The Green Bond Principles

ICMA

Handbook

Harmonised Framework for Impact Reporting

June 2023

The compilation of this handbook was **led by an informal Technical Working Group comprising EBRD, KfW, NIB and the World Bank.**

Special thanks are extended to this Technical Working Group, for their detailed work, that drove the preparation of this document as well as to the 4 Multilateral Development Banks (AfDB, EIB, IFC and World Bank) that published the first Harmonised Framework for Impact Reporting in March 2015, and **the 11 International Financial Institutions (IFIs)** that published the updated version in December 2015. **The material also benefitted from generous input from members of the Impact Reporting Working Group, coordinated by EBRD and KfW**, with support from ICMA.

The **11 International Financial Institutions (IFIs)** that published "Working Towards a Harmonised Framework for Impact Reporting" in December 2015 are:

The **Impact Reporting Working Group** currently consists of the following organisations:

Working Group Coordinators:

European Bank for Reconstruction and Development (EBRD)
KfW
Fannie Mae
Nordic Investment Bank (NIB)

2023 Working Group Members:

ABN AMRO Bank
Actiam
Allianz Global Investors
Aluminium Stewardship Initiative Ltd
American Bureau of Shipping
American Forest Foundation
Amundi
Ashurst Hong Kong office
ATP
Banco BTG Pactual
Banco Santander
Bank of America
Bank of Montreal (BMO)
Barclays
BlackRock
Bloomberg
BNP Paribas
BOCI Asia Ltd
BPCE SA
Caixa Bank
CECEP Environmental Consulting
Center for Public Policy Development - ESPOL Polytechnic University
Center for Sustainable Finance – Vlerick Business School
Central Bank of Hungary
China Chengxin Green Finance Technology
CIBC Capital Markets
CICERO
Citi Bank
Climate Bonds Initiative
Commonwealth Bank of Australia
Crédit Suisse
DBS Bank Ltd
Dentons
Deutsche Bank
Deutsche Kreditbank AG (DKB)
DLA Piper
DNV Business Assurance Services UK Ltd
Enterprise Community Loan Fund
Erste Asset Management
Escarus – TSKB Sustainability Consultancy
ESG Tech
EUROFIMA
European Bank of Reconstruction and Development (EBRD)
European Investment Bank (EIB)
Fannie Mae
Folksam
Freshfields Bruckhaus Deringer LLP
Goldman Sachs AM
Green Investment Group
Hannon Armstrong
Hong Kong Exchanges and Clearing
Hong Kong Investment Funds Association
Hong Kong Quality Assurance Agency
HSBC AM
ICE Data Services
Impact Investment Exchange (IIX)
Insight Investment
Institute for Global Environmental Strategies
Inter-American Development Bank (IADB)

International Finance Corporation (IFC)
Intesa Sanpaolo
ISS Corporate Solutions – Powered by ISS ESG
Japan Credit Rating Agency
KBC Bank NV
Kestrel Verifiers
KfW
King & Wood Mallesons LLP
Kommunalbanken
Lloyds Bank Corporate Markets plc
Local Initiatives Support Corporation
London Stock Exchange
Luxembourg Stock Exchange
Massachusetts Bay Transportation Authority
Mizuho International plc
Moody's/Vigeo-Eiris
Morgan Stanley Investment Management Ltd.
MUFG
National Bank Financial
Natixis
Natwest
Nomura International
Nordic Investment Bank (NIB)
Ostrum
PeaceStartup Foundation
PIMCO
Province of Ontario
Rabobank
Rating and Investment Information
RBC
Refinitiv
S&P Global Ratings
Scotiabank
SFIL/CAFFIL
Simmons & Simmons
Singapore Exchange
Skandinaviska Enskilda Banken AB (SEB)
SNCF SA
Social Value Institute
Société Générale CIB
Standard Chartered Bank
SustainableFitch
Sustainalytics
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The Carbon Trust
The Standard Bank of South Africa Limited
UBS
UN Women
Wells Fargo
Westpac
World Bank
WWF
Zurich Insurance

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I. Introduction

The overall goal of the green bond market is to promote and amplify the important role that financial markets can play in helping to address environmental issues. By explicitly specifying the environmentally beneficial projects to which the bond proceeds are allocated, Green Bonds allow investors to assess and allocate capital to environmentally sustainable investments. It is assumed that the green bonds referred to in this document are aligned with the **Green Bond Principles** (GBP)[1]. The GBP help enhance the integrity and transparency of environmental finance, including through recommending impact reporting.

In March 2015, a working group of four Multilateral Development Banks (AfDB, EIB, IFC and World Bank) developed and published the first Harmonised Framework for Impact Reporting, that was later revised and republished by 11 International Financial Institutions (IFIs).[2] The framework outlined core principles and recommendations for impact reporting in order to provide issuers with reference and guidance for the development of their own reporting and provided core indicators and reporting templates for Energy Efficiency and Renewable Energy Projects.

Successively, harmonised frameworks for impact reporting on all further categories of eligibility for Green Projects under the GBP have been released: Sustainable Water and Wastewater Management Projects (June 2017), Sustainable Waste Management and Resource-Efficiency Projects (February 2018), Clean Transportation Projects (June 2018), Green Building Projects (February 2019), Biodiversity Projects (April 2020), Climate Change Adaptation Projects (Decembers 2020), Circular Economy and/or Eco-Efficient Projects (May 2021) and Living Natural Resources and Sustainable Land Use Projects (June 2022). In June 2023 a Harmonised Framework for Impact Reporting for Energy Efficiency and Renewable Energy Projects was released to provide a list of core quantitative indicators for projects as well as reference reporting templates on energy efficiency and renewable energy projects. These above harmonised frameworks summarise the conclusions of informal technical working groups[3], which have received broader input through the Impact Reporting Working Group convened by the Executive Committee of the Principles.

This handbook unites the above mentioned harmonised frameworks in one document preserving the content of the initial documents. The objective is to enhance the usability of the initial documents and to avoid repetitions.

Reporting is a core component of the GBP. Issuers are required to report on the use of proceeds by providing a list of the projects to which Green Bond proceeds have been allocated and a brief description of the projects and their expected impact. In certain cases the information can be presented in generic terms or on an aggregated portfolio basis. The GBP recommend the use of both qualitative performance indicators and, where feasible, quantitative performance measures with the disclosure of the key underlying methodology and/or assumptions used in the quantitative determination. This handbook outlines general **core principles and recommendations** for reporting in order to provide issuers with a reference as they develop their own reporting. This handbook also **offers impact reporting metrics**[4] and **sector specific guidance** for the aforementioned project categories. In Chapter V of this handbook, **reporting templates** are included for issuers to use and adapt to their own circumstances. These templates make reference to the most commonly used indicators. Other indicators, however, might be relevant as well.

All recommendations, indicators and templates need to be compatible with different approaches to the management of proceeds, which can be based on allocations to either individual projects or project portfolios.

It is acknowledged that there are also other initiatives in the market that provide guidance on impact reporting including by green bond market participants.[5]

1 See: https://www.icmagroup.org/sustainable-finance/.
2 Participants: African Development Bank (AfDB), Agence Française de Développement (AFD), Asian Development Bank (ADB), European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), Inter-American Development Bank (IDB), International Bank for Reconstruction and Development (IBRD), International Finance Corporation (IFC), Kreditanstalt für Wiederaufbau (KfW), Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden (FMO), and Nordic Investment Bank (NIB).
3 The members of the respective working groups are mentioned under II. Background History.
4 References to impact and impact reporting metrics in this Handbook also encompass outcomes and outputs.
5 For example: Nordic Public Sector Issuers' "Position Paper on Green Bonds Impact Reporting" https://www.kuntarahoitus.fi/app/uploads.sites/2/2020/02/NPSI_Position_paper_2020_final.pdf.

II. Background History

- In November 2013, a group of investors, issuers and market intermediaries gathered at a Symposium hosted by the World Bank[6] to discuss the green bond market and what is needed to help it achieve its purpose. Investors recognised a need for more transparency around the use of proceeds as well as further development in the area of impact reporting and encouraged participating MDBs to help develop guidance on a common approach, building on ongoing work among a broader group of IFIs to develop harmonised approaches for GHG accounting.
- In January 2014, the Green Bond Principles (GBP), a voluntary set of guidelines, were published at the initiative of capital market intermediaries that recommended transparency and disclosure to promote integrity in the development of the green bond market by clarifying the cornerstones of green bond issuance.
- In February 2015, a statement of investor expectations for the green bond market convened by Ceres for the Investor Network on Climate Risk, highlighted investors' requests for issuers to report on the environmental impact issuers expected their projects to generate.
- In March 2015, a second edition of the Green Bond Principles was published with the support of the International Capital Market Association (ICMA) as the Secretariat to the GBP. This edition benefited from extensive dialogue with representative groups of issuers, investors and intermediaries to reflect the evolution of the green bond market and to identify best practice. The updated GBP identified four components of green bonds: (1) use of proceeds (eligibility criteria); (2) process for project evaluation and selection (due diligence procedures); (3) management of proceeds (allocation procedures); and (4) reporting. With regard to reporting, the updated GBP specified that:

  "In addition to reporting on the use of proceeds and the temporary investment of unallocated proceeds, issuers should provide at least annually a list of projects to which green bond proceeds have been allocated including - when possible with regards to confidentiality and/or competitive considerations - a brief description of the projects and the amounts disbursed, as well as the expected environmentally sustainable impact. [...]

  The GBP acknowledge that there are currently no established standards for impact reporting on Green Projects, ***and welcome and encourage initiatives, including those by leading green bond issuers, that help establish a model for impact reporting that others can adopt and/or adapt to their needs."***

- In March 2015, based on investor interest in impact reporting and the positive influence that higher transparency and comparability in this area may have for the green bond market and the call by investors such as BlackRock and Zurich Insurance for shared impact assessment approaches, AfDB, EIB, IFC, and the World Bank came together as a working group convened by the World Bank Treasury to develop a Harmonised Framework for Impact Reporting. The first version of this document was discussed with and distributed to investors and other market participants for broader consideration and published.
- In May 2015, ICMA, as GBP Secretariat, distributed the document to the GBP Members and Observers, to broaden its reach and increase its potential use by more market participants.
- In September 2015, seven additional IFIs joined the working group and their comments are reflected in the revised version of the document that was published in December 2015 under an initiative coordinated by the EIB timed to coincide with COP 21, hosted in Paris.
- In August 2016, the GBP Executive Committee established the Impact Reporting Working Group ("IRWG"). It was agreed that the IRWG would be co-chaired by BlackRock and EBRD.
- In September 2016, the kick-off meeting of the IRWG agreed to broaden sectoral coverage beyond renewables and energy efficiency, which were already covered by the aforementioned document, incrementally tackling other GBP project categories.
- In June 2017, the 30 members of the IRWG, led by an informal technical working group comprising EBRD, KfW, NIB and the World Bank, published "Suggested Impact Reporting Metrics for Sustainable Water and Wastewater Projects". Building on and referencing the previous framework of the Harmonised Framework for Impact Reporting, the document proposed core metrics for reporting on sustainable water and wastewater projects, while highlighting the importance of key qualitative and contextual information,

6 See: http://pubdocs.worldbank.org/en/980521525116735167/Green-Bond-Symposium-Summary.pdf.

proposing benchmarks and baselines, and offering additional sustainability indicators that may enhance reporting. Illustrative templates, similar to those proposed under the earlier document were provided both for project-by-project reporting and for portfolio-based reporting.

- In February 2018, under the co-chairmanship of BlackRock and EBRD, the 36 members of the IRWG led by an informal technical working group comprising EBRD, KfW, NIB and the World Bank published "Suggested Impact Reporting Metrics for Waste Management and Resource Efficiency Projects". It followed exactly the same format as the June 2017 document.
- In June 2018, under the co-chairmanship of BlackRock and EBRD, 37 members of the IRWG led by an expanded informal technical working group comprising EBRD, EIB, KfW, NIB and the World Bank published "Suggested Impact Reporting Metrics for Clean Transportation Projects".
- In March 2019, under the co-chairmanship of EBRD and KfW, 45 members of the IRWG led by the informal technical working group of EBRD, IFC, KfW, NIB and the World Bank, published "Suggested Impact Reporting Metrics for Green Building Projects".
- In April 2020, under the co-chairmanship of EBRD and KfW, 43 members of the IRWG led by the informal technical working group of EBRD, KfW, NIB and the World Bank published "Suggested Impact Reporting Metrics for Biodiversity Projects".
- In December 2020, under the co-chairmanship of EBRD and KfW, 42 members of the IRWG led by the informal technical working group of EBRD, KfW, NIB and the World Bank published "Suggested Impact Reporting Metrics for Climate Change Adaptation Projects".
- In May 2021, under the co-chairmanship of EBRD and KfW, 52 members of the IRWG led by the informal technical working group of EBRD, KfW, NIB and the World Bank published "Suggested Impact Reporting Metrics for Circular Economy and/or Eco-Efficient Projects".
- In June 2022, under the co-chairmanship of EBRD and KfW, 110 members of the IRWG led by the informal technical working group of EBRD, KfW, NIB and the World Bank published "Suggested Impact Reporting Metrics for Living Natural Resources and Sustainable Land Use Projects".
- In June 2023, under the co-chairmanship of EBRD and KfW, 114 members of the IRWG led by the informal technical working group of EBRD, KfW, NIB and Fannie Mae made a review and amended where appropriate the core recommendations of the Handbook – Harmonised Framework for Impact Reporting and published "Suggested Impact Reporting Metrics for renewable energy and energy efficiency".

III. Core Principles and Recommendations for Reporting

1. **Reporting is a core component of the GBP, and green bond issuers are required to report on both the use of green bond proceeds, as well as their expected environmental impacts at least on an annual basis.** Besides qualitative performance indicators and contextual information, the use of quantitative performance measures is recommended, where feasible. In this regard, core impact metrics such as those proposed under the relevant project categories in this Handbook are preferred over other quantitative metrics (e.g. inputs, outputs, outcomes).[7]

2. **Issuers are recommended to define and disclose the period and process for including projects in their report.** There are several options for choosing when to add/remove projects to/from the report. Some of these options are described below. Projects can be added/removed to/from an impact report either directly, or indirectly via adding/removing them to/from a portfolio when reporting on a portfolio level.

   - Projects can be added to the report once the issuer has approved and determined a project as eligible, or once green bond proceeds have been allocated to eligible disbursements.
   - Projects should be removed from a report if the project experiences issues that are likely to affect or have already negatively affected (expected) impact such as being past due, or after the underlying loans have been repaid.

   As part of its due diligence in monitoring projects included in its green bond programme, an issuer may elect to remove a project from its green bond programme, in which case it could cease reporting on such a project until a subsequent decision to restore the project's eligibility.[8]

3. **It is recommended that the report indicates the total signed amount[9] and the amount of green bond proceeds allocated to eligible disbursements[10].** It would also be beneficial for issuers to show additional information such as the year of signing (or other measures to describe the seasoning of a portfolio) or project stage from a financing point of view (such as signed, disbursed, repaying).

4. A defining characteristic of green bonds is that the issuance proceeds (or an amount equal to the proceeds) are to be allocated only to those projects that meet the issuer's predefined eligibility criteria. **Issuers are encouraged to put in place a formal internal process for the allocation of proceeds linked to their lending and investment operations for green projects and to report on the allocation of proceeds.** Issuers are encouraged to explain the key characteristics of the approach they select for their allocations and to provide reference to external audit/verification, when applicable, regarding their allocation criteria.

5. **Depending on the process put in place for the allocation of proceeds, it is recommended that issuers either provide a list of projects to which green bond proceeds have been allocated, or report solely on a portfolio level.**

   Reporting can be done:

   - **on a bond-by-bond basis**, where one green bond issuance is

     (i) linked to one or more specific projects or

     (ii) linked to a portfolio of projects if a large number of small-sized projects is financed by one green bond or if confidentiality considerations restrict the level of detail that can be disclosed.

   - **on a green bond portfolio basis** where the proceeds of all of an issuer's outstanding green bonds fund a portfolio of projects. Issuers are encouraged to explain the key characteristics of the approach they select for their reporting.

7 An overview of the results chain and related definitions can be found in "Measuring and Managing the Impact of Sustainable Investments – A Two-Axes Mapping (OECD, June 2020)".

8 Possible reasons for removing a project from a green bond programme include, but are not limited to, cancellation of the project, or restructuring that results in the project no longer meeting the eligibility criteria. Issuers are encouraged to disclose their approach to removing projects from their green bond programmes, if applicable.

9 Total approved and legally committed amount of financing for a project or the components thereof eligible under a green bond programme. Where only a portion of the overall financing is eligible, only the eligible portion should be reported. For example, if the total approved project size is CCY 10 million, of which CCY 6 million is eligible under the green bond program, the signed amount reported would be CCY 6 million.

10 For projects with partial eligibility (see para. 14) the issuer should disclose the procedure for attributing disbursements to the eligible components.

6. **Depending on the way in which proceeds are allocated, there can be differences in the approach to impact reporting.**

   In cases of allocations to individual projects, it is recommended that the report:

   - Identifies the individual projects and clearly defines, for each project, the overall project impacts (including financing from all financiers) with information about the total project size and/or the issuer's share of total financing (project-by-project report); and/or
   - Aggregates project-by-project results including only the pro-rated share (as a percentage of the issuer's share of the total financing) of the total projects' results (portfolio report based on project-by-project allocations).

   In cases of allocations to a portfolio of projects, issuers typically report on the overall impacts of the portfolio, especially where they believe that their financing has played a catalytic role. Issuers are encouraged to provide additional information on the catalytic role of their financing. Issuers are however encouraged to also report the pro-rated share of the overall results.

7. **The impact report should illustrate the expected environmental impacts or outcomes made possible as a result of projects to which green bond proceeds have been allocated.** It should be based on ex-ante estimates (developed prior to project implementation) of expected annual results for a representative year once a project is completed and operating at normal capacity. It is recommended that the source of the method of estimating the impacts is assessed by an external reviewer and aligned to the best standards and practices within the respective industry. In the case of reporting on a portfolio level, ex-ante estimates can be based on the annual analysis per portfolio and, if several categories are financed, per category, if possible. The method of estimating the impacts should be made transparent. As the report would include the estimated results of projects that are still in the construction or implementation phase, there is no guarantee that these results will ultimately materialise. The reporting is thus not intended to provide actual results achieved in a specific year or reporting period.

8. **It may also be beneficial to report the estimated lifetime results and/or a project's economic life (in years) to provide users with a basis for understanding the impact of the project over its lifetime.** It should be noted that a simple multiplication of the project's economic life by the estimated annual impact may not always provide a good estimate of the lifetime impact results, because this would not take into account ramp-up and ramp-down phases of the project life cycle. Also, for some project types, it may be difficult to aggregate all the measures being implemented at a project site given the heterogeneous nature of processes and/or equipment.

9. **When the issuer samples ex-post verification of specific projects, it is recommended that the relevant results are clearly included in the reporting and compared to the ex-ante assumptions.** An important consideration in estimating impact indicators is that they are often based on a number of assumptions. While technical experts aim to make sound and conservative assumptions that are reasonable based on the information available at the time, the actual environmental impact of the projects may diverge from initial projections. For example, social, economic, technical, political and legal changes can cause deviations from projections. In any case, transparency on the assumptions would clarify the reasons behind differences between ex-ante and ex-post assessments. Where ex-post impact information is not available, issuers are encouraged to disclose their process for monitoring, reporting and (if any) verification of ex-ante assessments.

10. **To facilitate comparison of project results, it is suggested that issuers aim to report on at least a limited number of sector specific core indicators for projects included in their green bond programmes.** This document proposes sector specific core indicators for all GBP project categories in Chapter IV and issuers are encouraged to report on all core indicators in the relevant project category, that relate to their projects. However, other indicators might be deemed relevant as well.

11. **For the calculation of indicators, where there is no single commonly used standard, issuers may follow their own methodologies while making these available to investors.** For the calculation of greenhouse gas (GHG) emissions reduced/avoided, for instance, there are a number of calculation methodologies both within and across institutions. While there are on-going efforts to harmonise GHG accounting methodologies for relevant sectors among a broad group of IFIs[11], given the current

11 IFI Framework for a Harmonised Approach to Greenhouse Gas Accounting and 2021 Joint Report on Multilateral Development Banks' Climate Finance.

differences in calculation approaches, reporting GHG emission data based on a uniform, consistent and published methodology remains a challenge. **Issuers are therefore encouraged to provide full transparency on the applicable GHG accounting methodology and assumptions, which should be referenced.**

12. **Investors should be aware that comparing projects, sectors, or whole portfolios is difficult because general assumptions on inputs in calculations, like grid factors and calculation methods, also vary significantly.** In addition, the cost structures between countries also vary, so that developing cost-efficiency calculations (results per unit of amount invested in eligible projects) could place smaller countries with limited economies of scale at a disadvantage and will not take into consideration the country-specific context. However, issuers are recommended to disclose a detailed description of the projects (e.g., context, region, target, population) to promote transparency and understanding about the various regulations and the baseline situation and circumstances in the respective country and region where the projects are located.

13. **Issuers may elect, for consistency reasons, to convert units reported for individual projects.** This should be based on a standard conversion factor to facilitate comparison and aggregation for example converting tons of coal equivalent (TCE) to megawatt hours (MWh), with appropriate disclosure of the conversion approach. However, complex recalculations that are not publicly disclosed in project documentation, such as re-estimating GHG emissions based on consistent baseline assumptions, should be avoided.

14. **Issuers are encouraged to be transparent about projects with partial eligibility.** Some projects may have components that meet the issuer's green bond eligibility criteria while other components of the same project do not. Issuers should therefore disclose whether or not and to what extent they accept partial eligibility. Should an issuer use criteria that require allocating green bond proceeds to a project with partial eligibility, then it is recommended to explain all assumptions about which component each disbursement relates to (e.g. if it is assumed that disbursements are first made to the 'green' component, or pro-rated between the 'green' and 'other' components). If an issuer allocates green bond proceeds only to those component(s) of a project that are eligible, it should report the portion of the total project that is green bond eligible. Irrespective of whether the Green Bond proceeds are used to finance the whole of a partially eligible project or just eligible components, the overall environmental impact of the projects (including the non-eligible part) should be estimated, and a clear risk assessment including appropriate mitigation efforts (if applicable) will need to be provided.

15. **The Green Bond Principles highlights the value of qualitative as well as quantitative reporting.** This should not only allow a better understanding of the context in which the project's impact is expected to be achieved but should also provide an understanding of the management of risks that have been identified in relation to the project, such as those highlighted in the relevant chapters for eligible project categories and qualified as material. Such negative effects of projects should also be reported.

16. **In cases where the expected impacts or outcomes of different project components (such as for example energy efficiency (EE) and renewable energy (RE) components of the same project) may not be reported separately, issuers may attribute the results to each component based on their relative share in the related financing, disclosing the attribution approach.** Alternatively, issuers could combine the reporting metrics for both components into a single table (option 2 in the reference reporting templates).

17. **Issuers should be transparent on how they report all green bond related cash flows in one currency when they allocate green bond proceeds and report on the projects to which green bond proceeds have been allocated.**

18. **Issuers may facilitate the smooth collection and/or transfer of data by investors through using the reporting templates in Chapter V of this handbook**[12] **and/or through uploading impact data on impact reporting databases.**[13] The Guidelines for Green, Social, Sustainability and Sustainability-Linked Bonds' Impact Reporting Databases were released in June 2021[14] and include advice for issuers on engagement with database providers.

12 The templates are available in excel format at https://www.icmagroup.org/sustainable-finance/impact-reporting/green-projects.
13 Databases - Guidelines and mapping » ICMA (icmagroup.org).
14 https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Guidelines-for-Green-Social-Sustainability-and-Sustainability-Linked-Bonds-Impact-Reporting-Databases-June-2021-100621.pdf.

IV. Sector Specific Guidance and Reporting Metrics

1. Renewable Energy

The indicators proposed herein aim to capture and illustrate the environmental and sustainability benefits of projects relating to renewable energy (including production, transmission, distribution, appliances and products).

While we understand such projects to also include those that are, for example, focused on waste management, transportation, agribusiness, construction and eco-efficient manufacturing, such projects may primarily fall under separate GBP project categories of "Pollution prevention and control", "Clean transportation", "Environmentally sustainable management of living natural resources and land use", "Green buildings", and "Circular economy adapted products, production, technology and processes; and/or certified eco-efficient products" respectively for which impact reporting metrics have been proposed.

Projects that generate electricity from renewable sources ("renewable energy" projects) are needed at scale and urgently if we are to reach the goals of the Paris Agreement. It is crucial, however, to provide information on the core dimensions of the project, its specific characteristics and the metrics to analyse the results. The importance of the geographic context in the assessment of, for instance, renewable resource levels, the choice of technologies and the current emissions intensity of the electrical grid reinforces the benefit of additional disclosures, such as the national, regional and local context and information on the population served.

While this document proposes certain specific quantitative impact reporting metrics, providing qualitative information, including all strategies, actions and plans for managing the positive and negative impacts, is also of importance. Issuers are advised to consider whether this information is more meaningful if provided at issuer or project level. For renewable energy projects, understanding their siting to ensure that negative impacts on biodiversity are minimised, appears to be of particular relevance. For all projects, the impact on labour markets is of significant importance, whether focused on the conditions affecting the production of raw materials, the supply chain more generally and/or construction, or on the livelihoods of those negatively affected by the transition to a low carbon economy. Qualitative information that reflects on how the benefits of a renewable energy project are shared and protect vulnerable populations to ensure a "just transition" will provide a meaningful context for understanding and assessing the baseline situation and the improvement as a result of the project. Investors may also have particular concerns in relation to energy crop production projects, with different sustainability implications being associated with each type of biofuel, and with the general risk of land being diverted from food to fuel production given the persistent growth in global food demand.

For the purpose of data quality, issuers are encouraged to disclose additional technical reports, environmental impact assessments and/or data verification protocols where additional information could be provided, as well as links to the sources of such data and methods of calculation. The robustness of disclosures and/or the underlying methodology may be enhanced by making available any independent assessment from consultants, verification bodies and/or institutions with recognised expertise in environmental sustainability. Since the context in which any project is undertaken is of key importance in an assessment, a portfolio of projects across different geographies may be best understood through disaggregated data.

Core Indicators

#1) Annual GHG emissions reduced/avoided in tonnes of CO_2 equivalent/a

#2) Annual renewable energy generation in MWh/GWh (electricity) and GJ/TJ (other energy)

#3)) Additional capacity of renewable energy plant(s) constructed or rehabilitated in MW

Other Indicators (Examples)

- Additional capacity of renewable energy plant(s) to be served by transmission systems (MW)
- Decrease in the carbon intensity factor[15] (tCO_2e/MWh)
- Annual Absolute (gross) GHG emissions from the project in tonnes of CO_2 equivalent/a/b

15 For utilities.

Notes:

a. Where CO_2 emissions figures are reported, the GHG accounting methodology and assumptions should be referenced.

b. Depending on their own GHG reporting requirements, some institutions may report Absolute (gross) GHG emissions from the project, alongside the reduced/avoided emissions (under indicator #1). Together with baseline emissions, Absolute (gross) emissions allow for the calculation of emissions reduced/avoided.

In the context of climate change, data on emissions of GHG (often quoted in tonnes of CO_2 equivalent) is a commonly used indicator to assess the climate impact of certain types of projects. However, there exist a number of different methodologies for estimating and reporting GHG emissions. The differences mainly relate to the assumptions used for estimating the future output (e.g. plant efficiency), the emission conversion factors (e.g. project specific combined margin vs UNFCCC standardised baseline for the host country/ region), definitions for the boundaries of a specific project (e.g. physical infrastructure/system boundary vs geographic/administrative boundary), scope of the GHG emission reductions attributable to the project, and the baseline alternative used for comparison with the project.

While many organisations have existing, published methodologies for project GHG accounting, there are on-going efforts to harmonise GHG accounting methodologies for relevant sectors among a broad group of International Financial Institutions (IFIs). However, this is an ongoing process and, in the absence of one single standard, institutions may follow their own methodologies while striving to make them publicly available and transparent. Green bond impact reporting will increase market-wide transparency on the status quo.

Other Sustainability Indicators

- Number of households served with clean energy
- Number of households served with energy efficiency solutions such as smart meters
- Reduction in air pollutants (SO_2, NOx, PM, VOCs, SF_6) from fossil fuels (in tonnes/annually)
- Energy efficiency components produced or procured (m^2, m^3, tonnes or %)
- Amount of energy recovered from non-recyclable waste (MWh/GWh or GJ/TJ)
- % of embodied energy (and carbon) reduced over lifecycle ("cradle to grave") vs local benchmark
- On-farm energy audit
- Volume of sustainably sourced goods produced or procured (m^3, tonnes)
- Number of permanent full-time jobs created (in FTE) by the projects
- Number of workers affected by the transition supported to reskill and/or relocate
- Increased human health/productivity valorised amount (currency (mn)/year)
- Contribution of the issuer to the transmission/distribution costs to consumer bills
- Key sensitive animal/plant species affected by the project (Number of species/specimens)
- Key biodiversity areas affected by the project (m^2)
- Area of land remediated/rehabilitated (m^2/ hectares)
- Remediation actions to preserve biodiversity (e.g. installation of nesting platforms for overhead lines)
- Water consumption (m^3)
- Variation of the carbon intensity factor of the transmission system in tonnes of CO_2 equivalent per MWh
- Investment valorised amount (currency (mn)) dedicated to reskilling/upskilling previously high-emitting facility workers beyond depolluting or dismantlement minimum legal requirements
- Investment valorised amount (currency (mn)) dedicated to repurposing of the previously high-emitting facilities beyond depolluting or dismantlement minimum legal requirements
- % of jobs conserved in the decommission phase of high-emitting or polluting facility(ies)/activity(ies)

2. Energy Efficiency

The indicators proposed herein aim to capture and illustrate the environmental and sustainability benefits of projects relating to energy efficiency (such as in new and refurbished buildings, energy storage, district heating, smart grids, appliances and products).

While we understand such projects to also include those that are, for example, focused on waste management, transportation, agribusiness, construction and eco-efficient manufacturing, such projects may primarily fall under separate GBP project categories of "Pollution prevention and control", "Clean transportation", "Environmentally sustainable management of living natural resources and land use", "Green buildings", and "Circular economy adapted products, production, technology and processes; and/or certified eco-efficient products" respectively for which impact reporting metrics have been proposed.

Projects that invest in substantially reducing energy demand ("energy efficiency" projects) are needed at scale and urgently if we are to reach the goals of the Paris Agreement. It is crucial, however, to provide information on the core dimensions of the project, its specific characteristics and the metrics to analyse the results. The importance of the geographic context in the assessment of, for instance, renewable resource levels, the choice of technologies and the current emissions intensity of the electrical grid reinforces the benefit of additional disclosures, such as the national, regional and local context and information on the population served.

While this document proposes certain specific quantitative impact reporting metrics, providing qualitative information, including all strategies, actions and plans for managing the positive and negative impacts, is also of importance. Issuers are advised to consider whether this information is more meaningful if provided at issuer or project level. For energy-efficiency projects, especially in high emitting sectors, it is particularly important in understanding the scale and speed of the transition of the issuer for consistency with the goals of the Paris Agreement. For all projects the impact on labour markets, is of significant importance, whether focused on the conditions affecting the production of raw materials, the supply chain more generally and/or construction, or on the livelihoods of those negatively affected by the transition to a low carbon economy. Qualitative information that reflects on how the benefits of a renewable energy project are shared and protect vulnerable populations to ensure a "just transition" will provide a meaningful context for understanding and assessing the baseline situation and the improvement as a result of the project. Investors may also have particular concerns in relation to energy crop production projects, with different sustainability implications being associated with each type of biofuel, and with the general risk of land being diverted from food to fuel production given the persistent growth in global food demand.

For the purpose of data quality, issuers are encouraged to disclose additional technical reports, environmental impact assessments and/or data verification protocols where additional information could be provided, as well as links to the sources of such data and methods of calculation. The robustness of disclosures and/or the underlying methodology may be enhanced by making available any independent assessment from consultants, verification bodies and/or institutions with recognised expertise in environmental sustainability. Since the context in which any project is undertaken is of key importance in an assessment, a portfolio of projects across different geographies may be best understood through disaggregated data.

Core Indicators

#1) Annual energy savings in MWh/GWh (electricity) and GJ/TJ (other energy savings)/a

#2) Annual GHG emissions reduced/avoided in tonnes of CO_2 equivalent/b

Other Indicators (Examples)

- Annual Absolute (gross) GHG emissions from the project in tonnes of CO_2 equivalent/b/c

Notes:

a. Energy savings depend on benchmarks which should be disclosed.

b. Where CO_2 emissions figures are reported, the GHG accounting methodology and assumptions should be referenced.

c. Depending on their own GHG reporting requirements, some institutions may report Absolute (gross) GHG emissions from the project, alongside the reduced/avoided emissions (under indicator #2). Together with baseline emissions, Absolute (gross) emissions allow for the calculation of emissions reduced/avoided.

In the context of climate change, data on emissions of GHG (often quoted in tonnes of CO_2 equivalent) is a commonly used indicator to assess the climate impact of certain types of projects. However, there exist a number of different methodologies for estimating and reporting GHG emissions. The differences mainly relate to the assumptions used for estimating the future output (e.g. plant efficiency), the emission conversion factors (e.g. project specific combined margin vs UNFCCC standardised baseline for the host country/region), definitions for the boundaries of a specific project (e.g. physical infrastructure/system boundary vs geographic/administrative boundary), scope of the GHG emission reductions attributable to the project, and the baseline alternative used for comparison with the project.

While many organisations have existing, published methodologies for project GHG accounting, there are ongoing efforts to harmonise GHG accounting methodologies for relevant sectors among a broad group of International Financial Institutions (IFIs).[16] However, this is an ongoing process and, in the absence of one single standard, institutions may follow their own methodologies while striving to make them publicly available and transparent. Green bond impact reporting will increase market-wide transparency on the status quo.

Other Sustainability Indicators

- Number of households served with clean energy
- Number of households served with energy efficiency solutions such as smart meters
- Reduction in air pollutants (SO_2, NOx, PM, VOCs, SF_6) from fossil fuels (in tonnes/annually)
- Energy efficiency components produced or procured (m^2, m^3, tonnes or %)
- Amount of energy recovered from non-recyclable waste (MWh/GWh or GJ/TJ)
- % of embodied energy (and carbon) reduced over lifecycle ("cradle to grave") vs local benchmark
- On-farm energy audit
- Volume of sustainably sourced goods produced or procured (m^3, tonnes)
- Number of permanent full-time jobs created (in FTE) by the projects
- Number of workers affected by the transition supported to reskill and/or relocate
- Increased human health/productivity valorised amount (currency (mn)/year)
- Contribution of the issuer to the transmission/distribution costs to consumer bills
- Key sensitive animal/plant species affected by the project (Number of species/specimens)
- Key biodiversity areas affected by the project (m^2)
- Area of land remediated/rehabilitated (m^2/hectares)
- Remediation actions to preserve biodiversity (e.g. installation of nesting platforms for overhead lines)
- Water consumption (m^3)
- Variation of the carbon intensity factor of the transmission system in tonnes of CO_2 equivalent per MWh
- Investment valorised amount (currency (mn)) dedicated to reskilling/upskilling previously high-emitting facility workers beyond depolluting or dismantlement minimum legal requirements
- Investment valorised amount (currency (mn)) dedicated to repurposing of the previously high-emitting facilities beyond depolluting or dismantlement minimum legal requirements
- % of jobs conserved in the decommission phase of high-emitting or polluting facility(ies)/activity(ies)

16 An overarching harmonised framework has already been agreed. See https://www.worldbank.org/content/dam/Worldbank/document/IFI_Framework_for_Harmonized_Approach%20to_Greenhouse_Gas_Accounting.pdf.

3. Sustainable Water and Wastewater Management

The indicators proposed herein aim to capture and illustrate the environmental and sustainability benefits of projects relating to sustainable water and wastewater management, which are recognised by the GBP for Green Projects under one of the ten broad categories of eligibility for Green Projects:

"sustainable water and wastewater management (including sustainable infrastructure for clean and/or drinking water, wastewater treatment, sustainable urban drainage systems and river training and other forms of flooding mitigation)".

Relevant projects may also reference categories focused on pollution prevention and control, environmentally sustainable management of living natural resources and land use, as well as climate change adaptation. While this handbook does not yet cover environmentally sustainable management of living natural resources and land use projects, the authors of this document acknowledge the importance of harmonisation also for such projects.

The proposed indicators are designed to facilitate quantitative reporting at a project and/or at a portfolio level across geographies. The importance of the geographic context in the assessment of solutions reinforces the benefit of providing additional contextual information. We therefore encourage disclosure on the local and regional context, including river basin or regional sea specific baselines, to help understand the environmental impacts/benefits of the project in its context. Additional qualitative reporting is also encouraged.

It is recognised that water use, wastewater treatment and energy consumption are often closely interlinked, and therefore where such projects result in energy savings, these, and related Greenhouse Gas reductions, can be reported using the core indicators for Energy Efficiency and corresponding reporting templates.

For meaningful aggregation of indicators across projects, consistency in the methods of calculation, baselines and benchmarks would be required. Thus for the purpose of data quality, issuers are encouraged to disclose additional technical reports and/or data verification protocols where additional information could be provided as well as links to the sources of such data and methods of calculation.[17]

17 For example, the International Benchmarking Network for Water and Sanitation Utilities (IBNET) is the world largest database for water and sanitation utilities performance data (https://www.ib-net.org/) or guidance on definitions and data sources for water-related metrics that are commonly used by companies to disclose aggregated data at site or company level, such as the Global Reporting Initiatives G4 standard water metrics.

Core Indicators

A. Sustainable Water Management - Water Use Sustainability and Efficiency Projects

#1) Annual water savings

Annual water savings for example from:

- *reduction in water losses in water transfer and/or distribution*
- *reduction in water consumption of economic activities (e.g. industrial processes, agricultural activities including irrigation, buildings, etc.)*[18]
- *water reuse and/or water use avoided by waterless solutions and equipment, (e.g. for sanitation, cooling systems for power plants, industrial processes, etc.)*

Indicators:

- Annual absolute (gross) water use before and after the project in m^3/a, reduction in water use in %

Benchmarks:

- *Internationally recognised benchmark standards for water use efficiency (e.g. EU Directives and Best Available Techniques reference standards or industry/sector good/best practice standards)*
- *The Water Exploitation Index Plus (WEI+) or internationally recognised tools such as WRI's Aqueduct, and the WWF's Water Risk Filter*
- *The average monthly water consumption as a percentage of the sustainable basin water*

B. Wastewater Treatment Projects (including Sewage Sludge Management)

#2) Annual volume of wastewater treated or avoided[19]

Annual amount of:

- *wastewater treated to appropriate standards or raw/untreated wastewater discharges avoided*
- *wastewater avoided, reused or minimised at source*

Indicators:

- Annual absolute (gross) amount of wastewater treated, reused or avoided before and after the project in m^3/a and p.e./a and as %

Population equivalent (1 p.e.) or 60 g of BOD_5 (EU definition)

#3) Treatment and disposal and/or reuse of sewage sludge

Treatment, disposal and/or reuse of sewage sludge (according to country legislation compatible with internationally recognised standards):

- *Sludge that is treated and disposed of (e.g. dewatering, sanitisation, composting, digestion without biogas extraction)*
- *Sludge that is reused (e.g. digestion with biogas recovery, phosphorous recovery, agriculture use, co-combustion)*

Indicators:

- Annual absolute (gross) amount of raw/untreated sewage sludge that is treated and disposed of (in tonnes of dry solids p.a. and in %)
- Annual absolute (gross) amount of sludge that is reused (in tonnes of dry solids p.a. and in %)

Note: Projects which involve sludge that is dumped in landfill or stored in the wastewater treatment plant (WWTP) premises or sludge that is recycled without approved safeguards will be excluded. In portfolio reporting, this may be combined with utilisation, recycling and/or disposal of other types of (solid) waste for one aggregated figure.

18 Improvements in sustainable water management may also come via small interventions (e.g. distributed sustainable water assets include composting toilets, low-flow water fixtures, efficient washing machines, micro-irrigation systems and rainwater tanks).

19 Water and wastewater projects may be deemed to have multiple benefits which can be broken out or reported according to the most meaningful impact. For instance, a project may be reported solely as a reduction in Water Consumption (under A.#1 of the respective templates under V. Reporting Templates), or by differentiating between the water use avoided and the generation of wastewater avoided.

Benchmarks:

- *Internationally recognised benchmark standards for wastewater/effluent quality at discharge and treatment efficiency (e.g. EU Directive, HELCOM recommendations or national standards)*
- *Total discharges in m^3 or p.e. (if known) or concentrations of pollutants (BOD_5 and/or Ntot and/or Ptot) in the recipient surface water body (a river basin, a lake or a regional sea)*
- *Water quality indices, such as UN Global Water Quality Index (WQI), could be used to characterise the baseline environmental conditions of the recipient surface water body*

Other Sustainability Indicators

#1) Improved water supply infrastructure and facilities and/or improved quality of the supplied drinking water as a result of the project

Indicators:

- Number of people with access to clean drinking water (or annual volume of clean drinking water in m^3/a supplied for human consumption) through infrastructure supporting sustainable and efficient water use (where average consumption per person is consistent with internationally recognised standards for sustainable water use)

Benchmarks:

- *The definition of "clean drinking water" follows internationally recognised drinking water quality standards, such as WHO or EU.*

#2) Improved sanitation facilities that have been constructed under the project

The increase in the share of the population connected to wastewater collection and treatment systems helps in domestic water pollution abatement and prevents long lasting environmental damage to the aquifers.

Indicators:

- Number of people with access to improved sanitation facilities under the project

Benchmarks:

- *The definition of "improved sanitation facilities" follows the UNICEF-WHO Joint Monitoring Program definition.*

#3) Improved measures to reduce the risk from adverse flooding impact

This may include, for example, improved hydrometeorological forecasting, improved early warning systems, infrastructure for flood mitigation (levees and reservoirs), flood zoning and improved basin planning.

Indicators:

- Number of people and/or enterprises (e.g. companies or farms) benefitting from measures to mitigate the consequences of floods and droughts

#4) Sustainable land and water resources management (SLM) systems in place

SLM for the preservation and restoration of natural landscapes (such as floodplains, forests, watersheds, and wetlands) will be site-specific as different areas require different interventions. These may include land use regimes (e.g. watershed plans, soil and water conservation zones); agronomic and vegetative measures (e.g. intercropping, afforestation); water-efficient irrigation; structural measures (e.g. flood control and drainage measures, water harvesting, run-off management, gully control measures); and/or active recharge by upstream activities to ensure a sustainable quantity of water. Land area may not be considered a pertinent indicator for localised actions that are not significant at a watershed level.

Indicators:

- Area covered by sustainable land and water resources management practices
- Annual catchment of water (m^3/year) that complies with quantity (m^3/year) and quality (e.g. turbidity) requirements by utilities

4. Waste Management and Resource Efficiency

The indicators proposed herein aim to capture and illustrate the environmental and sustainability benefits of projects relating to waste management and resource-efficiency, which are recognised by the GBP for Green Projects under one of the ten broad categories of eligibility for Green Projects:

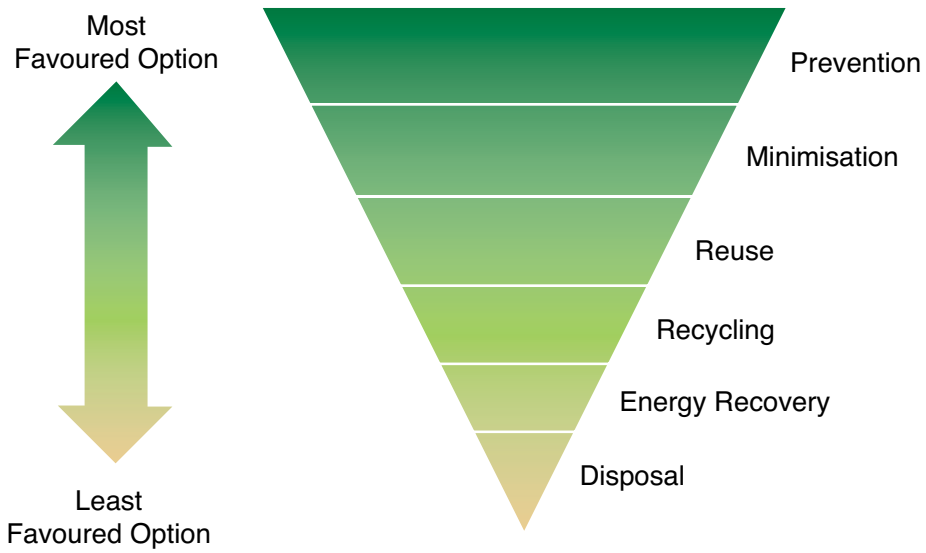
"pollution prevention and control (including…waste prevention, waste reduction, waste recycling and energy/emission-efficient waste to energy…)"

This guidance builds on the previous work on Sustainable Water and Wastewater Projects, and thus the indicators proposed here focus only on supplementary waste management projects.[20]

Although relevant projects may also reference categories focused on "eco-efficient and/or circular economy adapted products, production technologies and processes…", this is a separate eligible category under the GBP and for the reporting of such projects, users should reference the relevant indicators (see section 9 below) and reporting template (see Chapter V).

While this document proposes certain quantitative impact reporting metrics, the GBP also encourages issuers to provide qualitative information in relation to their waste management projects, whether they be focused on reducing pollution by introducing or improving waste management systems or focused on improved use of resources. Such qualitative information is also encouraged to provide for a meaningful contextualisation of the baseline situation and the improved solution as a result of the project. For waste management projects, this information may be especially meaningful when it covers the entire management system, including characterisation of waste sources, collection system (separate collection or not), waste recovery and reuse solutions (including which materials are being reused/recycled), and waste disposal, rather than isolated parts of it. In evaluating the environmental and sustainability benefits of waste management projects, it is especially useful for issuers to reference the broadly acknowledged "waste hierarchy" in any qualitative reporting on their waste strategy. This seeks to prioritise those activities that are optimal in managing resources and protecting the environment through extracting the greatest benefit with the minimum of waste generated.

This waste hierarchy is typically presented in the following schematic form:



As can be seen from this diagrammatic representation, waste prevention is the preferred option, followed sequentially by minimisation, reuse, recycling, energy recovery and finally safe disposal. Descriptive examples for each of these options are contained under Guidance and Definitions below.

20 This document therefore excludes wastewater projects, and, in alignment with the EU waste Framework Directive http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006L0012&from=EN it also excludes gaseous effluents, radioactive waste, waste from waste resulting from prospecting, extraction, treatment and storage of mineral resources and the working of quarries, animal carcasses and natural, non-dangerous agricultural waste, as well as decommissioned explosives.

The proposed core and other sustainability indicators are designed to facilitate quantitative reporting at a project and/or at a portfolio level across geographies. The importance of the geographic context in the assessment of solutions reinforces the benefit of providing additional contextual information. We therefore encourage disclosure on the national and regional context, including waste volume and waste management solution specific baselines, to help understand the environmental impacts/benefits of the project in its context. Additional qualitative reporting is also encouraged.

Greenhouse gas (GHG) emission reductions are an important green benefit of waste management and resource recovery interventions through avoidance of methane emissions from waste disposed of by preventing, minimising, reusing or recycling waste, production of energy from waste that substitutes for more emissions intensive energy sources and mitigating GHG emissions from waste disposal sites. These projects (such as composting; waste reduction, recycling and reuse; landfill gas capture and collection; anaerobic digestion; waste to energy (thermal treatment), etc.) are motivated significantly by reducing GHG and there are approaches for estimating these emissions.

For meaningful aggregation of indicators across projects, consistency in the methods of calculation, baselines and benchmarks would be required. Thus for the purpose of data quality, issuers are encouraged to disclose additional technical reports and/or data verification protocols where additional information could be provided as well as links to the sources of such data and methods of calculation.

Guidance and Definitions

Waste Management activities at each level of the Waste Management hierarchy may be described as follows:

Waste Prevention:

- Any operation that reduces at source the quantity of waste before recycling, composting, energy recovery and landfilling become options.

Waste Minimisation:

Any operation that:

- reduces the quantity of material used in the creation of products and increases the efficiency with which products, once created, are used;
- limits unnecessary consumption by designing and consuming products that generate less waste; and/or
- checks, cleans or repairs products or components that have become waste in preparation for reuse without any other pre-processing.

Waste Reuse:

- Any operation that reuses products or components for the same purpose for which they were conceived.

Waste Recycling:

- Any operation that recovers and reprocesses waste materials into materials or substances whether for the same purpose for which they were conceived, or for other purposes.

Energy Recovery:

- Any operation that converts non-recyclable waste materials into usable heat, electricity or fuel.

Waste Disposal:

- Any operation which is not waste recovery.

Core Indicators

A. Waste Management Projects – Resource Efficiency

#1) Waste prevented, minimised, reused or recycled

Indicators:

- Waste that is prevented, minimised, reused or recycled before and after the project in % of total waste and/or in absolute amount in tonnes p.a.
- For certain waste management projects that reduce the amount of waste disposed of, it may also be possible to capture GHG emissions from waste management before and after the project in tCO_2–e p.a.

Benchmarks:

- *Internationally recognised benchmark standards for waste management (e.g. EU Waste Policy and Waste Framework Directive statistics and reports)*
- *Internationally recognised tools for calculating Greenhouse Gases (GHG) in Solid Waste Management (SWM), such as the SWM-GHG Calculator (https://www.ifeu.de/en/project/tool-for-calculating-greenhouse-gases-ghg-in-solid-waste-management-swm/) or EPA's Waste Reduction Model (WARM, https://www.epa.gov/warm)*

B. Energy Recovery from Waste Including Energy/Emission-Efficient Waste to Energy Projects

#2) Energy recovered from waste

Annual amount of energy that is recovered from waste before and after the project in an environmentally sound manner through specified methods:

- *Energy recovered (e.g. through landfill gas collection, anaerobic digestion plants, waste-to-energy generation, biomass gasification, Mechanical Biological Treatment, etc.)*

Indicators:

- Annual energy generation from non-recyclable waste in energy/emission-efficient waste to energy facilities in MWh/GWh (electricity) and GJ/TJ (other energy)
- Energy recovered from waste (minus any support fuel) in MWh/GWh/KJ of net energy generated p.a.[21]
- GHG emissions from waste management before and after the project in tCO_2–e p.a.

Benchmarks:

- *Internationally recognised tools for calculating Greenhouse Gases (GHG) in Solid Waste Management (SWM), such as the SWM-GHG Calculator (https://www.ifeu.de/en/project/tool-for-calculating-greenhouse-gases-ghg-in-solid-waste-management-swm/) or EPA's Waste Reduction Model (WARM, https://www.epa.gov/warm)*
- *Internationally recognised standards for air emissions from waste to energy facilities (e.g. EU Directive on Waste Incineration, EU Industrial Emissions Directive and Best Available Techniques reference document for waste incineration)*

21 Where supporting fuel is added in order to facilitate the combustion of waste, the energy from this fuel should be subtracted from the total energy generated.

C. Pollution Control Projects

#3) Waste collected and treated or disposed

Collection and treatment or disposal of waste (according to country legislation compatible with internationally recognised standards):

- *Waste that is separated and/or collected, and treated (including composted) or disposed of in an environmentally sound manner before and after the project (this presumes no leakage of contaminants).*

Indicators:

- Annual absolute (gross) amount of waste that is separated and/or collected, and treated (including composted) or disposed of (in tonnes p.a. and in % of total waste)

Benchmarks:

- *Internationally recognised benchmark standards for waste separation and/or collection and environmentally sound waste disposal, such as EU Landfill Directive.*

Other Sustainability Indicators

#1) Resource efficiency/reduction in raw materials used in manufacturing

Indicators:

- KG of raw material per produced unit before and after
- Added monetary value created using waste

#2) Improved access to municipal waste collection (including separation)

The increase in the share of the population with access to waste collection helps in domestic waste pollution abatement.

Indicators:

- Number of people or % of population with access to waste collection under the project
- Area with improved regular (daily, weekly or bi-weekly) waste collection service
- How many fractions of waste were separated before and after the project
- The absolute amount or % of residual non-separated waste before and after the project

#3) Improved and regular access to street sweeping

Indicators:

- Number of people or % of population with access to street sweeping under the project
- Km of street with regular (daily, weekly or bi-weekly) street sweeping service coverage

#4) Improved municipal waste treatment or disposal services

Indicators:

- Number of people or % of population provided with improved municipal waste treatment or disposal services

#5) Improved recycling programmes

Indicators:

- Number of people benefitting from selective collection of recyclables
- Number of informal recyclers integrated into a formal system

#6) Reduced local pollution to air and/or water

Indicators:

- Absolute or % reduction in local pollutants

#7) Manufacturing for the circular economy

Indicators:

- Tons of waste reduced
- Products changed to increase waste reduction
- Tons of secondary raw materials or compost produced

5. Clean Transportation

The indicators proposed herein aim to capture and illustrate the environmental and sustainability benefits of projects relating to clean transportation, which are recognised by the GBP for Green Projects under one of the ten broad categories of eligibility for Green Projects:

"clean transportation (such as electric, hybrid, public, rail, non-motorised, multi-modal transportation, infrastructure for clean energy vehicles and reduction of harmful emissions)".

This guidance builds on the previous work on Sustainable Water and Wastewater Projects as well as Waste Management and Resource-Efficiency Projects and thus the indicators proposed here focus only on additional factors specific to clean transportation projects.[22]

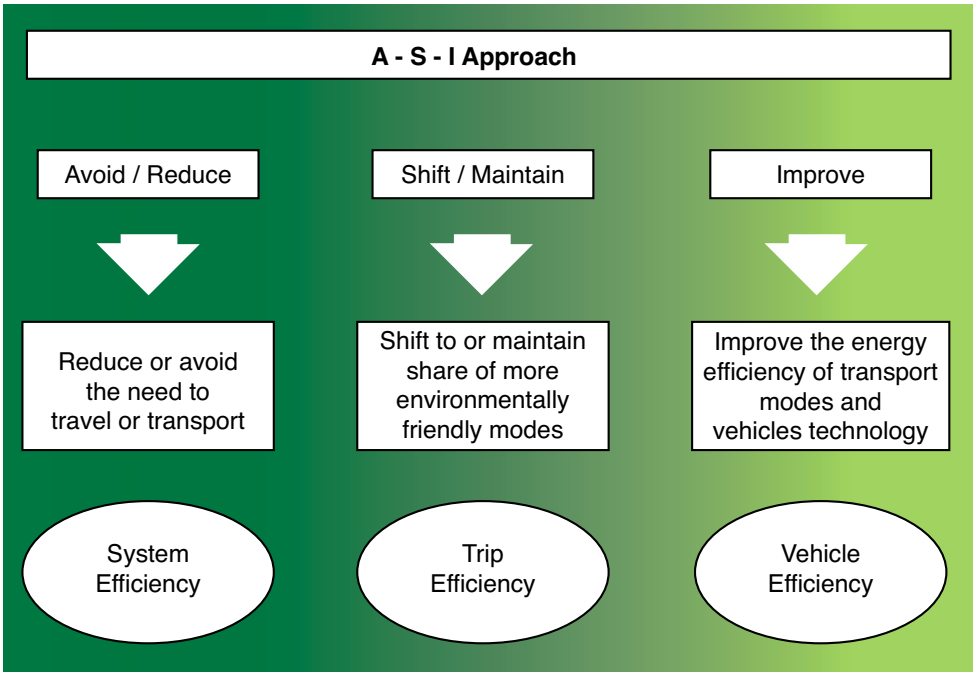
This section does not cover impact reporting on projects focused specifically on the design and manufacturing of clean vehicles and vehicle parts, which may be deemed to fall under another GBP category: "eco-efficient products, production technologies and processes…". For the reporting of such projects, users should reference the relevant indicators (see section 9 below) and reporting template (see Chapter V).

While this document proposes certain quantitative impact reporting metrics, the GBP also encourage issuers to provide qualitative information in relation to their clean transportation projects, whether they be focused on reducing pollution or focused on improved use of resources. Such qualitative information is also encouraged to provide for a meaningful contextualisation of the baseline situation and the improvement as a result of the project. For clean transportation projects, this information may be especially meaningful when it covers the entire life-cycle, including the decommissioning of vehicles, as well as the local and/or regional context in which the project is undertaken. In evaluating the environmental and sustainability benefits of clean transportation projects, it may be useful for issuers to reference the "sustainable transport hierarchy" in any qualitative reporting on their transportation strategy. This seeks to prioritise those activities that are optimal in managing resources and protecting the environment.

While the GBP category, as noted above, uses the term "clean transportation", the green bond market aims to finance projects that make a significant contribution to environmental sustainability. This therefore may be deemed to encompass all ambitious "cleaner" transport projects that represent meaningful progress towards this goal. Furthermore, examples of benchmarks developed by internationally recognised conventions and initiatives are given below. These should not be seen as baselines for the determination of clean transportation projects: in certain jurisdictions, meeting an internationally recognised standard may require a significant improvement beyond "business as usual", whereas in other geographies the same standard may represent a mandatory baseline. In such cases, an eligible transportation project may be expected to drive for a meaningful outperformance of the benchmark.

22 This document therefore excludes, for example, the management of ship-generated waste and associated waste reception facilities, the decommissioning of vehicles, as well as improvements to water usage associated with the clean transportation project.

This sustainable transport hierarchy may be presented in the following schematic form:



As can be seen from this diagrammatic representation[23] of the "Avoid-Shift-Improve (ASI)" approach, demand reduction is the preferred option, followed sequentially by modal shift, and finally by transport efficiency improvements. Descriptive examples for each of these options are contained under Guidance and Definitions below.

The proposed core and other sustainability indicators are designed to facilitate quantitative reporting at a project and/or at a portfolio level across geographies. The importance of the geographic context in the assessment of solutions reinforces the benefit of providing additional relevant information. We therefore encourage disclosure on the national, regional and local context, including information on the population served, pollution levels, and specific CO_2 electricity grid baselines. Such information, as well as the rate and level of shift under the ASI approach helps to understand and provide more accurate assessments of the environmental impacts/benefits of the project in its context. Additional qualitative reporting is also encouraged.

For a meaningful assessment of the aggregate impact of projects, consistency in the methods of calculation, baselines and benchmarks is necessary. Thus for the purpose of data quality, issuers are encouraged to disclose additional technical reports and/or data verification protocols where additional information could be provided as well as links to the sources of such data and methods of calculation. The robustness of disclosures and/or the underlying methodology may be enhanced by making available any independent assessment from consultants, verification bodies and/or institutions with recognised expertise in environmental sustainability.

Guidance and Definitions

Clean transportation activities at each level of the ASI sustainable transport hierarchy may be described as follows:

Avoid/Reduce:

- Any operation that avoids the need to travel or reduces the length of travel, including through integrated land-use planning, and transport demand management[24].

Shift/Maintain:

- Any operation that moves people or freight to a more sustainable and less polluting means of transportation, such as cycling, walking, buses, ferries, trains and trams.

Improve:

- Any operation that reduces the emissions (both GHG and local pollutants) of vehicles or the transport system.

23 Ref: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.
24 Improved internet connectivity may also contribute significantly to the avoidance or reduction of travel, however, it does not fit readily into the Clean Transportation project category.

Core Indicators

A. Clean Transportation Projects

- **Procurement and/or deployment of clean transportation (modal shift)**
  Any operation that moves people or freight to a significantly more sustainable and less polluting means of transportation
- **Deployment of clean transportation (low emissions)**
  Any operation that reduces GHG emissions and/or air pollutants per unit of service provided through, for example, fuel switch or technology switch taking account of fuel production and electricity generation, including projected changes[25]

B. Construction of Clean Transport Infrastructure[26]

- **Construction, extension and/or improvement to core sustainable transport infrastructure**
  e.g. constructing or electrifying train tracks, clean utility connections in port, constructing or improving bicycle lanes, bicycle parking and bicycle sharing schemes
- **Construction and/or improvement to the auxiliary sustainable transport infrastructure**
  e.g. stations, terminals, electric vehicle charging infrastructure, network and traffic management systems, connected and automated transport technologies, smart mobility systems, and the development and deployment of alternative transport fuels

Indicators:

- Passenger-kilometres (i.e. the transport of one passenger over one kilometre) and/or passengers; or tonne-kilometres (i.e. the transport of one tonne over one kilometre) and/or tonnes
- Annual GHG emissions reduced/avoided in tCO_2–e p.a.
- Reduction of air pollutants: particulate matter (PM), sulphur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), and non-methane volatile organic compounds (NMVOCs)

Benchmarks:

- *Internationally recognised benchmark standards for Clean Transport (e.g. EURO VI Standard, IMO, MARPOL, and WHO guidelines for particulate matter concentration)*
- *Internationally recognised tools for calculating Greenhouse Gases (GHG) in sustainable transportation projects such as the Global Fuel Economy Initiative (GFEI) in the IEA 2DS.*
- *Internationally recognised benchmark standards for sustainable transport infrastructure.*
- *IEC/IEEE 80005 -2:2016 for utility connections in port*

25 For example, deployment of electric vehicles may be considered a clean transportation project although it may not necessarily reduce GHG emissions in the near term.
26 Tracks or auxiliary infrastructure projects that are substantially for the transportation of fossil fuel related freight should be excluded.

Other Sustainability Indicators

#1) Deployment of clean transportation

Indicators:

- Annual Absolute (gross) GHG emissions in tCO_2–e
- Number of clean vehicles deployed (e.g. electric)
- Estimated reduction in car/truck use in number of kilometres driven or as share of total transport ridership
- Estimated reduction in fuel consumption

#2) Construction or improvement to core infrastructure

Indicators:

- Annual Absolute (gross) GHG emissions in tCO_2–e
- Total in kilometres of new or improved train lines/dedicated bus, BRT, LRT corridors bicycle lanes
- Reduction in weather-related disruption (days p.a). and/or risk frequency (%)
- Ambient noise reduction from the transport infrastructure in decibels
- Estimated change in land consumption for transport infrastructure
- Number of hectares compensated[27]
- Number of wildlife crossings created
- Volume of reused or recycled rail material for rail, or port infrastructure in tons

#3) Construction or improvement to auxiliary infrastructure

Indicators:

- Annual Absolute (gross) GHG emissions in tCO_2–e
- Improved luminance or road surface reflection coefficient (cd/m^2)
- Number of LED or SSL lighting fixtures with lumen/watt (Lm/W)
- Ambient noise reduction in decibels

#4) Projects aimed at avoidance or reduction of transport use

Indicators:

- Annual Absolute (gross) GHG emissions in tCO_2–e
- Land use density including 'transit oriented development' (people and jobs per unit of land area)
- Estimated reduction in car use in number of kilometres driven or as share of total transport ridership
- Increase of households with internet access (absolute or percentage)
- Reduction in congestion[28]

27 The securing of an equivalent area to the land utilised by the infrastructure project should have comparable conservation value.
28 Calculated on the vehicle speed (based on https://publications.jrc.ec.europa.eu/repository/handle/JRC69961).

6. Green Buildings

The indicators proposed herein aim to capture and illustrate the environmental and sustainability benefits of projects relating to green buildings, which are recognised by the GBP for Green Projects under one of the ten broad categories of eligibility for Green Projects:

"green buildings which meet regional, national or internationally recognised standards or certifications".

The GBP category for Green Buildings is understood to address broad considerations such as water usage and waste management in addition to energy consumption, whereas a focus solely on energy-efficiency and low carbon in buildings would come under the GBP category "energy efficiency (such as in new and refurbished buildings…)", and it is therefore recommended that these projects be reported using the relevant indicators and templates outlined in reference to Energy Efficiency in Chapter IV.2 and Chapter V respectively.

This document does not cover impact reporting on projects focused specifically on resilience to climate change, which may be deemed to fall under another GBP category: "climate change adaptation". For the reporting of such projects, users should reference the relevant indicators (see section 8 below) and reporting template (see Chapter V).

While this document proposes certain quantitative impact reporting metrics, the GBP also encourages issuers to provide qualitative information in relation to their green building projects, whether they be for new buildings or the retrofitting of existing buildings. Such qualitative information is also encouraged to provide for a meaningful contextualisation of the baseline situation and the improvement as a result of the project. For green building projects, as is highlighted in the aforementioned wording of this GBP category, regional, national or (optimally) internationally recognised standards or certifications are key, providing important baselines against which the green building project can be benchmarked. Other salient information such as the siting of the building and its purpose may be critical to understanding the design of the project, and its benefits in managing resources and protecting the environment. Indeed, while, as aforementioned, this document does not cover impact reporting on projects focused specifically on resilience to climate change, which may be deemed to fall under the GBP category of "climate change adaptation" for which specific metrics are yet to be proposed, the reporting of pertinent information on building resiliency to address such risks as flood prevention, heat stress and water shortages is nevertheless strongly encouraged.

While the GBP category, as noted above, uses the term "green buildings", the green bond market aims to finance projects that make a significant contribution to environmental sustainability. This therefore may be deemed to encompass all ambitious "sustainable" building projects that represent meaningful progress towards this goal across all core dimensions. Although the highest potential to reduce energy consumption will result from improvements made to the existing building stock, we recognise that the needs of society and the economy will continue to drive demand for new buildings. While the construction phase will have a significant impact on the environment, including the climate, and few if any new buildings are, in reality, "zero energy buildings", we nonetheless understand the GBP's Green Building category to encompass any new building that minimises the impact of both its construction and life-cycle use on the environment in line with ambitious regulatory requirements and best industry practice.

Furthermore, examples of benchmarks developed by internationally recognised conventions and initiatives are given below. These should not be seen as baselines for the determination of green building projects: in certain jurisdictions, meeting an internationally recognised standard may require a significant improvement beyond "business as usual", whereas in other geographies the same standard may represent a mandatory baseline. In such cases, an eligible green building project may be expected to drive for a meaningful outperformance of the benchmark.

The proposed core and other sustainability indicators are designed to facilitate quantitative reporting at a project and/or at a portfolio level across geographies. The importance of the geographic context in the assessment of solutions reinforces the benefit of additional disclosures, such as the national, regional and local context, information on the population served, pollution levels, and specific CO_2 electricity grid baselines. Where fossil fuels are used on-site, it will be important to understand whether these are lower carbon content fuels and how the project promotes the transition to "Zero Net Carbon". While the Core Indicators proposed focus on the construction, development and refurbishment of Green Buildings, and are thus also relevant to their purchase, several Other Sustainability Indicators are relevant to the management of Green Buildings over time.

For a meaningful assessment of the aggregate impact of projects, consistency in the methods of calculation, baselines and benchmarks is necessary. Thus for the purpose of data quality, issuers are encouraged to disclose additional technical reports and/or data verification protocols where additional information could be provided as well as links to the sources of such data and methods of calculation. The robustness of disclosures and/or the underlying methodology may be enhanced by making available any independent assessment from consultants, verification bodies and/or institutions with recognised expertise in environmental sustainability such as LEED, BREEAM and BEAM. We note, however, that many of these assessments and standards incorporate evaluations that extend beyond environmental factors, and thus issuers should seek to provide greater transparency on their scores against the "green" requirements.

Guidance and Definitions

New Buildings: New construction and the development of buildings must take account of their impact on ecosystems and biodiversity. Where no certification standard is available or where the certification standard referenced does not provide an analysis of location considerations, these should be highlighted in reporting in particular to demonstrate how construction activities have avoided building on land that should be protected, how access to public transportation is incorporated, and any measures taken to offset negative impacts on biodiversity.

Retrofitted Buildings: The retrofit, upgrade or renovation of an existing building, building unit, or any building component or system should take into consideration all efforts to improve energy performance (or reduce energy use for comparable quality of enabling environment and for comparable services) in order to meet some minimum energy efficiency criteria whenever this is technically, functionally and economically feasible.

Where both the purpose of the building and its use remain unchanged, the improved performance of the building can be reported against that attained prior to the project. Where the purpose and/or use of the building has been altered, the improved performance should be measured against baselines and benchmarks applicable to new buildings.

Energy Use: The annual energy input to the building in order to satisfy the energy needs associated with a typical use of the building and by the building services that provide an enabling environment in the building. It encompasses the amount of energy needed to meet the energy demand associated with, inter alia, energy used for heating, cooling, air-conditioning, ventilation, hot water and lighting.

Primary Energy Use: Energy from renewable and non-renewable sources used in buildings and which has not undergone any conversion or transformation process. For further guidance on calculation of Primary Energy Use including renewable energy generated on site, ISO EN standards or applicable national methodologies for energy and carbon performance assessment in buildings.

Final Energy Use: The total energy consumed by end-users in their building assets. It is the energy which reaches the final user's asset and excludes the energy used by the energy sector itself.

Gross Building Area (GBA): Gross Building Area, also named Gross Floor Area ("GFA") corresponds to the total floor area contained in a building measured to the external walls. The physical environmental impact comes from the entire building, and therefore Gross Building Area is more relevant than Gross Letting Area, which is the amount of floor space available to be rented.

Certification Schemes: While the importance of international certification schemes as industry benchmarks is highlighted by their prime position in the proposed Core Indicators, the associated costs and processes may be deemed prohibitive for small local players, or large portfolios of very small assets. Locally applicable proxies may therefore provide a relevant baseline when compatible with the major international certification schemes.

Core Indicators[29]

A. Energy Performance

#1 Final and/or Primary Energy Use - in new buildings or retrofitted buildings

Indicators:

- kWh/m² of GBA p.a.; and % of energy use reduced/avoided vs local baseline/building code; and, if relevant % of renewable energy (RE) generated on site (specifying the relevant RE form)

B. Carbon Performance

#2 Carbon reductions - in new buildings or retrofitted buildings

Indicators:

- $kgCO_2/m^2$ of GBA p.a; and
- Annual GHG emissions reduced/avoided[30] in tonnes of CO_2 equiv. vs local baseline/baseline certification level; and/or
- % of carbon emissions reduced/avoided vs local baseline/baseline certification level.

C. Water Efficiency and Savings

#3 Water efficiency - in new buildings or retrofitted buildings

Indicators:

- m^3/m^2 of GBA p.a; and Annual absolute (gross) water use before and after the project in m^3/a (for retrofitted buildings) and/or
- % of water reduced/avoided vs local baseline/baseline certification level/IGCC/International Plumbing Code

D. Waste Management

#4 Waste management in the construction/demolition/refurbishment process in new or retrofitted buildings

Indicators:

- Amount p.a. of waste minimised, reused or recycled in % of total waste and/or in absolute (gross) amount in tonnes p.a.
- Waste removed in tonnes

E. Certification Standard, if available

#5 Type of scheme, certification level and m² GBA

Benchmarks:

Internationally and nationally recognised standards for Green Buildings such as LEED (Leadership in Energy and Environmental Design), BREEAM (Building Research Establishment Environmental Assessment Method), ANSI/ASHRAE/IES/USGBC Standard 189.1 Standard for the Design of High-Performance Green Buildings and/or the International Green Construction Code; other standards for Green Buildings widely known and/or used in the industry locally, such as CEEQUAL, DGNB, EDGE, the International Energy Conservation Code (IECC), the US Property Assessed Clean Energy Programs (PACE), Passive House or Swiss Minergie, when compatible with the aforementioned standards; National Minimum Requirements for Energy Efficiency in Buildings in EU states (based on the EU Energy Efficiency Directive) and Energy Performance Certificates (EPCs), or national certification schemes.

29 Issuers that report on energy-efficient buildings are recommended to refer to core indicators and reporting templates of the energy efficiency section of this handbook (please see Chapters IV.2 and V. respectively).

30 International guidelines for the calculation of emissions avoided, such as the GHG Protocol may provide further guidance for calculations.

Other Sustainability Indicators

#1) Use of materials with lower environmental footprint - for both new buildings and retrofitted buildings

Indicators:

- Embodied energy (and carbon) over life-cycle ("cradle to grave"), in tons CO_2
- % of embodied energy (and carbon) reduced over life-cycle ("cradle to grave"), vs local benchmark/ baseline

#2) Land Use and Biodiversity – for new buildings

Indicators:

- Land remediated/decontaminated/regenerated, in ha or m^2
- % of unadulterated Green spaces before and after the project

#3) Water Efficiency - for both new buildings and retrofitted buildings

Indicators:

- Amount of rainwater harvested and reused in m^3/a
- Recharge to groundwater in mm/d, mm/a

#4) Waste Management - in the use of both new buildings or retrofitted buildings

Indicators:

- Recycling, re-use or composting of non-hazardous waste in %

#5) Indoor Air Quality - for both new buildings and retrofitted buildings

Indicators:

- Reduction of particulate matter vs local baseline: sulphur oxides (SOx), and nitrogen oxides (NOx) carbon monoxide (CO), (PM2.5/PM10) and non-methane volatile organic compounds (NMVOCs)

#6) Light quality and energy efficiency - for both new buildings and retrofitted buildings

Indicators:

- Number of LED or SSL lighting fixtures with lumen/watt (Lm/W)
- Energy efficiency from installation of motion detectors (kWh) vs baseline/previous equipment
- Energy efficiency from installation of low-E window glass panels vs baseline/previous equipment

#7) Transport connectivity and clean transportation infrastructure – for both new buildings and retrofitted buildings

Indicators:

- Land use density including 'transit oriented development' (people and jobs per unit of land area)
- Number of Electric vehicle charging stations as a % of total parking and/or number of bicycle facilities provided
- Distance (in Km) to public transportation (thereby reducing the scope 3 emissions of the building)

7. Biodiversity

The indicators proposed herein aim to capture and illustrate the environmental and sustainability benefits of projects relating to biodiversity, which are recognised by the GBP for Green Projects under one of the ten broad categories of eligibility for Green Projects:

"terrestrial and aquatic biodiversity conservation (including the protection of coastal, marine and watershed environments)".

While we understand biodiversity projects to also include those that are focused on the conservation and restoration of natural landscapes, including forests, this document only partially covers biodiversity in agricultural production systems, e.g. the transfer of unsustainable agricultural production into biodiverse food systems (agroecology) or biodiversity in urban environments. Such projects predominantly fall under the separate GBP project category of "environmentally sustainable management of living natural resources and land use" for which suggested indicators are covered under Chapter 10 of this Handbook.

Biodiversity describes the variety of life on earth and the natural pattern it forms. It is understood in terms of a wide variety of plants, animals and microorganisms. Fragmentation, degradation, and outright loss of forests, wetlands, coral reefs, and other ecosystems pose the gravest threat to biological diversity.

According to the Convention on Biological Diversity (CBD) [31], three dimensions are key to biodiversity:

- The conservation of biological diversity (genetic diversity, species diversity and habitat diversity).
- The sustainable use of biological diversity.
- The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.

Biodiversity should be the primary or secondary goal of any project or portfolio of projects reported under this GBP category. Projects that focus primarily on other targets and approach biodiversity from the perspective of minimising damage or managing biodiversity risks in projects should not fall under the biodiversity project category.

Projects targeting biodiversity are, for example, focused on safeguarding and/or developing protected terrestrial and marine areas and systems, forest conservation, or REDD (Reducing Emissions from Deforestation and Forest Degradation) and typically require a preliminary analysis and inventory of core species that need protection.

As the focus and objectives of biodiversity projects are highly dependent on individual circumstances of the relevant habitat, it is crucial to provide information on the core dimensions of the project, its specific characteristics and the metrics to analyse the results. The importance of the geographic context in the assessment of solutions reinforces the benefit of additional disclosures, such as the national, regional and local context and information on the population served.

While this document proposes certain specific quantitative impact reporting metrics, providing qualitative information, including all strategies, actions and plans for managing the impacts on biodiversity, appears to be of particular relevance for biodiversity projects. Such qualitative information is also encouraged to provide a meaningful context for understanding and assessing the baseline situation and the improvement as a result of the project, which may be further complemented by more general indicators such as Mean Species Abundance (MSA) and Potentially Disappeared Fraction (PDF) of species.

A key aspect should be the improvement of income and living conditions for the communities living adjacent to protected areas, for example through tourism or forest management. These measures aim to ensure that local people benefit from conservation and the sustainable use of natural resources, thus enhancing the conservation of protected areas' buffer zones and biological corridors.

For the purpose of data quality, issuers are encouraged to disclose additional technical reports, environmental impact assessments and/or data verification protocols where additional information could be provided, as well as links to the sources of such data and methods of calculation. The robustness of disclosures and/or the underlying methodology may be enhanced by making available any independent assessment from consultants, verification bodies and/or institutions with recognised expertise in environmental sustainability[32].

31 The Convention on Biological Diversity (CBD) is a multilateral treaty that was opened for signing at the UN Conference on Environment and Development in Rio de Janeiro in 1992. It has been ratified by the vast majority of countries worldwide.

32 There are a number of organisations working on biodiversity impacts, especially focusing on biodiversity accounting, biodiversity footprint measurement and/or qualitative guidance for projects, which may provide a helpful reference, including ASN Bank, Biodiversity Accounting Financials, Capitals Coalition, CDC Biodiversité, EU Business@Biodiversity, GIIN, IUCN, UNEP FI, WBCSD and WWF.

Core Indicators

A. Protected areas and Other Effective Area-based Conservation Measures (OECM)[33]

#1 Preserving terrestrial natural habitats

#2 Preserving marine natural habitats

Indicators:

- Maintenance/safeguarding/increase of protected area/OECM/habitat in km^2 and in % for increase
- Absolute number of predefined target organisms and species per km^2 (bigger fauna) or m^2 (smaller fauna and flora) before and after the project
- Absolute number of protected and/or priority species that are deemed sensitive in protected/conserved area before and after the project
- Changes in the CO_2, nutrient and/or pH levels for coastal vegetation, and coral reefs in %[34]
- Absolute number of invading species and/or area occupied by invading species in m^2 or km^2 before and after the project

Benchmarks:

- IUCN Categories for Protected Areas (https://www.iucn.org/theme/protected-areas/about/protected-area-categories) and Management Effectiveness Tool (https://www.protectedplanet.net/en/thematic-areas/protected-areas-management-effectiveness-pame?tab=METT)

Note: Indicators referencing differences "before and after the project" may use ex-ante estimates of the project results before project completion.

B. Landscape conservation/restoration

Including Reducing Emissions from Deforestation and Forest Degradation (REDD)

Indicators:

- Maintenance/safeguarding/increase of natural landscape area (including forest) in km^2 and in % for increase
- Maintenance/safeguarding/increase of natural landscape area in urban areas in km^2 and in % for increase
- Increase of area under certified land management[35] in km^2 or m^2 and in % (in bufferzones of protected areas)[36]
- Absolute number of indigenous species, flora or fauna (trees, shrubs and grasses, etc.) restored through the project
- Annual GHG emissions reduced in tCO_2-e p.a.

Benchmarks:

- *Internationally recognised benchmark standards for sustainable forest management (e.g. FSC, PEFC, Rainforest Alliance)*

33 IUCN-WCPA 2018 definition of OECM is "A geographically defined space, not recognised as a protected area, which is governed and managed over the long-term in ways that deliver the effective in-situ conservation of biodiversity, with associated ecosystem services and cultural and spiritual values".

34 Issuers are encouraged to provide additional information for coastal and marine areas, for example on maintenance and restoration of coastal vegetation like mangroves; the increase of health of coral reefs by reducing disease (degree of bleaching, age and size of living corals), as well as by reducing the sedimentation rate, nutrients in water and direct human damage.

35 Certified land management is an externally audited set of processes and activities that seek to improve environmental and animal welfare outcomes together with improvements in the productivity and risk management of landholdings.

36 This should not be reported as a sole indicator, but in conjunction with information on the corresponding protected area.

Other Sustainability Indicators

- Number of conservation workers (e.g. game wardens, rangers, natural park officials) trained in biodiversity conservation
- Number of forestry personnel trained in biodiversity conservation
- Number of farmers trained in sustainable farming and biodiversity
- Improvement of income of local populations in percentage
- Number and/or capacity of nurseries created under the project in terms of seedlings or number of individual trees/shrubs per year

Guidance and Definitions for Additional Human Rights and Social Disclosures

Assessing the improvements in living conditions for communities upholds the primacy of human rights considerations, which may include:

1. The right to free, prior and informed consultation and consent (FPIC) of indigenous peoples.
2. Other participation and co-determination rights, including complaint mechanisms.
3. Resettlements and restricted access to and use of natural resources (physical and economic displacement) resulting from the establishment and management of protected areas.
4. Rebuilding the livelihoods of the local population, compensation arrangements.
5. Human rights violations in the context of combating poaching and law enforcement.
6. Handling historical cases of injustice concerning the establishment of protected areas (e.g. lack of consultation, lack of support for rebuilding lost livelihoods) that still have an impact on the present day-situation.

8. Climate Change Adaptation

The indicators proposed herein aim to capture and illustrate the environmental and other sustainability benefits of projects relating to climate change adaptation, which are recognised by the GBP for Green Projects under one of the ten broad categories of eligibility for Green Projects:

"climate change adaptation (including efforts to make infrastructure more resilient to impacts of climate change, as well as information support systems, such as climate observation and early warning systems)"

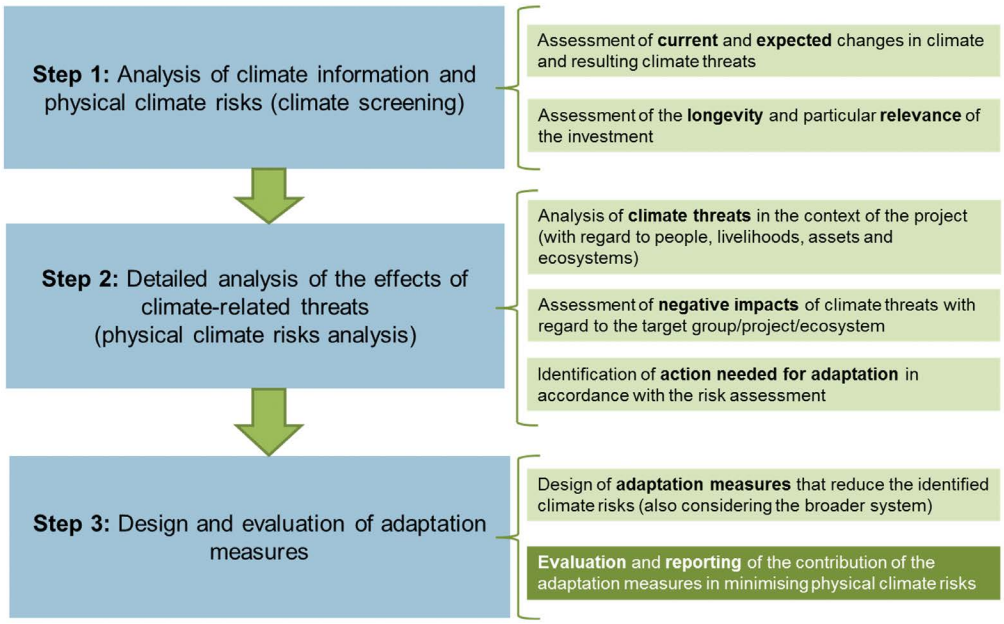
Climate change adaptation projects are sector and context specific, and therefore no proposed set of indicators will likely cover all sectors and contexts. Nevertheless, the authors believe that there is a significant benefit in offering exemplars for a range of such projects.

We understand adaptation projects to be those that are focused on enhancing preparedness and resilience to expected changes in climate, as well as any actual changes experienced. This would not only include projects that seek to moderate or avoid its likely or potential harmful effects on people, nature and/or economic activities and assets (e.g. infrastructure, buildings), but may also encompass those investments that provide sustained adaptive solutions, such as fireproof roofs and other building elements to withstand higher temperatures, water-management systems for irrigation, and climate change monitoring systems. While the terms "climate change adaptation" and "climate resilience" may be defined distinctly to differentiate between the adaptation actions taken in order to achieve the goal of resilience, we believe that for the purposes of providing indicators, climate change adaptation and/or resilient projects and investments may be used interchangeably.

According to the Climate Bond Initiative's Climate Resilience Principles[37], there are two types of climate resilience investments: those that are primarily focused on enhancing the resilience of an asset; and those that principally seek to enhance the resilience of the broader system. There are nevertheless interlinkages between the two, and it is important in evaluating the impact of any climate adaptation investment that there is no negative impact on the system of which it forms part. A context-specific approach is always required in climate change adaptation[38], reflecting the importance of the geographic and location specific context in the assessment of the project's climate vulnerabilities and the identification of appropriate solutions. This highlights the importance of additional disclosures, such as the national, regional and local vulnerabilities and physical climate-related risks.

The following flow chart provides guidance for projects that are primarily focused on enhancing the resilience of an asset:

Process-based approach to climate change adaptation



Source: KfW 2020

37 http://www.climatebonds.net/adaptation-and-resilience.
38 As set out in the Joint MDB Adaptation Finance Tracking Methodology.

While this document proposes certain quantitative impact reporting metrics, providing qualitative information is of particular relevance for climate change adaptation/resilience projects. This document aims to provide a meaningful context for understanding the baseline situation and the amelioration of the assessed vulnerability as a result of the project. Relevant disclosures may include climate change scenarios, time horizons and processes employed for determining the key weather and climate-related risks and their likely relative probability and severity, as well as all strategies, actions and plans for managing the vulnerabilities.

Where a project is deemed to deliver significant climate resilience benefits to GHG emission intensive assets or operations, issuers should disclose their approach and their assessment of the extent of the relative trade-off between climate mitigation and climate resilience.

Impact reporting on climate resilience investments is typically at an outcome level[39] on an ex-ante basis measured against the expected situation in a "no action" scenario. Such assets may be most easily categorised relative to the climate-related hazard[40] that the climate change adaptation/resilience project(s) seek(s) to address, withstand and/or ameliorate. Some projects may be deemed to relate to more than one climate hazard, such as the reforesting of coastal land, which may serve to reduce wave and flood damage, as well as reducing erosion, and the expected impacts of such projects may therefore be reported in relation to all relevant climate hazards.

This document builds on the previous work published by the GBP Impact Reporting Working Group, including for impact reporting on sustainable water and wastewater projects, clean transportation, green buildings and biodiversity projects. The indicators proposed here focus only on supplementary indicators associated with climate change adaptation/resilience projects, and issuers are encouraged to report the co-benefits of projects with reference to such other suggested metrics.

For the purpose of data quality, issuers are encouraged to disclose additional technical reports and/or data verification protocols where supplementary information could be provided, as well as links to the sources of such data and methods of calculation. The robustness of disclosures and/or the underlying methodology may be enhanced by making available any independent assessment from consultants, verification bodies and/or institutions with recognised expertise in environmental sustainability.

Examples of Climate-Related Hazards and Adaptation/Resilience Outcomes

Climate Hazard:	Examples:	Adaptation Outcomes
Temperature-Related:	**Heatwaves** **Cold snaps** **Wildfires** **Temperature variability** **Thawing of the permafrost** **Increasing heat stress**	**Reduce or avoid damage/disruption**
Wind-Related:	**Typhoons/hurricanes** **Dust** **Storms/sandstorms**	**Reduce or avoid damage/disruption**
Water-Related:	**Floods/heavy precipitation** **Droughts** **Glacial flooding** **Rising sea-levels** **Increasing water stress** **Hydrological variability**	**Reduce or avoid damage/disruption** **Increase water availability**
Land-Related:	**Landslides** **Avalanches** **Subsidence** **Soil erosion** **Soil degradation**	**Reduce or avoid damage/disruption** **Increase productivity**

Climate-related damage to assets may result in a rise in risk frequency and/or harm to assets/life/livelihoods or in a reduction in the serviceable life of assets.

Climate-related disruption may result in lost revenue or income through the reduction in the amount of time that a system or a component of a system is operable, or due to a lowering of the productivity of the system or asset.

It is also possible to categorise climate change adaptation projects in terms of sectors (e.g. health, infrastructure, agriculture), as another means of reflecting that projects may need to be designed to cope with multiple hazards, and an illustrative guide is provided in the Appendix.

39 In line with the Climate Resilience Metrics Framework developed by the Multilateral Development Banks and development finance institutions: https://www.ebrd.com/documents/climate-finance/a-framework-for-climate-resilience-metrics-in-financing-operations.pdf.

40 A classification of climate-related hazards is set out in the EU Sustainable Finance Taxonomy: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en.

Exemplary Indicators

A. Temperature-Related

Indicators:

#1 Reducing or avoiding weather-related damage

- Increase in grid resilience, energy generation, transmission/distribution and storage in MWh
- Reduction in the number of wildfires, and/or in the area damaged by wildfires in km^2
- Reduction in emergency and unplanned rail and tarmac replacement in km

#2 Reducing or avoiding weather-related disruption

- Increase in grid resilience, generation and storage in MWh

B. Wind-Related

Indicators:

#3 Reducing or avoiding weather-related damage

- Reduction in repair costs due to storms (to all kinds of infrastructure and assets)

#4 Reducing or avoiding weather-related disruption

- Reduction in the number of customers/employees suffering loss of power/transport services
- Reduction in the number of power lines incapacitated due to storms

C. Water-Related

Indicators:

#5 Reducing or avoiding weather-related damage

- Reduction in flood damage costs
- Reduction in number of operating days lost to floods
- Reduced/avoided water loss (in reservoirs/waterways/natural habitats etc.) in m^3
- Reduction in land-loss from inundation and/or coastal erosion in km^2

#6 Reducing or avoiding weather-related disruption

- Reduction in number of operating days lost to floods

#7 Increased water availability

- Additional water availability and/or increased water catchment in m^3/year
- Reduction in household demand for clean water in m^3/year

D. Land-Related

Indicators:

#8 Reducing or avoiding weather-related damage

- Reduction in repair costs and/or operating days lost due to landslides
- Increase in area under wetland management in km^2

#9 Reducing or avoiding weather-related disruption

- Reduction in the number of operating days lost to disrupted transport networks or other infrastructure

#10 Increased agricultural productivity

- Reduction in changes in the nutrient and/or pH level for agricultural soils
- Increase in agricultural land using more drought resistant crops in hectares
- Area cultivated by precision agriculture in km^2

Other Sustainability Indicators

- Increased number of urban residents with access to thermally safe conditions in buildings/transport systems
- Increased number of households with access to resilient energy systems
- Increased number of people/businesses/acres with secure water supply
- Decrease in climate-related risk insurance premia
- Reduced number of people suffering from flood-related infections
- Reduced number of people evacuated/injured/displaced/economically unproductive due to climate-related hazards
- Reduction in workforce absenteeism due to climate-related health impacts
- Reduced/avoided loss of livestock and/or crops
- Number of kms of road, rail or other infrastructure adapted
- Decrease in the number of days between a disaster and the related response and recovery

Appendix

A sectoral categorisation of climate adaptation/resilience projects may include, but is not limited to the following examples:

- **Health**
  - Direct effect (drowning from floods, stroke from temperature, etc.) and non-communicable disease
  - Vector-borne
  - Water-borne
  - Malnutrition
  - Labour productivity (especially outdoor)
- **Infrastructure**
  - Power system
    - Repairs (in pecuniary value)
    - Reliability of service (in days with disruptions)
  - Water system
    - Repairs
    - Reliability of service
  - Transport system
    - Repairs
    - Reliability of service
  - Communication system
    - Repairs
    - Reliability of service
  - Flood management
- **Human settlements and buildings**
  - Operation and maintenance (e.g. air conditioning costs)
  - Repairs (e.g. flood damages)
  - Quality of life (e.g. thermal comfort, death risks)
- **Agriculture and forestry and food security**
  - Food production and costs
  - Soil and water conservation
- **Ecosystem and environment**
  - Biodiversity
  - Services (e.g. water filtration, flood control)
- **Social systems**
  - Social protection
  - Financial inclusion
  - Health care coverage
- **Information and decision-making**
  - Data collection
  - Early warning systems
  - Data dissemination and decision support to include future climate risks in decision-making

9. Circular Economy and/or Eco-Efficient Projects

The indicators proposed herein aim to capture and illustrate the environmental and sustainability benefits of circular economy and/or eco-efficient projects, which are recognised by the GBP under one of the ten broad categories of eligibility for Green Projects:

"circular economy adapted products, production technologies and processes (such as the design and introduction of reusable, recyclable and refurbished materials, components and products; circular tools and services); **and/or certified eco-efficient products"**

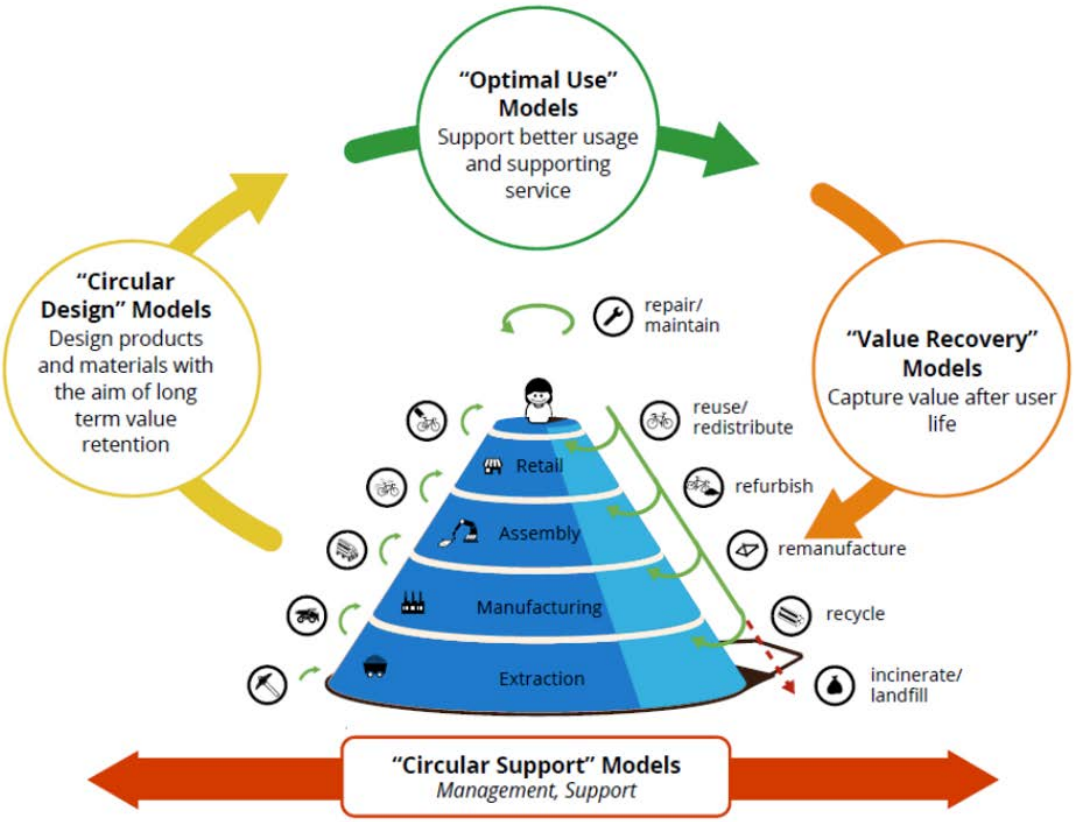
This document builds on previous work published by the GBP Impact Reporting Working Group, including that entitled "Suggested Impact Reporting Metrics for Waste Management and Resource-Efficiency Project" in February 2018, and thus the indicators proposed here are supplementary and specific for circular economy and/or eco-efficiency projects.

While this document proposes certain quantitative impact reporting metrics, the GBP also encourages issuers to provide qualitative information, which is especially relevant in relation to circular economy projects. Such qualitative information is encouraged to provide for a meaningful contextualisation of the baseline situation and the improved solution as a result of the project (e.g. achievement of circularity). For circular economy projects, qualitative information is especially important in order to highlight how a project, a component of a project and/or a business contributes substantially to the circular economy, thereby differentiating it from linear resource efficiency projects that optimise or reduce resource use, but without increasing value retention or value recovery. The geographical context is relevant, for instance, in understanding what biodegradable waste may be considered as waste. Qualitative information is also critical in understanding, the management and mitigation of risks associated with projects such as when the use of bio-based inputs may be deemed to jeopardise food sources.

In contrast to the linear economy of "take-make-waste", the circular economy may be understood to design out waste and pollution, maintain the utility and the value of materials and products for as long as possible while minimising the need for material and other resource inputs, such as energy, water and land, as well as to use/reuse waste productively for alternative eco-efficient resources and products. While the definition may also be extended to the regeneration of natural systems, this may be better covered through the Green Bond Principles eligible Green Project category of "environmentally sustainable management of living natural resources and land use". The authors of this document acknowledge the importance of harmonisation for such projects, for which additional suitable indicators will need to be developed in the future.

While it is acknowledged that energy recovery from waste is not only preferable to landfill, it may also contribute to climate change mitigation through minimising the use of fossil fuels, it is not deemed to contribute substantially to the circular economy, especially by comparison with projects that reprocess waste into new products or materials. Any climate change mitigation co-benefits should, therefore, reference the suggested impact reporting metrics for Renewable Energy/Energy-Efficiency projects: https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/20151202-0530-FINALRevised-Proposal2.pdf.

The circular economy has been presented in the following Value Hill Business Model[41] schematic form:



As can be seen from this diagrammatic representation, the circular economy focuses on the following key components:

Repair	Repair and maintain a product to restore it to its original function.
Reuse	Reusing a product for its original function that is in good condition.
Refurbish	Restoring, reconditioning and updating an old product to a requisite quality.
Remanufacture	Reusing and refurbishing parts of a discarded products for a new product with the same function, or repurpose the product or part for a new product with a different function.
Recycle	Recovering materials from waste for reprocessing into new products or materials, whether for the original or other purposes.

Note: A high-quality circularity of material should be favoured over downcycling. Also, **energy recovery should not be included**.

These 5 "Rs" of the circular economy have been further extended to cover the importance of "rethinking" the design of products and their use, including through the design of multi-functional products and through a focus on re-use through sharing. The "removal" of toxic chemicals in a redesigned product further extends the list of "Rs".

As reflected both in the schematic and the "Rs", in contrast to linear resource efficiency projects, the positive impact of circular economy projects may be assessed by the reduced input and/or substitution of virgin, finite resources (e.g. through the use of recycled or renewable content), increased asset utilisation (e.g. through designing for durability or sharing models) and in the extended or enhanced value of the output (e.g. through product design for repair, new products with circular features or regenerated natural assets).

Further guidance and criteria to assist issuers in identifying circular economy projects or components can be found in the European Commission report: "Categorisation system for the circular economy" which provides

41 From: Elisa Achterberg, Jeroen Hinfelaar, Nancy Bocken, "The Value Hill Business Model Tool: identifying gaps and opportunities in a circular network" (2016).

a sector-agnostic approach for activities contributing to circular economy.[42] In addition, the Ellen MacArthur Foundation's paper "Financing the circular economy - Capturing the opportunity"[43] provides an overview of circular practices, growth drivers and examples in 10 key sectors, selected to demonstrate a broad range of circular economy opportunities.

The proposed core and other sustainability indicators are designed to facilitate quantitative reporting at a project and/or at a portfolio level across geographies.

For meaningful aggregation of indicators across projects, consistency in the methods of calculation, baselines and benchmarks would be required. Thus, for the purpose of data quality, issuers are encouraged to disclose additional technical reports and/or data verification protocols where additional information could be provided as well as links to the sources of such data and methods of calculation[44].

While an evaluation of circular economy projects should typically be assessed on a lifecycle basis, in connection with Green Bond issuance that may be significantly shorter than the expected lifetime of the project, this can be translated into a per annum impact, as reflected in the suggested indicators.

Core Indicators for Circular Economy and Eco-Efficiency Projects:

A. Circular Design and Production Projects

#1 Design, development, sustainable production and/or use of materials (including bio-based materials), components and products that are reusable, recyclable or certified compostable

Indicators:

- The % increase in materials, components and products that are reusable, recyclable, and/or certified compostable as a result of the project and/or in absolute amount in tonnes p.a.
- The increased proportion of circular materials produced as a % of the total material production of the project
- Waste that is prevented, minimised, reused or recycled before and after the project in % of total waste and/or as absolute amount in tonnes p.a.
- Reduction or removal of harmful substances (persistent, carcinogenic, mutagenic, reprotoxic) used in % in comparison to the original design and/or in absolute amount in tonnes p.a.

#2 Design and production of components, products and assets that support the circular economy through increasing the functionality, durability, modularity and ease of repair

Indicators:

- Increase in components, products or assets with circular design as a result of the project in valorised amount, in % of the total product portfolio, and/or absolute amount in tonnes p.a.
- The extended warranty period compared to the market standard in years, or the expected extension of lifetime in years (compared to the equivalent linear product's expected lifetime)
- The % of single use products replaced by products designed and produced for reuse

#3 Substitution of virgin materials with secondary raw materials and by-products

Indicators:

- The % and/or absolute amount in tonnes p.a. of virgin raw materials that are substituted by secondary raw materials and by-products from manufacturing processes

Benchmarks:

Internationally recognised benchmark standards, including current EU standards for the quality of materials/products as well as use of chemical substances (e.g. REACH), Cradle to Cradle Product Institute's C2C Guideline[45], the ISCC Certification System[46], or APR Postconsumer Resin (PCR) Certification Program[47]

42 In future, the EU taxonomy is expected to provide a framework with specific criteria to support the identification and validation of activities that substantially contribute to the circular economy across various sectors.
43 https://www.ellenmacarthurfoundation.org/assets/downloads/Financing-the-circular-economy.pdf.
44 Issuer-level tools exist e.g. Circulytics: https://www.ellenmacarthurfoundation.org/resources/apply/circulytics-measuring-circularity.
45 https://cdn.c2ccertified.org/resources/certification/standard/v4_2nd_draft_docs_FOR_PUBLIC_COMMENT_FINAL_071420.pdf.
46 https://www.iscc-system.org/news/iscc-plus-certification-for-the-circular-economy-and-bioeconomy/.
47 https://plasticsrecycling.org/apr-pcr-certification.

Notes:

- Bio-based materials should be clearly traceable to regenerative or sustainable biomass production and not induce significant competition for land and water use regarding the sourcing of raw agricultural material
- Clear labelling for recyclability and compostability is best practice, (e.g. https://bpiworld.org/products.html)
- Reference should be made to relevant legislation, international conventions and/or protocols to ensure that the secondary raw materials and by-products are not harmful

B. Circular Use

#4) Production of new products or assets from redundant products and assets that have been repurposed, refurbished or remanufactured

Indicators:

- Increase in products or parts derived from redundant products or components in valorised amount, in % of the total product portfolio, and/or in absolute amount in tonnes p.a.
- Increase in the number of end-of-design life or redundant immovable assets that have been refurbished and/or repurposed and/or area in m^2
- Redundant products that have been repurposed, refurbished or remanufactured as a result of the project as a % of total products to be discarded and/or in absolute amount in tonnes p.a.
- The expected extension of lifetime in years (compared to the equivalent linear product's expected lifetime)

Notes:

- Efforts to promote the life extension of products or assets must not compromise the ability to:
  - recover or recycle the products/movable assets or their associated materials at the end of a new life-cycle,
  - disassemble the immovable asset(s) (buildings/infrastructure/facilities) and reuse/recycle their associated materials at the end of life, and
  - align with the fundamental environmental goals of minimising energy use and reducing pollution.
- Refurbished/remanufactured products/movable assets should meet a generally accepted specific international standard including current EU standards (as new condition in the case of remanufactured products/assets) and accompanied by relevant warranties for the refurbished assets
- Refurbishing/remanufacturing of products/movable assets should retain a substantial proportion of the original components/parts/products/assets

C. Circular Value Recovery

#5) Development and sustainable production of new materials from secondary raw materials, by-products and/or waste

Indicators:

- New materials derived from secondary raw materials, by-products and/or waste in % compared to total production capacity, and/or in absolute amount in tonnes p.a.
- Annual absolute (gross) amount of secondary raw materials, by-products and/or waste that is recovered[48] in tonnes p.a. and/or in % of total waste that will be used to develop new materials

Notes:

- New materials should be of the same or similar quality and/or suitable for the same or equivalent application as those made from virgin raw materials

48 This excludes energy recovery through waste-to-energy generation.

#6) Recovery, recirculation and valorisation of biodegradable waste and/or by-products (including through anaerobic digestion) for food, feed nutrients, fibres, fertilisers, and, where legally allowed in the relevant country, cosmetics and medicals

Indicators:

- Annual absolute (gross) amount of biodegradable waste, digestate and compost that is recovered in tonnes p.a. and/or in % of total waste
- Amount of food, feed nutrients product, fibres or fertiliser produced from biodegradable waste and/or by-products in tonnes p.a. or in valorised amount
- Annual absolute amount of secondary raw materials and chemicals recovered in tonnes p.a.

Benchmarks:

- Internationally recognised benchmark standards including current EU standards for allowable biomass extraction to avoid soil degradation

D. Circular Support and Products

#7) Circular support through tools and services (e.g. sharing platforms and digital infrastructure/ software) that enable circular economy strategies and business models e.g. through reuse and/or sharing

Indicators:

- Increase in number of clients for tools or services enabling circular economy strategies
- % increase of annual income derived through tools and services enabling circular economy

#8) Eco-efficient products

Indicators:

- The increase in number of products and/or the share of production awarded an internationally recognised eco-label, or energy, eco-efficiency or other relevant environmental certification

Benchmarks:

- Relevant environmental certification, such as the Nordic eco-label, EU eco-label, FSC PEFC, Cradle to Cradle Blue Angel and ISO 14021, that serves to recognise products that have a smaller environmental footprint over their lifecycle than other products serving the same use

Other Sustainability Indicators for Circular Economy and Eco-Efficiency Projects:

#1 Rehabilitation of contaminated or depleted areas and brownfield sites

Indicators:

- Rehabilitated areas in km^2, and the share of which is redeveloped for the same or other use in %
- Reduction in contaminant levels in mg contaminant kg^{-1} soil

#2 Reuse/recycling of wastewater

Indicators:

- Annual absolute (gross) amount of treated wastewater reused/recycled before and after the project in m^3/a

#3 Reduction in carbon intensity through the manufacture of circular economy and/or eco-efficient products and/or through the provision of services that enable circular economy strategies and business models

Indicators:

- Reduction in carbon intensity of service in tCO_2 eq/unit of service
- Reduction in lifecycle GHG emissions of materials through reuse, recycling or composting

#4 Reduction in air pollution in circular economy and/or eco-efficient production

Indicators:

- Reduction of NOx or SOx or particulates (PM2.5 and PM10) or VOC before and after the project

#5 Components and processes that are deemed closed loop recycling

Indicator:

- Number of components/processes or as percentage share of the portfolio or of total production

#6 Improvements in recycling to meet virgin material quality (e.g. for food grade containers)

Indicator:

- Number of recycling cycles that the recycled material can withstand
- % of new products that meet virgin material quality (e.g. eligible food grade packaging)

#7 Components produced through additive manufacturing (3D printing)

Indicator:

- Number of components or as percentage share of the portfolio or of total production

#8 Patent applications/commercialisation of patent applications for eco-efficient/circular economy products

Indicator:

- Number of patent applications/number of commercialised patent applications

#9 Corporate focus on the design of eco-efficient/circular economy products

Indicator:

- % of corporate workforce dedicated to eco-design
- Number of employees trained in circular economy and/or ecodesign

#10 Collection of products from customers for recycling and/or refurbishment

Indicator:

- Number of used products collected from customers for recycling and/or refurbishment

#11 Improved industrial symbiosis and product sharing through clarity of disclosures

Indicator:

- % of products covered by ingredients' disclosure/ingredients' passport

Glossary of Terms Used for Circular Economy and Eco-Efficiency Projects:

Bio-based inputs: Inputs of biological origin excluding inputs embedded in geological and/or fossilised formations.

Biodegradable waste: Any organic matter or residue capable of undergoing anaerobic or aerobic decomposition from municipal, commercial, industrial or agricultural sources, including (i) biodegradable garden and park waste, food and kitchen waste from households, offices, restaurants, retail premises and comparable waste from food processing plants; (ii) organic by-products from agriculture, aquaculture, fisheries, forestry and related industries; and (iii) organic sludge.

Circular Value Recovery: Recovering secondary raw materials and other valuable by-products from waste and redundant products to re-use as new products/materials thereby replacing virgin materials.

Closed loop recycling: Products returned to circulation for reuse of the materials or components keeping the original properties.

Contaminated areas: Areas which are polluted by contaminants including heavy metals (such as lead, arsenic, mercury), or organic pollutants.

Downcycling: Recycling a product/material into one of lower quality and functionality.

Eco-efficient products: Products that have a smaller environmental footprint over their life-cycle than other products serving the same use, and which meet the criteria of internationally recognised eco-labels or other relevant environmental certifications.

High-quality circularity: Materials, components or products that derive from reused or recycled sources and that can be used for longer and/or with greater intensity than the industry average for the relevant material, component or product.

Industrial symbiosis: Engaging traditionally separate industries in a collective approach involving physical exchange of materials, energy, water, and/or by-products in order to collectively optimise material and energy use at efficiencies beyond those achievable by any individual process alone.

Life cycle assessment: An impact evaluation of all relevant energy, material inputs and environmental releases associated with each process, component product, and/or service over the cycles of design, production, use, consumption and disposal.

Recover: Recovering materials from waste for the purpose of replacing other (virgin) materials.

Recycle: Recovering materials from waste for reprocessing into new products, materials or substances with a high-quality circularity of materials favoured over downcycling, and with energy recovery excluded.

Redundant products: Products that are not in use anymore but would still work or have become completely non-functional.

Refurbish: Restoring, reconditioning and updating an old product to a requisite quality.

Remanufacture: Reusing and refurbishing parts of a discarded products for a new product with the same function, or repurpose the product or part for a new product with a different function without compromising the quality and functionality of the product, such that a remanufactured component is in as-new condition with the same warranty as a new component.

Repair: Restore to working order and maintain a product in its original function.

Reuse: Reusing a product or component in its original function.

Secondary raw materials: Waste material which has been recycled and injected back into use as productive material.

Sustainable biomass: Any type of organic matter, including plant or animal materials, residues and waste that is cultivated and harvested in a sustainable manner.

Sustainable production: Manufacture of products that incorporates best practices to minimise resource use, pollution and waste generation.

Upcycling: Process of transforming by-products, waste materials, useless, or unwanted products into new materials or products perceived to be of greater quality and increased functionality.

Virgin materials: Materials in unprocessed or minimally processed states.

Waste: Unwanted materials or substances, including electronic waste (e-waste).

10. Living Natural Resources and Land Use Projects

The indicators proposed herein aim to capture and illustrate the environmental and sustainability benefits of projects relating to sustainable management of living natural resources and land use projects, which are recognised by the GBP for Green Projects under one of the ten broad categories of eligibility for Green Projects:

"Environmentally sustainable management of living natural resources and land use (including environmentally sustainable agriculture; environmentally sustainable animal husbandry; climate smart farm inputs, such as biological crop protection or drip irrigation; environmentally sustainable fishery and aquaculture; environmentally sustainable forestry, including afforestation or reforestation; and preservation or restoration of natural resources."

While we understand "environmentally sustainable management of living natural resources and land use" projects to also include those that are focused on the conservation and sustainable use of biodiversity, such projects fall under the separate GBP project category of "terrestrial and aquatic biodiversity" for which impact reporting metrics have been proposed in Chapter 7 of this Handbook. Similarly, this GBP project category is understood to address broader considerations, such as water usage, energy consumption, waste management, the circular economy and climate adaptation. For instance, in relation to the latter, metrics were proposed to cover projects focused on increasing the using drought resistant crops and precision farming. Similarly, investments in reducing and preventing food loss may be addressed through waste management or circular economy indicators. As this chapter seeks to provide additional and specific metrics, projects already covered by other relevant project categories in earlier chapters of this Handbook may be reported using the relevant indicators and templates provided.

Living natural resources are understood in terms of a wide variety of plants, animals and microorganisms, and also in terms of the ecosystem services to which they contribute. As the focus and objectives of environmentally sustainable management of living natural resources and land use projects are highly dependent on individual ecological circumstances, it is crucial to provide information on the core dimensions of the project, its specific characteristics and the metrics to analyse the results. The importance of the geographic context in the assessment of, for instance, crop selection and more generally of proposed solutions reinforces the benefit of additional disclosures, such as the national, regional and local context and information on the population served.

While this chapter proposes certain specific quantitative impact reporting metrics, providing qualitative information, including all strategies, actions and plans for managing the positive and negative impacts, including on biodiversity, appears to be of particular relevance for sustainable management of living natural resources and land use projects. For instance, outlining landscape and jurisdictional strategies, nutrient management techniques employed and the approach to avoiding or minimising the use of pesticides and antibiotics will provide an understanding of a project's co-benefits to biodiversity, human health and the broader environment. Similarly, explaining policies that increase forest protection against insects, disease and fire may be important in understanding climate mitigation, adaptation and biodiversity benefits. Such qualitative information is also encouraged to provide a meaningful context for understanding and assessing the baseline situation and the improvement as a result of the project, which may be further complemented by more general indicators that highlight the wellbeing of the local community, as well as the relevance of food security.

At present, established global benchmarks for sustainable management of living natural resources are scant, but this looks set to change. In particular, there is a growing focus on the importance of adopting improved sustainability practices in the sector if the climate mitigation and adaption goals of the Paris Agreement are to be achieved. Even as demand for food is expected to increase by 50% by 2050, the ambition to limit global temperature rises to 1.5°c will require agriculture and forestry to halve GHG emissions. To provide the fullest understanding of the level of ambition of projects targeting GHG emissions' reductions, impact reporting should reflect this goal and interim targets. Issuers may look to reference guidance being developed for target setting.

It is widely understood that a net zero goal will not be achievable without a substantial shift away from current consumption levels of livestock products, given the sector's present high level of emissions. It is, nevertheless, important to highlight projects that offer significant emissions' reduction opportunities ahead of a meaningful societal dietary transition to alternative protein sources.

Investors may have particular concerns in relation to energy crop production projects, with different sustainability implications being associated with each type of biofuel, and with the general risk of land being diverted from food to fuel production despite a persistent growth in global food demand. It will be important to demonstrate that high emissions during production, processing and transportation do not quash GHG savings, and that air quality impacts are within statutory emissions ceilings.

For the purpose of data quality, issuers are encouraged to disclose additional technical reports, environmental impact assessments and/or data verification protocols where additional information could be provided, as well as links to the sources of such data and methods of calculation. The robustness of disclosures and/or the underlying methodology may be enhanced by making available any independent assessment from consultants, verification bodies and/or institutions with recognised expertise in environmental sustainability. Since the context in which any project is undertaken is of key importance in an assessment, a portfolio of projects across different geographies may be best understood through disaggregated data.

Core Indicators

A. Crop production

#1 Resource efficiency in operations incl. traction, irrigation, pumping, harvesting, crop cooling, storage and transportation.

Potential indicators:

- Reduction in net GHG emissions, GHG intensity (e.g. tCO2e/unit of output) or energy intensity (e.g. GJ/unit of output)
- Water savings from improved irrigation, stormwater and rainwater capture, groundwater recharge and/or the reuse of highly treated wastewater (e.g. m^3/year)
- Farmland covered by new, or rehabilitated efficient irrigation, water efficient crops and/or resource conserving crop rotation (ha or km^2)

#2 Management of soil and biomass for carbon sequestration, erosion control and improved soil health.

Potential indicators:

- Farmland under soil conservation/regenerative agricultural practices, including increased cover crop coverage, complex crop rotation, crop diversity practices, maintaining living roots/permanent soil coverage, minimum or no tillage farming and/or crop and livestock integration (ha and % of acreage farmed)
- Increase in above and below ground carbon stocks (tC/ha) (TEG Taxonomy Report)
- Reduction of GHG emissions as a result of soil conservation measures and land use change (tCO2e/ha)

#3. Implementation of sustainable land practices.

Potential indicators:

- Increase in area under certified organic or sustainable agriculture (ha and % of acreage farmed)
- Conversion of agricultural land to more diverse cropping systems (e.g. agroforestry) (ha and % of acreage farmed)
- Increase in area under integrated pest management (ha and % of acreage farmed)
- Increase in agricultural land set aside for biodiversity conservation (e.g rewilding, conversion of land along field edges to woodland) (ha and % of acreage farmed)
- Increase in area under management practices targeting improved ecosystem services provision (e.g. pollination) (ha and % of acreage farmed)

Benchmarks:

Internationally recognised and/or locally relevant benchmark standards for organic farming (e.g. EU eco label for organic food production, USDA organic label, Demeter, Naturland).

B. Livestock production

#1. Management of soil and biomass for carbon sequestration, erosion control and improved soil health.

Potential indicators:

- Pasture area under improved management such as Management Intensive Rotational Grazing (MIG) systems and silvopastoral grazing practices (ha / % of rangeland) (jMDB)

#2. Reduction of methane and nitrous oxide emissions from livestock

Potential indicators:

- Improved feeding practices reducing enteric CH4 emissions (% of herd covered)
- Improved manure treatment practice (% of total volume)
- Sustainable improvement of productivity (% decrease of tCO2e/unit of output)

Notes:

Ensure that mitigation and emission reduction techniques for feeding and housing of livestock and for manure storage and processing are applied, such as recommended in the UNECE Framework Code for Good Agricultural Practice for Reducing Ammonia.

Ensure emissions to air, water and soil are within the BATAEL ranges / are prevented or reduced by using a combination of BAT techniques as set out in the BREF for the Intensive Rearing of Poultry or Pigs, and by using similar emission reducing techniques for dairy farming.

#3. Minimising environmental impacts in agricultural value chains

Potential indicators:

- Increase in feedstock supply chain certification coverage (% of total feedstock volume)
- Increase in the share of agricultural inputs that can be shown to be deforestation- or conversion-free (% of total agricultural inputs)
- Replacement of feedstock reliant on long-haul transportation with sustainable on-farm sources/local alternatives (% of total volume)

Benchmarks:

Feedstocks used are certified under one of the following, pre-approved best practice standards:

- RSB https://rsb.org/certification/
- RTRS https://responsiblesoy.org/
- ISCC Plus https://www.iscc-system.org/
- Pro Terra https://www.proterrafoundation.org/

Notes:

An immediate action for mitigation should not prevent or close down future options for change that could deliver greater mitigation benefits in the sector. For example, the investment in activities that seek to improve the GHG performance of the livestock sector should not prevent more systemic changes in the sector through, for example, greater integration of livestock and crop production (mixed farming), or overall reduction in livestock production. One opportunity for emissions reductions in the agriculture sector as a whole is to switch from higher emitting activities to lower emitting activities (for example, by reducing cattle numbers and increasing legume production as an alternative source of protein), with a corresponding consumption switch between agricultural commodities (TEG Taxonomy Report).

C. Forestry

#1. Sustainable forest management, including afforestation, reforestation, forest rehabilitation.

Potential indicators:

- Avoided and/or sequestered GHG emissions (tCO_2-e p.a)
- Increase in area under sustainable forest management (ha)/Area converted from conventional logging to reduced-impact logging practices (% of managed forestland)/Adoption of harvesting methods that minimise impacts on soil (% of managed forestland)
- Maintenance/increase of provisions of ecosystems services: erosion control and improved soil health, quantity and quality of water (% of managed forestland)

Benchmarks:

Internationally recognised benchmark standards for sustainable forestry (e.g. FSC, PEFC, Rainforest Alliance).

Notes:

jMDB: Activities that drain native ecosystems or degrade hydrological systems shall not be eligible.

jMDB: Evidence of human-assisted natural regeneration should be provided. TEG: The FAO FRA definition of reforestation excludes natural regeneration. However, the Taxonomy recognises the importance of natural regeneration to the increased carbon sink and stock potential provided by forests in general. It is therefore included explicitly within this context in line with the FAO FRA definition of naturally regenerating forest.

CBI requirements for sustainable forestry management: Free Prior & Informed Consent (FPIC); No natural landscape conversion since 2010 (e.g. FSC or PEFC certification plus confirmation that no peatlands have been converted since 2010).

Taxonomy TEG on reforestation: Regeneration of forests after harvesting is covered under EU legislation (need to ensure criteria are additional).

D. Fisheries & aquaculture

#1. Sustainable fisheries

Potential indicators:

- Increase in % of certified sustainable fisheries
- Increase in tonnes of sustainable seafood production
- Increase in low-impact fishing gear (in % of operations covered?)
- Reduction in bycatch per unit of effort in tonnes or %
- Reduction in abandoned, lost or otherwise discarded fishing gear (ALDFG) volumes

Benchmarks:

Internationally recognised benchmark standards and certification schemes for fisheries (e.g. MSC, ASC).

Notes:

Certified sustainable fisheries should be accredited by the GSSI and comply with FAO Technical Guidelines

#2. Sustainable aquaculture

Potential indicators:

- Increase in % of certified sustainable aquaculture
- Reduction in marine and freshwater pollution / Waste discharged per ton of fish, nitrogen discharged from the farm (per ton of production) and total discharge of wastes from farms
- Reduction of chemicals, anti-microbials or pesticides per ton of fish
- Reduction in the occurrence of farmed fish escapes / Percentage of operations covered by new design improvements mitigating the risk of escape

- Decrease in the dependence on the direct wild capture of fish in favour of farm-raised broodstocks (% total stock for fish production)

#3. Minimising environmental impacts in feed value chains

Potential indicators:

- Increase in feed supply chain certification coverage (% of total feedstock volume)
- Reduction in the use of fish meal and fish oil taken from wild stocks as feed (e.g. in favour of using alternative protein ingredients such as algal, insect, or single-cell ingredients)
- Increase in the share of feed that can be shown to be deforestation- or conversion-free

Benchmarks:

Internationally recognised benchmark standards and certification schemes for aquaculture (e.g. ASC, Global-GAP).

Notes:

Certified sustainable aquaculture should be accredited by the GSSI and comply with FAO Technical Guidelines.

Other Sustainability Indicators

- Number of inefficient agricultural water pumps replaced with more efficient models
- Reduction in chemical inputs in kg/ha and in %
- Increase in cold storage facilities in absolute number and/or in installed capacity (metric tonnes)
- Number of projects involving integration of bycatch exclusion devices and other fishing gear modification programmes
- Increase in area covered by water management practices reducing CH_4 emissions in paddy rice cultivation
- Improvements in water quality in discharged effluents from farming/aquaculture – changes in NO_3 in mg/L and pH level
- Area of peatland/wetlands restored/under conservation practices (ha)
- Farmland covered by new, efficient drainage (ha)
- On-farm energy audit
- Volume of sustainably sourced goods produced (m^3, tonnes)
- Volume of sustainably sourced goods procured (m^3, tonnes)
- Number of trees/seedlings/shrubs planted and/or bought from certified forests
- Number of sustainable farms/wetland areas/conservation centres created or financed

Glossary, References and Guidance

Terms Used for Sustainable Management of Living Natural Resources and Land Use Projects.

Crop Production:

Agroforestry: Growing trees and agricultural crops on the same piece of land with a focus on complementarities.

Cover crop coverage: Sowing of cover/catch crops using a locally appropriate species mixture with at least 1 legume and reducing bare soil to the point of having a living plant coverage index of at least 75% at farm level per year.

Efficient drainage should include e.g. laser levelling.

Efficient irrigation (e.g. drip irrigation) should not include e.g. sprinklers or flood irrigation.

Integrated Pest Management (IPM): Prevention of pest damage through controls based on the life cycles of pests and their interaction with the environment.

Nutrient Management Plan: that identifies the right rate of N fertiliser use for the production unit kg/ha.

Regenerative farming: focuses on the restoration and conservation of natural resources through soil conservation practices including increased cover crop coverage, complex crop rotation, crop diversity practices, maintaining living roots/permanent soil coverage, minimum or no tillage farming.

Resource conserving crop rotation: Growing crops in ways that reduce erosion, improve soil fertility and moisture, interrupt pest cycles and increase local biodiversity, including growing different crops in the same area sequentially, growing different crops simultaneously, and growing different crops in between rows of a primary crop.

Water Management Practices reducing CH_4 emissions could include a list of examples (e.g. alternate wetting and drying https://www.frontiersin.org/articles/10.3389/fsufs.2020.575823/full).

Water Savings: can be measured as a net reduction in abstraction from source e.g. river, lake or aquifer.

TEG Taxonomy Report: shallow flooding, mid-season drying event, off-season straw.

Additional guidance on sustainable crop production projects:

The Annex to the Platform on Sustainable Finance's report with recommendations on technical screening criteria for the four remaining environmental objectives of the EU taxonomy may provide useful guidance on the minimum conditions for crop production projects (Table 3, pages 92-110) as well as under supplementary material (pages 110-115).

Livestock Production:

Feeding practices reducing enteric CH_4 emissions should include e.g. increasing the lipid content of diets.

Improved manure treatment practice where manure is applied to the land, activities should comply with the limit of 170 kg nitrogen application per ha per year, based on the provisions set out under the Nitrates Directive 91/676/EC. (In practice, this is implemented by setting limits on livestock density between 1.7-2.0 livestock units / ha.) (TEG Taxonomy Report).

Improved pasture management focuses on efforts to increase forage productivity and soil carbon storage as well as improving soil and water quality and water infiltration through measures such as rotational grazing, water tanks, stream crossings, the use of manure to either replace or supplement mineral fertilisers and pasture rehabilitation through re-establishing grasses and legumes on bare soil.

Management Intensive Grazing (MIG) systems uses repeat periods of grazing and rest between two or more paddocks or pastures. There are different methods of MIG employed for different situations, most commonly rotational grazing, but also include managed grazing, buffer grazing, deferred grazing, frontal grazing, strip grazing and mixed species grazing.

Silvopastoral grazing practices intentionally integrate and manage trees, forage crops and livestock thereby combining animal husbandry with the production of wood products and high-quality forage.

Additional guidance on sustainable livestock production projects:

The Annex to the Platform on Sustainable Finance's report with recommendations on technical screening criteria for the four remaining environmental objectives of the EU taxonomy may provide useful guidance on grazing regimes, supplementary feed, etc (Table 3, pages 34-55) as well as under supplementary material (pages 55-57).

Forestry:

Degraded Land has minimal tree cover, and absence of peat and therefore is an area with low carbon stocks.

Reduced Impact Logging Practices - https://www.fao.org/3/ac805e/ac805e04.htm.

Rehabilitated Land seeks ecological restoration of forest land to ensure the productivity and resilience of

the trees, soils, and vegetation thereby supporting biodiversity, the role that forests play in absorbing and storing GHG emissions, as well as supporting livelihoods.

Sustainable Forest Management - See also: TEG Taxonomy Report, Annex F2 for indicative examples of types of practices.

Certifications: FSC, PEFC.

Fisheries and Aquaculture:

Bycatch per unit: The quantity of fish/wildlife caught (in number or in weight) with one standard unit of fishing effort (e.g. number of fish taken per 1,000 hooks per day, or weight of fish taken per hour of trawling).

High to low impact fishing gear: (e.g. trawls/dredges to fishing gear that does not contact the seafloor, pole and line. selectivity).

Sustainable Fisheries: Should cover sourcing from fisheries with healthy levels of fish abundance, fishing fleet efficiency, equipment, leaving enough fish in the ocean[49], protecting habitats[50] and threatened species[51].

Sustainable Aquaculture: Should ensure sustainable feed systems that respect ecosystems and biodiversity, reduce the use of veterinary products and other substances while promoting the health and welfare of the animals, and mitigate adverse effects, including on water quality, discharges, emissions, and pollutants.

FAO The State of World Fisheries and Aquaculture (SOFIA): https://www.fao.org/fishery/en/sofia/en

FAO Technical Guidelines on Sustainable Fisheries & Aquaculture: https://www.fao.org/fishery/en/home

EU Aquaculture: for the period 2021 to 2030 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2021:236:FIN

Additional guidance on sustainable fisheries:

- Fishing within established catch limits set at Maximum Sustainable Yield (MSY) with at least 50% of spawning biomass unfished, based on stock status and fishing mortality below MSY taking into account an ecosystem-based approach; not operating in a fishery where targeted species are threatened or endangered).
- Avoiding by-catch (Only truly selective methods/gear that has published research showing high selectivity and low impact on the ecosystem are used & Release bycatch when species have known survival possibility).
- Respecting no take zones (fishing in a fishery with an established and maintained 10% no take zone, prioritising sensitive habitats and ecosystem connectivity; this should be evidenced in a fisheries management plan; restricting fishing areas in case of essential fish habitats and sensitive habitats).
- No discarded gear and minimised gear loss. All gear must have a tagging (ID), reporting, recovery and recycling, use of biodegradable materials and no single use equipment.
- No record of illegal, unreported and unregulated (IUU) fishing activity in the last 5 years (100% observers' coverage or Remote Electronic Monitoring (REM) is in place on board vessel to monitor compliance with harvesting criteria and better collection of data on by-catch).

49 EU-Taxonomy: Operating in a fishery which complies with established catch limits set at Maximum Sustainable Yield (MSY) with at least 50% of spawning biomass unfished, based on stock status and fishing mortality below MSY taking into account an ecosystem-based approach.

50 EU-Taxonomy: Fishing in a fishery with an established and maintained 10% no take zone, prioritising sensitive habitats and ecosystem connectivity; this should be evidenced in a fisheries management plan; restricting fishing areas in case of essential fish habitats and sensitive habitats).

51 EU-Taxonomy: not operating in a fishery where targeted species are threatened or endangered & avoid by-catch (Only truly selective methods/gear that has published research showing high selectivity and low impact on the ecosystem are used & Release bycatch when species have known survival possibility).

V. Reporting Templates

Notes a/ to f/ in the below templates can be found in page 76

The below reporting templates can be downloaded in excel format on ICMA's website

Renewable Energy

Illustrative Summary Template for Project-by-Project Report:

Renewable Energy (RE)	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	RE component	Allocated Amount c/	Project lifetime d/	#2) Annual generation (electricity/ other)		#3) a) Additional capacity of renewable energy plant(s) constructed	#3) b) Additional capacity of renewable energy plant(s) rehabilitated	#1) Annual GHG emissions reduced/avoided e/	Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	MW/ GWh	GJ/ TJ	MW	MW	in tonnes of CO_2 equivalent	Additional capacity of renewable energy plant(s) to be served by transmission systems (MW) Decrease in the carbon intensity factor (tCO_2e/MWh), Annual Absolute (gross) GHG emissions from the project in tonnes of CO2 equivalent
e.g. Project 2	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	

Illustrative Summary Template for Portfolio-based Report[52]:

Renewable Energy (RE)	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	RE component	Allocated Amount c/	Average portfolio lifetime d/	#2) Annual generation (electricity/other), possibly per unit of financing		#3) a) Additional capacity of renewable energy plant(s) constructed (possibly per unit of financing)	#3) b) Additional capacity of renewable energy plant(s) rehabilitated (possibly per unit of financing)	#1) Annual GHG emissions reduced/avoided (possibly per unit of financing) e/	Other Indicators (possibly per unit of financing)
Portfolio name	currency	%	%	%	currency	years	MWh/ GWh	GJ/TJ	MW	MW	in tonnes of CO_2 equivalent	Additional capacity of renewable energy plant(s) to be served by transmission systems (MW) Decrease in the carbon intensity factor (tCO_2e/MWh), Annual Absolute (gross) GHG emissions from the project in tonnes of CO2 equivalent
e.g. Portfolio 2	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	

52 The issuer should disclose the approach underlying the results (see item 6. of the core principles/recommendations), i.e. specify whether the portfolio report:
- Aggregates project-by-project results including only the pro-rated share (as a percentage of the issuer's share of the total financing) of the total projects' results (portfolio report based on project-by-project allocations), or
- Reports only of the overall results of the portfolio (portfolio report based on portfolio allocations).

Energy Efficiency

Illustrative Summary Template for Project-by-Project Report:

Energy Efficiency (EE)	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	EE component	Allocated Amount c/	Project lifetime d/	#1) Annual energy savings (electricity/ other)		#2) Annual GHG emissions reduced/ avoided e/	Other Indicators
Project name f/	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**MWh/ GWh**	**GJ/TJ**	**in tonnes of CO_2 equivalent**	Annual Absolute (gross) GHG emissions from the project in tonnes of CO_2 equivalent Number of households served with energy efficiency solutions such as smart meters, Energy efficiency components produced or procured (m^2, m^3, tonnes or %)
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	

Illustrative Summary Template for Portfolio-based Report:

Energy Efficiency (EE)	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	EE component	Allocated Amount c/	Average portfolio lifetime d/	#1) Annual energy savings (electricity/other), possibly per unit of financing		#2) Annual GHG emissions reduced/avoided (possibly per unit of financing) e/	Other Indicators per unit (possibly per unit of financing)
Portfolio name	**currency**	**%**	**%**	**%**	**currency**	**years**	**MWh /GWh**	**GJ/TJ**	**in tonnes of CO_2 equivalent**	Annual Absolute (gross) GHG emissions from the project in tonnes of CO2 equivalent Number of households served with energy efficiency solutions such as smart meters, Energy efficiency components produced or procured (m^2, m^3, tonnes or %)
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	

Sustainable Water and Wastewater Management

Illustrative Summary Template for Project-by-Project Report:

Sustainable Water Management Projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Sustainable Water Management component	Allocated Amount c/	Project lifetime d/	#1) Annual absolute (gross) water savings e/		Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	in m^3/a	in %	~ No. of people with access to clean drinking water (or volume of clean drinking water in m^3/a) through infrastructure supporting sustainable and efficient water use ~ Number of people or enterprises benefitting from measures to mitigate the consequences of floods etc.
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	

Wastewater Treatment Projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Sustainable Wastewater Management Component	Allocated Amount c/	Project lifetime d/	#2) Annual absolute (gross) amount of wastewater treated, reused or avoided e/			#3) i) Annual absolute (gross) amount of raw/ untreated sewage sludge that is treated and disposed of e/		#3) ii) Annual absolute (gross) amount of sludge that is reused e/		Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	in m^3/a	in p.e./a	in %	in tonnes of dry solids p.a.	in %	in tonnes of dry solids p.a.	in %	~ No. of people with access to improved sanitation facilities
e.g. Project 2	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	

Sustainable Water and Wastewater Management (continued)

Illustrative Summary Template for Portfolio-based Report:

Sustainable Water Management Portfolios	Signed Amount a/	Share of Total Projects Financing b/	Eligibility for green bonds	Sustainable Water Management component	Allocated Amount c/	Average Portfolio lifetime d/	#1) Annual absolute (gross) water savings e/		Other Indicators
Portfolio name	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**in m^3/a**	**in % (weighted average)**	~No. of people with access to clean drinking water (or volume of clean drinking water in m^3/a) through infrastructure supporting sustainable and efficient water use ~Number of people or enterprises benefitting from measures to mitigate the consequences of floods etc.
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	

Wastewater Treatment Portfolios	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Sustainable Wastewater Management Component	Allocated Amount c/	Average Portfolio lifetime d/	#2) Annual absolute (gross) amount of wastewater treated, reused or avoided e/			#3) i) Annual absolute (gross) amount of raw/ untreated sewage sludge that is treated and disposed of e/		#3) ii) Annual absolute (gross) amount of sludge that is reused e/		Other Indicators
Portfolio name	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**in m^3/a**	**in p.e./a**	**in % (weighted average)**	**in tonnes of dry solids p.a.**	**in % (weighted average)**	**in tonnes of dry solids p.a.**	**in % (weighted average)**	~No. of people with access to improved sanitation facilities
e.g. Portfolio 2	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	

Waste Management and Resource-Efficiency

Illustrative Summary Template for Project-by-Project Report:

Waste Management Projects – Resource Efficiency	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Waste Management component	Allocated Amount c/	Project lifetime d/	#1) i) Waste prevented, minimised, reused or recycled e/		#1) ii) Annual GHG emissions reduced e/	Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	in % of total waste	in tonnes p.a.	in tonnes of CO_2 equivalent p.a.	~ KG of raw material per produced unit before and after ~ Added monetary value created using waste ~ Products changed to increase waste reduction ~ Tons of secondary raw materials or compost produced
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	

Energy Recovery from Waste Projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Energy Recovery from Waste component	Allocated Amount c/	Project lifetime d/	#2) i) Annual energy generation from non-recyclable waste (electricity/other energy) e/		#2) ii) Annual energy recovered from waste (minus any support fuel) of net energy generated e/	#2) iii) Annual GHG emissions reduced e/
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	in MWh/GWh	in GJ/TJ	in MWh/GWh/KJ	in tonnes of CO_2 equivalent p.a.
e.g. Project 2	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

Pollution Control Projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Pollution Control component	Allocated Amount c/	Project lifetime d/	#3) Waste separated and/ or collected and treated or disposed in environmentally sound manner e/		Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	in % of total waste	in tonnes p.a.	~ Number of people or % of population with access to waste collection ~ Area with improved regular waste collection service ~ How many fractions of waste were separated ~ Absolute amount or % of residual non-separated waste ~ Number of people or % of population with access to street sweeping etc.
e.g. Project 3	XX	XX	XX	XX	XX	XX	XX	XX	

Waste Management and Resource-Efficiency (continued)

Illustrative Summary Template for Portfolio-based Report:

Waste Management Portfolios – Resource Efficiency	Signed Amount a/	Share of Total Projects Financing b/	Eligibility for green bonds	Waste Management component	Allocated Amount c/	Average Portfolio lifetime d/	#1) i) Waste prevented, minimised, reused or recycled e/		#1) ii) Annual GHG emissions reduced e/	Other Indicators
Portfolio name	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**in % of total waste**	**in tonnes p.a.**	**in tonnes of CO_2 equivalent p.a.**	~ KG of raw material per produced unit before and after ~ Added monetary value created using waste ~ Products changed to increase waste reduction ~ Tons of secondary raw materials or compost produced
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	

Energy Recovery from Waste Portfolios	Signed Amount a/	Share of Total Projects Financing b/	Eligibility for green bonds	Energy Recovery from Waste component	Allocated Amount c/	Average Portfolio lifetime d/	#2) i) Annual energy generation from non-recyclable waste (electricity/ other energy) e/		#2) ii) Annual energy recovered from waste (minus any support fuel) of net energy generated e/	#2) iii) Annual GHG emissions reduced e/
Portfolio name	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**in MWh/GWh**	**in GJ/TJ**	**in MWh/GWh/KJ**	**in tonnes of CO_2 equivalent p.a.**
e.g. Portfolio 2	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

Pollution Control Portfolios	Signed Amount a/	Share of Total Projects Financing b/	Eligibility for green bonds	Pollution Control component	Allocated Amount c/	Average Portfolio lifetime d/	#3) Waste separated and/ or collected and treated or disposed in environmentally sound manner e/		Other Indicators
Portfolio name	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**in % of total waste**	**in tonnes p.a.**	~ Number of people or % of population with access to waste collection ~ Area with improved regular waste collection service ~ How many fractions of waste were separated ~ Absolute amount or % of residual non-separated waste ~ Number of people or % of population with access to street sweeping ~ Km of street with regular street sweeping service coverage etc.
e.g. Portfolio 3	XX	XX	XX	XX	XX	XX	XX	XX	

Clean Transportation

Illustrative Summary Template for Project-by-Project Report:

Clean Transportation Projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Clean Transportation project component	Allocated Amount c/	Project lifetime d/	Passenger-kilometres and/or passengers or tonne-kilometres and/or tonnes e/		Annual GHG emissions reduced/ avoided e/	Reduction of air pollutants e/	Other Indicators
Project name f/	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**Passenger kilometres and/or passengers**	**Tonne kilometres and/or tonnes**	**in tonnes of CO_2 equivalent p.a.**	**Particulate matter (PM), sulphur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), and non-methane volatile organic compounds (NMVOCs)**	~ Annual Absolute (gross) GHG emissions in tCO_2–e ~ Number of clean vehicles deployed (e.g. electric) ~ Estimated reduction in car/truck use in number of kilometres driven or as share of total transport ridership ~ Estimated reduction in fuel consumption
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

Construction of Clean Transportation Infrastructure Projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Construction of Clean Transportation Infrastructure project component	Allocated Amount c/	Project lifetime d/	Passenger-kilometres and/or passengers or tonne-kilometres and/or tonnes e/		Annual GHG emissions reduced/ avoided e/	Reduction of air pollutants e/	Other Indicators
Project name f/	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**Passenger kilometres and/or passengers**	**Tonne kilometres and/or tonnes**	**in tonnes of CO_2 equivalent p.a.**	**Particulate matter (PM), sulphur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), and non-methane volatile organic compounds (NMVOCs)**	~ Annual Absolute (gross) GHG emissions in tCO_2–e ~ Total in kilometres of new or improved train lines/ dedicated bus, BRT, LRT corridors bicycle lanes ~ Reduction in weather-related disruption (days p.a). and/or risk frequency (%) ~ Ambient noise reduction from the transport infrastructure in decibels etc.
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

Clean Transportation (continued)

Illustrative Summary Template for Portfolio-based Report:

Clean Transportation Portfolios	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Clean Transportation portfolio component	Allocated Amount c/	Portfolio lifetime d/	Passenger-kilometres and/or passengers or tonne-kilometres and/or tonnes e/		Annual GHG emissions reduced/ avoided e/	Reduction of air pollutants e/	Other Indicators
Portfolio name	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**Passenger kilometres and/or passengers**	**Tonne kilometres and/or tonnes**	**in tonnes of CO_2 equivalent p.a.**	**Particulate matter (PM), sulphur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), and non-methane volatile organic compounds (NMVOCs)**	~ Annual Absolute (gross) GHG emissions in tCO_2–e ~ Number of clean vehicles deployed (e.g. electric) ~ Estimated reduction in car/truck use in number of kilometres driven or as share of total transport ridership ~ Estimated reduction in fuel consumption
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

Construction of Clean Transportation Infrastructure Portfolios	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Construction of Clean Transportation Infrastructure portfolio component	Allocated Amount c/	Portfolio lifetime d/	Passenger-kilometres and/ or passengers or tonne-kilometres and/or tonnes e/		Annual GHG emissions reduced/ avoided e/	Reduction of air pollutants e/	Other Indicators
Portfolio name	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**Passenger kilometres and/or passengers**	**Tonne kilometres and/or tonnes**	**in tonnes of CO_2 equivalent p.a.**	**Particulate matter (PM), sulphur oxides (SOx), nitrogen oxides (NOx), carbon monoxide (CO), and non-methane volatile organic compounds (NMVOCs)**	~ Annual Absolute (gross) GHG emissions in tCO_2–e ~ Total in kilometres of new or improved train lines/dedicated bus, BRT, LRT corridors bicycle lanes ~ Reduction in weather-related disruption (days p.a). and/or risk frequency (%) ~ Ambient noise reduction from the transport infrastructure in decibels etc.
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

Green Buildings

Illustrative Core Indicator Summary Template for Project-by-Project Report

Green Building Projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Green Building component	Allocated Amount c/	Project lifetime d/	Gross Building Area (GBA)	#1) Final and/or Primary Energy Use e/			#2) Carbon reductions e/			#3) Water efficiency e/		#4) Waste management e/		#5) Certification Standard	
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	in m²	kWh/m² of GBA p.a.	% of energy use reduced/ avoided	% of renewable energy generated on site	$kgCO_2$/m² of GBA p.a.	tonnes of CO_2 equiv. reduced/ avoided p.a.	% of carbon emissions reduced/ avoided	m³/m² of GBA p.a.	annual water savings in m³/a and/or in %	waste minimised, reused, recycled in % of total waste and/or in tonnes p.a.	waste removed in tonnes	type	certification level
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

Illustrative Core Indicator Summary Template for Portfolio-based Report[53]:

Green Building Portfolios	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Green Building component	Allocated Amount c/	Average Portfolio lifetime d/	Gross Building Area (GBA)	#1) Final and/or Primary Energy Use e/			#2) Carbon reductions e/			#3) Water efficiency e/		#4) Waste management e/		#5) Certification Standard	
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	in m²	kWh/m² of GBA p.a.	% of energy use reduced/ avoided	% of renewable energy generated on site	$kgCO_2$/m² of GBA p.a.	tonnes of CO_2 equiv. reduced/ avoided p.a.	% of carbon emissions reduced/ avoided	m³/m² of GBA p.a.	annual water savings in m³/a and/or in %	waste minimised, reused, recycled in % of total waste and/or in tonnes p.a.	waste re-moved in tonnes	type	certification level
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX

53 Please add other indicators (see "Other Sustainability Indicators" in Chapter on Green Buildings) as applicable.

Biodiversity

Illustrative Summary Template for Project-by-Project Report:

Protected areas/ OECM projects	Signed Amount a/	Share of Total Projects Financing b/	Eligibility for green bonds	Biodiversity component	Allocated Amount c/	Project lifetime d/	Maintenance/ safeguarding increase[49] of protected area/ OECM/habitat		Number of predefined target or protected organisms/species before and after the project Other Indicators		Changes in the CO_2, nutrient and/ or pH levels for coastal vegetation, and coral reefs[50]	Number of invading species and/or area occupied by invading species before and after the project		Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	km²	%	per km² (bigger fauna)	per m² (smaller fauna, flora)	%	per km²	per m²	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. number of game wardens/rangers trained in biodiversity conservation etc.

Landscape conservation and restoration projects	Signed Amount a/	Share of Total Projects Financing b/	Eligibility for green bonds	Biodiversity component	Allocated Amount c/	Project lifetime d/	Maintenance/ safeguarding/ increase[49] of natural landscape area		Increase of area under certified land management (in bufferzones of protected areas)		Number of indigenous species, flora or fauna restored through the project	Annual GHG emissions reduced e/	Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	km²	%	km²	%	absolute number	in tonnes of CO_2 equivalent	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. number of farmers trained in sustainable farming and biodiversity etc.

54 Issuers should specify if "maintenance", "safeguarding" or "increase" applies.

55 Issuers are encouraged to provide additional information for coastal and marine areas, for example on maintenance and restoration of coastal vegetation like mangroves; the increase of health of coral reefs by reducing disease (degree of bleaching, age and size of living corals), as well as by reducing the sedimentation rate, nutrients in water and direct human damage.

Biodiversity (continued)

Illustrative Summary Template for Portfolio-based Report:

Protected areas/ OECM projects	Signed Amount a/	Share of Total Projects Financing b/	Eligibility for green bonds	Biodiversity component	Allocated Amount c/	Average portfolio lifetime d/	Maintenance/ safeguarding/ increase[51] of protected area/ OECM/ habitat		Number of predefined target or protected organisms/species before and after the project		Changes in the CO_2, nutrient and/ or pH levels for coastal vegetation, and coral reefs[52]	Number of invading species and/or area occupied by invading species before and after the project		Other Indicators
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	km²	%	per km² (bigger fauna)	per m² (smaller fauna, flora)	%	per km²	per m²	
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. number of game wardens/ rangers trained in biodiversity conservation etc.

Landscape conservation and restoration portfolios	Signed Amount a/	Share of Total Projects Financing b/	Eligibility for green bonds	Biodiversity component	Allocated Amount c/	Average portfolio lifetime d/	Maintenance/ safeguarding/ increase[51] of natural landscape area		Increase of area under certified land management (in bufferzones of protected areas)		Number of indigenous species, flora or fauna restored through the project	Annual GHG emissions reduced e/	Other Indicators
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	km²	%	km²	%	absolute number	in tonnes of CO_2 equivalent	
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. number of farmers trained in sustainable farming and biodiversity etc.

56 Issuers should specify if "maintenance", "safeguarding" or "increase" applies.
57 Issuers are encouraged to provide additional information for coastal and marine areas, for example on maintenance and restoration of coastal vegetation like mangroves; the increase of health of coral reefs by reducing disease (degree of bleaching, age and size of living corals), as well as by reducing the sedimentation rate, nutrients in water and direct human damage.

Climate Change Adaptation

Note: Recognising that qualitative impact information is especially important in the case of climate change adaptation/resilience projects, exemplary indicators are proposed in Chapter IV.8 Adaptation instead of core indicators as in other Chapters. Issuers are welcome to fill in the indicators relevant to their quantitative reporting when using below templates.

Illustrative Summary Template for Project-by-Project Report:

Climate change adaptation/ resilience projects Temperature-related projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Climate change adaptation component	Allocated Amount c/	Project lifetime d/	<Indicator x> e.g. Increase in grid resilience, energy generation, transmission/ distribution and storage	<Indicator y> e.g. Reduction in the area damaged by wildfires	<Indicator z> e.g. Reduction in emergency and unplanned rail and tarmac replacement	-	Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	<unit x> in MWh	<unit y> in km²	<unit z> in km	-	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. increased number of households with access to resilient energy systems etc.

Climate change adaptation/ resilience projects Wind-related projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Climate change adaptation component	Allocated Amount c/	Project lifetime d/	<Indicator x> e.g. Reduction in repair costs due to storms	<Indicator y> e.g. Reduction in the number of customers/ employees suffering loss of power/ transport services	<Indicator z> e.g. Reduction in the number of power lines incapacitated due to storms	-	Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	<unit x> Valorised ($/€/£ etc.)	<unit y>	<unit z>	-	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. increased number of households with access to resilient energy systems etc.

Climate Change Adaptation (continued)

Illustrative Summary Template for Project-by-Project Report:

Climate change adaptation/ resilience projects Water-related projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Climate change adaptation component	Allocated Amount c/	Project lifetime d/	<Indicator x> e.g. Reduction in flood damage costs	<Indicator y> e.g. Reduced/avoided water loss/household demand or increased water availability/ catchment	<Indicator z> e.g. Reduction in land loss from flooding/coastal erosion	-	Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	<unit x> Valorised ($/€/£ etc.)	<unit y> in m^3	<unit z> in km^2	-	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. increased number of households with access to resilient energy systems etc.

Climate change adaptation/ resilience projects Land-related projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Climate change adaptation component	Allocated Amount c/	Project lifetime d/	<Indicator x> e.g. Reduction in repair costs due to landslides	<Indicator y> e.g. Increase in area under wetland management/ drought resistant crop farming	<Indicator z> e.g. Reduction in changes in the nutrient and/or pH level for agricultural soils	-	Other Indicators
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	<unit x> Valorised ($/€/£ etc.)	<unit y> in km^2/ hectares	<unit z> in %	-	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. increased number of households with access to resilient energy systems etc.

Climate Change Adaptation (continued)

Illustrative Summary Template for Portfolio-based Report:

Climate change adaptation/ resilience projects Temperature-related portfolios	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Climate change adaptation component	Allocated Amount c/	Average portfolio lifetime d/	<Indicator x> e.g. Increase in grid resilience, energy generation, transmission/ distribution and storage	<Indicator y> e.g. Reduction in the area damaged by wildfires	<Indicator z> e.g. Reduction in emergency and unplanned rail and tarmac replacement	-	Other Indicators
Portfolio name f/	currency	%	% of signed amount	% of signed amount	currency	in years	<unit x> in MWh	<unit y> in km²	<unit z> in km	-	
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. increased number of households with access to resilient energy systems etc.

Climate change adaptation/ resilience projects Wind-related portfolios	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Climate change adaptation component	Allocated Amount c/	Average portfolio lifetime d/	<Indicator x> e.g. Reduction in repair costs due to storms (to all kinds of infrastructure and assets)	<Indicator y> e.g. Reduction in the number of customers/ employees suffering loss of power/ transport services	<Indicator z> e.g. Reduction in the number of power lines incapacitated due to storms	-	Other Indicators
Portfolio name f/	currency	%	% of signed amount	% of signed amount	currency	in years	<unit x> Valorised ($/€/£ etc.)	<unit y>	<unit z>	-	
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. increased number of households with access to resilient energy systems etc.

Climate Change Adaptation (continued)

Illustrative Summary Template for Portfolio-based Report:

Climate change adaptation/ resilience projects Water-related portfolios	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Climate change adaptation component	Allocated Amount c/	Average portfolio lifetime d/	<Indicator x> e.g. Reduction in flood damage costs - Valorised ($/€/£ etc)	<Indicator y> e.g. Reduced/avoided water loss/household demand or increased water availability/ catchment	<Indicator z> e.g. Reduction in land loss from flooding/coastal erosion	-	Other Indicators
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	<unit x> Valorised ($/€/£ etc.)	<unit y> in m^3	<unit z> in km^2	-	
e.g. Porfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. increased number of households with access to resilient energy systems etc.

Climate change adaptation/ resilience projects Land-related portfolios	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Climate change adaptation component	Allocated Amount c/	Average portfolio lifetime d/	<Indicator x> e.g. Reduction in repair costs due to landslides	<Indicator y> e.g. Increase in area under wetland management/ drought resistant crop farming	<Indicator z> e.g. Reduction in changes in the nutrient and/or pH level for agricultural soils	-	Other Indicators
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	<unit x> Valorised ($/€/£ etc.)	<unit y> in km^2/ hectares	<unit z> in %	-	
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. increased number of households with access to resilient energy systems etc.

Circular Economy and/or Eco-Efficient Projects

Note: Given the range of core indicators recommended for several use cases in the Chapter on circular economy and/or eco-efficient projects, issuers are welcome to fill in the indicators relevant to their quantitative reporting when using below templates.

Illustrative Summary Template for Project-by-Project Report:

Circular Design and Production projects	Signed Amount a/	Share of Total Projects Financing b/	Eligibility for green bonds	Circular Economy component	Allocated Amount c/	Project lifetime d/	<indicator x> e.g. Increase in materials, components, and products that are reusable recyclable, and/or certified compostable		<indicator y> e.g. Percentage of single use products replaced by products designed and produced for reuse	<indicator z> e.g. Virgin raw materials that are substituted by secondary raw materials and by-products from manufacturing processes		Other Indicators
Project name f/	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**%**	**in tonnes p.a.**	**%**	**%**	**in tonnes p.a.**	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Number of recycling cycles that the recycled material can withstand, number of patent applications for CE products, etc.

Circular Use projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Circular Economy component	Allocated Amount c/	Project lifetime d/	<indicator x> e.g. Increase in products or parts derived from redundant products or components			<indicator y> e.g. Redundant products that have been repurposed, refurbished or remanufactured		<indicator z> e.g. Expected extension of lifetime	Other Indicators
Project name f/	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**in valorised amount**	**%**	**in tonnes p.a.**	**%**	**in tonnes p.a.**	**in years**	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Number of components and processes that are deemed closed loop recycling, etc.

Circular Economy and/or Eco-Efficient Projects (continued)

Illustrative Summary Template for Project-by-Project Report:

Circular Value Recovery projects	Signed Amount a/	Share of Total Projects Financing b/	Eligibility for green bonds	Circular Economy component	Allocated Amount c/	Project lifetime d/	<indicator x> e.g. New materials derived from secondary raw materials, by-products and/or waste		<indicator y> e.g. Biodegradable waste, digestate and compost that is recovered		<indicator z> e.g. Secondary raw materials and chemicals recovered	Other Indicators
Project name f/	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**%**	**in tonnes p.a.**	**%**	**in tonnes p.a.**	**in tonnes p.a.**	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Number of recycling cycles that the recycled material can withstand, number of patent applications for CE products, etc.

Circular Support and Products projects	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Circular Economy component	Allocated Amount c/	Project lifetime d/	Increase in number of clients for tools or services enabling circular economy strategies	Increase of annual income derived through tools and services enabling circular economy	Increase in number of products and/ or the share of production awarded an internationally recognised eco-label, or energy, eco-efficiency or other relevant environmental certification		Other Indicators
Project name f/	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**in absolute number**	**in absolute number**	**in absolute number**	**%**	
e.g. Project 1	XX	XX	XX	XX	XX	XX		XX	XX	XX	e.g. Percentage of corporate workforce dedicated to eco-design, etc.

Circular Economy and/or Eco-Efficient Projects (continued)

Illustrative Summary Template for Portfolio-based Report:

Circular Design and Production portfolios	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Circular Economy component	Allocated Amount c/	Average portfolio lifetime d/	<indicator x> e.g. Increase in materials, components, and products that are reusable recyclable, and/or certified compostable		<indicator y> e.g. Percentage of single use products replaced by products designed and produced for reuse	<indicator z> e.g. Virgin raw materials that are substituted by secondary raw materials and by-products from manufacturing processes		Other Indicators
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	%	in tonnes p.a.	%	%	in tonnes p.a.	
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Number of recycling cycles that the recycled material can withstand, number of patent applications for CE products, etc.

Circular Use portfolios	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Circular Economy component	Allocated Amount c/	Average portfolio lifetime d/	<indicator x> e.g. Increase in products or parts derived from redundant products or components			<indicator y> e.g. Redundant products that have been repurposed, refurbished or remanufactured		<indicator z> e.g. Expected extension of lifetime	Other Indicators
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	in valorised amount	%	in tonnes p.a.	%	in tonnes p.a.	in years	
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Number of components and processes that are deemed closed loop recycling, etc.

Circular Economy and/or Eco-Efficient Projects (continued)

Illustrative Summary Template for Portfolio-based Report:

Circular Value Recovery portfolios	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Circular Economy component	Allocated Amount c/	Average Portfolio lifetime d/	<indicator x> e.g. New materials derived from secondary raw materials, by-products and/or waste		<indicator y> e.g. Biodegradable waste, digestate and compost that is recovered		<indicator z> e.g. Secondary raw materials and chemicals recovered	Other Indicators
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	%	in tonnes p.a.	%	in tonnes p.a.	in tonnes p.a.	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Percentage of new products that meet virgin material quality (e.g. eligible food grade packaging), etc.

Circular Support and Products portfolios	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Circular Economy component	Allocated Amount c/	Average Portfolio lifetime d/	Increase in number of clients for tools or services enabling circular economy strategies	Increase of annual income derived through tools and services enabling circular economy	Increase in number of products and/ or the share of production awarded an internationally recognised eco-label, or energy, eco-efficiency or other relevant environmental certification		Other Indicators
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	in absolute number	in absolute number	in absolute number	%	
e.g. Project 1	XX	XX	XX	XX	XX	XX		XX	XX	XX	e.g. Percentage of corporate workforce dedicated to eco-design, etc.

Living Natural Resources and Land Use Projects

Illustrative Summary Template for Project-by-Project Report:

Crop production	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Living Natural Resources and Land Use component	Allocated Amount c/	Project lifetime d/	<indicator x> e.g. Reduction in net GHG emissions, GHG intensity or energy intensity e/		<indicator y> e.g. Farmland under soil conservation/regenerative agricultural practices e/		<indicator z> e.g. Increase in area under certified organic or sustainable agriculture e/		Other Indicators e/
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	%	in t tCO2e/ unit of output p.a. or GJ/ unit of output p.a.	% of acreage farmed	in ha	% of acreage farmed	in ha	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Number of inefficient agricultural water pumps replaced with more efficient models Reduction in chemical inputs in kg/ha and in %.

Livestock production	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Living Natural Resources and Land Use component	Allocated Amount c/	Project lifetime d/	<indicator x> e.g. Pasture area under improved management (MIG systems) and silvopastoral grazing practices e/		<indicator y> e.g. Improved feeding practices reducing enteric CH4 emissions e/	<indicator z> e.g. Increase in feedstock supply chain certification coverage e/	Other Indicators e/
Project name f/	currency	%	% of signed amount	% of signed amount	currency	in years	% of rangeland	in ha	% of herd covered	% of total feedstock	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Volume of sustainably sourced goods produced (m^3, tonnes)

Living Natural Resources and Land Use Projects (continued)

Illustrative Summary Template for Project-by-Project Report:

Forestry	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Living Natural Resources and Land Use component	Allocated Amount c/	Project lifetime d/	<indicator x> e.g. Avoided and/or sequestered GHG emissions e/	<indicator y> e.g. Increase in area under sustainable forest management e/	<indicator z> e.g. Maintenance/increase of provisions of ecosystems services: erosion control etc. e/	Other Indicators e/
Project name f/	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**in tCO2e p.a.**	**in ha.**	**% of managed forestland**	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Number of trees/ seedlings/shrubs planted and/or bought from certified forests

Fisheries and aquaculture	Signed Amount a/	Share of Total Project Financing b/	Eligibility for green bonds	Living Natural Resources and Land Use component	Allocated Amount c/	Project lifetime d/	<indicator x> e.g. Increase in certified sustainable fisheries e/	<indicator y> e.g. Increase in certified sustainable aquaculture e/	<indicator z> e.g. Reduction in marine and freshwater pollution / Waste discharged, nitrogen discharged from the farm e/	Other Indicators e/
Project name f/	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**%**	**%**	**t of production**	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Increase in cold storage facilities in absolute number and/ or in installed capacity (metric tonnes) Improvement in water quality in discharded effluents from aquaculkture – changes NO2 in mg/L and ph level

Living Natural Resources and Land Use Projects (continued)

Illustrative Summary Template for Portfolio-based Report:

Crop production	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Living Natural Resources and Land Use component	Allocated Amount c/	Average portfolio lifetime d/	<indicator x> e.g. Reduction in net GHG emissions, GHG intensity or energy intensity e/		<indicator y> e.g. Farmland under soil conservation/regenerative agricultural practices e/		<indicator z> e.g. Increase in area under certified organic or sustainable agriculture e/		Other Indicators e/
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	%	in t tCO2e/ unit of output p.a. or GJ/ unit of output p.a.	in ha	% of acreage farmed	in ha	% of acreage farmed	
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Number of inefficient agricultural water pumps replaced with more efficient models Reduction in chemical inputs in kg/ha and in %

Livestock production	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Living Natural Resources and Land Use component	Allocated Amount c/	Average portfolio lifetime d/	<indicator x> e.g. Pasture area under improved management (MIG systems) and silvopastoral grazing practices e/		<indicator y> e.g. Improved feeding practices reducing enteric CH4 emissions e/	<indicator z> e.g. Increase in feedstock supply chain certification coverage e/	Other Indicators e/
Portfolio name	currency	%	% of signed amount	% of signed amount	currency	in years	% of rangeland	in ha	% of herd covered	% of total feedstock	
e.g. Project 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Volume of sustainably sourced goods produced (m^3, tonnes)

Living Natural Resources and Land Use Projects (continued)

Illustrative Summary Template for Portfolio-based Report:

Forestry	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Living Natural Resources and Land Use component	Allocated Amount c/	Average portfolio lifetime d/	<indicator x> e.g. Avoided and/or sequestered GHG emissions	<indicator y> e.g. Increase in area under sustainable forest management e/	<indicator z> e.g. Maintenance/increase of provisions of ecosystems services: erosion control etc e/	Other Indicators e/
Portfolio name	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**in tCO2e p.a.**	**in ha.**	**% of managed forestland**	
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Number of trees/ seedlings/shrubs planted and/or bought from certified forests

Fisheries and aquaculture	Signed Amount a/	Share of Total Portfolio Financing b/	Eligibility for green bonds	Living Natural Resources and Land Use component	Allocated Amount c/	Average portfolio lifetime d/	<indicator x> e.g. Increase in certified sustainable fisheries e/	<indicator y> e.g. Increase in certified sustainable aquaculture e/	<indicator z> e.g. Reduction in marine and freshwater pollution / Waste discharged, nitrogen discharged from the farm e/	Other Indicators e/
Portfolio name	**currency**	**%**	**% of signed amount**	**% of signed amount**	**currency**	**in years**	**%**	**%**	**t of production**	
e.g. Portfolio 1	XX	XX	XX	XX	XX	XX	XX	XX	XX	e.g. Increase in cold storage facilities in absolute number and/ or in installed capacity (metric tonnes) Improvement in water quality in discharded effluents from aquaculkture – changes NO2 in mg/L and ph level

Notes

a/ Signed amount represents the amount legally committed by the issuer for the project, a portfolio of projects or component that is/are eligible for green bond financing.

b/ This is the share of the total project cost that is financed by the issuer. Issuers may also report the total project cost. When aggregating impact metrics only the pro-rated share should be included in the total.

c/ This represents the amount of green bond proceeds that has been allocated for disbursements to the project/portfolio.

d/ Based on either the expected economic life or financial life of the project(s), if applicable. Issuers should disclose the reporting basis used.

e/ The methodology and assumptions used should be disclosed for calculations in quantitative reporting.

f/ Confidentiality considerations may restrict the project level detail that can be disclosed, but issuers should aim to report the list of projects and either project level or aggregate level committed and allocated amounts and core indicator amounts.

Contact details

ICMA Paris

62 rue la Boétie

75008 Paris

France

greenbonds@icmagroup.org

www.icmagroup.org