GREEN BOND
ENVIRONMENTAL IMPACT ASSESSMENT

HKGFA
香港綠色金融協會
Hong Kong Green Finance Association

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ABOUT
THIS GUIDANCE

The development of this guidance was initiated by Hong Kong Quality Assurance Agency (HKQAA) as a project of Green Bond Working Group (Working Group) under the Hong Kong Green Finance Association (HKGFA). It was produced as a result of the contributions of individual members of the Working Group from various leading international and Mainland financial organizations seek to provide guidance to the bond issuers or parties involved in the bond issuance on how to conduct impact assessment in the context of Green Bond.

ACKNOWLEDGEMENTS

We thank Dr Ma Jun, Chairman and President of HKGFA, all HKGFA members, International Capital Markets Association (ICMA, co-chair of Working Group) and all Working Group members for their invaluable inputs to this guidance.

1.
PURPOSE
OF THE GUIDE

This guidance is intended for audiences that are concerned with preparing impact assessment in the context for Green Bond. As the context so admits, the impact may be referred as the positive impact brought forward by the Green Bond and demonstrated through quantitative or qualitative information or negative impact that inevitably incurred during the operation of green projects. There are many different types of impact assessment methods available. The method described in this guidance is not the only resolution but a quick introduction suggesting commonly employed methods and key considerations and elements in the design of impact assessment for Green Bond.

2.
DEFINITIONS
OF IMPACT ASSESSMENT

World Bank defines Environmental Assessment (EA)[1] as a process whose breadth, depth and type of analysis depend on the nature, scale and potential environmental impact of the proposed project. EA evaluates a project's potential environmental risks and impacts in its area of influence; examine project alternatives; identifies ways of improving project selection, sitting, planning, design and implementation by preventing, minimizing, mitigating or compensating for adverse environmental impacts and enhancing positive impacts and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. World Bank favors preventive measures over mitigatory or compensatory measures, whenever feasible. EA takes into account the natural environment (air, water and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples and cultural property) and transboundary and global environmental aspects. EA considers natural and social aspects in an integrated way.

[1] *World Bank OP 4.01*

3.
SIGNIFICANCE OF IMPACT ASSESSMENT

NEGATIVE IMPACT

While there may be overwhelming environmental benefit brought forward by a Green Bond, the negative impact that may accompany with during the operation of green projects should never be neglected. As so suggested in the Green Bond Principle, a process to identify and manage potentially material environmental and social risks associated with the projects should be applied. In such case, impact assessment being a process to assess the predicted effects on the environment imposed by a proposed development or project is crucial to Green Bond. By doing so, adverse impacts on environment would be taken into consideration in early stage of development and corresponding mitigation or management program could be imposed to minimize the effect.

POSITIVE IMPACT

In Green Bond Principle (GBP), Green Bonds are defined as any type of bond instrument where the proceeds will be exclusively applied to finance or re-finance, in part or in full, new and/or existing eligible Green Projects and which are aligned with the four core components of the GBP. Further, the eligibility of Green Projects is stressed to provide clear environmental benefits, which will be assessed and, where feasible, quantified by the issuer. Such a nature recalls the utmost mission of Green Bond, to provide clear environmental benefits and which should be assessed and reported so as to provide confidence to investors that such Green Bond is financing on the right track and fulfilling its mission. The intention of impact reporting is to help investors develop a more detailed understanding of the climate and environmental impacts that can be expected or projected to result from Green Bond eligible projects.

4.
GENERAL PRINCIPLES OF IMPACT ASSESSMENT[2]

Relevance

Select the data sources, data sinks, data, methodologies and all other information that is appropriate to the needs of the intended user.

Completeness

Include all relevant data sources and sinks, and information to support compliance with all requirements.

Consistency

Enable meaningful comparisons in project activity-related information.

Transparency

Disclose sufficient and appropriate project activity-related information in a truthful manner to allow intended users to make decisions with reasonable confidence.

Accuracy and Conservativeness

Reduce bias and uncertainties as far as it is practical/cost-effective, or otherwise use conservative assumptions, values and procedures to ensure that net anthropogenic impact is not overestimated.

[2] *Reference with CDM project standard for project activities Version 02.0*

5. GUIDANCE FOR NEGATIVE IMPACT ASSESSMENT

5.1 BASIC CONSIDERATIONS[3]

1. **Proactive Planning and Decision Tool**

   Impact assessment should be linked to the decision making process.

2. **Making Positive Influence on Decision Making at the Earliest Possible Opportunity and Thinking Proactively about Options and Alternatives**

   It is important to facilitate any effort to enhance the environmental performance of the proposed development at the beginning of the project planning stage rather than at the later stage of the project development.

3. **Living Process Throughout the Project Cycle**

   The impact assessment process should involve a course of dynamic actions throughout the project cycle.

4. **Making Impact Assessment Recommendations Enforceable**

   The recommendations should be sensible, practical and effective, with information about the 5 Ws (i.e. what measures would be implemented, by whom, when, where and to what requirements) and with clear definition of the responsibility for implementing the recommended mitigation measures.

[3] *Reference with Environmental Impact Assessment Ordinance, Cap.499 Guidance Note, Environmental Protection Department, Hong Kong*

[4] *Source: ISO 9000 Introduction and Support Package: Guidance on the Concept and Use of the Process Approach for management systems*

[5] *"Life cycle", Terms and definitions, ISO 14001: 2015 Environmental management systems — Requirements with guidance for use*

[6] *"Environment", Terms and definitions, ISO 14001: 2015 Environmental management systems — Requirements with guidance for use*

5.2 THE PDCA CYCLE FOR CONDUCTING IMPACT ASSESSMENTS[4]

(Typical for assessment in the early stage of project development)

5.2.1 Plan

Identification of risk and impact (Initial Screening)

The screening process involves professional judgment on a case-by-case basis. While screening is designed to be a quick and high-level review, the issuer should exercise careful consideration of the potential environmental and social risks and impacts associated with the proposed activities.

a. Breakdown the project into project activities or process.

b. Initial screening to identify if there is any applicable legal or regulatory requirement involved. If so, further analysis through additional steps of the identification process may be needed.

c. Examine the project in a life-cycle approach including planning and design, construction, commissioning, operations, and decommissioning or closure, post-closure, as appropriate. Life cycle refers to consecutive and interlinked stages of a product (or service) system, from raw material acquisition or generation from natural resources to final disposal. Typical life cycle stages include acquisition of raw materials, design, production, transportation/ delivery, use, end-of-life treatment and final disposal[5].

d. The risks and impacts identification process should be based on recent, up-to-date information at an appropriate level of detail. Relevant description of the project in its geographic, ecological, social, health and temporal context (the environmental and social baseline) should be included.

e. Identify and assess the potential impact of the proposed activities. Typical environmental impacts include air, water, land, natural resources, flora, fauna, humans and their interrelationships[6]. Describe the source of impact and the affected area/ audience and the corresponding life cycle stage that the impact may occur.

f. The significance could be evaluated in the form of risk, expressed in terms of a combination of the "consequences" of an event and the associated "likelihood" of occurrence. The aggregated score could serve as an indicator for the significance of impact which helps to formulate the mitigation measure needed.

g. When determining the significance, the issuer can make use of the factors below for consideration:

- **Likelihood** - How likely is it that the negative impact will occur?
- **Frequency** - How often will the activity that creates the risk or impact occur?
- **Intensity** - How big will the impact be?
- **Manageability** - Can the risk be managed?
- **Duration** - How long will the risk be present?
- **Reversibility** - Can the situation be restored if/when negative impacts occur?

Reference with IFC's approach to risk categorization, activities may also be categorized as follows:

Risk level	Category	Definition
High	Category A	Activities with potential significant adverse environmental and/ or social risks, and/or impacts that are diverse, irreversible or unprecedented
Medium	Category B	Activities with potential mild adverse environmental and/or social risks, and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures
Low/ No	Category C	Activities with minimal or no adverse environmental and/or social risks, and/or impacts

In-depth impact assessment (Optional)

- Depending on the risk level and project nature, the scope and depth of the impact assessment could be adjusted and different type of instrument may be used. For examples, environmental impact assessment, regional or sectoral environmental assessment, environmental audit, hazard or risk assessment and environmental management plan.
- A comprehensive assessment (e.g. full-scale Environmental and Social Impact Assessment (ESIA)) may be required for high-risk projects. Examples include those activities required by the host country's environmental assessment laws and regulations to perform ESIA.
- For projects with limited impacts and well-developed mitigation and monitoring measures, a limited-focus ESIA which is specific to potential environmental and social risks and/or impacts identified will be sufficient. For certain of these projects, confirmation and documentation of the application of environmental sitting, pollution standards, design criteria, or construction standards should be appropriate. This type of project activities may include modernization and upgrade of existing production facilities, not involving major expansions or transformations; real estate projects in urban areas and/or developed areas with the needed infrastructure; development of social infrastructure such as health and education facilities, etc.
- For projects, expected of no significant environmental and social impacts, further assessment may not be required.

[7] *Avoidance: Consider if any feasible alternatives available by comparing the environmental pros and cons and make corresponding design change.*
[8] *Minimization: Where avoidance is not possible, propose mitigation measures to eliminate, offset, or reduce adverse environmental impacts to acceptable levels. Options may include: abate, rectify, repair, and/or restore impacts.*
[9] *Compensation: Where avoidance or minimization measures are not available, propose design and implement measures that compensate/offset for residual risks and impacts.*

5.2.2 Do

Project Implementation

a. Implement the green project according to plan.

Mitigation (if applicable)

b. A mitigation hierarchy could be applied with the following priorities:
1) Avoidance ; 2) Minimization ; 3) Compensation .

c. The measures should be captured in a management program and implemented through a PDCA cycle.

5.2.3 Check

Monitoring

a. Proposes monitoring indicators that can be tracked over defined time periods

b. Define monitoring requirements to determine whether mitigation is successful.

c. Describe the institutional framework for environmental management and proposes relevant capacity building needs

5.2.4 Act

Improvement

a. Propose corrective action when the performance is not up to the defined target.

5.2
THE PDCA CYCLE FOR CONDUCTING IMPACT ASSESSMENTS[4]

(Typical for assessment in the early stage of project development)

Project Name:

Project Category:

Project Description:

Assumptions[11]:

Project activities/ Process		Environmental impacts[12]								Lifecycle Concerned	Alternatives[13] / Mitigation Measure[14]	Applicable Legal Requirement[15]
		Describe the impact and significance[16] (H/M/L)										
		Air	Noise	Water	Waste	Land	Ecology	Emission	Social Impact			
1												
2												
3												

Conclusion[17]:

[10] *Reference with Goals and Principles of Environmental Impact Assessment - Preliminary Note, UNEP*

[11] *An indication of gaps in knowledge and uncertainties which may be encountered in compiling the required information*

[12] *A description of the potentially affected environment, including specific information necessary for identifying and assessing the environmental effects of the proposed activity*

[13] *A description of practical alternatives, as appropriate*

[14] *An identification and description of measures available to mitigate adverse environmental impacts of the proposed activity and alternatives, and an assessment of those measures*

[15] *An indication of whether the environment of any other State or areas beyond national jurisdiction is likely to be affected by the proposed activity or alternatives*

[16] *An assessment of the likely or potential environmental impacts of the proposed activity and alternatives, including the direct, indirect, cumulative, short-term and long-term effects*

[17] *A brief, non-technical summary of the information provided*

6.
GUIDANCE FOR POSITIVE IMPACT ASSESSMENT

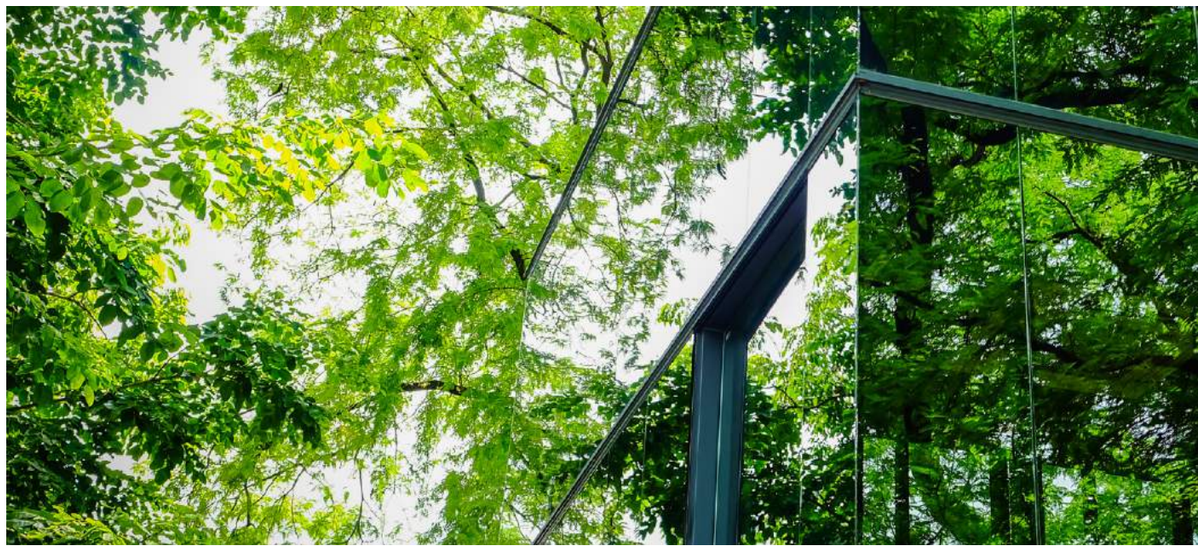
6.1
BASIC CONSIDERATIONS

6.1.1 Strive to report on the actual impact

Identification of risk and impact (Initial Screening)

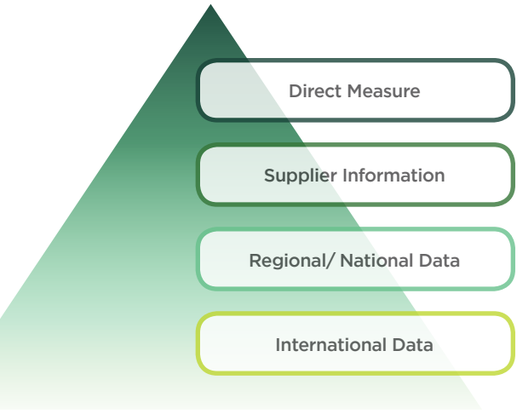
It is common to observe that impact reporting based on the expected environmental impact (ex-ante). It is also understood that not in all circumstance that actual impact could be measured and reported. However, whenever possible, issuers are encouraged to strive to report the actual impact (ex-post) to give a more clear and precise picture of the result. For any scope of results, issuers should also state clearly for any ex-ante or ex-post calculation to avoid misunderstanding.

> **Example**:
>
> Scope of results: Reporting is based on “ex-ante” estimates of climate and environmental impacts at the time of project appraisal and mostly for direct project effects, except as indicated where the results have been updated for actual results at the time of project completion.
>
> - World Bank Green Bond Impact Report 2018



6.1.2 Choose the most relevant and updated data

Issuer should select the most relevant and updated data source for impact assessment and calculation. When possible, issuer should plan ahead before the project implementation to facilitate direct measure of the impact. The direct measure may take into account the fluctuations in batches that may not be able to be reflected by equipment or technology specification. Considering the cost impact, issuer may also strive to select the most relevant data source for the estimating the impact produced with the following priority based on their relevancy, supplier information (e.g. equipment specification), regional or national data and international data. For regional data, Hong Kong Issuer may consider making use of CLP when involving the use of an emission factor. For International data, Intergovernmental Panel on Climate Change (IPCC) and International Energy Agency (IEA) also provide useful information.



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Example:

For a green project of building low carbon metro, the issuer has to set a baseline scenario to estimate the GHG avoidance brought forward by such green project. Without the low carbon metro, passengers may take buses, minibus, taxis or private cars as alternative. Among these substitutions, a conservative estimate may assume that passengers are taking buses which have the lowest GHG emissions per passenger than the other alternatives.

6.1.5 Take into account data sensitivity

Issuers are recommended to take into account fluctuations in data due to uncontrollable events for the impact estimation throughout the project lifetime. For example, for the case of renewable energy, weather irregularities in energy consumption or production should be taken into consideration. Normalization may be needed in such a case.

6.1.6 Adequate information

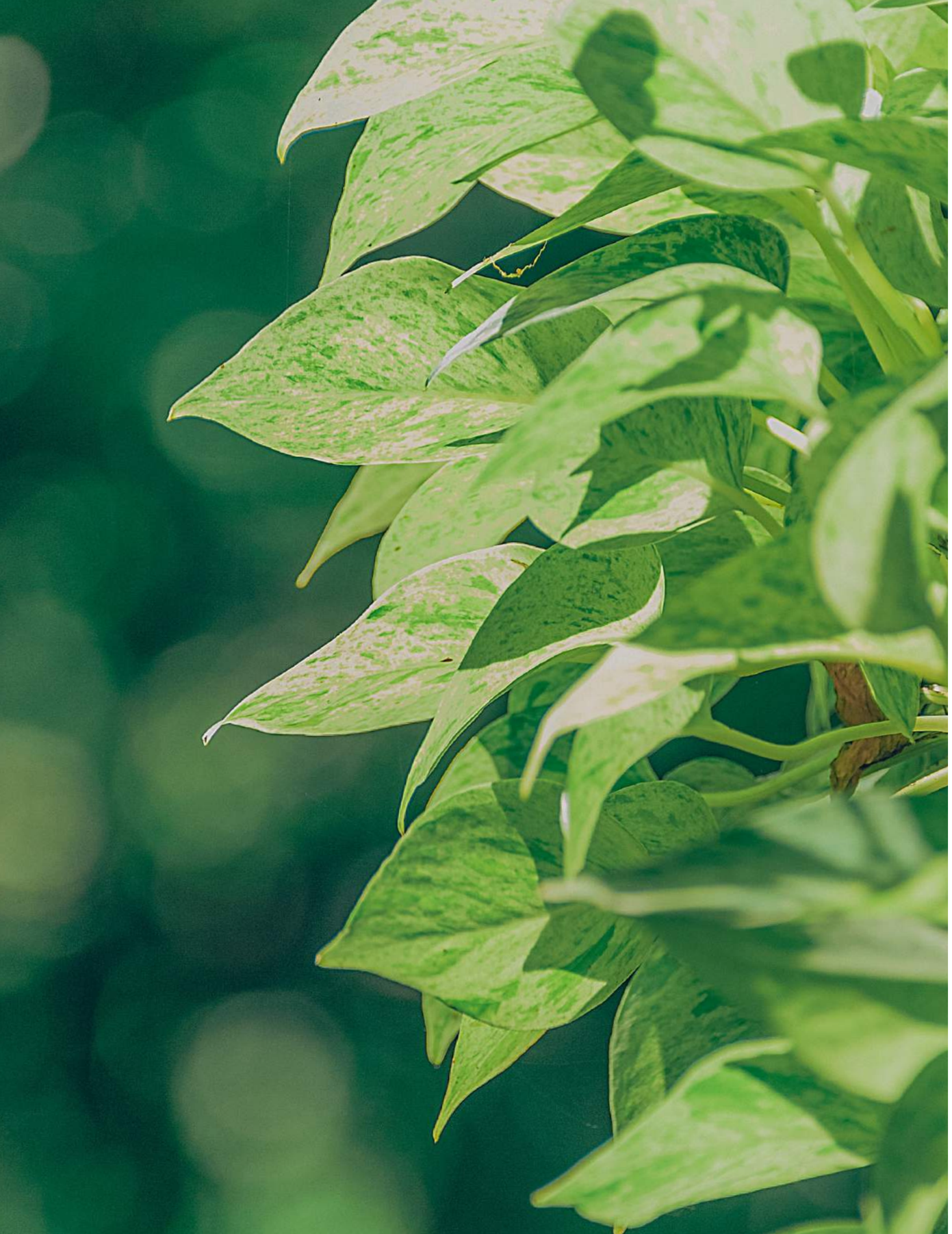
It is highly recommended that issuer should provide the assumption, baseline scenario, data source and methodology for the impact estimation and calculation to give a full picture to reader, especially for the case of GHG emission reporting. With different GHG emission calculation methodologies on the market, without transparency on GHG accounting methodology and assumptions may lead to misunderstanding. Issuers are also recommended to provide an executive summary on portfolio level alongside with impact report on project-by-project basis whenever feasible.

6.1.7 Indicators

GHG emission avoidance or reduction is a commonly observed impact indicator with good comparability demonstrated. On the other hand, it is encouraged that reporting should also include direct performance indicators such as renewable energy produced or electricity saved alongside with the resulting emission reduction (which require certain assumptions). Issuers should also select relevant and applicable indicator for reporting according to the project nature. For sector-specific indicators, ICMA - Harmonized Framework for Impact Reporting would be a good reference as a starting point.

6.1.8 Align with international principles or goals

The Sustainable Development Goals (SDGs) adopted by the United Nations in 2015 are widely-adopted as a universal benchmark by corporates or nations to address global needs. Issuers may align the impact of green bond with SDGs or similar benchmark to demonstrate their effort against the global challenge and also encourage more to commit towards the same goal. ICMA's Mapping to the Sustainable Development Goals would be a useful reference to align green projects with SDGs.



6.2
RECOMMENDED CONTENT IN THE GREEN BOND IMPACT REPORT

a. Introduction of Green Bond Framework e.g. eligible project categories;

b. Summary of the green bond portfolio with details such as currency, coupon, maturity date, principal amount, issue date;

c. Summary of green project portfolio with details such as total project amount, cost incurred, amount financed by green bond proceeds, the proportion of finance shared for each project and the bond that the fund originated from;

d. Impact reporting on a project basis;

e. Summary of impact on portfolio level;

f. Verification statement if applicable.

6.2
RECOMMENDED IMPACT REPORT TEMPLATE ON PROJECT BASIS

(Please note this is just a general example of impact report, there could be other report format)

Name of Green Project	
Total investment amount	
Investment amount funded by Green Bond	
Green project category	
Project description	
Benefits of project	
KPI and performance data	
Data source	
Methodology for estimating environmental benefits and assumption	

7.
REFERENCE

a. An Introduction to Environmental Assessment, United Nation Environmental Programme (UNEP)

b. Basic Principles of the Environmental Impact Assessment Process Environmental Impact Assessment Ordinance (EIAO) Guidance Note, Environmental Protection Department (EPD) Hong Kong, Dec 2010

c. Clean Development Mechanism (CDM) Project Standard For Project Activities Version 02.0

d. Environmental (and Social) Impact Assessment Instruments, World Bank Safeguard Workshop Training Presentation

e. Goals and Principles of Environmental Impact Assessment - Preliminary Note, UNEP

f. Green Climate Fund Handbook Dec 2015

g. Green Climate Fund Proposal Toolkit 2017: Toolkit To Develop A Project Proposal For The GCF

h. Green Bond Principles - Harmonized Framework for Impact Reporting, International Capital Market Association (ICMA), June 2019

i. International Finance Corporation's Guidance Notes: Performance Standards on Environmental and Social Sustainability

j. ISO 14001: 2015 Environmental management systems — Requirements with guidance for use

k. Nordic Public Sector Issuers: Position Paper on Green Bond Impact Reporting - January 2019

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