction sector faces many age-old challenges i.e., shortage of manpower, environmental harm, poor quality of work due to skill gaps and falling productivity alongside conventional construction approaches. There are also emerging challenges on sustainability, which includes issues such as the excessive and unregulated use of resources, the absence of construction techniques for emissions and pollution reduction, energy efficient technologies, etc. However, with the progressive initiatives earmarked under the Construction Strategy Plan 4.0 in line with Malaysia's Shared Prosperity Vision 2030 and the National 4.0 Industry Policy (Industry4WRD), this will boost the capabilities of the sector whilst helping overcome these challenges.

This C&I Sectoral Guide is a living document to encourage FIs to apply the 'Do Good' principle to the sector, and steer their customers to support accelerated climate action and governance; strategic investments in innovation and carbon technologies; increased portfolio shares of alternative and hybrid or renewable sector; and improved social and community support and respect for human rights.

[5] Construction in Malaysia – Key Trends and opportunities to 2025, Global Data Report, June 2021

This guidance equips FIs with proven and effective methodologies and prescribed practices for promoting sustainable / responsible business practices in the C&I sector. This guidance will inform FIs to apply sustainability screening and make responsible investment / financing / lending decisions, while creating a new band of Environmental, Social, and Governance or ESG-compliant C&I players. This document can also prove to be an insightful reference for customers, partners and other stakeholders of FIs in the C&I supply chain, who also play a critical role in the transition.

The guidance will inform FIs to apply sustainability screening and make responsible investment / financing / lending decisions, while creating a new band of Environmental, Social, and Governance or ESG-compliant C&I players. This document can also prove to be an insightful reference for customers, partners and other stakeholders of FIs in the C&I supply chain, who also play a critical role in the transition.

For FIs, the operationalisation of this Sectoral Guide will mean managing its ESG risk exposures, maintaining credit quality and accelerating its sustainability performance. On the other hand, the clear beneficiaries in the process, the C&I players, will benefit from improved cost efficiencies, effective carbon consumption, incentives for cleaner, greener construction methods; and the promotion of environmentally friendly modes of transport, which could raise new standards, new incentives and new opportunities for growth. By mainstreaming this sectoral guidance, FIs will also be able to encourage C&I players to funnel new investments in frontier and clean construction methods, low-carbon consumption, effective use of scarce resources, among others.

On behalf of the VBI Community of Practitioners (CoP), regulator, technical experts, and individual contributors, I welcome all feedback for us to continue improving this guidance by integrating new emerging principles and global best practices. Please send your comments and suggestions to AIBIM (Secretariat) via staff@aibim.com.

**Syamsul Azuan Ahmad Fauzi**
**Chief Executive Officer**
**Public Islamic Bank Berhad**

# B. INTRODUCTION

## AIMS & OBJECTIVES

1. This Sectoral Guide should be read in conjunction with Bank Negara Malaysia's Value-based Intermediation Financing and Investment Impact Assessment Framework (VBIAF), which outlines the key principles, prescribed governance, and impact-based risk management approach.

2. VBI is an intermediary that functions to deliver the intended outcomes of Shariah (Maqasid al-Shariah). The application of Shariah principle of attainment of benefit, prevention of harm, doing good and integration of Shariah are key to this Sectoral Guide, whereby the FIs should define their respective approaches to integrate Shariah into their business strategies.

3. The main objective of the Sectoral Guide is to provide comprehensive or more granular guidance for implementing impact-based assessments for the sector. It also provides relevant sustainability metrics or indicators that can be considered when taking a more holistic approach to the classification of economic activities.

4. This Sectoral Guide is a living document that may be periodically edited and updated, when necessary, in response to changes in relevant government policies, laws and regulations, industry practices and other sector-specific developments.

## SCOPE & APPROACH

5. The guidance provided is developed in reference to applicable policy documents issued by Bank Negara Malaysia, Malaysian laws and regulation, standards and guidance issued by international / multi stakeholder organisations and initiatives and publicly available information on best practices adopted by relevant institutions and practitioners.

6. The sector in focus has been selected for its significant contribution to the Malaysian economy, susceptibility to environment degradation and social issues, and potential significant exposure to transition risk.

7. The Sectoral Guide recommends an inclusive approach to adoption and implementation, where it is critical to orientate FI's stakeholders including customers and investors to create a common understanding towards meaningful outcomes.

## APPLICABILITY

8. This guidance is intended for financial institutions (FIs). Counterparties of the FIs (e.g., customers, investors) may refer to this guidance to obtain a general perspective on areas / criteria considered in lending / financing and investment assessments. However, final decision making is subject to the policies and procedures of the respective FIs.

9. While the guidance provides basic framework to help the industry build capability, FI-level calibration may be necessary to drive decisions that are aligned to their respective vision, mission, strategies, risk and growth appetites.

10. Efforts have been made to consult diverse group of stakeholders and technical experts in documenting this Sectoral Guide, however, it is not recommended to take the prescriptions as 'standard' solutions or practices. When operationalising this guidance, FI's should take into account the double materiality and its complexity, especially when it comes to quantifying the impacts, e.g., measuring the "costs" of negative impacts such as excessive GHG emissions etc.

11. The guidelines are for voluntary adoption and implementation. The prescribed best practices, frameworks and solutions may not be applicable or material universally. The applicability should be determined based on individual FI's appetite; maturity and preparedness to integrate sustainability principles into business models; ability to build own capacity or nurture value chain partners with appropriate skills and knowledge; as well as the long-term aspirations to align and support organisational, national and international agenda of sustainable development.

12. This Sectoral Guide might be updated periodically i.e., every 2-3 years as appropriate to reflect the evolving nature and maturity of risk management practices. The examples of ESG risk management practices featured in this document are meant to be illustrative, and are neither prescriptive nor exhaustive.

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## C. SECTOR IN FOCUS: CONSTRUCTION & INFRASTRUCTURE

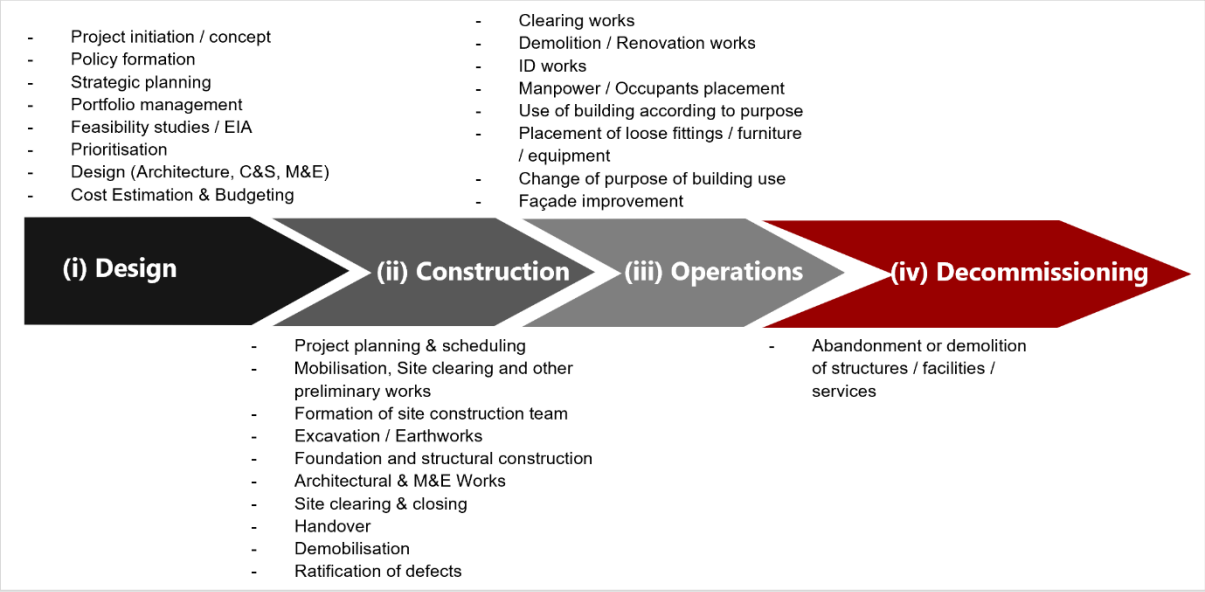
### DEFINITION & SCOPE

13. As per the Malaysia Standard Industrial Classification (MSIC), C&I include design, construction (of commercial and residential buildings, roads and railways, utility projects such as dams and reservoirs etc.), civil engineering, and specialised activities such as demolition and site preparation, electrical, plumbing, and other construction installation activities, building completion and finishing.

14. According to Construction Industry Development Board (CIDB), Infrastructure constitutes the basic physical service systems for society and includes (but is not necessarily limited to) activities such as ports, harbours and marinas; dams and reservoirs; railways; roads, transfer pipelines, airports and power supply and telecommunication network.

15. For specific C&I sector related definitions/scope in key documents including the MSIC 2008; Act 520- Lembaga Pembangunan Industri Pembinaan Malaysia Act 1994; various provisions under CIDB in UBBL-BY_LAW, Arahan KPKR, and Insentif Kerajaan, please refer to Appendix IV – Essential Readings.

**Diagram 1**: **Lifecycle of C&I**




16. The lifecycle of C&I includes the following as also shown in the diagram above. Sustainability considerations can be even more effective when integrated during the design and upstream stages of the lifecycle, where there are opportunities to influence ideation and pre-feasibility studies as well as to change project flow, policies and plans.

a. **Design stage** involves review of schematic plans and elevations, revision and expansion of all pertinent details and specifications required for construction. These include project initiation / concept, feasibility studies, EIA (including any other assessment/s such as social impact assessment and life-cycle assessment). It is also at the Design stage when there are considerations to incorporate sustainable features and conform to various conditions set by the authority in relation to the architecture, civil and structural (C&S) works, mechanical and engineering (M&E) scope and finally, arriving at cost estimation and budgeting accordingly.

**b. Construction phase** involves completion of the building as well as the scope of the project. This phase covers activities to monitor and control project progress; monitor and control project finances/cash flow; administer the construction contract; quality compliance; health and safety compliance; and environmental compliance processes. Typically, there is a contract with a construction manager or a construction contractor who manages the project, schedules the work and hires and schedules the sub-contractors. The project's architecture or engineering firm or other professional service contractor continues to prepare and document all design issues, changes and specifications, then verifies that the construction documents are being followed. Normally, throughout the construction phase situations arise that require changes or refinements to the original drawings or specifications. These unforeseen changes are documented and are added to the construction documents. These changes, if they require a change in budget, will be accounted for by one of the contingencies. If contingencies are exhausted, the budget needs to be adjusted.

c. **Operations** stage comprises of two components, namely “operation” and “maintenance”. Operation refers to the day-to-day activities that contribute to service delivery to the users which includes direct access to the system, the activities of any operational staff, as well as the rules or by-laws that govern such access. Maintenance, on the other hand, includes technical activities, which are needed to keep the system working. Maintenance requires skills, tools and spare parts. Maintenance can be classified as preventive or planned, reactive and corrective.

d. **Decommissioning** is the process of shutting down a building and/or removing it from operation or use upon expiry of service life; failure to function (upon confirmation / report by authority or professional); structural / integrity failure; change of land use; change in topography / climate / soil condition due to natural/unnatural cause; and change in legislation/laws. Decommissioning may be followed by re-commissioning, repurposing or demolition. Common types of buildings that may be decommissioned to include power stations, oil rigs, factories, warehouses, public buildings etc. The purpose of decommissioning a building is to protect it and its systems, to reduce ongoing costs, hazards and other risks until the future of the building has been determined. Decommissioning can be a complex process that requires careful planning and management to ensure it is carried out efficiently and safely.

17. While the applicability of this Sectoral Guide extends to all sub-sectors of C&I, with holistic guidance on the risk impact and assessment, selected illustrations and best practices have been included specifically on a) Property Development b) Sea Ports, Harbours, & Marinas c) Airports d) Dams & Reservoirs e) Pipelines and f) Roads & Railways.

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## ECONOMIC CONTEXT

18. C&I has an important role to play in the country's economic development. In Malaysia, the construction output grew from RM13.1 billion in 1990 to RM53.6 billion in 2020[6]. The figure for 1990 has been derived by reconfiguring the baseline data for 1990 to reflect the 2015 baseline as per the CEIC data obtained from Department of Statistics Malaysia. When the trend is juxtaposed against national GDP, it clearly indicates the industry's increasing contribution to catalyse critical infrastructure essential to not just meet the development needs, but to also enable investments in other economic sectors.

19. Even though C&I output as a percentage of GDP is at 4.0% in 2020, the industry's ability to create systemic opportunities is significant, especially due to its linkages with construction related manufacturing industries such as basic metal industries etc.

20. The 12th Malaysia plan[7] highlights the importance of the construction sector in reviving the post-pandemic economy. Furthermore, the plan emphasises the importance of shifting towards sustainable economic practices which value natural endowments and environmental health, through addressing climate change, unsustainable consumption and production, biodiversity loss, energy, lack of coherence in policies and inefficient water resources management.

21. The C&I's annual growth rates or trends reflect the corresponding growth or decline in the economy. This reinforces the importance of this sector as well as its strong correlation with the national GDP and progress. For instance, in 2020 due to the COVID-19 triggered socio-economic disruptions, the construction activities which formed a total share of 4.0% of overall GDP fell by a massive 19.4%.

22. Similarly, the value of construction work done plunged by 19.4% in 2020 from a 0.6% growth in the previous year, amounting RM117.9 billion (2019: RM146.4 billion). This was mainly attributed by the impact of the Movement Control Order (MCO) and containment measures to curb the fast-spreading virus as the sector has been severely affected by the supply chain disruptions and stringent standard operating procedures (SOPs). On further scrutiny, all sub-sectors recorded a negative growth last year with Civil Engineering posted the largest contraction (2020: -24.0% vs. 2019: 8.3%). This was followed by Residential Buildings (2020: -17.2% vs. 2019: -2.3%), Non-Residential Buildings (2020: -17.1% vs. 2019: -8.8%) and Special Trade Activities (2020: -2.1% vs. 2019: 4.2%).

23. In Malaysia, typical financing products for construction include project/contract financing, bridging financing, syndication financing, Term financing and Multi-trade facilities as well as debt capital market products such as conventional and Islamic bonds, commercial papers (CPs) and medium-term notes (MTNs) to facilitate financing of projects and equipment.

[6] CEIC Data, Malaysian GDP: Construction, Department of Statistics, 2015-2019

[7] Twelfth Malaysia Plan (2021-2025), Economic Planning Unit, 2021

24. For infrastructure, funding is available through public funding and public private partnerships (PPP) ventures introduced under the Malaysia Privatisation Masterplan (MPM) in 1983. PPP comprise public finance initiatives (PFI) and privatisation wherein the companies would seek financing from banks or development financial institutions (DFIs) for their projects without the requirement for government guarantee.

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## ESG/SUSTAINABILITY CONTEXT

25. Malaysia has announced its intention to be carbon-neutral by 2050, and aims to reduce its economy-wide carbon intensity (against GDP) of 45% in 2030 compared to 2005 level. The updated NDC includes the increased ambition: (a) The 45% of carbon intensity reduction is unconditional; (b) This target is an increase of 10% from the earlier submission; and (c) The GHG coverage is expanded to seven greenhouse gasses.[8]

26. Malaysia is formulating its Long-term Low GHG Emission Development Strategies (LT-LEDS) which will contribute towards achieving Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement. Additionally, at COP26, Malaysia committed to the Global Methane Pledge, which aims for signatories to cut 30% of their methane emissions by 2030, as well as the Global Leaders Declaration on Forests and Land Use, which aims to halt and reverse forest loss and land degradation by 2030[9].

27. In managing future risks and potential loss from climate change, Malaysia is mainstreaming climate resilience into urban planning and development of infrastructures. This will include emphasising infrastructure integrity assessments and revisions of the existing manuals and guidelines.

28. Future planning for waste and wastewater infrastructures will take into account its sustainability, efficiency and effectiveness whilst avoiding areas that are environmentally sensitive, flood-prone and categorised as water catchments. Adopting nature-based solutions such as constructed wetlands in facilitating wastewater treatments will be a priority.

29. Malaysia also aims to identify, implement and expand innovative and nature-based infrastructure design. Resilient and green city concept will be adopted to ensure future climate risks are managed efficiently.

30. The National Investment Aspirations (NIA) focuses on inclusivity and sustainability, with ESG goals that serve as an anchor to drive new investments and propel growth in the technologically-sophisticated sectors. This focus will also provide a pathway for investors to access new market opportunities, particularly in developed countries that mainstream sustainability throughout their value chain. In this context, the NIA takes into account the global interest surrounding carbon-neutrality, including the use of technology to help reduce carbon foot-print[10].

31. The Shared Prosperity Vision 2030[11] commits to sustainable development through Enabler 7 (i.e., sustainability), emphasising on the need to harmonise socioeconomic development with preservation of the environment and natural resources. Its guiding principles include Sovereignty and Sustainability, with a focus on strengthening environmental conservation and natural resources in development planning.

[8] Malaysia's Update of its First Nationally Determined Contribution to UNFCCC, July 2021

[9] Corporate Website, ukcop26.org, Glasgow Leaders Declaration on Forests and Land Use, 2021

[10] Media Release: Investment Policy Reforms to be Rooted in the National Investment Aspirations (NIA), MITI, 2021

[11] Shared Prosperity Vision 2030, Ministry of Economic Affairs, 2019

32. The National Policy on Biological Diversity 2016-2025 sets the country's goal to reduce the direct and indirect pressures on biodiversity, to ensure all sectors of the economy are planned and managed in a manner that does not impose pressure on biological resources. The required action includes protection and conservation of biodiversity in urban areas and maintenance of important terrestrial and marine ecological corridors.

33. The Malaysia Plastics Sustainability Roadmap 2021-2030[12] outlines strategies and action plans to achieve greater levels of plastic circularity in Malaysia. The document also prescribes mandatory waste management plan (divert plastic from landfills) for construction sector (2028-2029).

34. A sustainable construction development may have the potential features designed to minimise the various socio-economic or environmental implications or risks associated with construction activities such as involuntary displacement of local community, affected livelihood, land use change, air quality and water quality degradation, deforestation, biodiversity and ecosystem services loss or degradation (including loss of habitats and fragmentation of wild corridors), GHG emissions, increased climate change vulnerability, and loss of forest-based carbon sinks etc.

35. A sustainable construction development is also presented with opportunities to address socio-economic and environmental issues throughout the planning, design, construction and operational stages.

**Illustration: Opportunities for Positive Socio-economic & Environmental Impact**

- Low-carbon/Low Emissions Cities integrated with climate mitigation features such as energy and water efficient designs, waste management etc.
- Resilient Cities featuring disaster risk reduction and climate adaptation measures
- Transit-Oriented Development emphasise connection to public transportation system, especially convenience of “first mile” and “last mile” travel provided to local community
- Nature-based solutions in urban and rural areas which offer carbon sequestration, Flood and landslide mitigation, urban biodiversity conservation, pollination, etc. among other ecosystem services
- Infrastructure planning that avoids loss or degradation of environmentally-sensitive areas, including habitats and ecosystems; incorporation of features in the design that minimise loss or degradation such as provision of ecological corridors or providing safe passage to targeted wildlife species where avoidance is not possible
- Monitoring of environmental and social factors and effectiveness of mitigation measures at the construction and operational stages, preferably by an independent party

36. Malaysia needs a cumulative infrastructure investment of roughly USD460 billion from 2016-2040 to meet its Paris Agreement targets. Much of these investments need to be directed at green infrastructure. Green finance including green bonds and sukuk will be essential to finance the transition to a low-carbon infrastructure sector.

[12] Malaysia Plastics Sustainability Roadmap 2021-2030, Ministry of Water and Environment (KASA) Malaysia, 2021

37. CIDB has introduced MyCREST (Malaysian Carbon Reduction and Environment Sustainability Tool) to complement existing rating tools for sustainable construction. It guides the development of building projects at every stage from design and construction to operation and maintenance through adherence to sustainable requirements and practices. It also aims to quantify carbon emission at every stage of a building's lifecycle.

38. CIDB has also introduced the Sustainable INFRASTAR, a sustainable infrastructure project rating tool in 2019. Sustainable INFRASTAR was developed based on internationally recognised rating tools and is generic in application for various infrastructure projects including highways, railways, dams, water utility systems, energy generation, water facilities, telecommunications, waterways, canal and ports etc.

39. Certification and standards such as the Green Building Index (GBI) was introduced by Pertubuhan Akitek Malaysia (PAM) and the Association of Consulting Engineers Malaysia in 2009. It provides guidance for certifying green buildings based on six criteria - Energy Efficiency, Indoor Environment Quality, Sustainable Site Planning and Management, Materials and Resources, Water Efficiency and Innovation. As of end 2020, about 563 projects have been awarded with GBI, covering a total gross floor area of 24.7 million square metres. For more relevant certifications such as GreenRE, which is a key consideration for energy efficiency, water efficiency, environmental protection, carbon assessment, & enhanced construction practices amongst others, refer to Appendix II: Policies, Frameworks, Standards & Certifications.

40. The Low-carbon Cities Framework was introduced by the then Ministry of Energy, Green Technology and Water in 2011 and revised in 2017. It provides guidance for local authorities, residents and businesses on how to transition their cities into low-carbon cities; and looks at addressing carbon emissions in four main areas: Urban Environment, Urban Infrastructure, Urban Transportation and Buildings. One of the pioneering and flagship green townships is the Federal Government Administrative Centre of Putrajaya. It is taking the lead with a goal to reduce its GHG emissions intensity by 60% by 2025 compared with 2012 levels, making the city cooler by 2$^{o}$C.

41. Another local initiative is the Kuala Lumpur Climate Action Plan 2050[13] (KLCAP2050), formulated with an ambitious goal of transforming Kuala Lumpur into a carbon neutral and resilient city by 2050. KLCAP2050 promotes prioritisation of the environment, health, cultural heritage as well as safety, while catalysing a vibrant economy and inspiring a model society that respect its environment and its fellow citizens.

42. Below are some of the specific examples on ESG risks and opportunities for areas such as property development; seaports, harbours & marinas; airports; roads & highways; dams and reservoirs.

43. Property Development: Environmental concerns are typical in property development projects. Green designs that incorporate efficient use of energy and water are taken into account throughout the project lifecycle.

[13] Kuala Lumpur Climate Action Plan 2050, Kuala Lumpur City Hall, 2021

44. Seaports, Harbours & Marinas: Environmental risks for ports and waterways among the highest for transportation infrastructure assets, stemming from vulnerability to rising sea levels, flooding, and hurricanes arising from climate change. These are particularly relevant, given the long-term nature (50 years or more) of port operations. Extreme weather events, insurable or not, can disrupt port operations, typically for shorter time frames. With the increasing phenomena of global heating and the climate emergency, the severity and frequency of major weather events seem to be increasing. There is also indirect exposure to changes in bulk cargo, notably related to coal, and longer term to oil-related product imports/exports. Even though most ports could change the type of products they handle, there is a related overhaul cost, and a timeframe to execute to guarantee future operations.

45. Airports: Environmental risks for airports are mainly indirect because airports themselves produce about 2% of total emissions in the aviation sector. Airports need to consider the levels of air pollution (e.g., emissions such as sulfur and nitrogen oxides, and particulate matters) and noise pollution in the operational and surrounding areas. An airport's environmental exposure also extends to the substantial road traffic that they may create in the neighbouring areas. Some airports are more vulnerable than others to rising sea-levels, flooding, and hurricanes arising from climate change. Again, this is a relevant consideration, given the long-term nature (50 years or more) of airport operations. Extreme weather events, insurable or not, can disrupt airport operations, typically for shorter time frames. Land use (environmental permits and studies) can also be a key risk factor for expansions, extensions, and new developments.

46. Roads and Railways: Rail networks and mass transportation assets have a competitive advantage in yielding lower emissions than other transport modes, considering the high volume of passengers moved in per trip. In some cases, specific government policies aim to reduce emissions via mass transport infrastructure assets, such as in Europe and Chile. Large systems in some regions are exposed to extreme weather risks and are required to focus on asset resiliency, and develop adaptation plans to assure ongoing operations. As for roads, the exposure to emissions is mainly indirect, coming from cars, buses, and trucks. A disruption in the technology used in each mode, e.g., replacement of the fleet by electric vehicles, is not expected to significantly affect demand, whereas there is no disruptive solution to replace the mobility capillarity provided by roads at large scale (even if rail and subways are more environmentally efficient). For both roads and railways, deforestation and human rights are material ESG risks, as this linear infrastructure can bisect customary lands, forests, and fragment habitats. In addition, the construction of this infrastructure in remote areas can accelerate deforestation by increasing accessibility[14]. Given the long lifespan of infrastructure assets, climate change can represent a key environmental risk, albeit varying by location and nature of the assets.

[14] Roads, deforestation, and the mitigating effect of protected areas in the Amazon, Biological Conservation, Christopher P. Barber, Mark A. Cochrane, Carlos M. Souza, William F. Laurance, Volume 177, 2014

47. Dams and Reservoirs: While reservoirs can provide benefits, such as flood control, agricultural irrigation, and recreation, and renewable energy, they can also negatively affect aquatic ecosystems. negatively impact biodiversity and local communities. Many reservoirs are constructed in forested areas, resulting in large-scale deforestation, habitat loss and fragmentation of habitats, as well as the alteration of hydrological flows and degradation of riverine habitats. Additionally, reservoirs can result in the displacement of local, particularly indigenous communities, through the flooding of their customary land, which results in numerous irreversible socio-economic and cultural impacts. Furthermore, reservoirs in tropical environments can release high amounts of GHG through methane emissions from the degradation of organic matter and soil[15].

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[15] DamRight! WWF's Dams Initiative, WWF International, 2003

## POLICY & REGULATORY CONTEXT

48. The National Policy on the Environment aims at continued economic, social and cultural progress of Malaysia and enhancement of the quality of life of its people, through environmentally sound and sustainable development. Based on strategy 4.10 stated in the policy, investment in cost-effective, efficient, less polluting and safer mass transportation systems such as integrated urban mass transit and sea transportation systems will be promoted and encouraged. Non-motorised transport will also be encouraged, while a systematic traffic management and control scheme will be developed and implemented.

49. In Malaysia, EIA is a statutory requirement for activities which have been prescribed under Section 34A of the Environmental Quality Act 1974 and the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015. For Sabah, the applicable legislation governing EIA is the Environment Protection Enactment, 2002 administered by the Sabah's Environmental Protection Department (EPD), while for Sarawak, the Natural Resources and Environment Ordinance, 1993 administered by the Natural Resource and Environment Board (NREB). Some of the prescribed activities related to construction and infrastructure include, Drainage & Irrigation, Ports, Power Generation & Transmission, Development in Coastal & Hill Area, Waste Treatment & Disposal, Housing & New Township, Roads and Water Supply.

50. Tax incentives are also offered to companies for using Industrialised Building System (IBS) in projects. The government has extended IBS tax incentive for a period of five years effective from 1 January 2021 to 31 December 2025. Companies producing at least three basic IBS components or using an IBS system using at least three basic IBS components are eligible for an Investment Tax Allowance of 60% on the qualifying capital expenditure for five years and can be offset against 70% of statutory income for the year of assessment. Unutilised allowances can be carried forward until fully absorbed.

51. The government also introduced an incentive - Automation Capital Allowance of 200% on the first RM2 million expenditures incurred for the year of assessment 2015 until the year of assessment 2023 for IBS manufacturers. "Incurred" refers to machinery or equipment purchased by IBS manufacturers that used directly for the purpose of the business in the approved Year of Assessment (YA).

52. The Building Information Modelling (BIM) system is being strongly prescribed by CIDB and the National Construction Industry Transformation Plan (CITP) shows that the BIM adoption rate in the country was at 49% at end of 2019. To date, 36 eligible companies have been offered financial incentive to adopt BIM through the RM1.5 million CIDB Transformation Fund Programme during the implementation period of the CITP.

53. The Green Technology Financing Scheme (GTFS) provides financial support through participating FIs for producer, user and Energy Services Companies (ESCOs). GTFS aims to accelerate the expansion of green investments in eligible sectors including energy, water, building and township, transport and waste management by providing easier access to financing and at lower financing costs. GTFS 3.0[16] has earmarked financing amount from RM10 million up to RM500 million.

[16] Corporate Website, danajamin.com, 2021

54. The Green Investment Tax Allowances (GITA) and Green Income Tax Exemption (GITE)[17] are two incentive schemes that were introduced by the government in 2014 to strengthen the development of green technology. Companies that acquire green technology assets, undertake green technology projects and green technology service providers are eligible to apply for the incentives.

55. The final issue of the Climate Change and Principle-based Taxonomy[18] was published in 2021 to facilitate financial institutions in assessing and classifying economic activities that contribute to climate change mitigation and adaptation. This includes introducing of a system of transition categories (Climate Supporting, Transitioning and Watchlist) to acknowledge concrete transition efforts and commitments by businesses to adopt sustainable practices, and providing greater clarity and guidance for the assessment of guiding principles including the incorporation of broader environmental outcomes through the principle of no significant harm, with specific focus on how business operations affect pollution, biodiversity and resource efficiency.

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[17] Corporate Website, myhijau.my, 2021

[18] Climate Change and Principle-based Taxonomy, Bank Negara Malaysia, April 2021

## SECTOR GUIDANCE

### IMPACT-BASED RISK MANAGEMENT SYSTEM

56. It is recommended for FIs to strengthen their current risk evaluation framework or processes to include various dimensions of impact (for e.g., ESG risks contributing to impairment, weak credit ratios, liabilities, reputational and punitive damages etc.) to the existing credit risk management practices (which is by default the base approach) as well as make reference to the interconnectedness between the material impacts an FI has on the environment and how the environment will impact the FI. The purpose of including impact-based dimensions is to drive the C&I sector to adopt ESG practices, which will benefit both C&I operators and FIs in the long term.

57. C&I project development and operation activities can result in impacts to the physical and social environment. The type and severity of impacts that may occur depend upon many factors, including;
    a. The stage and timing of an activity or process
    b. The size and complexity of a project or operating facilities
    c. The nature and sensitivity of the surrounding physical and social environment

58. As Malaysia navigates its way in the transition towards a low-carbon nature-positive economy, the Government will continue to adopt a market-driven approach[19]. However, if not managed responsibly, these activities can have unacceptable adverse impacts on people or on the environment. Customers can improve their environmental and social performance by addressing key impacts of their project development and operational activities.

59. FIs should also promote the following Principles to advance ESG performance across C&I sector lifecycle.

#### 59.1 Strategic planning, siting and design of infrastructure/construction projects

a. Infrastructure contributes to socio-economic development, but poor choices in design and location of assets (especially those with lifespans of up to 50 to 100 years) can lock-in unsustainability for decades. Integrating sustainable elements in the design and planning of infrastructure projects is important to tackle global challenges such as climate change and nature loss.

b. Every planning and development activities should take into account the existence of the existing ecosystems and the adverse impacts on HCV areas; ESA Rank 1 or 2 as identified in the National Physical Plan (only applicable to Peninsular Malaysia).

c. The design of major infrastructures requires many considerations. Foremost is purpose and function, followed by engineering, social acceptance, adherence to policies and regulations, and ultimately cost. Environmental considerations often take a low priority and this can result in adverse consequences i.e., loss of natural capital, biodiversity and ecosystem services. This could also result in indirect impacts such as increased flooding which can translate to more costs in the long term.

[19] Media Article: Govt's approach to climate change issues outlined in the Malaysian Climate Change Action Council-KASA, The Sun Daily, 2021

d. Proper planning, siting and design could encompass several actions such as adopting early and comprehensive strategic planning based on sound science, precautionary principle and meaningful social engagement, integration of ESG factors in infrastructure decision making, adherence to international standards, frameworks and best practices, use of science-based tools to influence the planning and design, and partner with like-minded stakeholders as well as technical stakeholders (such as engineers and financiers).

e. Responsive, resilient, and flexible services provision to meet actual infrastructure needs, allow for changes and uncertainties over time, and promote synergies between infrastructure projects and systems.

f. Infrastructure should be aligned with global sustainable development agendas and supported by a strong regulatory and policy landscape

### 59.2 Management of project's potential environmental and social risks and impacts

a. Development and maintenance of Environmental and Social Management System and Plans are critical to address issues raised during planning and assessment process, and incorporate actions required to comply with applicable standards, such as GRESB, SuRe, Envision's Sustainable Infrastructure Framework etc. (Refer to Appendix II: Policies, Frameworks, Standards & Certifications. Such plans should include a comprehensive life-cycle assessment including the cumulative impacts of multiple infrastructure systems on ecosystems and communities over their entire lifespans, to avoid "locking in" infrastructure projects and systems with various adverse effects.

b. Alignment with both local priorities and global initiatives where possible / relevant help document and communicate points of impact – both positive and negative (e.g., Paris Agreement, Post-2020 Global Biodiversity Framework, New Urban Agenda, UN Sustainable Development Goals[20] or UN SDGs (SDG6, SDG7, SDG11, SDG12, SDG13, SDG14, SDG15, SDG16, SBTi, RE100, CDP).

c. Transparent and effective engagement with stakeholders and affected communities from the early stages of project planning, help manage grievances and the risk of community backlash and its impact on the projects.

d. Independent review, monitoring, and reporting ensures comprehensive reporting and disclosure processes based on applicable standards and guidelines.

e. Review of policies for gender inclusivity, health and safety, protection and enhancement of human and labour rights, land acquisition and resettlement mitigation. The idea is to promote a certain degree of balance between social and economic infrastructure investment to protect human rights and promote well-being, particularly of more vulnerable or marginalised groups. There should also be meaningful employment generation and socio-economic support for the local economy.

[20] Corporate Website, sdgs.un.org, 2021

f. Infrastructure should provide accessible and affordable services equitably to all, with a view to promoting social cohesion, empowerment and human rights.

g. Infrastructure should create meaningful employment, support local business and build amenities which benefit communities.

h. Infrastructure developments should be developed within frameworks of fiscal transparency, financial integrity and debt sustainability. Furthermore, infrastructure development should be underpinned by transparent planning, information sharing and decision-making processes that facilitate meaningful, inclusive and participatory stakeholder consultation, and in the case of indigenous peoples, their free, prior and informed consent. National, sub-national, and project- level grievance mechanisms should be available for addressing stakeholder complaints and concerns.

### 59.3 Considerations of more sustainable and efficient alternatives

a. Application of principles, tools and inclusive, transparent processes in order to make the best possible choices regarding the management of existing infrastructures and development of new ones.

b. Full consideration of alternatives before decisions are made to build new infrastructures, including the use of nature-based solutions, strengthening natural infrastructure which 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), alternative siting/location and designs that do not adversely impact sensitive areas, use of more sustainable materials and technologies, circularity in the use of construction materials (planned and designed into infrastructure systems) to reduce emissions, waste and other pollutants, as well as responsible and ethical sourcing of raw materials.

c. Rehabilitation, re-operation, and retrofitting of existing infrastructures instead of developing new ones.

d. New infrastructure to complement or strengthen, rather than replace, nature's ability to provide ecosystem services such as water supply and carbon sequestration.

e. Resource efficiency/circular solutions to minimise infrastructure's natural resource footprint, reduce emissions, waste and other pollutants, and increase the efficiency and affordability of services.

### 59.4 Long-term vision for development and operations

a. Review of the entire life cycle of C&I, with considerations for long-term management and operations of infrastructure. A comprehensive planning for the future and climate-resilience is required, which can be done through strategic foresight to monitor emerging socio-economic and technological changes as well as climate change risks.

b. Creating long-term strategies centered around development and climate change, which includes research and development projects that enable climate innovations and responds to the changing market demands and behaviour. Regular adjustments of long-term strategies are required to meet and mitigate emerging changes and risks related to climate change i.e., align to the Nationally Determined Contributions (NDCs) and national Long Term Low Emissions Development Strategy (LT-LEDS).

c. Taking into account technological disruptions that may completely upend estimates of infrastructure usage and needs. Some technological breakthroughs could render some current types of infrastructure obsolete, while also creating entirely new needs (possibilities include autonomous vehicles, artificial intelligence and machine learning, drone deliveries, advanced automation, renewable or unconventional energy, and digitisation). Furthermore, societal expectations for sustainability are increasing, and continued poor ESG performance could cause a loss of the social license to operate.

d. Continuous improvement by way of evidence-based decision-making that includes regular monitoring of infrastructure performance impacts based on key performance indicators and the promotion of data sharing with all stakeholders. Owners, operators, and regulators should also identify infrastructures whose environmental and social performance can be improved as technologies, science, and knowledge progresses. For instance, in the development of new infrastructures, precautionary principles should be applied right from design to decommissioning stages.

e. Allocation of sufficient funds/budget (x% of the project budget) for environmental mitigation measures, environmental monitoring, auditing, reporting, improvements (e.g., restoration of degraded forests).

f. Planning and management of infrastructure throughout the lifecycle be informed by key performance indicators that promote collection of data, including data that is disaggregated by stakeholder groups. Regular monitoring of infrastructure performance and impacts is necessary to generate data, which should be made available to all stakeholders.

### 59.5 Cooperation and just transition

a. Sharing of technical solutions, tools, information and best practices across disciplines and stakeholders is important for a more holistic approach in mitigating climate change risks.

b. A just and inclusive transition to achieve a sustainable goal while taking into account impacts toward workers and communities. This can be achieved by anticipating and addressing various social consequences of the low-emission transition and involving the relevant communities, civil society and the government in the policymaking processes.

### 59.6 Integration of Shariah governance

a. It is also recommended for Islamic FIs to integrate Shariah governance in their evaluation framework to obtain responses and advice from Shariah perspectives for decision-making purposes. The FIs should determine the role of Shariah governance functions in providing such responses including the application of *Maqasid al-Shariah* in assessing the priorities and impact-based dimensions based on *daruriyyat* (essentials), *hajiyyat* (needs) and *tahsiniyyat* (embellishments). With regard to the application of the Shariah principle on attainment of benefits and prevention of harm, it may require Shariah guidance and deliberation, for e.g., when making a choice between two harms when there is a constraint whereby the lesser of the two must be chosen. In addition, the prevention of public harm should be given priority over individual harm as guided by relevant Shariah principles.

### 59.7 Resilient and Flexible Infrastructure

a. Systems-level planning of infrastructure projects to promote synergies for improved connectivity which can lead to improved productivity, efficiency, sustainability and spill-over benefit of investment. Flexibility and resilience should be built into infrastructure plans to allow for changes and uncertainties over time and plans should be updated.

60. Apart from the above principles, FIs should also encourage customers to be equipped with knowledge, understanding and application of the internationally accepted and adopted methodologies and tools for identifying process hazard and management of associated risks. In short, the FIs should prioritise or incentivise customers with relevant certifications and recognised standards. Refer to Appendix II: Policies, Frameworks, Standards & Certifications.

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## Risk Identification & Transmission

61. Along the value chain of C&I sector, 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. There is merit in the concept of 'Double Materiality', where FIs identify the ESG risks that impact FI's C&I customers' business and also the impacts of your customers' business on the environment and society. In both instances, there could be financial implications, which should be taken into account during customer due diligence. Additionally, as also stated in VBIAF (paragraphs 41-43), FIs should consider aligning material matters with national/sectoral priority/focus areas.

**Diagram 2: Dual Materiality**


62. FIs should identify and balance trade-offs between the positive (benefits) and negative (risks) impacts related to lending/financing and/or investing (and any other relevant financial activities) in this sector.

63. The identified impact areas and risks can have financial (in the form of costs of remediation, fines and penalties, litigation etc.) and reputational implications if not well managed. These are also the areas (when proactively managed) that present significant opportunities to deliver stakeholder value.

64. The Table 1 below provides a brief description of various ESG impacts and the risk transmission across various stages of C&I Lifecycle, which may be interchangeable (between various stages) depending on the nature of the project/operations. The list is not comprehensive and have been adapted from various internationally accepted frameworks such as the Climate Action 100+; FIRST for sustainability by the IFC; IFC's Performance Standards for Environmental and Social Sustainability; Bloomberg Climate Transition Scores; WWF One Planet City Challenge (OPCC) Updated Assessment Framework Report; WWF The Nature of Risk: A Framework for Understanding Nature-Related Risk to Business; Sustainalytics Industry Reports; and TCFD Reports.

65. Where applicable, we have also included the relevant risks, metrics and mitigations in relation to gender issues and social inclusion (GESI) in infrastructure. These are adopted from EBRD's just transition initiative, Asia Development Bank's Gender-Inclusive Approaches in Urban Development Tip Sheet, Gender in Infrastructure: Lessons from Central and West Asia report, and the Gender Action Plan: Gender Equality and Social Inclusion Action Plan.

**Table 1: C&I Lifecycle & Risk Transmission**

| C&I LIFECYCLE & RISK TRANSMISSION | | | | |
|---|---|---|---|---|
| **Impact / Risk Categories** | **Design** | **Construction** | **Operations** | **Decommissioning** |
| **Environmental**<br>Environmental harm, including GHG Emissions is responsible for global heating, which further triggers acute and chronic physical risks to include natural disasters and extreme climatic conditions (and as a result, project delays), which affect C&I operations. The following risks / impact areas can severely affect business/issuer credit quality due to mounting liabilities from environmental remediation, fines, and litigation from consumers, civil society, and even, government (based on the magnitude of impact). | | | | |
| Land access, land-use, land-use change and acquisition<br><br>These impacts occur during pre-construction stage, potential major impacts are associated with breach of National and International Policies and issues related to land acquisition and settlements | • Significant loss of natural habitat/biodiversity and ecosystem services from Land access, land-use, land-use change (on-shore and/or off-shore e.g., marina, dams)<br><br>• Land acquisitions could lead to loss of economically productive land/water (e.g., agricultural lands, forests, and fishing grounds)<br><br>• Acquisition of local community home/ land/properties/public infrastructure (school, park), religious and cultural sites (cemetery, mosque, temple) cause community fear / unrest, with possible liabilities from relocation and compensation<br><br>• Encroachment into indigenous land, acquisition of land without FPIC (perceived “land grabbing”) | • Soil erosion may be caused by exposure of soil surfaces to rain and wind during site clearing, earth moving, and excavation activities<br><br>• Removal of natural land cover, excavation, extraction of construction materials, and other construction-related activities may result in soil erosion and in many cases unwanted soil deposition<br><br>• Exposure to physical hazards including soil erosion may be caused by exposure of soil surfaces to rain and wind during site clearing, earth moving, and excavation activities<br><br>• Ports, harbours and marinas can also result in adverse impacts on the terrestrial coastal environment. Many of the rivers are fragmented by dam construction, which can interrupt the natural flows of waterways and disrupt the movement of sediment | • Landscape scarring and visual impact<br><br>• Failure of infrastructure facilities due to natural disasters such as landslides, tidal waves, floods and fire etc.<br><br>• Exposure to physical hazards - Ports, harbour and marinas can also have direct/indirect impacts due to changes in coastal dynamics as these infrastructures sometimes include reclamation and can cause erosion many miles away from the site | • Land contamination may be encountered in sites under decommissioning (or construction) due to known or unknown historical releases of hazardous materials or oil, or due to the presence of abandoned infrastructure formerly used to store or handle these materials, including underground storage tanks |

| | | | | |
|---|---|---|---|---|
| Biodiversity loss and deforestation | • Significant habitat loss (or degradation of habitat) for endangered/protected animals and impact on migration routes or nesting habits (e.g., Forests inundated by dam may impact survival of endangered species/ nesting beach may be affected by port built at the beach or some distance away due to coastal hydrodynamics)<br>• Geology and geotechnical hazard; ground movements and vibrations occurring during and after construction of tunnel may affect natural ground and nearby existing structures<br>• Land clearance which leads to deforestation; increased landslide and mud slides risks; contamination; and geotechnical instability etc. | • Impacts on wildlife and biodiversity and encroachments on protected or high-conservation value areas, wildlife habitats, biodiversity hotspots<br>• Potential protected area downsizing, downgrading or degazettement; destruction of primary rainforests, peat forests and other carbon sinks, as well as changes in the type and quality of vegetation<br>• 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<br>• Potential impact arising from land clearance affect the slope stability and cause loss of protective vegetative cover which exposes the soil to erosion and uncontrolled runoff<br>• Soil erosion may be caused by exposure of soil surfaces to rain and wind during site clearing, earth moving, and excavation activities | • Lighting can affect nesting habitats and release of hatchlings, loss of fishing ground etc. | • Pollution from disposal of contaminated wastes and materials<br>• Destruction of vegetation from site development and disposal |

| | | | | |
|---|---|---|---|---|
| | | • Sediment deposition in downstream watercourses reduce the stream capacity and can lead to flooding | | |
| Climate/ GHG emissions | • Emissions arising from potential clearance of forested areas, drainage of peat swamps and land use change due to conversion of agricultural areas with significant carbon stock<br>• Land clearing removes the carbon sequestration potential and may release carbon from the soil and vegetation<br>• Machineries and logistics including material transportation release GHG<br>• Long term impact from ozone depletion and global warming from greenhouse gas emissions from energy consumption<br>• Greenfield developments, and use of fossil fuel in the production of materials, are sources of significant quantities of $CO_2$ emissions | • Climate change due to the release of greenhouse gases from construction and operations<br>• Land clearing removes the carbon sequestration potential and may release carbon from the soil and vegetation<br>• Machineries and logistics including material transportation release GHG<br>• Critical raw material, cement is known to be the second largest emitter of $CO_2$ globally, with significant amounts of emissions generated through the decomposition of limestone and combustion of fuels. Other construction materials such as steel and glass are also known as high emitters | • A secondary source of emissions may include exhaust from diesel engines of earth moving equipment, as well as from open burning of solid waste on-site<br>• Accidents and spills from inadequate or improper handling, storage and use of hazardous materials<br>• The emissions in operating a building includes energy used to heat, cool and light buildings<br>• Carbon emissions through embodied carbon from assembly materials (e.g., wall assembly, ceiling assembly, flooring assembly | • Emissions arising from decomposition of waste materials including organic and inorganic materials such as wastewater and chemical residues |

| | | | | |
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| Water | • Potential impacts of poor waste management practices leading to wastewater and chemical residues negatively impacting quality of adjacent freshwater and groundwater<br>• Poor water management plan/system i.e., alteration of drainage channels, may result in soil erosion and flooding | • Excessive use of freshwater including groundwater during construction and operation of the infrastructure projects<br>• The mobilisation and transport of soil particles may, in turn, result in sedimentation of surface drainage networks, which may result in impacts to the quality of natural water systems and ultimately the biological systems that use these waters<br>• Stormwater runoff can flow directly into the waterbody which affects the water quality, harming aquatic ecosystems | • Increase in saltwater intrusion to groundwater or surface waters; depleting water quality due to rainwater runoff<br>• Erosion resulting from construction can, in turn, lead to sedimentation in receiving waters. Sedimentation may reduce the capacity of ponds and reservoirs, increase flood potential, change water chemistry by introducing new nutrients, or substantially alter aquatic ecosystems by changing streambed, lakebed, and estuary conditions<br>• Dams' construction for instance can degrade water quality through increased salinity, decomposition of organic matter or the leaching of mercury from the soil, making the water unusable for drinking or irrigation | • Potential negative impacts of runoff arising from waste materials including wastewater and chemical residues remaining on site after decommissioning<br>• |
| Pollution and waste | • Potential shortfalls in waste management procedures covering construction, operations and decommissioning phases resulting in negative environmental impacts to areas surrounding the project site<br>• High consumption of raw materials i.e., cements, sand, clay, gravel, and | • Deterioration of air quality due to release of pollutants such as sulfur dioxide ($SO_2$), nitrogen oxide ($NO_x$), Volatile Organic Compounds (VOCs), ozone-depleting substances and particulate matter<br>• Discharge of liquid and solid wastes, which could include contaminated soil, construction refuse, wastewater and dredging sediments and other toxic materials | • Noise and vibrations caused due to operation of pile drivers, earth moving and excavation equipment, concrete mixers, cranes and the transportation of equipment, materials and people<br>• Pollution of surface water bodies (river, marine & coastal waters) due to wastewater discharges<br>• Liquid wastes from operation processes could cause turbidity, increased siltation of reservoir leading to dredging requirements | • Pollution of surface water bodies (river, marine & coastal waters) due to wastewater discharges<br>• Emissions from fugitive dust due to on-site excavations and movement of earth materials<br>• Hazardous solid waste includes contaminated soils, which could potentially be encountered |

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| | calcium carbonate increase risks of exposure to dust and leads to unsafe working conditions | • Disruption and pollution to surface water (lakes, rivers, etc) and groundwater systems and flows due to spills and / or uncontrolled erosion / sedimentation<br>• Construction (and decommissioning) activities may generate emission of fugitive dust caused by a combination of on-site excavation and movement of earth materials, contact of construction machinery with bare soil, and exposure of bare soil and soil piles to wind. Other secondary source of emissions may include exhaust from diesel engines of earth moving equipment, as well as from open burning of solid waste on-site<br>• Noise and vibrations caused by the operation of pile drivers, earth moving and excavation equipment, concrete mixers, cranes and the transportation of equipment, materials and people<br>• Solid wastes from construction processes, such as dredging sediments, garbage or refuse, construction materials, and other discarded materials<br>• Any garbage or refuse; construction material, residual waste from a wastewater treatment plant, water supply treatment plant, or air pollution control facility; and other discarded material, e.g., resulting from industrial, commercial, mining, and | including dredge spoil disposal, bilge and ballast water release from ships to harbour basins, and wastewater which may contain detergents and de-icers<br>• Non-hazardous solid waste generated at construction and decommissioning sites includes excess fill materials from grading and excavation activities, scrap wood and metals, and small concrete spills, as well as office, kitchen and dormitory wastes<br>• Hazardous solid waste includes contaminated soil, which could potentially be encountered on-site due to previous land use activities, or small amounts of machinery maintenance materials, such as oily rags, used oil filters, and used oil, as well as spill clean-up materials from oil and fuel spills<br>• Handling, storage and use of hazardous materials, i.e., chemicals, fuels, oil, paints and varnishes; Use of anti-fouling paints such as Tribulytin (TBT) in ship repair and servicing during construction and operations | on-site due to previous land use activities, or small amounts of machinery maintenance materials (e.g., oily rags, used oil filters, used oil, spill clean-up materials from oil and fuel spills)<br>• Solid wastes (production and disposal) ; non-hazardous solid waste generated at construction and decommissioning sites includes excess fill materials from grading and excavation activities, scrap wood and metals, and small concrete spills.<br>• Other non-hazardous solid wastes include office, kitchen, and dormitory wastes. |

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| | | agricultural operations, and from community activities<br><br>• Construction and decommissioning activities may pose the potential for release of petroleum-based products, such as lubricants, hydraulic fluids, or fuels during their storage, transfer, or use in equipment | | |
| Resource use and efficiency | • Inefficient resource planning leading to excessive clearance of vegetation, disruption to soil and groundwater, negative impacts to freshwater and to surrounding areas adjacent to the project site<br><br>• Significant loss of natural habitat affects ecosystems, damage the landscape and create potential subsidence problems | • Using unknown sources of timber (uncertified timber) may be contributing to illegal logging and deforestation<br><br>• Use of inefficient machinery and equipment that utilise high amounts of fossil fuels may result in excessive energy usage and pollution | • Risks associated with handling, storage and use of hazardous materials, i.e., chemicals, fuels, oils, paints and varnishes and use of anti-fouling paints such as TBT in ship repair and servicing during construction and operations<br><br>• Heavy and energy-intensive operations tend to have high pressure on natural resources - power and water. Buildings are the major single largest contributor to the global warming and accounts for one-third of global carbon emissions | • Release of petroleum-based products, such as lubricants, hydraulic fluids, or fuels during their storage, transfer, or use in equipment |
| **Social**<br>Social inequalities and unrest, community exploitation and chaos are a threat to securing licence to operate. For instance, opposition from communities and even government can potentially delay the development of C&I projects or significantly increase the full-cycle costs, making them unviable, difficult to plan growth and assure returns on capital. Lack of understanding and provisions to secure labour rights and ethical working conditions may lead to labour exploitation (especially for migrant labour). Similarly, C&I players have to incur high costs to educate and ensure safety and compliance with local regulations, affecting CAPEX etc. | | | | |
| Labour rights and working conditions | • Use of undocumented migrant labour and potential exploitation of vulnerable workers (e.g., forced labour including modern slavery indicators or child labour)<br>• Unsafe working conditions and lack of benefits (e.g., sub-standard labour conditions, excessive working hours, lack of healthcare protections, failure to pay minimum wage, withholding of documents, contract substitution, inadequate and unhygienic living quarters etc.)<br>• Gender/racial inequality and marginalisation in the workplace | | | |

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| | • Failure to adequately plan human resource requirements may result in use of unethical recruitment pathways impacting workers' rights and legality<br><br>• Poor project planning that does not include specific considerations for housing and provision of basic sustenance to workers in remote areas including access to healthcare, food and clean water<br><br>• Insufficient understanding of contracts and benefits by workers at the recruitment stage | • Lack of proper contracts between employer and employee especially when involving migrant labour agents may result in forced labour conditions due to lack of understanding of contracts or non-provision of contracts<br><br>• Lack of provision of basic labour protections as per legal requirements for workers' housing, basic needs including access to healthcare, electricity, food and clean water may result in conditions of exploitation<br><br>• Withholding of identifying documentation especially for migrants may result in enforcement actions and undue detainment by authorities | • Lack of proper contracts between employer and employee especially when involving migrant labour agents may result in forced labour conditions due to lack of understanding of contracts or non-provision of contracts<br><br>• Lack of provision of basic labour protections as per legal requirements for workers' housing, basic needs including access to healthcare, electricity, food and clean water may result in conditions of exploitation<br><br>• Withholding of identifying documentation especially for migrants may result in enforcement actions and undue detainment by authorities | • Inadequate fulfilment of contractual obligations and full payment of salaries at decommissioning stage especially for migrant workers that are intended to be repatriated at the end of the contract |
| Occupational Safety and Health (OSH)<br><br>Building sites are inherently dangerous places, with workers at risk of accidents such as falls, as well as long-term health issues such as respiratory and skin diseases.<br><br>Once investments in infrastructure, housing and other facilities have been | • Failure to plan for human resource requirements and legality, safe working conditions, budgeting for personal protective equipment and competent on-site safety personnel | • Falls from elevation associated with working with ladders, scaffolding, and partially built or demolished structures are among the most common cause of fatal or permanent disabling injury at construction or decommissioning sites<br><br>• Accidents and fatalities at work sites lead to harmful impacts on both workers and operations, including disruptions and potential compensation to affected parties | • Over-exertion, and ergonomic injuries and illnesses, such as repetitive motion, over-exertion, and manual handling, are among the most common causes of injuries in construction and decommissioning sites | • Slips and falls on the same elevation associated with poor housekeeping, such as excessive waste debris, loose construction materials, liquid spills, and uncontrolled use of electrical cords and ropes on the ground, are also among the most frequent cause of lost time accidents at construction and decommissioning sites |

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| made in hazardous locations, the risk is locked in place for decades or more, and once in place, it is far more expensive to correct it than it would have been to avoid its creation in the first place. | | and increased scrutiny by regulatory bodies<br>• Complex transportation systems and safety issues due to increased traffics<br>• Exposure to noise, heavy machinery, moving machines, high temperatures, caustic dust, metal dust, heat and vapours from metal working fluids. | | |
| Human rights and community relations | • Illegal, unauthorised or involuntary land acquisition may involve land grab issues and loss of access to source of livelihood for local communities, including impacts to indigenous customary land without Free, Prior, Informed Consent (FPIC) and/or adequate and fair compensation<br>• Low accessibility or consideration for the disabled and vulnerable communities in real estate and construction design<br>• Social unrest due to internal labour migration, new or increased/decreased employment opportunities, income differentials and inflation | • Project-induced in-migration can substantially change the community in which the project operates.<br>• Inadequate, outdated, or unsafe public infrastructures may cause additional risks and burden of tasks for women and vulnerable population / communities<br>• Strain on existing infrastructure and public nuisance from noise and traffic<br>• Damaging effects on cultural heritage (property of historical or religious or cultural importance)<br>• Local business/economic activities affected due to construction activities<br>• Site hazard risks include physical, chemical, or other hazards associated with sites under | • Disproportionate impacts to persons in poverty and vulnerable groups. Vulnerable or marginalised people may have reduced capacity to cope with project impacts. For instance, if a project affects available essential resources, their access to alternative resources is likely to be limited | • Failure to adequately clear waste and residues and fully rehabilitate project area post-decommissioning may negatively impact indigenous peoples and local communities in surrounding areas due to pollution and long-term health effects |

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| | • The stakeholder's social, cultural and possible religious interactions and practices are negatively impacted by the land acquisition and relocation, especially those who have forged long-term relationships and ties in their neighbourhoods and face difficulty to adapt and change with the new infrastructure<br><br>• Relocation can impact vulnerable groups (poor, single-parents especially females, disabled people, elderly who are alone, poor tenants) due to financial constraints | construction and decommissioning. Risks may arise from inadvertent or intentional trespassing, including potential contact with hazardous materials, contaminated soils and other environmental media, buildings that are vacant or under construction, or excavations and structures which may pose falling and entrapment hazards<br><br>• Increased incidence of communicable and vector-borne diseases attributable to construction activities represents a potentially serious health threat to project personnel and residents of local communities<br><br>• Construction activities may result in a significant increase in movement of heavy vehicles for the transport of construction materials and equipment increasing the risk of traffic-related accidents and injuries to workers and local communities | | |
| **Governance**<br>Good governance, even in terms of efficient policies to support the transition to a low-carbon industry or economy. Reputational and punitive damages as well as investigations that result in sanctions may affect cash and credit position of businesses. | | | | |
| Governance mechanism | • Supply chain and revenue transparency/bribery and corruption particularly in developing economies and states with weak governance structures<br>• Sustainable community development - economic dependency of project affected communities<br>• Political and litigious issues resulting from environmental and social risks of the project in a transboundary and/or cumulative impact context | | | |

66. The Tables (2-7) below provide some illustrations of various impact-based/ESG risks that are typical for C&I activities related to a) Property Development b) Sea Ports, Harbours, & Marinas c) Airports d) Dams & Reservoirs e) Pipelines and f) Roads & Railways. These are based on the GHG Protocol, a widely used international accounting standard to quantify the direct (Scope 1) and indirect emissions (Scope 2 & 3) associated with the industry's life cycle. This guidance however focuses only on the Scope 1 and Scope 2 risk impacts. Please refer to Appendix IV : Essential Readings for Guideline on GHG Methodologies and Definitions of Scope 1, 2 and 3. The C&I activities that are not listed here should be mapped and assessed for their risks and impacts by respective FIs, with the help of various guidelines and illustrations provided in this document.

**66.1 Property Development** includes light industrial, commercial and residential developments (i.e., buildings). Property development can occur on greenfield or brownfield sites and can include new builds or the refurbishment and upgrade of existing buildings including the renovation or alteration of exteriors and/or interiors. Typically, developments occur either within existing population centres/built environments or relatively close to them although this is not necessarily always the case.

**Table 2: Property Development Life Cycle & Risk Transmission**

| PROPERTY DEVELOPMENT LIFECYCLE & RISK TRANSMISSION | | | |
|---|---|---|---|
| **Design** | **Construction** | **Operations** | **Decommissioning** |
| • Greenfield development sites (esp. those close to an existing population centre / built environment) to have previously been used for agricultural purposes, hence change of land use from for food production as well as leads to ecological impacts<br>• Involuntary land acquisition and resettlement of local communities without adequate and fair compensation<br>• Brownfield developments close to population centres / built environments typically have had some form of industrial historical use and therefore, may present risks associated with existing contamination<br>• Building design sensitivity to surrounding architecture particularly where the development is to take place in a location with historical/cultural heritage. Visual impacts are of concern include the preservation of “protected views”, and avoiding demolition of heritage and other culturally | • As new builds typically occur more often in-built environments, environmental issues tend to centre around sustainability of building materials (including ethical sourcing and appropriate waste management), building energy efficiency (in some instances including a requirement for a building to generate ~10% of its own energy)<br>• Potential loss of primary forests, PADDD (protected area downsizing, downgrading and degazettement) and other habitats with ensuing impacts on biodiversity<br>• Shadowing and wind tunnel effects – shadowing of neighbouring properties, wind tunnelling and public access including for disabled persons to the building (i.e., available transport infrastructure) and in and around the building (i.e., inclusion of lifts, elevators and ramps)<br>• Materials used to construct the proposed development represent an irretrievable and irreversible commitment of resources such as wood, steel, cement | • Heavy and energy-intensive operations tend to have high pressure on natural resources - power and water<br>• High energy consumption during the occupancy stage of building life cycle for space and water heating, space cooling, lighting, running the equipment and appliance<br>• Low workforce morale and erosion of trust or industrial action due to poor practices can lead to high staff turnover, low productivity, additional training and recruiting costs, and reputational damage | • Wastes from building demolition/ decommissioning are directed to landfills, directly contributing to emissions. With reuse/recycling technologies, contaminated waste/ demolished building materials going to landfills can be reduced<br>• Contamination remediation, land rehabilitation |

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| important buildings, structures and other sites<br><br>• Low accessibility for the vulnerable group such as disabled people in real estate design | • Emissions from construction equipment, trucks and other vehicles used in construction work could be a source of GHG emissions. Dust from construction activities is also a possible source of air pollution<br><br>• Noise, light pollution and public disturbances/nuisance from use of equipment and activities<br><br>• Impacts on roads, local traffic congestion and other infrastructure | | |

**66.2 Sea Ports, Harbours and Marinas** dramatically in scale and purpose - from large-scale industrial facilities designed and constructed to handle large volumes of cargo to small scale facilities that are exclusively recreational and focused marinas for leisure boats and tourism activities. Port / harbour / marina facilities include berths, docksides, fuelling points and fuel storage facilities, lifting infrastructure for cargo handling, warehousing and ancillary office buildings. They also typically support a large number of smaller industries / businesses such as workshops, ship repair facilities, passenger terminals and amenities, customs and excise offices and car parks.

Methods for unloading and loading goods and cargo are numerous but the most common are cranes for lifting and moving sealed shipping containers or large-scale chutes, conveyor belts and / or flexible pipes for loading grain or liquid hydrocarbon products directly into the holds of bulk carriers. Specialist equipment is used for liquefied natural gas (LNG) terminal port facilities. Despite the variety of scales and types of ports, harbours and marinas, the environmental and socioeconomic issues are similar when considered in the life-cycle of a development.

**Table 3: Seaports, Harbours & Marines Lifecycle & Risk Transmission**

| SEAPORTS, HARBOURS & MARINES LIFECYCLE & RISK TRANSMISSION | | | |
|---|---|---|---|
| **Design** | **Construction** | **Operations** | **Decommissioning** |
| • Poor design and planning might result to water pollution and disturbance to marine habitats | • Materials used to construct the proposed development represent an irretrievable and irreversible commitment of resources such as wood, steel, and cement<br><br>• The development of a port, harbour or marina necessarily takes place on a coastline or within an estuarine or river environment. As such, they can and often do result in significant alterations to the local/regional waterway environments. Noticeable impacts might include erosion and salt deposition from dredging and reclamation<br><br>• Habitat depletion, fragmentation and degradation i.e., loss, dissection and / or degradation of marine and/or coastal habitats. The location of a port affects aquatic fauna and flora through changes of water quality, coastal hydrology and bottom contamination. Land reclamation from the sea destroys bottom habitat and | • Solid and liquid wastes (production and disposal) international ship wastes - (turbidity) during port operations<br><br>• Natural hazards and risks accidents port, harbour or nearby waters leading to oil and / or chemical spills and fires<br><br>• Aquatic pollution from use of anti-fouling paints such as Tributyltin (TBT) in ship repair and servicing during construction and operations<br><br>• Possible discharges from ships that could be sources of water pollution are bilge water, ballast water, oily wastes, sewage, garbage and other residues in a ship. Spills of oils, lubricants, fuels and other oily liquids may be other sources of water pollution. Once an oil or oily compound is discharged | • Solid and liquid wastes (production and disposal) dredging sediments, hazardous/non-hazardous waste and construction waste and materials |

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| | displaces fishery resources. Terrestrial fauna and flora may also be altered by the location of a port<br><br>• Disruption and pollution to local hydrological/oceanographic systems and flows: resulting in sedimentation and/or erosion<br><br>• Disruption and pollution to local surface (hydrological) systems and flows: modification to channel depth and cross section may cause an increase in saltwater intrusion to groundwater or surface waters<br><br>• Emissions from construction equipment, work vessels, trucks and other vehicles used in construction work could be a source of GHG emission. Dust from construction activities is also a possible source of air pollution<br><br>• Building or expanding a port often requires relocation of the local community, sometimes causing ethnic, cultural, tribal, or religious conflicts with local people. Industrialisation and modernisation may change the cultural traditions of the local community<br><br>• Construction activities may create a problem of noise and vibration generated by construction equipment, truck traffic, work vessels and other similar sources<br><br>• Wastes from construction activities are mainly spoils generated by dredging. Disposal of dredged material on land may cause destruction of plants, loss of vegetation, leakage of contaminated materials and salt, odour, an unsightly | into water, it is spread on the surface by winds and currents, forming a thin layer<br><br>• Exotic species' invasions from ballast discharge; algal blooms from nutrient runoff; mortality from ship strikes and entanglement in waste<br><br>• Ships are a possible source of airborne emissions such as gasses, smoke, soot and fumes. N02 and S02 are typical pollutants generated by ships while both manoeuvring and berthing and may affect air pollution in the hinterland<br><br>• Adverse interaction with local communities if ecosystem services are damaged or access to use is impaired | |

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| | view and other nuisances to the local community | | |

**66.3** **Airports** typically cover vast areas of land especially where major commercial and international operations are concerned. On an average, up to 75% of airport land is not occupied by buildings. This open area comprises of runways and taxiways, aircraft hard-stands and intervening grassed areas on the "airside" and on the "landside" includes primarily car parking space. Terminal buildings, hangers, administration, maintenance and servicing facilities (e.g., catering, freight handling etc.) and leased activities for non-airport use (e.g., car hire, hotels, etc.) typically occupy the balance of airport land.

**Table 4: Airports Lifecycle & Risk Transmission**

| AIRPORTS LIFECYCLE & RISK TRANSMISSION | | | |
|---|---|---|---|
| **Design** | **Construction** | **Operations** | **Decommissioning** |
| • Potential loss of primary forests, PADDD (protected area downsizing, downgrading and degazettement) and other habitats with ensuing impacts on biodiversity during land clearing<br><br>• Involuntary land acquisition and resettlement of local communities without adequate and fair compensation | • Materials used to construct the proposed development represent an irretrievable and irreversible commitment of resources such as wood, steel, cement<br><br>• Soil erosion is a primary concern as a possible serious adverse impact of construction. During the site-preparation phase, existing land would be cleared and excavation would occur to remove any existing pavement, trees, vegetation, utility lines, and other structures<br><br>• Adverse impacts to water quality due to erosion and subsequent sedimentation are primary concerns during an airport construction project. The increase in suspended sediment concentrations, caused by an increase of eroded materials entering waterways, could induce impacts on aquatic life within the Airport environs<br><br>• Solid and liquid wastes (production and disposal) concrete batching plants and associated contaminated water runoff | • Significant Noise emissions resulting in disturbance of near-by receptors (human and wildlife)<br><br>• Pressure on natural resources power and fuel consumption, often affects floodplains, wetlands and coasts; creating noise and light disturbance<br><br>• Airport operations may produce various pollutants, including volatile organic compounds (VOCs), carbon monoxide (CO), particulate matter (PM), lead, sulphur oxides (SOx), and nitrogen oxides (NOx). They also may produce a complex array of toxic or hazardous air pollutants (HAPs)<br><br>• Airport operations include many activities likely to result in the discharge of pollutants to adjacent water bodies. Those activities include aircraft and airfield de-icing and anti-icing, fuel storage and | |

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| | • Emissions from construction equipment, trucks and other vehicles used in construction work could be a source of GHG emissions. Dust from construction activities is also a possible source of air pollution<br><br>• Temporary construction impacts could include increased noise, dust, vibration, congestion, and truck traffic along roadways<br><br>• Land degradation from soil compaction, alteration of drainage channels and increased erosion | refuelling, aircraft and vehicle cleaning and maintenance, and construction<br><br>• Community health and safety traffic congestion on airport approach roads and within airport “landside” areas | |

**66.4 Dams and Reservoirs** can be of various scale but are typically constructed for two primary reasons – water storage and supply or generation of electricity (i.e., hydroelectricity). Small-scale dams close to urban residential areas, however, may be constructed for recreational purposes (e.g., water sports/fishing etc.).

**Table 5: Dams & Reservoirs Lifecycle & Risk Transmission**

| DAMS & RESERVOIRS LIFECYCLE & RISK TRANSMISSION | | | |
|---|---|---|---|
| **Design** | **Construction** | **Operations** | **Decommissioning** |
| • Habitat depletion, fragmentation and degradation geotechnical instability as a result of dam construction<br>• Building on the Wrong River – such as area of high seismic activity and high conservation value sites within river systems<br>• Poor consultation and failure to address resettlement and downstream livelihood issues almost always results in conflict<br>• Challenges in maintenance of structural integrity during natural catastrophic events (e.g., major land slide, earthquake) is a key concern from community health and safety perspective | • Impact on terrestrial and aquatic ecology; upstream catchment impacts on ecology / biodiversity as a result of catchment flooding. The converse effect of flooding valleys is the “starving" of the downstream river system<br>• Loss of control of downstream water flows during flood events (over-topping of dam) leading to downstream ecological impacts and erosion<br>• Biological disease and pestilence breeding of vectors of water borne diseases (in particular snails and mosquitoes). Dams may cause increases in water sourced illnesses such as typhus, typhoid fever, malaria and cholera<br>• Emissions from construction equipment, trucks and other vehicles used in construction work could be a source of air pollution. Dust from construction activities is also a possible source of air pollution<br>• Heavy usage of energy-intensive concrete, usually produced from coal-fired plants; and greenhouse gas emissions from decomposing biomass in reservoirs | • Production of noxious gases toxic to aquatic life as a result of (anaerobic) decomposition of inundated vegetation on the bottom of reservoirs<br>• Liquid wastes (production and disposal), catchment-based erosion and sedimentation may lead to reduced storage capacity / hydrostatic head and impairing flood control capacity of catchment area<br>• Increased siltation of reservoir may lead to dredging requirements including dredge spoil disposal<br>• Hydrological changes (in the downstream) affect aquatic ecosystem; causing submersion of vast swathes of forest, especially from alteration of river flow and sediment transport. Higher water table affects soil, and can cause landslides and soil erosion | • Natural hazards and risks include dam failure due to seismic events |

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| | | • Storage dams can significantly alter downstream river flows to either a more or less constant flow. A river's natural flow dynamics maintain and support key ecological processes and vital life-cycle stages, thus alterations can significantly alter the integrity of ecosystems<br>• There will be serious changes in the water quality as a result of drainage water returning from irrigation that was done based on the irrigation projects. In other words, over transfer of food and the increase in salt density can raise water lichens and may change water living species<br>• Normal passing ways of territorial animals are hindered since the dam works as a barrier. Meantime the upstream fish movement aiming ovulation and feeding is prevented and thus fish population decreases significantly | |

**66.5** **Pipelines** are considered to include any type and size of infrastructural pipe, cable or service line lying above or underground, e.g., meant for transportation of water, sewerage, oil & gas etc. These may be considered as critical infrastructure which may come with both risks such as land clearing and displacement of local communities and opportunities such as job creation and deployment of techniques that can minimise environmental harm.

**Table 6: Pipelines Lifecycle & Risk Transmission**

| PIPELINES LIFECYCLE & RISK TRANSMISSION | | | |
|---|---|---|---|
| **Design** | **Construction** | **Operations** | **Decommissioning** |
| • Development may entail land acquisition causing disruption to livelihoods and possibly resettlement requirements<br>• Development may also result in habitat loss; fragmentation; human and exotic species' invasions | • Habitat loss / dissection and impacts at stream / river crossings increase due to pipeline infrastructure (e.g., water mains supply from a reservoir)<br>• Sewage disposal / untreated discharge from a treatment plant) may pollute water bodies<br>• Hydro test water disposal and use of chemical additives to treat liquid waste (production and storage) may further contribute to pollution<br>• Emissions from construction equipment, trucks and other vehicles used in construction work could be a source of air pollution. Dust from construction activities is also a possible source of air and noise pollution | • Site security and vandalism, corrosion of pipelines and associated risks of spills or leaks in the absence of preventative technologies in construction measures and protection<br>• Contaminants in runoff, risk of pipeline accidents, leakages, and soil pollution place neighbouring communities at risk | • Generation of significant amounts of potentially hazardous waste from decommissioning of pipelines, which is usually by either totally removing the pipeline or by burying it on site |

**66.6 Roads and Railways:** Road construction typically occurs as an addition to existing networks although new major motorways are often constructed through greenfield areas in order to connect smaller "isolated" networks. Whereas, Railways, include LRT/MRT/RTS infrastructure projects typically require narrower linear areas of land than roads but the facilities also require land for stations and rail depots/rail heads.

**Table 7: Roads & Railways Lifecycle & Risk Transmission**

| ROADS & RAILWAYS LIFECYCLE & RISK TRANSMISSION | | | |
|---|---|---|---|
| **Design** | **Construction** | **Operations** | **Decommissioning** |
| • General Habitat depletion, and forest loss fragmentation and degradation potential for encountering contaminated land in brownfield developments; creation of geotechnical hazards (land slip potential) in cuttings, edge and barrier effects, particularly wider clearings<br><br>• Illegal, unauthorised or involuntary land acquisition may involve land grab issues and loss of access to source of livelihood for local communities, including impacts to indigenous customary land without FPIC and/or adequate and fair compensation | • Railways: Construction of underground subways is likely to require re-routing of services (e.g., pipes, sewers and cables), and the construction of stops / stations is likely to result in changes to urban environment<br><br>• Roads: Disruption to existing road networks 'Surface water pollution due to the build-up and eventual washing-off (during heavy rain) of greases and oils. Major sources of noise and light spill potentially resulting in disturbances to residents that are close to the road; Significant risk to human life due to user behaviour (e.g., speeding and reckless driving causing dust; microclimatic effects from warming; noise)<br><br>• Emissions from construction equipment, trucks and other vehicles used in construction work could be a source of GHG emissions. Dust from construction activities is also a possible source of air pollution<br><br>• Noise, light pollution and public disturbances/nuisance from use of equipment and activities may also cause human and exotic species' invasions | • Delays and damages in maintenance works may result in unforeseen financial implications and losses<br><br>• Railway engineering yards and goods depots range in size and the nature of activities undertaken (i.e., from small maintenance sheds to large scale manufacturing sites). Such activities include the use of a wide range of chemicals and other solvents and often historically have resulted in the contamination (of soil and groundwater)<br><br>• Soil pollution - Fuel combustion, vehicular and track material abrasion, and leaked cargo emit particles containing metals that are deposited in the soils, where they can remain for many years due to their low biodegradability | • Railways: Inappropriate disposal of train cars and railway tracks as well as abandonment of train stations contribute to waste and other social issues, e.g., the train cars and tracks may be left rotten whereas abandoned train stations become sites for dumping or illegal activities<br><br>• Roads: Excavation of the road surface and subsequent ripping-off the ground to foster vegetation regrowth can impact the soil fertility and surrounding landscape. In some instances, minor roads in rural areas may be closed, affecting movement of communities. In some cases, roads are simply left to deteriorate and "naturally" recolonise with vegetation over time |

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| | | • Infrastructures associated with railways (e.g., leakages of petroleum products from fuel storage tanks) contribute, together with pollutants, to aquatic ecosystems, also impeding drainage; creating pollution and sediments in runoff, and littering<br>• Increased accessibility of biodiversity habitats for poachers<br>• GHG emissions and pollutants resulting from vehicles using roads<br>• Disturbance from noise, lights, and vibrations associated with the construction and operation of the railways affect the wildlife and nearby communities<br>• Many animals migrate long and short distances to find mates, food, water and other resources. Large animals need big spaces and lots of freedom to roam. Roads (and road kills) and railways can block wildlife corridors, fragment habitat and push species towards extinction | |

**Risk Measurement**[21]

67. In assessing the risks, FIs should develop different sets of metrics/indicators for different categories of risks or ESG pillars to measure the nature and impact of such risks. Where the metrics or indicators are 'Policies', FIs should investigate if such policies are supported with time-bound programmes, targets, management accountability and oversight.

68. FIs should also assign appropriate risk score/level for each of the impact metrics/indicators. As stated in paragraph 52 of VBIAF, FIs should consider factors such as the likelihood and materiality of the impact-based risks, consideration of stakeholders' interest and national priorities/targets. The assessment should include, where relevant, an analysis of the severity of the environmental, social and governance risks, as well as capacity, commitment and track record of the customer in managing such risks. 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.

69. **Guide to read / apply the following Risk Assessment Table:** The level 1 and level 2 assessments can be undertaken in phases (one after the other or simultaneously) depending on the risk appetite, the maturity of ESG adoption and integration, level of ESG governance etc. Where necessary and relevant, FIs may choose to partner with experts and external assurance bodies to conduct various assessments and generate evidence-based reports.

    69.1 Level 1: The preliminary assessment can be objective, mainly to determine if the businesses produce / track / monitor the most fundamental of widely accepted metrics using a polar question of YES/NO. A 'YES' would qualify positive scoring, where as a 'NO' could attract a negative or zero scoring.

    69.2 Level 2: The next level of assessment could be subjective, where specific thresholds or parameters could be set by FIs assigning weightages or different scores based on the quality (high, medium, low); extent of fulfilling the set thresholds / parameters (%); reduction in negative impact year on year (% / trend); positive impact from various measures taken such as technology deployment, new policy enforcement etc. (subjective indicators of positive impact on environment or communities) etc.

    69.3 While the table below provides some examples of transaction-level risk metrics that can be assessed for scoring, please refer to Appendix IV: Essential Readings, for additional references to international frameworks that may prescribe comprehensive list of thresholds and parameters, where applicable.

[21] As stated in paragraph 52 of VBIAF, impact assessment should be conducted at both customer and transaction levels. The guidance provided in this document focuses on transaction-level risks but may also be used to assess customer-level risk. Customer-level on-boarding process is stated in paragraph 40 and Table 3 of VBIAF.

**Table 8: Transaction-level Risk Metrics and Risk Score**

| Impact / Risk Categories | Inherent Risk Level | Sources of Metrics | Mitigation Benefits | Risk Score Level[22] |
|---|---|---|---|---|
| **Land access, land-use, land-use change and acquisition** | High / Medium / Low | • EIA Report<br>• ESIA Report<br>• SIA Report<br>• Satellite images and geospatial data (i.e., Global Forest Watch)<br>• NGO/Community reports, complaints and protests<br>• Negative media coverage<br>• SEA and Cumulative Effects Assessments | Disbursement subject to effective mitigation | Metrics for type, scale, and location of the land use / projects, implementation of best practices in obtaining FPIC, number of affected communities, availability of resettlement sites and replacement land, team and budget considerations for implementation etc.<br><br>**Level 1:** Polar Analysis (Yes / No)<br>Conducted/secured EIA / ESIA / FPIC and have published relevant reports / documents.<br><br>**Level 2:** Qualitative (High / Medium / Low)<br>High: unsatisfactory report(s)<br>Medium: sufficient evidence that effective mitigation measures are in place to address issues identified<br>Low: satisfactory report(s) |
| **Biodiversity loss and deforestation** | High / Medium / Low | • HCV Assessment<br>• HCS Assessment<br>• IUCN Red List Species<br>• On-site / Desktop Biodiversity Assessment<br>• EIA Report<br>• Erosion and Sedimentation Control Plan (ESCP)<br>• Satellite images and geospatial data (i.e., Global Forest Watch)<br>• NGO/Community reports, complaints and protests<br>• Negative media coverage<br>• SEA and Cumulative Effects Assessments | Disbursement subject to effective mitigation | Metrics for changes in forest cover, % of green spaces in urban areas, hectares of forest restored, funding for biodiversity conservation, % natural habitat increase per sq. km of natural habitat, number of critically endangered, endangered and vulnerable species, absolute number and trend of threatened species in project area and its surroundings before and after project development and throughout operations (as per IUCN Red List of Threatened Species) etc.<br><br>**Level 1:** Polar Analysis (Yes / No)<br>Conducted HCV / HCS / IUCN assessments and have published relevant reports / documents. |

[22] The risk score/level provided is an example. FIs can use either a numeric score (1-5) or categorisation (High, Medium, Low) according to their respective internal risk methodologies. FIs should determine the appropriate risk score/level based on their respective risk appetites. Examples for some of the risk scores/ levels are intentionally not provided as they will depend on the respective project/ transaction baselines. From risk management perspective, inherent risk means an assessed level of raw or untreated risk i.e., natural level of risk without doing anything to reduce the risk. However, this definition should be applied in the context of the project / transaction and with due consideration to the materiality of impact/risk categories.

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| | | | | **Level 2:** Qualitative (High / Medium / Low<br>High: unsatisfactory report/s<br>Medium: sufficient evidence that effective mitigation measures are in place to address issues identified<br>Low: satisfactory report/s |
| **Climate/ GHG emissions** | High / Medium / Low | • Climate Adaptation Strategy<br>• Emissions Abatement Strategy Document<br>• GHG Emissions Data, covering scope 1, 2 & 3 (in absolute terms, physical activity-based emission, or economic-based emission)<br>• Public Disclosures (Sustainability/Integrated Report, CDP, GRI Standards etc.)<br><br>(Refer to Appendix IV: Essential Readings for GHG Calculator / Methodology) | Better Terms subject to consistent reductions | Metrics for Total energy consumed during the production, use of alternative fuels and renewable energy, GHG per tonne, air quality (measures SOx, NOx, TSP, TSP, PM10, PM2.5), % reduction is emissions from deployment of technology or other mitigation efforts etc.<br><br>**Level 1:** Polar Analysis (Yes / No)<br>Measured the carbon footprint as per the defined boundary and scope and have published relevant reports / documents.<br><br>**Level 2:** Qualitative (High / Medium / Low)<br>High: no reduction targets or mitigation action plan<br>Medium: some evidence of mitigation action plan but, not targets<br>Low: consistent reduction of emissions and progress towards achieving targets[23] |
| **Water** | High / Medium / Low | • Water Source Vulnerability Assessment<br>• Effluents Management Plan<br>• Water Management Policy<br>• Water Quality Index (that checks for Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), Oil & Grease (O&G, Ammoniacal Nitrogen, Turbidity, Faecal Coliform etc.) | Better Terms subject to consistent reductions<br>& Proper management & usage data | Metrics for total water withdrawn and water consumed, water savings, recycled water used, % of water withdrawn and consumed from high baseline water stress, % of wastewater treatment works meeting licencing conditions, baseline water stress, water scarcity, projected change in drought occurrence, drought frequency probability, estimated flood occurrence, projected change in flood occurrence etc.<br><br>**Level 1:** Polar Analysis (Yes / No)<br>Defined a water management policy and undertaken / tracked water vulnerability, quality, and waste assessments<br><br>**Level 2:** Qualitative (High / Medium / Low) |

[23] Targets can be expressed either in absolute emissions or carbon/emissions intensity

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| | | | | High: no policy and/or assessments<br>Medium: policy defined but partial assessment with some mitigation action<br>Low: policy in implementation and assessments undertaken, with targets and action plan |
| **Pollution and waste** | High / Medium / Low | • Pollution & Waste Management Strategy e.g., waste disposal through: 1) reuse 2) recycling, 3) incineration,4) landfill 5) other means<br>• On-Site Assessment / Report or Register (waste/ effluent/ chemical storage, handling and disposal)<br>• AQI (Air Quality Index) Report<br>• Environmental Monitoring Report<br>• Environmental Management Plan | Disbursement subject to effective mitigation | Metrics for amount of waste produced/revenue, % of total waste diverted from landfill and other disposal options, % of reusable/recyclable material, noise and vibration sampling as well as monitoring, light intensity measurement, air quality (SOx, NOx, TSP, PM10, PM2.5) and water quality, waste/ effluent/ chemical storage, handling and disposal etc.<br><br>**Level 1:** Polar Analysis (Yes / No)<br>Defined a waste management policy or strategy with assessments / audits on waste<br><br>**Level 2:** Qualitative (High / Medium / Low)<br>High: no policy and/or assessments<br>Medium: policy defined but partial assessment with some mitigation action<br>Low: policy in implementation and assessments undertaken, with targets and action plan |
| **Resource use and efficiency** | High / Medium / Low | • Inventory of Raw Materials & Impacts[24](Life Cycle Assessment)<br>• Procurement Strategy / Sustainable Sourcing Policy | Better Terms subject to use of sustainable sources & recycle materials | Metrics for consumption of raw materials (steel, concrete, tiles, timber etc.), % of materials used from sustainable sources (certified), recycle materials[25], % of renewable content or % non-virgin content; % water circularity; % renewable energy etc.<br><br>**Level 1:** Polar Analysis (Yes / No)<br>Defined a sustainable sourcing policy and criteria and an inventory maintained<br><br>**Level 2:** Qualitative (High / Medium / Low)<br>High: no inventory and/or policy<br>Medium: policy defined but not implemented as strict criteria |

[24] An established and internationally recognised life cycle assessment (LCA) to properly understand upstream and downstream impacts. The LCA could be evaluated based on the contribution of the production process to the environment, including categories such as global warming potential (GWP), land acidification, land occupation, respirable organic, and human toxicity.
[25] Corporate Website, wbcsd.org, Circular Transition Indicators, 2021

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| | | | | Low: policy in implementation and sourcing criteria delivers positive ESG impacts |
| **Labour rights and working conditions** | High / Medium / Low | • Collective Bargaining Agreements<br>• Labour Welfare and Wellbeing Provisions / Policies<br>• Labour Management Policy (formal contracts, training, minimum wage vs. living wages, overtime etc.)<br>• Grievance/ complaints Mechanism (including Transparent, Safe & Independent Grievance Procedures)<br>• Desktop/ On-site Assessment / Report (working conditions, living arrangements etc.)<br>• Non-Discrimination and Gender Equality Policy<br>• Gender-based Violence and Harassment (GBVH) Policy<br>• Equal Opportunities Policy (in the company's workforce and procurement practices) | Disbursement subject to effective mitigation | Metrics for % of workforce covered under collective bargaining agreements; % covered by insurance; quality of housing and sanitation; minimum wage vs. living wage ratio; % of dispute resolution, % use of migrant and vulnerable workers, compliance with national employment and labour laws, and occupational health and safety laws etc.<br><br>**Level 1:** Polar Analysis (Yes / No)<br>Defined all relevant policies and tracked relevant metrics<br><br>**Level 2:** Qualitative (High / Medium / Low)<br>High: no policies and programmes<br>Medium: policies defined but metrics tracked partially<br>Low: policy in implementation and programmes deliver positive data on social impact |
| **Occupational Safety and Health (OSH)** | High / Medium / Low | • OSH Management – Policy, Training, Monitoring, Audits<br>• Certification of Fitness for machinery in plant<br>• Steam Engineer's Certificate of Competency<br>• Machinery Maintenance Reports<br>• On-site Assessment for Working Conditions, Safety & Equipment | Better Terms subject to consistent OSH track record<br><br>• Satisfactory machinery maintenance reports<br>• Insurance coverage for workers | Metrics for number of occupational injuries/ accidents / health issues / fatalities; lost-time injury; accident / incident / severity / fatality rates; cases/disputes; % workers covered by takaful/insurance; % of employees with protection (e.g., PPE, PERKESO); provision for compensation, provision of a health and safety (or similar) policy supporting an embedded associated management system, project certified to ISO 45001 for Health and Safety etc.<br><br>**Level 1:** Polar Analysis (Yes / No)<br>Defined all relevant policies and tracked relevant metrics<br><br>**Level 2:** Qualitative (High / Medium / Low)<br>High: no policies and programmes<br>Medium: policies defined but metrics tracked partially<br>Low: policy in implementation and programmes deliver positive data on OSH |

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| **Human rights and community relations** | High / Medium / Low | • Social Impact Assessment or SIA (including community demography and profile, impacts by community profiles i.e., social hierarchy, ethnic groups, socio-cultural and religious practices, skills profile and public services / resources, provisions for labour standards, equal wages, non-discrimination policy etc.)<br>• CSR Policy and Programmes<br>• Community engagement policy<br>• Community Complaints Procedures<br>• Community / NGO reports/complaints<br>• Free, Prior, Informed Consent Policy<br>• Police reports<br>• Satellite images and geospatial data (i.e., Global Forest Watch)<br>• SEA and Cumulative Effects Assessments<br><br>, - | Disbursement subject to effective mitigation | Metrics for number of engagement programmes including consultation with vulnerable groups, number of legal cases/disputes; cases of community / stakeholders' opposition; complaints and resolution; instances of gender-Based violence and harassment (GBVH) in local communities; protests, social activism, law-suits or legal action by community; and negative media coverage etc.<br><br>**Level 1:** Polar Analysis (Yes / No)<br>Undertaken social impact assessment and defined a CSR policy, with community relations programmes<br><br>**Level 2:** Qualitative (High / Medium / Low)<br>High: no policy and/or assessments<br>Medium: policy defined but partial assessment of human rights with some mitigation action<br>Low: policy on CSR in implementation with community investments and assessments undertaken, with targets and action plan |
| **Governance** | High / Medium / Low | • Anti-Corruption / Money Laundering Policy<br>• Enterprise Risk Management Framework (with ESG Integration)<br>• Statement of Commitment on Sustainability and Climate Change | Better Terms subject to effective governance mechanisms | Metrics for % of operations scanned for the risk of corruption and corrupt business practices; number of ESG risks identified and integrated into the ERM framework; policies and governance in place to monitor and manage incidences of corruption and corrupt practices (and their impacts), complaints, and resolutions; % of policies supported with management KPIs and targets etc.<br><br>**Level 1:** Polar Analysis (Yes / No)<br>Defined relevant policies, with due diligence in place to monitor and manage governance issues<br><br>**Level 2:** Qualitative (High / Medium / Low)<br>High: no policies and inadequate governance<br>Medium: policy defined but enforcement is weak or partially effective<br>Low: policies in implementation with regular audits on governance aspects |

**When assessing the risks, FIs may additionally review various cash flow projection variables such as the following:**

- **Revenues:** assess the split between traditional and low-carbon products.
- **Costs:** assess the impact of R&D costs on gross profit margin of using low-carbon technology, and the ability to pass on carbon costs to customers.
- **Cash flows: a**ssess $CO_2$ emissions per tonne of building material produced / potential carbon tax liability of upgrading equipment / investment in energy efficient machinery.

## Risk Mitigation

70. FIs should review the broad mitigation strategies of their customers in the context of their outcomes and how they will support the sector's overarching ESG strategies. FIs should also refer to BNM's Climate Change and Principle-based Taxonomy: Guiding Principle 4 on Remedial Measures to Transition for better alignment.

**Table 9: Risk Mitigation and Remedial Measures**

| Risk Categories | Impact | Risk Mitigation and Remedial Measures[26] |
|---|---|---|
| **Land access, land-use, land-use change and acquisition**<br><br>These impacts occur during pre-construction stage, where major impacts are associated with breach of National & International's Policies as well as issues related to land acquisition and settlements | • Significant loss of natural habitat/ biodiversity and ecosystem services from Land access, land-use, land-use change and acquisition (on-shore and / or off-shore e.g., marina, dams) | • Ensure the new developments are not in breach of the National Physical Plan (NPP), Central Forest Spine: Masterplan for Ecological Linkages (CFS) or Heart of Borneo (HoB)[27]<br>• Devise a Conservation Plan to safeguard protected areas and avoid degradation and a Restoration Plan in the event of unavoidable damages<br>• Encourage new development/ project on the Brownfield area instead of Greenfield area |
| | • Damage or loss of archaeological heritage and sites of cultural / historical /geological importance due to land use and acquisition for development | • Ensure the new developments are not in breach of UNESCO World Heritage List<br>• Propose alternate site for religious building relocation |
| | • Encroachment into indigenous land, acquisition of land without FPIC (perceived "land grabbing") | • Conduct a verification of best practices in obtaining FPIC from affected communities prior to any development activities<br>• Establish and observe FPIC procedures as per recognised by UNDRIP<br>• Implement grievance mechanisms and address issues |

[26] Illustrations Only. Not Comprehensive.

[27] Corporate Website, mybis.gov.my, Protected Areas, 2021

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| | • Illegal or unauthorised land acquisition may involve land grab issues and loss of access to source of livelihood for local communities | • Undertake an exercise for stakeholder identification, consultation and disclosure (including governmental / national / national / regional / local stakeholders / vulnerable communities)<br>• Conduct quality interactions with impacted community to identify alternative strategy to continue economic activities, prioritise job opportunities available for impacted community, build capacity/upskill the community with relevant skillset for potential economic/job opportunities |
| | • Acquisition of local community home/ land/properties/ public infrastructure (school, park), religious & cultural sites (cemetery, mosque, temple) result in fears & worries among the public regarding relocation and compensation<br>• Acquisition of agricultural land, commercial and industrial land & properties lead to strong objections due to the income disruption/ losses | • Engage early with affected stakeholders, effective communication strategy and provide adequate information on the acquisition process, engage in dialogues to address specific needs of the community and give them ample time to make alternative plans<br>• Avoid development on the religious and cultural sites due to sensitive nature of these places<br>• Make provision for fair and reasonable compensation to the affected stakeholders by ensure fair valuation of land/properties and income loss<br>• Carryout land acquisition procedures in accordance to the Land Acquisition Act which allow for compensation of land at market values |
| **Biodiversity loss and deforestation**<br><br>A loss of biodiversity typically occurs when habitats can no longer support the present species. This may happen due to invasive activities (e.g., sea bottom trawling, urbanisation, fossil fuel harvesting), or due to effects of global warming (e.g., flooding or drying of wetlands) | • Deforestation of virgin land and encroachment into forest reserves<br>• Significant habitat loss (or degradation of habitat) for endangered/protected animals and impact on migration routes or nesting habits (e.g., Nesting beach may be affected by port built at the beach or some distance away due to coastal hydrodynamics) | • Ensure the new developments are not in breach of National Physical Plan (NPP), Central Forest Spine: Masterplan for Ecological Linkages (CFS) or Heart of Borneo (HoB)<br>• Ensure the new developments are not in breach of National Policy on the Environment, National Policy on Biological Diversity, Environmental Quality Act,2002, Environment Protection Enactment 1974 & Natural Resources and Environment Ordinance,1993<br>• Avoid all nationally and internationally recognised HCV areas<br>• Maintain, safeguard, increase natural landscape area, natural habitat and ecosystem services |
| | • Land clearance which leads to deforestation; increased landslide and mud slides risks; contamination; ad geotechnical instability etc.<br>• Potential impact arising from land clearance affect the slope stability and cause loss of protective vegetative cover which exposes the soil to erosion and uncontrolled runoff | • Conduct appropriate site alternatives assessment and harmonisation of the project design with the natural landscape - avoidance of forest fragmentation, erosion, re-vegetation and reforestation to ensure key ecosystem services are maintained<br>• Take in to account appropriate siting and design of infrastructure i.e., slope stabilisation measures, avoid forest fragmentation, incorporate wildlife crossing etc.<br>• Conserve natural landscape where protected areas shall remain protected and do not degrade |

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| | | • Install instrumentation to monitor ground movement during and after construction works that will allow mitigation of geotechnical issues in a timely manner. |
| | • Soil erosion may be caused by exposure of soil surfaces to rain and wind during site clearing, earth moving, and excavation activities<br>• Sediment deposition in downstream watercourses reduce the stream capacity and can lead to flooding | • Prepare and implement Erosion and Sedimentation Control Plan (ESCP)as the strategy to monitor and mitigate the impact of soil erosion and sedimentation. ESCP shall reflect the measures and control at different stage of earthworks and should be approved by Department of Irrigation and Drainage Malaysia prior to commencement of the project/ development<br>• Prepare and implement Land - Disturbing Pollution Prevention and Mitigation Measures (LD-P2M2) on the prevention, mitigation and control of discharge from the construction area containing the major pollutant<br>• Preserve and protect existing soil and re-vegetation to specific site areas (cleared ground) during construction<br>• Stockpile and reuse excavated topsoil for re-vegetation<br>• Implement sediment control practice such as sediment basin and sediment trap which design & specification as per 'Urban Stormwater Manual for Malaysia (MASMA)' published by Department of Irrigation and Drainage Malaysia<br>• Ensure proper drainage systems are in place as well as temporary drains to intercept runoff and divert away from work area<br>• Run-off diversion systems<br>• Implement staging and spill prevention plan (e.g., staging area)<br>• Minimise the disturbance of land by project design following the topography of the site in order to minimise cut and fill<br>• Undertake earthwork activities in phases to minimise the disturbed area |
| | • Impacts on wildlife and biodiversity and encroachments on protected or high-conservation value areas, wildlife habitats, biodiversity hotspots<br>• Lighting can affect nesting habitats and release of hatchlings, loss of fishing ground, etc. | • Conduct site inventory to preserve the protected areas, existing endangered species and/or critical habitats on the sites<br>• Devise a Habitat Restoration / Rehabilitation Plan<br>• Consult with Jabatan Perhilitan on guidance to deal with wildlife encounters, especially for endangered species<br>• Engage with local community and stakeholders on biodiversity management<br>• Integrate Nature-based Solutions (conservation of key ecosystems) into development design<br>• Incorporate ecological linkages as part of the planning and design stage of developments and ensure these linkages are conducive as wildlife corridors)<br>• Plan the phasing and direction of site clearing activities to enable wildlife to escape to other undisturbed parts of the forest away from the project site.<br>• Construct some form of fencing around the project site to prevent wildlife from entering the work site |

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| | | • Prepare a rehabilitation and remediation plan in the event of decommissioning |
| | • Potential protected area downsizing, downgrading or de-gazettement; destruction of primary rainforests, peat forests and other carbon sinks | • Determine site selection procedures to avoid-long term disturbance and impact on local environment<br>• Minimise clearing of vegetation / limit disturbance to vegetation and landforms e.g., use "thumpers" in preference to explosives;<br>• Develop full decommissioning, restoration and aftercare plan in consultation with local authorities, communities and stakeholders |
| | • Geology and geotechnical hazard; ground movements and vibrations occurring during and after construction of tunnel may affect natural ground and nearby existing structures | • Conduct detailed soil investigation and geological studies to determine suitable and safe foundation design |
| **Climate/ GHG emissions**<br><br>GHG emissions and reporting of Scope 1, Scope 2 and Scope 3 emissions in terms of carbon dioxide equivalent ($CO_2e$).[28] | • Climate change due to the release of greenhouse gases from construction and operations | • Have a science-based decarbonisation strategy to meet GHG reduction targets following a robust methodology such as the Sectoral Decarbonisation Approach[29].<br>• Use sector-scenarios from the IEA 2DS model to calculate a 2-degree compatible company intensity pathway, which can inform a strategy to reduce absolute emissions and emissions intensity.<br><br>**Measures to support a science-based pathway can include:**<br><br>• Invest in and transition to sustainable energy[30] and low-carbon fuel portfolios<br>• Improve operational efficiency and reduce emissions in upstream operations<br>• Improve energy efficiency and other carbon intensity reduction<br>• Define the carbon offsetting mechanism<br>• Reduce GHG-intensive activities and deploy efficient technologies to reduce emissions e.g., carbon capture and storage technology<br>• Reduce Scope 1 and 2 emissions by managing methane leaks, venting and flaring |

[28] $CO_2e$ equivalent refers to all greenhouse gasses, including carbon dioxide ($CO_2$), methane ($CH_4$) and nitrous oxide ($N_2O$), and the global warming potential (GWP) expressed in terms of carbon dioxide equivalent ($CO_2e$)

[29] This approach allocates the remaining global 2 degrees carbon budget to different sectors, and within each sector companies can derive their science-based emission reduction targets based on their relative contribution to the total sector activity and their carbon intensity relative to the base year.

[30] Covers both renewable energy and energy efficiency

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| | | • Increase operational resilience through climate change adaptation, a process which involves identification of risks & vulnerabilities, planning, assessment & selection of options, implementation and monitoring & evaluation (IPIECA 2013[31])<br><br>**Mitigation Strategies[32] for Scope 1 and Scope 2 can include**<br><br>• Electrifying operations and incorporating renewables to fulfill power needs.<br>• Adopting low or no emission fuels such as hydrogen, e-fuels/synthetic fuels, biofuels and ammonia<br>• Improving logistics to reduce fuel consumption. For instance, invoking the principles of a sharing economy, some operators coordinate logistics,<br>• including trucks, marine vessels and helicopters, to optimize transport times and volumes<br>• Reducing routine flaring<br>• Employing methane capture<br>• Optimising production and reservoir management through the use of digital tools such as IoT sensors, digital twins, and virtual reality to model scenarios, monitor operations, track emissions and energy usage and proactively maintain equipment<br>• Producing lower-emission products moving from one hydrocarbon to another (for example, from coal to natural gas) or creating another product (such as biofuels or syngas)<br>• Increasing reuse or employing additive manufacturing to decrease waste and increase supply-chain flexibility<br><br>**Other considerations**<br><br>• Align with the "G20 Principles for Quality Infrastructure Investment" Principle 4: "Building Resilience against Natural Disasters and Other Risks" (including human-made risks)<br>• Factor-in Sound disaster risk management at design stage. A comprehensive disaster risk management plan should influence the design of the project, the ongoing maintenance and consider the re-establishment of essential services |
| | • Critical raw material, cement is known to be the second largest emitter of $CO_2$ | • Encourage the use of Industrialised Building System (IBS) to reduce site related operational carbon emission |

[31] Addressing adaptation in the oil and gas industry, Climate Change, ipieca, 2013

[32] The 2030 Decarbonisation Challenge. The Path to the Future of Energy, Oil & Gas, Deloitte, 2020

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| | globally, with significant amounts of emissions generated through the decomposition of limestone and combustion of fuels | |
| | • Carbon emission through embodied carbon from assembly materials (e.g., wall assembly, ceiling assembly, flooring assembly | • Evaluate value of embodied carbon and choose production materials with lower embodied carbon |
| | • A secondary source of emissions may include exhaust from diesel engines of earth moving equipment, as well as from open burning of solid waste on-site | • Use alternative fuels such as low-carbon fuels and renewable energy, where possible<br>• Prohibition of open burning of solid waste |
| **Water** | • Excessive use of freshwater including groundwater during construction and operation of the infrastructure project | • Use taps with automatic shut-off valves and use high water pressure and optimised nozzles<br>• Use counter-current wash techniques for primary wash of raw materials<br>• Reduce water consumption through recycling process streams |
| | • Pollution to surface water bodies (e.g., lakes, rivers, coastal) & groundwater systems due to spills and / or uncontrolled erosion / sedimentation<br>• Pollution to surface water bodies (e.g., lakes, rivers, coastal) & groundwater systems due to discharge of wastewater and untreated sewage /spills / uncontrolled erosion / sedimentation<br>•<br>• Untreated wastewater release into natural streams affect marine ecosystems and the communities that depend on it. | • Implement sediment control practice such as sediment basin and sediment trap which design & specification as per 'Urban Stormwater Manual for Malaysia (MSMA)' published by Jabatan Pengaliran dan Saliran (JPS) Malaysia<br>• Temporary drainage channels and perimeter swale to divert the pollutant water to the treatment device/facility (e.g.: sediment basin & sediment trap)<br>• Construction of coastal erosion prevention structures in the area such as rock revetment, river training wall, groynes or sine slab<br>• Optimise product conveying systems to reduce contact of raw material and product with water, e.g., by using dry instead of wet conveying systems<br>• Put in place sewage treatment plants or processes to remove pollutants before discharge |
| | • Stormwater runoff can flow directly into the waterbody which will affect the water quality, and harming aquatic ecosystems | • Implement Storm Water Management Plan as per 'Urban Storm Water Management Manual for Malaysia' (Manual Saliran Mesra Alam (MSMA))<br>• Segregate or divert clean water runoff to prevent it mixing with water containing a high solids content, to minimize the volume of water to be treated prior to release<br>• Increasing on site infiltration and remove runoff pollutant by using natural mechanism (e.g.: wetlands)<br>• Remove pollutant in runoff in impervious area by using structural measures (e.g.: rainwater collection system, treatment device, manhole & ponds) |

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| | • The mobilisation and transport of soil particles may, in turn, result in sedimentation of surface drainage networks, which may result in impacts to the quality of natural water systems and ultimately the biological systems that use these waters | • Road sweeping can be carried out to remove sediment from roadways and prevent sediment from entering drains or water systems |
| **Pollution and Waste**<br><br>Waste management, air pollution, noise pollution and land pollution | • Deterioration of air quality due to release of pollutants such as sulfur dioxide ($SO_2$), nitrogen oxides (NOx), Volatile Organic Compounds (VOCs), ozone-depleting substances and particulate matter | • Prepare an Air Quality Management Plan, with pollution abatement measures and continuous monitoring<br>• Use low VOC materials for paints, coatings, sealants (for indoor) and adhesive |
| | • Construction (and decommissioning) activities may generate emission of fugitive dust caused by a combination of on-site excavation and movement of earth materials, contact of construction machinery with bare soil, and exposure of bare soil and soil piles to wind. | • Spillage boxes to be installed in all concrete trucks to prevent spillage on public roads<br>• Lorries that carry raw materials should be covered with tarpaulin to prevent spillage and pollution to atmosphere<br>• Provide wash through area at all site exit points to clean lorries and trucks before entering public roads |
| | • Construction and decommissioning activities may pose the potential for release of petroleum-based products, such as lubricants, hydraulic fluids, or fuels during their storage, transfer, or use in equipment<br>• Hazardous solid waste includes contaminated soils, which could potentially be encountered on-site due to previous land use activities, or small amounts of machinery maintenance materials, such as oily rags, used oil filters, and used oil, as well as spill clean-up materials from oil and fuel spills | • Proper packaging, labelling and storage of waste, oil and grease as per 'Guidelines for Packaging, Labelling and Storage of Scheduled Wastes in Malaysia' published by DOE.<br>• All waste fuel oil and lubricant should be collected, sorted in leak proof drums and disposed as per guideline by DOE.<br>• Provide adequate secondary containment for fuel storage tanks and for the temporary storage of other fluids such as lubricating oils and hydraulic fluids<br>• Use impervious surfaces for refuelling areas and other fluid transfer areas and train workers on the correct transfer and handling of fuels and chemicals and the response to spills |
| | • Handling, storage and use of hazardous materials, i.e., chemicals, fuels, oil, paints and varnishes; Use of anti-fouling paints such as Tribulytin (TBT) in ship repair and | • Proper packaging, labelling and storage of waste, oil and grease as per 'Guidelines for Packaging, Labelling and Storage of Scheduled Wastes in Malaysia' published by DOE.<br>• Implement appropriate procedures and protocols for storage, handling and use and disposal of hazardous substances |

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| | servicing during construction and operations | • Assess the presence of hazardous substances in or on building materials (e.g., polychlorinated biphenyls, asbestos containing flooring or insulation) and decontaminating or properly managing contaminated building materials |
| | • Solid wastes (production and disposal); non-hazardous solid waste generated at construction and decommissioning sites includes excess fill materials from grading and excavation activities, scrap wood and metals, and small concrete spills.<br>• Cutting and felling existing tree for land clearing activities accumulate significant amount of biomass which can affect water quality deterioration<br>• Other non-hazardous solid wastes include office, kitchen, and dormitory wastes. | • No open burning and prohibition of solid waste disposal into waterways<br>• Implementation of solid waste management. The solid waste can be disposed at the approve dumpsite/ landfill.<br>• The biomass generated from site clearing and earthworks activities shall be disposed using proper disposal method such as:<br>  ○ Shredding Method: Use of shredded machine to shred trees into small pieces and fine biomass, and then transported to the designated area/disposal<br>  ○ Mulching Method: Shredded biomass can be grounded into fibrous material and can be mulched on the site area<br>• Provide sufficient waste receptacles at the site, worker quarters and strategic locations for proper disposal and minimise littering |
| | • Noise and vibrations pollution are caused by the operation of pile drivers, earth moving and excavation equipment, concrete mixers, cranes and the transportation of equipment, materials and people. | • Plan Noise Pollution Reduction and Management to ensure operations with regard to noise and light pollution are in line with local and environmental requirements e.g., an Aircraft Noise Abatement and Management Plan includes flight path control, noise abatement technologies and continuous monitoring of noise levels to ensure compliance with legal requirements<br>• Site works/ construction should be only done during specific time to minimize noise which disturb local community |
| | • Land contamination may be encountered in brownfield sites or sites under decommissioning (or construction) due to known or unknown historical releases of hazardous materials or oil, or due to the presence of abandoned infrastructure formerly used to store or handle these materials, including underground storage tanks. | • Soil condition test should be conducted on new development/ project on the Brownfield area and safety measures should be implemented to neutralize contaminated soil<br>• Understand the historical use of the land with regard to the potential presence of hazardous materials or oil prior to initiation of construction or decommissioning activities<br>• Prepare plans and procedures to respond to the discovery of contaminated media to minimise or reduce the risk to health, safety, and the environment<br>• Manage contaminated media with the objective of protecting the safety and health of occupants of the site, the surrounding community, and the environment post construction or post decommissioning<br>• Prepare a management plan to manage obsolete, abandoned, hazardous materials or oil |
| | • Movement of heavy vehicles during construction phase will cause traffic hazard | • Implement traffic management plan to address issue regarding traffic hazard<br>• Provide sufficient signage and flagmen to control and direct traffic on the roads affected by sites |

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| | | • Include a plan to repair the damaged road caused by heavy vehicles |
| **Resource Use and Efficiency** | • Using unknown sources of timber (uncertified timber) may be contributing to illegal logging and deforestation | • Use sustainable raw materials such as PEFC / FSC certified for wood product and timber flooring<br>• Use recycled materials such as steel can reduce cost and improve energy efficiency |
| | • Heavy and energy-intensive operations tend to have high pressure on natural resources - power and water. Buildings are the major single largest contributor to the global warming and accounts for one-third of global carbon emissions | • Take an integrated approach to minimising building's energy consumption e.g., reduce heating, cooling, and lighting demand through passive strategies such as climate-responsive design, daylighting, and conservation practices<br>• Optimise building performance by employing Energy Modelling Programmes during design<br>• Optimise system control strategies by using occupancy sensors, $CO_2$ sensors, and other air quality alarms during operation |
| **Labour Rights and Working Conditions** | • Child labour and working conditions (labour intensive, long working hours, pay, work by hand) | • Follow international standards and guidelines, e.g., those prescribed by ILO<br>• Ensure the HR Policy elaborates on the details of labour/employee right and benefit<br>• Promote and strengthen freedom of association and the right to collective bargaining<br>• Educate vulnerable workers about the laws limiting their freedom of expression so they can better protect themselves.<br>• Conduct due diligence on employment and recruitment agencies supplying workers<br>• Adopt non-discriminatory company policies and raise awareness of discrimination<br>• Ensure that employees and contracted workers enjoy equal treatment and labour rights, and that grievance systems are known, accessible and effective.<br>• Institutionalise grievance mechanisms / a whistle-blowing policy<br>• Assess how projects at and beyond community level affect gender equity, men and women access to and control of resources, and power of decision-making and apply appropriate management strategy |
| | • Poor living conditions such as labour quarters provided at site do not meet the standard of basic labour rights and working conditions lead to bad hygiene and poor sanitary quality within site | • Ensure that the workers quarters at the site are built to a liveable standard and furnished with all basic necessities, e.g., water, electricity, proper sanitary facilities and sewerage system. |
| | • Gender/racial inequality and marginalisation in the workplace | • Adopt equal employment policies and safeguards, and create a work environment that supports equality and respect, non-discrimination and anti- |

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| | | harassment, and promotes gender equity in all employment-related decisions e.g., Gender-based violence and harassment (GBVH) policy<br><br>• Champion efforts to achieve inclusive staff profile, with women and people from the affected groups in positions of responsibility. This should also overcome barriers for women and affected groups in terms of skill levels, mobility, and social norms, access or control over resources |
| **Occupational Safety and Health (OSH)** | • Accidents and fatalities at work sites can lead to operational disruptions, potential compensation to affected parties and increased scrutiny by regulatory bodies<br>• Exposure to noise, heavy machinery, moving machines, high temperatures, caustic dust, metal dust, heat and vapours from metal working fluids<br>• Over-exertion, and ergonomic injuries and illnesses, such as repetitive motion, over-exertion, and manual handling, are among the most common causes of injuries in construction and decommissioning site | • Provide safety gears for construction workers, e.g., safety helmets, boots, and protective harness as per Occupational Safety and Health Act 1994 (OSHA)<br>• Adopt health and safety risk management systems, devise site security plans, deliver technical training, plan adequately on process and workflow design, enforce technical measures ensuring distance from danger zones, and apply appropriate ventilation and filters<br>• Devise Emergency Preparedness, Management, and Response Plans to protect communities and workers against facility failure scenarios<br>• Appoint Safety and Health officer to monitor and inspect on the safety, health and hygienic problem |
| | • Falls from elevation associated with working with ladders, scaffolding, and partially built or demolished structures are among the most common cause of fatal or permanent disabling injury at construction or decommissioning sites<br>• Slips and falls on the same elevation associated with poor housekeeping, such as excessive waste debris, loose construction materials, liquid spills, and uncontrolled use of electrical cords and ropes on the ground, are also among the most frequent cause of lost time accidents at construction and decommissioning sites | • Implement good house-keeping practices, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths; cleaning-up excessive waste debris and liquid spills regularly; locating electrical cords and ropes in common areas and marked corridors; use of slip retardant footwear; training and use of temporary fall prevention devices etc.<br>• Provide workers with training in the proper use of equipment (including the proper use of machine safety devices) and personal protective equipment (PPE), such as hearing protection |
| **Human rights and community relations** | • Involuntary resettlement may require relocation of populations, with associated compensation<br>• The stakeholders social, cultural and possible religious interactions and practices are negatively impacted by the | • Undertake an exercise for stakeholder identification, consultation and disclosure (including governmental / national / regional / local stakeholders / vulnerable communities), which includes the principles of FPIC<br>• Put in place an effective resettlement and relocation management plan including development of proper compensation schemes, restoration of |

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| | land acquisition and relocation, especially those who have forged long-term relationships and ties in their neighbourhoods and face difficulty to adapt and change with the new infrastructure<br>• Relocation will give hard impact on vulnerable groups (poor, single-parents especially females, disabled people, elderly who are alone, poor tenants) due to financial constraints | livelihoods and living standards, considering of alternatives such as the in-situ (in the original place) relocation etc.<br>• Conduct quality interactions with impacted community to identify alternative strategy to continue economic activities, prioritise job opportunities available for impacted community, build capacity/upskill the community with relevant skillset for potential economic/job opportunities<br>• Arrange consultations at various stages of project cycle, especially with marginalised groups. In addition to mixed-sex consultations, offer men and women separate consultations |
| | • Social unrest due to internal labour migration, new or increased/decreased employment opportunities, income differentials and inflation. | • Provide employment opportunity by giving preference to the local community especially around the surrounding area<br>• Enhance the economic benefit for local community by using local supplier or small business such as stalls that provide/sell construction workers' necessities<br>• Manage community tensions, grievances and concerns through transparent formal grievance mechanism |
| | • Potential threat to public health due to poor quality of living conditions, where labourers have high exposure to communicable diseases, sexually-transmitted diseases etc. | • Provide surveillance and active screening and treatment of workers (to reduce or eliminate the risk of communicable diseases and other internal conflicts and unrest)<br>• Manage community health and communicable diseases through health and safety plans, vaccinations, awareness on communicable diseases, and baseline health assessment as necessary |
| **Governance mechanism** | • Supply chain and revenue transparency/bribery and corruption particularly in developing economies and states with weak governance | • Ensure the fulfilment of statutory and regulatory requirements, including regular third-party audits certification<br>• Ensure a strong anti-corruption and whistle-blower policy is enforced |
| **References in preparing this table[33]** | | |

[33]
Risk Table VBIAF Construction (WWF)
National Physical Plan (NPP)
Malaysia Biodiversity Information System (MyBIS)
Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCREST)
UNESCO World Heritage List
Environmental Impact Assessment (EIA) Guideline in Malaysia
Enviro Knowledge Management Center (EKMC), Department of Environment Malaysia
Multiple EIA Reports published by Enviro Knowledge Management Center (EKMC), Department of Environment Malaysia

71. In assessing the risk mitigation strategies, FIs should include clear and comprehensive terms and conditions in the contractual agreements with the counterparties (applicable to new or renewal contracts) which require C&I operators to adhere the following steps in managing various risks and their impacts:

71.1 Identify applicable laws/ regulations/ standards/ certification that are related to the C&I sector in Malaysia and require the counterparties to be in compliance with Environmental Quality 1974 (Act 127), Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 2015 and the Regulations thereunder.

71.2 Identify, encourage and/or or require specific commitments from counterparties to strive towards adopting local/international standards and best green construction practices.

71.3 Identify and require specific commitments from the counterparties including commitment to:

a) adopt green construction practices and a time-bound action plan to comply with mandatory Act 127: Environmental Quality Act (Prescribed Activities) (Environmental Impact Assessment) Order, 2015;
b) comply to relevant local/international certifications;
c) adopt best management practices relating to sustainable construction (including environmental management techniques for water use, energy efficiency and waste management, engagement with local communities, stakeholders and experts, time-bound environmental, biodiversity and social management plans etc.);
d) disclose management approaches, past construction-related environmental and social impacts and ongoing mitigation and performance through sustainability reporting (for main listed companies); and
e) Identify event(s) that would constitute impact-based non-compliance/breach, e.g., failure to comply with time bound plan to adopt best construction practices.

72. In addition to the above terms, FIs may consider including the following expectations on their counterparties or encourage counterparties to perform the following to improve positive impact and/or mitigate negative impact (based on the appetite and their maturity or stage of ESG adoption and implementation):

72.1 Benchmark with local and international frameworks such as a) the TCFD recommendations and commit to setting science-based targets to manage GHG emissions, and b) TNFD and report/act on evolving nature-related risks toward nature-positive outcomes.

72.2 Adopt energy efficiency/renewable energy as per VBIAF Sectoral Guide Energy Efficiency and VBIAF Sectoral Guide Renewable Energy.

72.3 Impose adequate contractual penalties and warranties with the counterparties to

mitigate the risk of not adhering to the time-bound action plan to comply with mandatory Act 127: Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 2015.

72.4 Offer income protection for smallholders and workers i.e., protection against loss of income due to illness or injury as well as ensure labour rights are protected through fair and inclusive labour policies and practices.

72.5 Secure protection against losses associated with an existing or new pollution event and contractually embedded green remediation supplementary payment. Green remediation includes the increase in costs for following standards, products, methods and processes for improving the environment, increasing energy efficiency and enhancing safety and property protection. It also includes the costs attributable to apply green techniques which operate to minimise waste generation, reduce energy consumption, or conserve natural resources in the execution of a clean-up.

72.6 Adopt recognised management systems, e.g., ISO14001, ISO 50001, ISO45001.

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## ON-BOARDING CHECKLIST

73. FIs should develop an appropriate customer on-boarding checklist based on the key impact categories and potential risk transmission channels identified above. The following table suggests the information required for the initial on-boarding assessment to determine transaction-level risk. Depending on the materiality and the nature of the financing, some of the requirements may not be applicable. The list below is not exhaustive and is for illustration purposes only. FIs should build on this template to ensure all necessary aspects are covered for key risk categories.

**Table 10: Template for Customer On-Boarding Checklist**

| **1. Customer Details** | **Details** |
|---|---|
| Group/Project Name:<br><br>Customer(s) Name | |
| Country where headquartered | |
| If a project, country of operation | |
| Financial Services Proposed/Granted | |
| Date Customer was supplied with a copy of Bank's C&I Policy (public version) | |
| **2. Scope** | **Details**<br>(Yes/No, with summary details) |
| Design: Project initiation/ concept; feasibility studies; EIA; design (architecture, C&S, M&E), cost estimation and budgeting. | |
| Construction: Planning and scheduling, mobilisation, site clearing and other preliminary works, formation of site construction team, excavation, earthworks, foundation and structural installations, architectural and M&E works, site clearing and closing, handover, demobilisation, and ratification of defects. | |
| Operations: Clearing works, demolition and renovation works, ID works, manpower / occupant's placement, use of building according to purpose, placement of loose fittings/furniture/equipment, change of purpose of building use, and façade improvement. | |
| Decommissioning: Abandonment or demolition of structures / facilities / services and the associated works. | |
| **3. Risk Assessment** | **Details**<br>(Yes/No, with summary details) |
| **Environment** | |
| - EIA and SIA where applicable has been undertaken<br>- Climate change vulnerability assessment conducted and adaptation strategies have been devised<br>- Aligned disclosures to recommendations of TCFD or other science-based targets made publicly<br>- Locally relevant and global best practices and tools adopted | |
| Land access, land-use, land-use change and acquisition<br>- Land description (e.g., size, type of land, proximity to water source, primary forest, peat, indigenous people, communities and livelihoods affected) is disclosed<br>- FPIC from affected communities have been secured | |

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| - Resettlement requiring relocation of populations and associated compensation is disclosed<br>- Protected area downsizing, downgrading or degazettement are being reported<br>- Valid land-use term and planning permissions secured<br>- Adequate compensation plan prepared<br>- Stakeholder consultation / engagement programme designed | |
| Biodiversity loss and deforestation<br><br>- Impact assessments have been undertaken such as, EIA and SIA and, most importantly HCV, HCS<br>- Impacts to protected species (i.e., IUCN Red List)<br>- Impacts to forest reserves and reserve degazettements<br>- Land clearance methods have been selected to minimise impacts<br>- Desktop & field biodiversity assessments have been done (e.g., SPOTT, GFW, Integrated Biodiversity Assessment Tool, Water Risk Filter, and WWF-SIGHT) | |
| Climate/ GHG emissions<br><br>- Climate mitigation and/ or GHG management plan is in place, with annual GHG emissions report (specific to project/s and / or the organisation)<br>- Climate adaptation strategies have been devised<br>- GHG emission reduction target defined and decarbonisation strategy has been articulated<br>- Technological, financial and human resources of company to achieve climate targets have been assessed | |
| Water<br><br>- Water management policy exists with clear indication of the source of water, usage monitor, pollution etc.<br>- Riparian management policy and mitigation plans are in place<br>- Water source vulnerability assessment has been undertaken | |
| Pollution and Waste<br><br>- Waste/ effluents management plan (from JAS - Jabatan Alam Sekitar) exists<br>- Necessary permits of purchasing and storage of diesel<br>- On-site assessment – waste/ effluent/ chemical storage, handling and disposal<br>- Air quality measurement and management | |
| Resource Use and Efficiency<br><br>- Energy Management System (EnMS) implemented to improve energy consumption | |

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| - Electrical Energy Regulations 2008 (EMEER 2008) adhered to for energy efficiency and relevant standards on energy efficiency are observed<br>- Sustainable procurement policy defined to ensure a percent of raw materials are from sustainably certified sources (e.g., FSC certified timber) | |
| **SCORE** | |
| **Social** | |
| Labour rights and working conditions<br><br>- ILO and local labour regulations observed<br>- Policies on migrant and vulnerable workers defined<br>- Labour management includes, welfare and wellbeing policies, collective bargaining agreements, equal opportunity, anti-discrimination and gender equality policy, fair contracts, provision on minimum wages, training, grievance/ complaints mechanism<br>- Desktop/ On-site assessments conducted on working conditions, living arrangements etc.<br>- Grievances handling and management information is published publicly | |
| Occupational safety and health (OSH)<br><br>- OSH management policy defined<br>- OSH plan to avoid or minimise impacts to health and safety of affected communities prepared for the project<br>- Training and awareness programmes in place<br>- OSH performance / audit reports published (including data on cases of fatalities and injuries etc.)<br>- Performance monitoring and internal / external audit reports are published<br>- Certification of Fitness for machinery in plant (JKKP) obtained<br>- Sufficient protection i.e., coverage, compensation schemes offered to workers at risk<br>- Emergency response plan in place | |
| Human rights and community relations<br><br>- Stakeholder management policy institutionalised, including requirements for FPIC and transparent grievance/ complaints mechanism<br>- Human rights policy framed<br>- Community relations managed in line with international frameworks, covenants and best practices (i.e., United Nations Declaration on the Rights of Indigenous Peoples)<br>- Stakeholder Engagement Programme designed to incorporate the views of affected communities and other relevant stakeholders, also aiming to raise awareness, and support community events etc.<br>- SIA report published | |
| **SCORE** | |

| **Governance** | |
|---|---|
| Governance mechanism<br><br>- Sustainability commitment, strategy and relevant ESG policies and risk management framework including monitoring mechanism, transparency and disclosures publicly made available.<br>- If no, a credible (time-bound) plan/s to mitigate ESG issues is made available<br>- Industry standards and/ or relevant certifications obtained<br>- Outstanding legal claims relating to the customer's environmental and social performance disclosed<br>- Issues reported (i.e., media backlash, protests by community, etc.) and how they were resolved | |
| **SCORE** | |
| **TOTAL SCORE** | |
| **OVERALL RISK CATEGORY** | |

**Note:** FIs should update the above assessment at least annually (e.g., by mandating the customer to provide at least an annual report with clear plans / programmes / policies implemented and their outcomes, with sufficient data, evidence, stakeholder statements to substantiate the claims) and/ or when renewing/reviewing financing facility / lending / investment.

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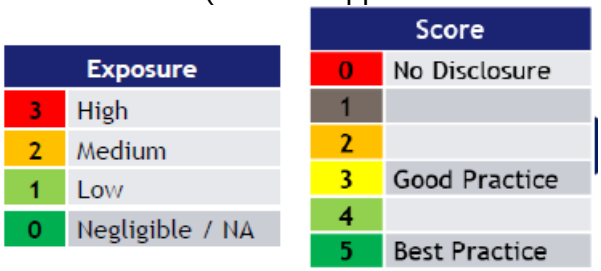
74. FIs should determine their Scoring Criteria and Methodology and maintain certain degree of transparency with the businesses under assessment. The scoring rules can be based on various standards set by leading market indices and / or sustainability frameworks. For instance, the FTSE4Good ESG scoring by Bursa Malaysia as illustrated below (Refer to Appendix IV – Essential Readings).




75. For optimum decision making, FIs should determine a decision-making rule based on the aggregate risk score/ level of the impact-based metrics/ indicators above and their respective risk appetite statement. The table below illustrates a description of decision-making rules specific to this sector. In addition, FIs should also refer to BNM's Climate Change and Principle-based Taxonomy: Guiding Principle 3 & 4 - Do No Harm to the Environment & Remedial Measures to Transition respectively for better alignment.

**Table 11: Decision-Making Rules Description**

| Categories | Description | Score |
|---|---|---|
| High Risk | High risk based on the impact categories/ themes but has satisfactory mitigation strategy. Approval should be subject to strict compliance conditions/ covenants. | |
| Medium Risk | Exhibit evidence of effective mitigation strategy. Approval can be subject to standard compliance conditions/ covenants. | |
| Low Risk | Scores "Low" for all impact categories and exhibit evidence of effective mitigation strategy. Approval can be subject to standard compliance conditions/ covenants. (FIs may also consider not approving this category due to the nature of this sector and market developments) | |

76. The scoring can also depend on customers' i) Intent and ii) Action. The intent suggests customers inclination to not just meeting minimum regulatory requirements, but go beyond to understand and manage ESG impacts along their value chain. An intent should always be supported by an action plan, which could be implemented over short, medium, or long-term depending on the FI facility that's being considered. Whereas, action refers to the demonstrated efforts in terms of operating to a more stringent set of international standards, adopting global sustainability frameworks to effectively not just manage but deliver positive ESG impacts. In either of the cases, when granting bank facilities, FIs should encourage customers to go beyond minimum expectations required to operate legally. Where possible, FIs should introduce standards which will make a tangible difference to the type of business that they support. The FIs should engage with customers, where appropriate, and support them in moving towards global best

practices, which is also one of the most significant contributions FIs can make to sustainable development.

77. Both the intent and action can be assessed by FIs for their specific risk control approaches, which can go two ways: First is through avoidance, where FIs' customers may take a precautionary approach by not contributing to any negative ESG impacts, for e.g., by proactively deploying greener and cleaner technologies or by evolving to adopt RE business models. In such cases, it is necessary for the FIs to take a long-term view of their business viability as well as financial prospects and credit position especially in cases where new investments in technology and/or business mobilisation plans are impending. The second way is by elimination - a method where FIs' customers may identify and eliminate the root causes of negative ESG impacts, and in the long-run, manage to reduce the probabilities of occurrence or recurrence. In such cases, FIs should review the effectiveness of the measures put in place, which should be validated by data evidencing elimination over a significant period of time.

78. Companies are expected to use globally recognised and locally prescribed (by regulators) frameworks to disclose material ESG matters / issues in order to inform investors and the market about the risks and opportunities, and to increase transparency of both financial and non-financial impacts. Refer to Appendix V - Essential Readings for recommended global frameworks.

**Exclusion List**

79. FIs should develop an exclusion list which would serve as a baseline risk appetite. Examples of general activities that should be avoided are provided in Table 6 of VBIAF pp. 30-31. Specific activities that should be avoided in this sector include the following (based on IFC as well as selected international and regional banks'[34] exclusion list).

80. The following criteria serves as a quick reference for FIs to filter or exclude customers with a poor ESG performance track record. A general rule of thumb can be applied here – Activities that are in breach of national and international laws, with irreversible ESG impacts can be part of the exclusion or prohibited list. FIs should also refer to BNM's Climate Change and Principle-based Taxonomy: Guiding Principle 5 on Prohibited Activities for better alignment.

**Illustration: Sample Criteria to Exclude Customers with Poor ESG Performance**

- Fatalities, where customers with five or more in either of the last two years, or a deteriorating trend over the last two years
- Material accidents, spills or pollution - Material refers to occurrences serious enough to cause a controversy at a national level or reputational damage to the customer and, potentially, to FIs
- Companies with breaches of laws and regulations in respect of workers, communities, the environment or corruption. This could typically relate to the suspension of an important operating licence or a fine which is substantial in either absolute size (above USD 1 million or Malaysia Ringgit equivalent) or by reference to the size and resources of the customers
- rack records of environmental breach, human rights violation as defined by Universal Declaration of Human Rights and other international standards, modern slavery, child labour, forced labour, any other labour abuses as defined in ILO conventions
- Activities involving deforestation/conversion of natural forests, resettlement or violations of the rights of indigenous peoples and other local communities without adherence to FPIC and other international human rights covenants
- Projects within natural, cultural or mixed UNESCO World Heritage sites, Ramsar Wetlands, IUCN I-IV category areas, marine protected areas, Key Biodiversity Areas, Intact Forest Landscapes and other areas identified as HCV or under national protection
- Use of unbonded asbestos fibres in the construction. This does not apply to purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%
- Use of products or trade in asbestos-containing products such as asbestos-cement, sheets and pipes
- Use of wood or other forestry products other than from sustainably managed forests
- Dams failing to comply with the World Commission on Dams (WCD) framework and Malaysia Dam Safety Management Guidelines (MyDAMS)

[34] This includes BBVA and Santander

81. Below are the prohibited activities that can part of the exclusion list and may be considered by FIs within local context.

**Illustration: Sample List of Prohibited Activities**

- Activities that impinge on the lands owned, or claimed under adjudication, by Indigenous Peoples, without their FPIC
- Projects in or impacting on World Heritage Sites, List of Ramsar wetlands, Alliance for Zero extinction sites, and Category I-IV of the International Union for the Conservation of Nature (IUCN)
- Projects that will significantly damage non-replicable cultural property
- Projects clearing of HCV, High Carbon Forests and ESAs
- Production or activities involving harmful or exploitative forms of forced labour / harmful child labour
- Infrastructure projects, including pipelines, related to tar sands, fracking, oil sands and other methods of extracting and distributing oil and gas
- Energy sector projects that flare significant amounts of associated gas
- Use of unbonded asbestos fibres in the construction. This does not apply to purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%[35]
- Use of products or trade in asbestos-containing products such as asbestos-cement, sheets and pipes
- Use of wood or other forestry products other than from sustainably managed forests
- Dams failing to comply with the World Commission on Dams (WCD) framework and Malaysia Dam Safety Management Guidelines (MyDAMS)

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[35] Bonded asbestos is where asbestos is mixed with other materials, such as cement. In this form, it is non friable or may not be crumbled, pulverised or reduced to powder by hand pressure. Unbonded (friable) asbestos, on the other hand, is where the raw materials are used as lagging or insulation. In this form, it is friable and easily gives off dust or becomes airborne, therefore increasing the risk of exposure. See for example: What is friable and non-friable asbestos? - WorkSafe; Friable and non-friable | The Australian Asbestos Network

## PERFORMANCE MANAGEMENT

82. In the event where the client does not comply with the conditions described in the FI's sustainability policies, ESG conditions may be added requiring clients to commit to a time-bound Action Plan describing how the clients intend to improve the ESG practices in the future, including specific goals and credible timescales. This aims to address ESG risks that have been identified as unacceptable and bring the client into alignment with the FIs' ESG criteria as part of the provision of financial services provided.

83. Contractual clauses regarding compliance with FI's sustainability policies and agreed time-bound action plan may be inserted into the relevant loan documentation, contracts or letters for prospects.

84. FIs should undertake regular client monitoring and reviews to ensure client's compliance to FIs' ESG policies and monitor the progress of the agreed time bound Action Plan, if any. This will also help FIs to understand the material issues their clients face periodically and help them identify and resolve problems with a view to positively influence their sustainability performance and minimise risks and can include evaluating clients on an ad-hoc basis, triggered by a material social or environmental incident, adverse media/NGO coverage, fines and penalties, etc.

85. The monitoring and review frequency may be adjusted according to clients' ESG risk level. For instance, FIs can set to review and re-assess low, medium, and high-risk clients every five years, three years, or annually respectively.

86. FIs should establish appropriate performance tracking and reporting mechanism to adequately monitor the impact-based performance, based on the impact measures/ indicators established through a time-bound action plan.

87. An Action Plan can be mandated to C&I players seeking finance at two stages – either at the point of credit assessment, where by performance status on specific ESG metrics can be requested and reviewed outrightly OR at the point of sanction of financing facility with conditions to be fulfilled in different areas of ESG that may be material and relevant to the type and quantum of financing.

88. Performance status or progress on the Action Plan should be requested periodically – quarterly or half-year basis, so that necessary support may be extended by the FIs to help manage and / or mitigate ESG risks or accelerate ESG integration / implementation.

89. Where the performance is not as expected, FIs, depending on their capacity, can offer training programmes, skills and knowledge transfer, as well as any other support that may help C&I players to improve on their implementation of the Action Plan.

90. An Action Plan (at the minimum) should include the following components:

**Illustration: Sample Action Plan Components**

- A summary report on the assessment of ESG risks / exposure, dual materiality and the priority areas of focus and improvement
- A clear statement on the type and quantum of financing that has been approved either based on the current ESG performance or with specific conditions to improve ESG performance
- A definite and reasonable period of tracking of ESG performance improvements, which may be determined by the FIs, depending on the size of business as well as the type of financing and the ESG risk exposure. FIs can draw different timelines for different risk categories. However, this may also be subject to the ability as well as the maturity of businesses
- A globally established and locally relevant set of material ESG metrics / thresholds / performance targets and outcomes that will be tracked or monitored over the pre-determined time. (Refer to Point 60, Table 2 as well as Appendix V for examples of ESG metrics based on various frameworks and standards)
- An absolute statement on the incentives as well as disincentives to motivate O&G operators to invest time and resources to improve ESG performance
- An expected reporting format, frequency, and channels to ensure the ESG performance is transparent to all key stakeholders of business

91. Additionally, detailed transition plan[36] or strategy should be drawn based on available technology and policy levers. The transition plan should be consistent with broader economy- or sector-wide science-based pathways to a low-carbon economy.

92. A transition plan (at the minimum) should include the following:

**Illustration: Sample Transition Plan Components**

- The organisation's current capabilities, technologies, pathways, and financial plan
- The risks that the organisation faces from a transition to a low-carbon economy
- The assumptions, significant limitations, constraints, and uncertainties in the transition plan, such as challenges regarding GHG emissions reductions of hard-to-decarbonise sectors
- The impact on businesses, strategy, and financial planning from a low-carbon transition
- The specific actions and activities to support transition, including GHG emissions reduction targets and planned changes to businesses and strategy

93. FIs should look beyond compliance, policy statements and check-list approaches and assess qualitative/in-depth evidence on positive or negative ESG exposure. This is critical especially when dealing with large businesses, with significant ESG footprint and who may be looking for long-term and high-value financing solutions.

[36] TCFD Guidance on Metrics, Targets, and Transition Plans, October 2021

## STAKEHOLDER INCLUSION & VALIDATION

94. FIs should verify/validate the ESG strategies deployed by the C&I players and their outcomes/performance by mandating evidence in the form of policies, implementation programmes, corrective measures, stakeholder feedback and endorsements, internal or external audits, standards adopted, industry rankings and performance improvement on ESG Market Indices[37] etc.

95. FIs should request the C&I players to include information on stakeholder participation, materiality, and stakeholder feedback in their performance reports. In other words, comprehensive information on key capacity building/ engagement initiatives and feedback/grievances from wider stakeholders can help validate the performance of the C&I players, including their management of material ESG risks and their impacts on stakeholders.

96. FIs may require their C&I clients to submit a stakeholder feedback report, which may be constructed as per the illustration below.

**Illustration: Stakeholder' Feedback Report Template**

Objective: Provide comprehensive information on key capacity building/ engagement initiatives and feedback/ grievances from wider stakeholder that is critical for effective risk management decision-making. Minimum requirements and examples are as below:

- Type of engagement with the key stakeholders (directly related to C&I sector) e.g., ESG training for employee, capacity building on ESG practice for key C&I throughout the value chain players, consultation with indigenous people and community representative, dialogue with the local government
- Timeframe and frequency of the engagement e.g., prior to the commencement of project for consultation period, semi-annual or annual training for employees, etc
- Nature/ types of feedback/ grievance – positive/ negative, non-compliance/breaches
- Summary of key issues discussed during the engagement
- Summary of action plan e.g., established an ESG procurement criteria for the value chain, adequate compensation for the impacted community, follow up community engagement, etc.
- Status of action plan e.g., complete, in-progress
- Impact on the C&I clients' ESG practice e.g., improved policies and procedures, improved public sentiment/ branding, reduction in GHG emissions

[37] The use of ESG Market Indices should be treated with care as they pose a number of issues. Rating services are subjective and susceptible to issues such as potential biases in the methodology and inconsistencies across methodologies, affecting comparability of data. Furthermore, these ratings have the potential to reflect only the information available about a company rather than a companies' true ESG performance.

97. The evidence in relation to stakeholders that FIs can assess include the following:

**Illustration: Sample Stakeholder Assessment Criteria**

- Quality of relationships with key stakeholders affected by direct ESG impacts
- Nature/ types of feedback/ grievances from the stakeholders affected
- Type and quality of engagement with stakeholders to improve ESG performance
- Perceptions of stakeholders on both negative and positive impacts e.g., improved policies and procedures, improved public sentiment/ branding, reduction in GHG emissions

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## REMEDIAL MEASURES

98. FIs should establish remedial measures for the identified high impact-based risk C&I players. FIs should also refer to BNM's Climate Change and Principle-based Taxonomy: Guiding Principle 4 - Remedial Measures to Transition for better alignment.

99. FIs can clearly distinguish remedial measures as associated with 1) rectification plans (where immediate or time-bound and non-negotiable corrective measures can minimise negative ESG impact) and 2) performance plans (where long-term measures can help improve net positive impact of the business). The idea is to bring ESG risk exposure to a level that is acceptable to the FIs.

100. FIs can also offer two sets of remedial measures – steps that can be taken by the C&I players and advisory/support that can be offered by the FIs, depending on their capacity and the initial push to manage ESG risk exposure.

101. For instance, as part of its remedial measures, FIs can facilitate appropriate nurturing programmes for its stakeholders and some examples are as below:

**Illustration: Sample Nurturing Programmes**

- Collaborate with relevant government agencies/ NGOs to provide training/ awareness programme and advisory services on sustainable C&I practices.
- Conduct regular workshop for FIs' customers to share experience and knowledge with the support of relevant external parties (e.g., GreenTech representatives, Malaysian Green Technology and Climate Change Centre etc.)
- Offer green financial products to incentivise clients to improve on their sustainability practices (e.g., reduced margin based on predetermined target relating to adopting sustainable C&I practices).
- Setting aside part of the total financing (at preferential rates) to the client for certification

102. FIs should establish clear escalation procedures by identifying:

**Illustration: Sample Criteria to Trigger Escalations**

- Complex or controversial cases, these cases should be escalated to a higher committee such as Group Sustainability Committee for further deliberation
- A maximum term within which improvements must take place to address non-compliance and conduct the rectification plan for remedies. The maximum term will be determined on a case-by-case basis. In certain cases, an extension of this timeline is possible – for instance when substantial improvements have been made and full compliance is within reach
- Penalties e.g., increase/ step-up pricing, temporarily stop availability of revolving/ trade finance facility, no additional facility etc.
- Event of default e.g., continuous breach/ repeated breach, certification withdrawn, ESG controversies, stakeholders' activism etc.
- Exit procedure, although an option of last resort, can be an outcome of the process if the clients are not meeting a satisfactory progress level. This is done by taking into account existing contractual agreements e.g., action to be taken such as cancel undisbursed financing amount, recall financing and terminate relationship (negative list) etc.

103. FIs can establish exceptions to the remedies and exit procedure in accordance to the FIs sustainability guiding principles as well as the quality of their business/client relationships and most importantly, FIs' own approach and strategy to manage ESG performance of their respective customers.

104. Overall, FIs should engage with the disclosing companies to support them to effectively communicate the value of their action. They can also support the investor community by highlighting the financial materiality of ESG risks and advise portfolio companies on how to engage with the issue.

105. FIs can play an important role of evaluating the impact and make it comparable. To motivate action, FIs should drive home the critical need to address social and environmental challenges mainly because it makes business sense to manage the risks and optimise the opportunities at the same time.

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## TECHNICAL APPENDICES & REFERENCES

### APPENDIX I: POLICIES & INITIATIVES AND THEIR KEY MANDATES

| Policy/ Regulation/ Programme | In Effect Dates* | Scope/Objective |
|---|---|---|
| National Transport Policy (2019-2030) | 2019 - 2030 | To strengthen **national transport infrastructure** and provide a **sustainable transport** system as the Government of Malaysia strives to drive Malaysia's economic growth. |
| National Affordable Housing Policy (2019) | 2019 | To provide potential house owners access at **affordable prices** and **builders guidelines** and market intelligence. |
| Green Technology Master Plan (2017–2030) | 2017 - 2030 | To facilitates the mainstreaming of **green technology** into the **planned developments** of Malaysia. |
| National Policy on Biological Diversity (2016-2025) | 2016-2025 | To emphasise the need for **continued conservation, sustainable utilisation and the sharing of benefits from biodiversity in a fair and equitable manne**r. This Policy complements Malaysia's obligation under the United Nations Convention on Biological Diversity and the Sustainable Development Goals. |
| Construction Industry Transformation Plan (CITP) (2016–2020) | 2016 - 2020 | To transform the construction industry to be **highly productive**, **environmentally sustainable**, with globally competitive players while focused on safety and quality standards. |
| Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCREST) | 2015 | To guide, assist, quantify, hence **reduce**, the **built environment's impact** in terms of **reduced carbon emissions** and environmental impact, while taking into account a more holistic life cycle view of the built environment. |
| Green Real Estate (GreenRE) | 2013 | To establish a minimum environmental **sustainability** standard in the planning, design, construction and operation of building projects, to **mitigate the environmental impacts** of built structures. |
| Green Performance Assessment System (Green PASS) | 2012 | Estimates the **carbon emission** from building construction works throughout a building's life cycle without compromising on **desirable comfort level** of the building by assessing on the Indoor Environmental Quality (IEQ). |
| Skim Penilaian Penarafan Hijau JKR (PH JKR) | 2012 | Green rating tool developed and applied by JKR itself as a purpose to **evaluate** the **sustainability level** of each construction project. |
| Green Building Index (GBI) | 2009 | Green rating tool for buildings to **promote sustainability** in the built environment and **raise awareness** among Developers, Architects, |

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| | | Engineers, Planners, Designers, Contractors and the Public about **environmental issue**s and our responsibility to the future generations. |
| Solid Waste & Public Cleansing Management Act 2007 | 2007 | An Act to provide for and regulate the **management of controlled solid waste** and **public cleansing** for the purpose of **maintaining proper sanitation** and for incidental matters. |
| Construction Industry Standard (CIS 7) | 2006 | Specifies requirements on **quality** of workmanship and **assessment procedures** for building construction work. |
| National Urbanisation Policy | 2006 - 2020 | Guide and coordinate the planning and urban development of the country to be **more efficient** and **systematic** particularly to handle the increase in the urban population by 2020 with emphasis on balancing the social, economic and physical development within urban areas. |
| National Cyber Security Policy | 2005 | To ensure that **critical infrastructure** is **protected** to a level that commensurate with the risks. |
| National Policy on the Environment (DASN) | 2002 | To integrate **environmental considerations** into development activities and in all related decision-making processes, to foster long-term economic growth and human development, and to **protect** and **enhance the environment**. |
| Construction Industry Development Board (CIDB) | 2000 | To **regulate**, **develop** and **facilitate** the construction industry towards **achieving global competitiveness**. |
| Occupational Safety and Health Act 1994 | 1994 | To make further provisions for **securing the safety, health** and welfare of persons at work, for **protecting** others against **risks to safety or health** in connection with the activities of persons at work, to establish the National Council for Occupational Safety and Health, and for matters connected therewith. |
| Construction Industry Development Board Act (Act 520) | 1994 | To establish the Lembaga Pembangunan Industri Pembinaan Malaysia and to provide for its function relating to the **construction industry** and for matters connected therewith. |
| Buildings Ordinance, 1994 (Sarawak) | 1994 | An Ordinance to amend and consolidate and to make further provisions concerning the **laws relating to building** in the State, and for purposes connected therewith. |
| Electricity Supply Act 1990 | 1990 | An Act to provide for the regulation of the electricity supply industry, the **supply of electricity** at **reasonable prices**, the **licensing** of any electrical installation, the **control** of any **electrical installation, plant**, and **equipment** with respect to matters relating to the **safety of persons** and the |

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| | | **efficient use of electricity** and for purposes connected therewith. |
| Uniform Building By-Law | 1984 | Stipulate the procedures for **building plans approval** and other means of development and construction control. |
| Malaysian Highway Authority Act (1980) | 1980 | To **supervise** and **execute** the design, construction, regulation, operation and maintenance of inter-urban highways, to impose and collect tolls, to enter into contracts and to provide for matters connected therewith. |
| Local Government Act (1976) | 1976 | To **revise** and **consolidate** the laws relating to local government. |
| Town & Country Planning Act 1976 | 1976 | An Act for the proper control and **regulation of town and country planning** in **Peninsular Malaysia** and for purposes connected therewith or ancillary thereto. |
| Environmental Quality Act (1974) | 1974 | To the **prevention**, **abatement**, **contro**l of **pollution** and enhancement of the environment, and for purposes connected therewith. |
| Street, Drainage and Building Act 1974 | 1974 | An Act to amend and consolidate the laws relating to **street, drainage and building** in local authority areas in **Peninsular Malaysia**, and for purposes connected therewith. |
| Town and Country Planning Ordinance (Sabah Cap. 141) | 1950 | To make provision for the orderly and progressive development of land, towns, and other areas whether urban or rural, to **preserve** and **improve the amenities** thereof, and for other matters connected therewith. |
| Water Act 1920 | 1920 | To make provision for the **protection of rivers** and **streams** falling within the States of **Negeri Sembilan, Pahang, Perak, Selangor, Malacca** and **Penang.** |

** As at Date of Publication*

## APPENDIX II: POLICIES, FRAMEWORKS, STANDARDS & CERTIFICATIONS

The following Priority Table includes applicable policies, standards and guiding framework for construction and infrastructure. The list serves the purpose to guide the consideration of investment in sustainable development. It may be used as a screening tool to review or verify information at the project planning level. We have also selected and categorized the policies, guiding framework, standards and certifications according to the priority of implementation.

- P1: Compulsory (Comply with laws and regulations)
- P2: Conformed to or guided by national policies, plans and sustainable guiding framework
- P3: Adopt or in line with more advanced sustainable certifications, standards or taxonomy

***Note:*** *All certifications for real estate, such as GRESB for real estate assessment, are applicable for property development. Most of the C&I standards mentioned below are also applicable to the activities such as Sea Ports, Harbours, & Marinas, Airports, Dams & Reservoirs, Pipelines and, Roads & Railways.*

| Priority | Policies, Guiding Framework, Standards and Certifications | Justification / Remarks |
|---|---|---|
| P1: Compulsory (Comply with Laws & Regulations) | [MY] Town & Country Planning Act 1976 | Sustainable development in compliance to the planning act. |
| | [MY] Street, Drainage and Building Act 1974 | Implementation throughout EIA & EMP, including Air Quality, Water Quality, Waste regulation etc. |
| | [MY] Environmental Quality Act 1974 | Implementation throughout EIA & EMP, including Air quality, Water quality, Waste regulation etc. |
| | [MY] Occupational Safety and Health Act 1994 | Safety and health practices during construction activities in compliance to the act. |
| | [MY] Solid Waste & Public Cleansing Management Act 2007 | Waste management in compliance to latest federal and state regulations including recording the volume, hiring licensed contractors etc. |
| | [MY] Water Act 1920 | Provision of water infrastructure in compliance to the act. |
| | [MY] Electricity Supply Act 1990 | Provision of electricity in compliance to the act. |
| | [MY] Uniform Building By-Law | Provision of facilities in accordance with the UBBL. |
| | Town and Country Planning Ordinance (Sabah Cap. 141) | Sustainable development in compliance to the ordinance. |
| | BUILDINGS ORDINANCE, 1994 (Sarawak) | Sustainable development in compliance to the ordinance. |

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| P2: Conformed to or guided by national policies and sustainable guiding framework | [MY][38] Malaysia Plan (11th Malaysia Plan, 12th Malaysia Plan) | Sustainable development in accordance to the strategic thrusts that<br>● Improve wellbeing for all<br>● Pursue green growth for sustainability and resilience<br>● Strengthen infrastructure to support economic expansion |
| | [MY] National Physical Plan)<br>Note: The most current NPP.<br>(Only applicable in Peninsular Malaysia) | Sustainable development in accordance to the physical plan e.g., follow recommendations and not intruding areas identified as ESA, climate vulnerable etc. |
| | [MY] Central Forest Spine: Masterplan for Ecological Linkages<br>(Applicable in Peninsular Malaysia) | This masterplan contains strategies and action plans to maintain forests, prevent fragmentation and reconnect fragmented forest complexes through ecological linkages within the Central Forest Spine in Peninsular Malaysia. |
| | [MY] National Policy on Climate Change 2009 | The policy sets out the direction in relation to climate change mitigation and climate change adaptation, including the needs to reduce GHG emissions and to adapt to the current and future impacts |
| | [MY] National Green Technology Master Plan 2017-2030 states six initial key sectors with high potential to facilitate green growth in the country namely energy, building, manufacturing, transport, water and waste | The plan sets out targets for the respective sectors as follows:<br>● Energy - reduction in electricity consumption (residential & commercial) of 10% & 15% by 2025 & 2030 respectively.<br>● Transport - a target of 85% of total industry volume for private vehicles to be EEV by 2027 (with a target reduction in CO2 emissions of 199.7ltCO2e) & 100% by 2030.<br>● Building - 550 green buildings (inclusive of green buildings certified by various agencies & organisations such as MyCrest, Green Building Index, GreenRE etc.) by 2020 & 1750 by 2030. |

[38] [MY] denotes local laws, regulations, standards and certifications

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| | | ● Manufacturing 0 increases the percentage & number of green (including improved EE) manufacturing SMEs by 30% (10,200) & 50% (17,000) by 2025 & 2030 respectively. |
| | [MY] Bursa Malaysia Sustainability Reporting for listed companies. The guideline recommended the following standards, framework & management system:<br><br>Global Reporting Initiative (GRI) Standards<br>- GRI 100 Universal<br>- GRI 200 Economic<br>- GRI 300 Environmental<br>- GRI 400 Social<br><br>Carbon Disclosure Project (CDP)<br><br>TCFD - Materials & Buildings Group metrics<br><br>GHG Protocol<br><br>ISO 14001 Environmental Management System<br><br>ISO 45001 Occupational Health & Safety | Scope 1, Scope 2 & Scope 3 of carbon emissions<br>Energy consumption & efficiency<br>Water consumption & efficiency<br>Supply chain (Environmental)<br>Products & Services Responsibility (Environment)<br><br>Voluntary disclosure of energy & emissions, water & forest (land use activities)<br><br>Implications of GHG emissions, energy & water on the financial aspects related to revenue, costs, assets & financing costs<br><br>Measure & manage greenhouse gas (GHG) emissions from private & public sector operations, value chains & mitigation actions (Scope 1, 2 & 3 emissions)<br><br>Intended outcomes:<br>● enhancement of environmental performance;<br>● fulfilment of compliance obligations;<br>● achievement of environmental objectives. |

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| | | Reducing workplace risks and creating better, safer working conditions |
| | UNDP Social and Environmental Standards | Standard 3 recommends evaluating risks to the safety of affected communities during the design, construction, operation and decommissioning phases and establishing preventative measures. |
| | [MY] Low-carbon Cities Framework | Project development shall abide to planning guideline set by the local authorities, which is guided by the LCCF, including the following elements:<br>• Urban Environment<br>• Urban Transportation<br>• Urban Infrastructure<br>• Building |
| | [MY] Malaysian Carbon Reduction & Environmental Sustainability Tool (MyCrest) [for government building & infrastructure] | Developed by Construction Industry Development Board (CIDB) to assess<br>Energy Performance Impacts<br>Social & Cultural Sustainability<br>Sustainability Facility Management |
| | [MY] Infrastar | Developed by CIDB to assess the extent of sustainability measures adopted by infrastructure projects in Malaysia primarily at both design and construction stages:<br>• Land use planning and management<br>• Resource management<br>• Energy and water management<br>• Biodiversity and other ecosystem services<br>• Social and cultural protection<br>• Stakeholder coordination |
| | [MY] Quality Assessment in Construction (QLASSIC) | Measures and evaluates the workmanship quality of a building construction work based on Construction Industry Standard (CIS 7:2006). |
| | National Policy on Biological Diversity 2016-2025 | Sustainable development incorporating ecological linkages, green spaces in |

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| | | urban areas and conservation of biodiversity. |
| | CDC's Code of Responsible Investing | Effective management of ESG matters reduces risks to workers, the environment, local communities and other stakeholders. |
| | Equator Principles & IFC Performance Standards on Environmental & Social Sustainability | Strengthen the capacity of financial institutions to manage environmental & social risk. |
| P3: Adopt or in line with more advanced sustainable certifications, standards | UNEP FI Responsible Property Investment | Support the real estate investment community in developing voluntary best practices and shaping policy and regulatory frameworks for a low-carbon and climate-resilient buildings sector globally. |
| | United Nations Principles of Responsible Investment (UN PRI) | Voluntary and aspirational set of investment principles that offer a menu of possible actions for incorporating ESG issues into investment practice. |
| | International Integrated Reporting Framework (IR) | Enhance accountability and stewardship for the broad base of capitals (financial, manufactured, intellectual, human, social and relationship, and natural) and promote understanding of their independencies |
| | Climate Bonds Taxonomy | Identifies the assets and projects needed to deliver a low-carbon economy and gives GHG emissions screening criteria consistent with the 2-degree global warming target set by the COP21 Paris Agreement. |
| | ASEAN Green Bond Standards | An initiative that facilitates ASEAN capital markets in tapping green finance to support sustainable regional growth and meet investor interest for green investments and is part of the ACMF's broader efforts in developing green finance for the region. |

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| | ICMA Green Bond Principles (GBP) | Voluntary process guidelines that recommend transparency & disclosure, promote integrity in the development of the green bond market, provide issuers guidance on the key components involved in launching a credible green bond; aid investors by ensuring availability of information necessary to evaluate the environmental impact of their green bond investments |
| | Sustainability Accounting Standards Board (SASB) Real Estate & Infrastructure Sector<br>● Electric Utilities & Power Generators<br>● Gas Utilities & Distributors<br>● Water Utilities & Services<br>● Waste Management<br>● Engineering & Construction Services<br>● Home Builders<br>● Real Estate<br>● Real Estate Services | Ensuring comparable, consistent, & reliable disclosure as well as provide specific, detailed, and replicable requirements for what should be reported for each topic, including metrics. |
| | Taskforce on Nature-related Financial Disclosures (TNFD) | Expected to launch in 2021.<br>Provide a framework for corporates & financial institutions to assess, manage & report on their dependencies & impacts on nature, aiding in the appraisal of nature-related risk & the redirection of global financial flows away from nature-negative outcomes & towards nature-positive outcomes. |
| | The Global ESG Benchmark for Real Assets (GRESB) | Cater for Real Estate Assessments & Resilience Infrastructure Asset Assessments & Resilience |
| | [MY] Green Building Index (GBI) | Evaluate environment design & performance of buildings (residential, non-residential, township, industrial, data centre, hotel, resort) based on energy |

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| | | efficiency, indoor environmental quality, sustainable site planning and management |
| | [MY] GreenRE | Key considerations for the certification are energy efficiency, natural ventilation, daylighting, water efficiency, environmental protection, indoor air quality, carbon assessment, & enhanced construction practices |
| | [MY] Malaysian Carbon Reduction & Environmental Sustainability Tool | Developed by Construction Industry Development Board (CIDB) to assess:<br>Energy Performance Impacts<br>Social & Cultural Sustainability<br>Sustainability Facility Management |
| | Envision's Sustainable Infrastructure Framework | Provides a consistent, consensus-based framework for assessing sustainability, resiliency, & equity in civil infrastructure. |
| | Global Infrastructure Basel Foundation (GIB)'s SuRe®: Standard for Sustainable and Resilient Infrastructure | A global voluntary standard which integrates key criteria of sustainability & resilience into infrastructure development and upgrade, covering criteria across governance, social & environmental factors |
| | Infrastructure Sustainability Council of Australia (ISCA) - Infrastructure Sustainability (IS) rating scheme | Evaluates sustainability (Governance, Economic, Environmental and Social) across the planning, design, construction & operational phases of infrastructure programmes, projects, networks and assets. |
| | Excellence in Design for Greater Efficiencies (EDGE) | Provide measurable and credible solution to prove the business case for building green & unlock financial investment |
| | Leadership in Energy & Environment Design (LEED) | Set of rating systems for the design, construction, operation & maintenance of green buildings developed by the US Green Building Council |
| | BCA Green Mark | Singapore's initiative to encourage construction industry towards more environmental-friendly buildings, from project conceptualisation & design, & during construction. |

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| | BREEAM (BRE Environmental Assessment Method) | An environmental assessment method for buildings & communities developed in the UK. |
| | BRE's CEEQUAL | Sustainability assessment, rating and awards scheme for civil engineering, infrastructure, landscaping and works in public space.<br><br>The CEEQUAL standard recommends adopting plans and policies regarding ethical labour practices and regularly monitoring performance against these. Plans and policies should cover all workers on project construction site(s), and be applied in the selection process for:<br><br>● the design team<br>● the principal contractor<br>● sub-contractor(s) |
| | ISO 14007 (Environmental management) | Guidelines for organizations to determine the environmental costs and benefits associated with their environmental aspects. |
| | ISO 14008 (Monetary valuation of environmental impacts and related environmental aspects) | Monetary valuation of environmental impacts and related environmental aspects to identify economic values applied in trade-offs between alternative resource allocations. |
| | ISO 14064 Greenhouse Gases | Specifies principles & requirements at the organisation level for the quantification & reporting of greenhouse gas (GHG) emissions & removals |
| | WWF Climate Guide to guide asset owners | Support asset owners and show how they can align their investments with the objectives of the Paris Agreement. |
| | WWF Asset Owner guide on Coal and Renewable Electric Power Utilities | Recommendations on how asset owners can mitigate these risks, most notably through the development and adoption of a coal and renewable power policy. |
| | Eliminating Commodity-Driven Deforestation – Finance Sector Roadmap | Recommendations on key steps needed for financial institutions to eliminate commodity-driven deforestation, conversion, and associated human rights abuses from their portfolio by 2025. |
| | Greenroads International's Greenroads Rating System | Measure and manage sustainability (environment, social and economic performance) on transportation projects |

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| | [MY] Malaysia Green Highway Index (MyGHI) | A performance baseline standard to measure the level of greenness for current highways in Malaysia. Highlights five elements: energy efficiency, sustainable design & construction activities, environment & water management, social & safety, material & technology |

**Remarks:**

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|---|---|
| | General Sustainability (Environment, Social & Governance) |
| | Financial Sector |
| | Real Estate & Infrastructure Specific |
| | Environment & Climate Change |
| | Power & Energy |
| | Transportation |

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**APPENDIX III: CASE STUDIES**

| Sub-sector | Companies | Justification |
|---|---|---|
| Infrastructure Finance | European Investment Bank | • Target for 50% climate action and environmental finance by 2025.<br>• Scored B+ for OEKOM Sustainability Bond Rating, the highest rating assigned. |
| Construction & Engineering | Allianz Global Investors (AllianzGI) | • Scored 87/100 for DJSI in 2020<br>• Achieved A- rating for leadership level in CDP |
| Construction Materials | LafargeHolcim | • Scored A for climate and A- for water in CDP[39]<br>• Targets set and business ambition for 1.5°C[40] under Science Based Targets (SBTi)[41] |
| Real Estate | Dexus | • Scored A for climate in CDP<br>• DJSI Industry Leader 2020<br>• Targets set and business ambition for 1.5°C under Science Based Targets (SBTi) |
| | City Developments Limited | • Scored A for climate and A for water in CDP<br>• Targets set and business ambition for 1.5°C under Science Based Targets (SBTi) |
| Construction & Engineering | Hyundai Engineering & Construction Co Ltd | • DJSI Industry Leader 2020<br>• Scored A for climate change by SBTi |

[39] Corporate Website, cdp.net, 2021
[40] Set a net-zero target in line with a 1.5°C future
[41] Corporate Website, sciencebasedtargets.org, 2021

**APPENDIX IV: ESSENTIAL READINGS**

| Reference Documents / Information | Web Links |
|---|---|
| **The Malaysia Standard Industrial Classification (MSIC) system based on the International Standard of Industrial Classification of All Economic Activities (ISIC)** | https://mbls.dosm.gov.my/mylmid/paper/MSIC_2008.pdf<br><br>https://www.dosm.gov.my/v1/uploads/files/4_Portal%20Content/3_Methods%20%26%20Classifications/2_List%20of%20References/msic2000.pdf |
| **Government incentives on green assets, projects, and services** | https://www.myhijau.my/green-incentives/<br>https://www.gtfs.my/ |
| **Functions relating to the construction industry and for matters connected.** | https://www.cidb.gov.my/en/about-us/legislation/act-520 |
| **Climate Change and Principle-based Taxonomy, Bank Negara Malaysia** | https://www.bnm.gov.my/documents/20124/938039/Climate+Change+and+Principle-based+Taxonomy.pdf |
| **TCFD Implementation Guide** | https://www.cdsb.net/sites/default/files/sasb_cdsb-tcfd-implementation-guide-a4-size-cdsb.pdf |
| **TNFD (Taskforce on Nature-related Financial Disclosures)** | https://tnfd.info/ |
| **IFC Performance Standards** | https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards |
| **Post-2020 Global Biodiversity Framework** | https://www.cbd.int/conferences/post2020/post2020-prep-01/documents |
| **Natural Infrastructure Case Studies, United Nations Environment Programme, 2021** | Integrated Approaches in Action: A Companion to the International Good Practice Principles for Sustainable Infrastructure |
| **UNEP International Good Practices Principles for Sustainable Infrastructure** | https://wedocs.unep.org/bitstream/handle/20.500.11822/34853/GPSI.pdf |
| **Barclays: Environmental and Social Risk Briefing Infrastructure** | https://www.banktrack.org/download/160620_infrastructure_guidance_note_pdf/160620_infrastructureguidancenote.pdf |

**ESSENTIAL READINGS: SUSTAINABLE FEATURES AND CLIMATE CHANGE ADAPTATION AND MITIGATION INITIATIVES FOR CONSTRUCTION & INFRASTRUCTURE (NOT COMPREHENSIVE)**

<table>
<tr>
<td>Fugitive emissions reductions<br>
<ul>
<li>AC2OCEM (Oxyfuel technology for CO2 capture)</li>
<li>Catch4climate (applicability of oxyfuel technology to cement plants)</li>
<li>Use of CO2 from cement kiln to produce microalgae which can be used as a high-quality animal feed additive</li>
<li>Long-term CO2 storage</li>
<li>CO2MIN (recarbonation of cement dust in concrete recycling processes)</li>
</ul>
Sustainable Development<br>
<ul>
<li>Industrialised Building System (IBS) to make housing more affordable</li>
<li>Safe building materials for affordable housing</li>
<li>Building Information Management (BIM)</li>
<li>Building Management System (BMS)</li>
</ul>
Sustainable construction materials<br>
<ul>
<li>LEILAF (Low Emissions Intensity Lime and Cement)</li>
<li>EvopactZERO (resource-efficient and climate-neutral concrete)</li>
<li>ECOPact (low-carbon concrete, 30% to 100% less carbon emissions compared to standard/CEM I concrete)</li>
<li>Susteno (resource-saving cement in which mixed granulate from demolition sites is used as a grinding additives)</li>
<li>Aggneo (high quality aggregates</li>
</ul>
</td>
<td>Energy Efficiency<br>
<ul>
<li>Cross ventilation</li>
<li>Natural ventilation to reduce air-conditioning demands</li>
<li>Sun shading, cool paints to reduce heat gain</li>
<li>Use of daylight, sun pipes / light shelves to reduce the need for artificial lighting</li>
<li>Equipment upgrades to more energy-efficient ones i.e., Chiller retrofitting</li>
<li>EVs and EV charging stations</li>
<li>Motion sensors</li>
<li>Replacement of Conventional HPS Light to LED Compound Lighting i.e., Green efficient lighting (e.g., LED lighting)</li>
<li>Building orientation - facing North-South direction</li>
<li>Building facade recladding</li>
<li>Solar panels as a power source of green building</li>
<li>Solar water heating systems</li>
<li>Own-emissions reductions (e.g., on business travel, building use, and server consumption)</li>
<li>Reduction of mechanical ventilation at carpark</li>
<li>Natural ventilation features at bathrooms without the use of exhaust fans</li>
</ul>
Water efficiency<br>
<ul>
<li>Water-saving toilet cisterns</li>
<li>Rainwater harvesting for irrigation purpose</li>
<li>Grey water treatment and recycling</li>
</ul>
</td>
</tr>
</table>

| | |
|---|---|
| processed from recycled concrete)<br>● Agilia (self-levelling building material which flows and spreads easily, reducing noise, vibration and risk on the worksite)<br>● Agrovial (specially developed hydraulic binder for stabilisation of soils and rural roads. Combines cement with locally-sourced soils, cutting transport emissions)<br>● Airium (mineral insulating foam, fully recyclable and low CO2 footprint compared to insulation materials)<br>● Artevia Boreal (day light-absorbing concrete, releasing it as artificial light at night to minimize light pollution and energy consumption)<br>● DURABRIC (compressed earth stabilized block, does not require firing, cuts the need for firewood)<br>● Hydromedia (permeable concrete, helps water management)<br>● SuperLow (carbon neutral asphalt, manufactured at reduced temperature and all remaining emissions are then offset through carbon reduction projects)<br>● Thermaflow (low thermal-resistivity concrete, lowers energy requirement of high-demand electrical facilities) | Waste management<br>● Waste segregation at source<br>● Recyclable metal formwork<br>● Material Recovery Facilities for Recyclables<br>● Composter, Digester or Black Soldier Fly Farm for Organic Waste<br>● Pyrolysis or Waste to Energy Plant for Non-Recyclables |

## ESSENTIAL READINGS: GRESB CRITERIA FOR CLIENT'S ASSESSMENT TABLES (EXTRACTED FROM GRESB INFRASTRUCTURE AND CONSTRUCTION ASSET ASSESSMENT QUESTIONNAIRES)

**GRESB Infrastructure Asset Assessment:** GRESB provides an assessment that enables systematic reporting, objective scoring and peer benchmarking of ESG management and performance of infrastructure assets. Both single and multi-asset operators can participate and the process leads to deep data insights for investors, fund managers, and asset operators. The assessment criteria include:

1. Management
    - Leadership: The entity has materiality assessment, ESG leadership commitments, ESG objectives, Individual responsible for ESG and/or climate-related objectives, ESG and/or climate-related senior decision maker, and personnel ESG performance targets
    - Policy: Issues policies on environmental, social and governance issues
    - Reporting: Discloses ESG performance and actions through ESG reporting, ESG incident monitoring and occurrence
    - Risk management: Aligns to ESG-related management standards (e.g.: ISO, OSHAS, etc), performs an ESG risk assessment, incorporates resilience to climate-related risks, has a systematic process for identifying and assessing transition & physical risks, monitors ESG performance
    - Stakeholder engagement: The entity has stakeholder engagement programme, includes ESG specific requirements in procurement process, has a formal stakeholder grievance process, and receives stakeholder grievance during the reporting period

2. Performance
    - Implementation: The entity's ability to list key actions implemented to mitigate environmental risks / improve environmental performance, to mitigate social risks / improve social performance, and to mitigate governance risks / improve governance performance
    - Output & Impact: Provides measures of output and impact (including capacity and output by specific sector activity and unit, output intensity, and impact intensity)
    - Health & Safety: The entity's ability to report on health and safety performance of its employees, contractors, users, and local community
    - Energy: The entity's ability to report on energy, including whether the entity has imported / purchased energy, generated energy onsite, exported / sold energy, and measures of the energy consumption targets and energy intensity targets
    - Greenhouse Gas Emissions: The entity's ability to report on GHG emissions, including scope 3 GHG emissions, scope 2 emissions, and science-based targets
    - Air Pollution: The entity's ability to report on air pollution, including SOx, NOx, PM2.5, Ozone, Lead, Mercury, and Ozone-depleting substances
    - Water: The entity's ability to report on water inflows / withdrawals and water outflows / discharges

- Waste: The entity's ability to report non waste generated and disposed, including hazardous, non-hazardous, re-use, recycling, composting, waste-to-energy, incineration, and landfill
- Biodiversity & Habitat: The entity's ability to report in biodiversity and habitat, including wildlife and threatened & endangered species fatalities, and habitats removed, enhanced, restored, or protected
- Employees: Has employee engagement programmes through training or satisfaction monitoring, and reports on diversity & inclusion
- Customers: Undertakes customer satisfaction survey
- Certifications & Awards: Maintains / achieves asset-level certifications for ESG-related performance, and receives awards for ESG-related actions, performance, or achievements

The above criteria is adopted from GRESB Infrastructure Asset Assessment, you may access this link for the full assessment document.

**GRESB Real Estate Asset Assessment:** GRESB is the global standard for ESG benchmarking and reporting for listed property companies, private property funds, developers and investors that invest directly in real estate.

The GRESB Real Estate Assessment provides investors with actionable information and tools to monitor and manage the ESG risks and opportunities of their investments, and to prepare for increasingly rigorous ESG obligations. Assessment participants receive comparative business intelligence on where they stand against their peers, a roadmap with the actions they can take to improve their ESG performance and a communication platform to engage with investors. The Assessment evaluates performance against three ESG components - Management, Performance, and Development. The methodology is consistent across different regions, investment vehicles and property types and aligns with international reporting frameworks, such as TCFD, GRI and PRI. The assessment criteria include:

1. Management
    - Leadership: The entity has ESG leadership commitments, ESG objectives, ESG decision making, ESG decision maker, and personnel ESG performance targets
    - Policies: Issues policies on environmental, social and governance issues
    - Reporting: Discloses ESG performance and actions through ESG reporting, ESG incident monitoring and occurrence
    - Risk management: The entity has an Environmental Management System (EMS), performs social and governance risk assessments, performs asset-level environmental and/or social risk assessments as a standard part of due diligence process for new acquisitions, the entity's strategy incorporates resilience to climate-related risks, has a systematic process for identifying transition and physical risks, and for assessing the material financial impact of such risks,

- Stakeholder engagement: The entity has an employee engagement programme (provides training and development for employees, undertakes employee satisfaction survey, has a programme in place to improve its employee satisfaction based on the survey outcomes, has a programme in place for promoting health & wellbeing of employees, takes measures to incorporate the health and wellbeing programme for employees, monitors conditions and/or tracked indicators of employee safety, and monitors inclusion and diversity) and a supply chain engagement programme (includes ESG-specific requirements in its procurement processes, monitors property / asset managers' compliance with ESG-specific requirements, monitors external suppliers' / service providers' compliance with ESG-specific requirements, and provides stakeholder grievance process).

2. Performance
   - Reporting characteristics: The entity's standing investments portfolio during the reporting year and countries / states included in the entity's standing investments portfolio
   - Risk assessment: The entity performs asset-level environmental and/or social risk assessments of it standing investments, performs technical building assessments, implements efficiency measures (for energy, water, and waste management),
   - Targets: The entity sets long-term performance improvement targets, and sets a science-based GHG emissions target
   - Tenants & Community: Has a tenant engagement programme that includes ESG-specific issues, undertakes tenant satisfaction surveys; has a programme to improve tenant satisfaction based on the survey outcomes; has a fit-out and refurbishment programme for tenants that includes ESG-specific issues/requirements in its standard lease contracts; has a programme for promoting health and wellbeing of tenants, customers, and local surrounding communities; takes measures to incorporate the health and wellbeing programme for tenants and local communities; has a community engagement programme that includes ESG-specific issues and monitors its impact on the community
   - Energy: Reports on energy, including energy consumption and renewable energy generated
   - Greenhouse Gas Emissions: Reports on GHG emissions, including total GHG emissions of the portfolio and total data coverage of the portfolio
   - Water: Report on water use, including total water consumption of the portfolio, total data coverage of the portfolio, and reused and recycled water
   - Waste: Reports on waste management, including total waste generated of the portfolio
   - Data Monitoring & Review: Whether the entity's data on energy consumption, GHG emissions, water, and waste has been reviewed by an independent third party
   - Building Certifications: Standing investments that obtained a green building certificate at the time of design, construction, and/or renovation, standing investments that hold a valid operational green building certificate, standing investments that hold a valid energy rating

3. Development
    - Reporting characteristics: Composition of the entity's development projects portfolio during the reporting year and countries / states included in the entity's development projects portfolio
    - ESG requirements: The entity has an ESG strategy for development projects, requires sustainable site selection criteria to be considered for development projects, and has sustainable site design / construction requirements for development projects
    - Materials: The entity has a policy requiring that the environmental and health attributes of building materials be considered for development projects, assesses the life cycle emissions and discloses the embodied carbon emissions of its development projects
    - Building certifications: The entity's development portfolio includes projects that are aligned with green building rating standards, and projects that obtained or are registered to obtain a green building certificate
    - Energy: The entity has minimum energy efficiency requirements for development projects, incorporates on-site renewable energy in the design of development projects, and includes any buildings designed to meet net zero carbon in their portfolio
    - Water: Promotes water conservation in its development projects
    - Waste: Promotes efficient on-site solid waste management during the construction phase of its development projects
    - Stakeholder engagement: The entity takes measures to incorporate occupant health & wellbeing, promotes on-site safety during the construction phase, and monitors safety indicators at construction sites. Has ESG requirements for contractors and monitors its contractors' compliance with the requirements. Has a community engagement programme through its development projects that includes ESG-specific issues, assesses the potential long-term socio-economic impact of its development projects on the community as part of planning and pre-construction, and has a systematic process to monitor the impact of development projects on the local community during different stages of the project

The above criteria is adopted from GRESB Real Estate Assessment, you may access this link for the full assessment document.

**ESSENTIAL READINGS: FINANCIAL RISK ASSESSMENT**
**TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES (TCFD)**

| Transitional Risks | Physical Risks | Financial Risks |
|---|---|---|
| Policy & Legal<br>● Government policies or financial programmes linked to the energy transition that affect the competitiveness of construction assets or longevity of their returns<br>● Prohibition of construction materials with a negative effect on climate (e.g., Asbestos, PVCs, and materials provided under Annex II of the Basel Convention)<br>● Enhanced emissions-reporting obligations such as compulsory energy audit of buildings<br>● Regulatory change of existing products and services (e.g., mandatory green building certifications)<br>Technology<br>● Transitioning to lower emissions construction technology, machine, and equipment<br>● New climate-related technologies threaten to directly replace existing assets, indirectly endanger usership / revenue | Acute<br>● Disruption of transport due to flooding<br>● Increased risk and severity of extreme weather events (cyclones, hurricanes, floods)<br>● Changing patterns of storms causing damages to assets (e.g., bridges, wind farms, distribution networks), disruption to ports and airports, damage to above ground transmission infrastructure (e.g., radio masts), utilities including power plants, impacts on renewables infrastructure, damage to buildings, deaths and injuries, and decreased standard of protection by flood defences<br>● Disruption of energy supply and storage due to flooding | ● Increased costs for supply, as climate change may increase the costs of providing the same level of service (e.g., larger reservoirs needed to address more variable precipitation)<br>● Increased expenditures for climate risk adaptation and mitigations (e.g., changing the composition of road surfaces so that they do not deform in high temperatures, building seawalls or using permeable paving surfaces to reduce run-off during heavy rainfalls.)<br>● Risk of “stranded assets”, when investments are no longer economically viable as a result of the physical impacts of climate change, or the impact of climate change policies |

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| Market<br><br>● Changing patterns of demand driven by climate change, such as increased energy demand for air-conditioning in summer and reduced demand for heating in winter, or increased water demand for irrigation<br>● Increased demand for protective infrastructure, such as construction of coastal defences to address rising sea levels<br>● Migration as a result of extreme weather events or gradual climate change will impact on the demand of real estate<br>● Changing demand for ports as sea routes open due to melting of arctic ice<br>● Increased demand for cooling (e.g., for urban development, data centres in telecommunication facilities, energy plants)<br>● Increased demand for green buildings (residential and non-residential)<br><br>Reputation<br><br>● Reputational damage to the government, owner or operator of the asset resulting from the climate change risks<br>● Risks from shareholders, government, consumers, or the public (such as through social organizations or grassroots movements) challenging corporations' unsustainable practice<br>● Negative press coverage related to projects or activities with negative impacts on the climate | Chronic<br><br>● Melting road surfaces and buckling railway lines due to sustained higher temperature<br>● Damage to roads due to melting of seasonal ground frost or permafrost<br>● Rising sea levels causing Inundation of coastal infrastructure (such as ports, energy generation, transmission and distribution, changes in land use due to relocation of people living in exposed areas)<br>● Decreased standard of protection offered by coastal defences due to rising sea levels<br>● Changing water levels disrupt transport on inland waterways<br>● Temperature changes affecting energy production (e.g., reduced efficiency of solar panels, reduced output from thermal plants due to limits on cooling water temperatures)<br>● Changing patterns of precipitation may disrupt transport on inland waterways, reduce output from hydropower generation, decrease the amount of cooling water for energy sector, increase the need for water storage capacity, and increase the risk of river embankments being overtopped | ● Damage to assets and disruption to service provision, including cascading effects in other construction facilities as a result of interdependencies<br>● Additional investments required to manage increased risk of environmental damage, injuries, and deaths due to failure of construction assets<br>● Increased costs resulting from fines due to unsustainable construction practices<br>● Research & development expenditures in new and alternative technologies (e.g. investment in early warning systems or purchasing insurance to address financial consequences of climate variability) |

## ESSENTIAL READINGS: GHG CALCULATOR/ METHODOLOGY

Greenhouse gas emissions can be categorised into three groups or 'Scopes' by the most widely-used international accounting tool, the Greenhouse Gas (GHG) Protocol.

- **Scope 1** covers direct emissions from owned or controlled sources.
- **Scope 2** covers indirect emissions from the generation of purchased electricity, steam, heating and cooling consumed by the reporting company.
- **Scope 3** includes all other indirect emissions that occur in a company's value chain.

*Source: https://www.carbontrust.com/resources/briefing-what-are-scope-3-emissions*

**GHG accounting and reporting should be based on the following principles:**

a) Relevance—Define boundaries that appropriately reflect the GHG emissions of the organisations and the decision-making needs of users.

b) Completeness—Account for all GHG emission sources and activities within the chosen organisational and operational boundaries. Any specific exclusions should be stated and justified.

c) Consistency—Use consistent methodologies and measurements to allow meaningful comparison of emissions over time. Transparently document any changes to the data, methods or any other factors in the time series.

d) Transparency—Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose assumptions and make appropriate references to the calculation methodologies and data sources used.

e) Accuracy – Ensure that estimates of GHG emissions are systemically neither over nor under actual emission levels, as far as can be judged, and that uncertainties are quantified and reduced as far as practicable. Ensure that sufficient accuracy is achieved to enable users to make decisions with confidence as to the integrity of the reported GHG information.

**The various standards that can help with Emissions Management Strategy:**

- ISO 14064-1 Greenhouse gases — Part 1: Specification with guidance at the organisational level for quantification and reporting of greenhouse gas emissions and removals issued by International Standards Organization

- ISO 14064-2 Greenhouse gases – Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements

- ISO 14064-3 Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions

**NOTE:**
The Carbon Management Standard for Infrastructure PAS 2080 can be adopted and an independent third-party certification to measure carbon emissions across different stages of the life-cycle.

The measurement can include different types of emissions such as Capital (embodied) emissions; Operational (scope 1 and 2) emissions; user (scope 3) emissions etc. To calculate emissions avoided, reference can be made to the IFI Framework for a Harmonised approach to GHG Accounting[42], expressed in tonnes of CO2 equivalent, using the global warming potential of GHG as defined by the UNFCCC.

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[42] Corporate website, unfccc.int, 2021