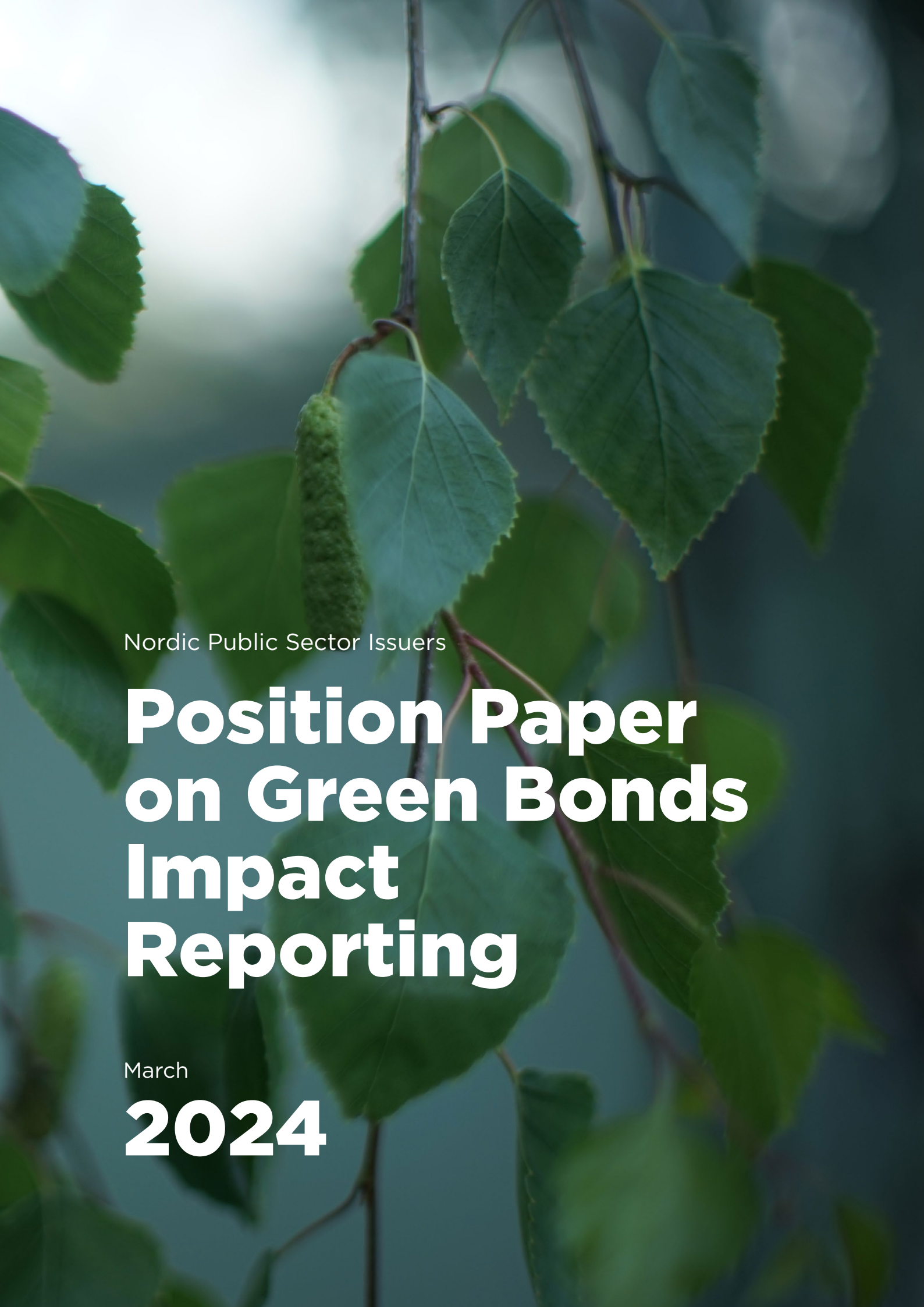


Nordic Public Sector Issuers

Position Paper on Green Bonds Impact Reporting

March

2024

Contents

Introduction and purpose

This document has been developed as a practical guide on impact reporting for Nordic public sector green bond issuers. For this reason, a certain level of technical detail cannot be avoided. This version, dated March 2024, is the fourth edition of the Position Paper, following the editions published in 2017, 2019 and 2020, respectively. The material changes between the previous edition and this one are introduced on page 7.

We, the signatories, are a group of Nordic public sector green bond issuers[1] which established joint common work on impact reporting in 2016, thus complementing efforts by a group of international financial institutions, as documented in the IFI Harmonized Framework for Impact Reporting[2] (IFI Harmonized Framework). The Nordic Investment Bank and two investment banks[3] have acted as our advisors.

The document primarily targets persons engaged in impact reporting in issuer organizations, such as environmental officers, sustainability analysts and investor relations specialists. We believe that a common Nordic position to the issues discussed may be beneficial to other issuers and are confident that by sharing experiences and know-how we can all benefit. We trust it is of interest and value to investors, as it gives an overview of the reporting commitments made by this group of green bond issuers.

We recognize the need to strike a balance between
a) a commitment to deliver impact reporting at a certain, manageable level and
b) absolute, detailed and fully verifiable numbers on project level and in the local context.

Notwithstanding the technical necessities involved in reporting adequately on impact from projects financed with green bonds, issuers should strive to report project information also in the context of how they contribute to the transformation to a low-carbon and resilient future, and other important environmental challenges. Issuers are therefore encouraged to position the information within the context of the issuer's overarching ESG risk management and strategy, taking also into account regulatory initiatives that may be relevant to reference.

We advise issuers to consult the Green Bond Principles, which capture the spirit of green bonds issuance and also provide guidance on green bonds impact reporting[4].

The position paper is a work in progress, and it can be expected to develop over time. We encourage feedback and will seek to develop our methodology to provide as relevant and appropriate impact reporting as possible.

While we strive to deliver reporting that is possible to compare and aggregate between issuers, we recognize the challenges related to different methodologies and metrics being used. Hence, we suggest caution to be exercised when such comparison or aggregation is undertaken.

1 Participants (DK=Denmark, FI=Finland, NO=Norway, SE=Sweden): City of Gothenburg (SE), Kommunalbanken, KBN (NO), Kommuninvest (SE), Kommunekredit (DK), Municipality Finance (FI), Municipality of Linköping (SE), Municipality of Lund (SE), Municipality of Norrköping (SE), Municipality of Örebro (SE), Region Skåne (SE), Region Stockholm (SE), Swedish Export Credit Corporation, SEK (SE). Municipality of Västerås (SE) participates in the group as an observer. In addition, Municipality of Borås and Swedish Association of Local Authorities and Regions (SALAR) have participated in the development work, as representatives of the Kommuninvest Green Bonds Environmental Committee.

2 International Financial Institutions (IFIs): Green Bonds, Working Towards a Harmonized Framework for Impact Reporting, December 2015. The IFI Harmonized Framework Impact Reporting Handbook is available at the Green Bond Principles Resource Centre at www.icmagroup.org

3 Crédit Agricole CIB and SEB.

4 The Green Bond Principles, including the "Handbook - Harmonized Framework for Impact Reporting", June 2023 are available at www.icmagroup.org

This document is focused on environmental benefits, notwithstanding the potential social co-benefits that investment projects financed through green bonds may bring. As this paper outlines, issuers may choose to add social impacts in their reporting if feasible and relevant.

Issuers that aim to comply with the recommendations of this updated position paper, published in 2024, are encouraged to reflect them at the latest as of their impact reporting for the 2024 calendar year.

The joint harmonization work on impact reporting among Nordic public sector issuers has been coordinated by Kommuninvest. Parties interested in supplying comments or questions to the signatories are invited to contact Kommuninvest at: sustainability@kommuninvest.se

Acknowledgements

The signatories wish to express their gratitude to Crédit Agricole CIB, Nordic Investment Bank and SEB, for advisory assistance during the development of this position paper.

Summary

Summary

General reporting principles

Reporting format

- In their impact reporting, issuers are recommended to include a summary of their green bond and green investment activities. An executive summary template is available in Appendix D.
- In addition to the traditional green bond report, issuers are recommended to publish the project information presented in or used for the report also in spreadsheet format, which can be downloaded by interested parties from the issuer's website.

Annual reporting based on annual impact

- Annual reporting recommended for issuers following portfolio approach to issuance. Issuers following bond-by-bond approach are also encouraged to report annually, but may choose a simplified approach (for instance, a confirmation of status quo).
- Report annual impact (as opposed to life-time results). Issuers may choose to add life-time perspective when relevant.
- Report on impact as long as there are green bonds outstanding.

Report based on the share financed

- Report on the basis of the share of the project's total investment cost that the issuer has financed with green bonds.
- Report impact based on amounts disbursed and outstanding to a project (as opposed to amounts committed).

Report impact per monetary unit when quantifiable and relevant

- Report CO_2-reduction and other quantified impact per invested monetary unit solely for investments made in projects or project categories where such impact is relevant.

Report bond-by-bond or on bond programme basis

- Issuers following bond-by-bond approach, should report impact in relation to the respective green bond(s).
- Issuers following portfolio approach should provide a breakdown of impact attributable to each bond, typically using a simple pro-rata allocation. A template is found in Appendix D.

Report net benefits based on expected impact

- Report expected impact (ex-ante), and strive to report on actual impact (ex-post). If reporting includes both ex-ante and ex-post impact data, a clear distinction should be made.
- Distinguish between reduced and avoided CO_2 emissions. In this document, reduced energy is defined as a direct or absolute reduction in operation; avoided energy use refers to a baseline/alternative reference scenario.
- Highlight methodologies used and the uncertainty of environmental data to reader
- Report net benefits, comparing projects to relevant reference scenarios (see project category recommendations)

Focus on environmental impact

- Issuers should report on direct climate-related/environmental impacts such as renewable energy production, energy savings, reduced greenhouse gas emissions, increased resilience, environmental operations and infrastructure etc.
- Issuers may choose to add social and/or economic impacts when deemed feasible and relevant.

Report at geography and sector level

- For issuers with projects located in multiple jurisdictions, it is recommended that disbursements and impacts are reported both at geography and sector level, e.g. geographical distribution of wind sector investments.

Environmental impact methodology

Project boundary and scope of emissions

- Greenhouse gas calculations should include all related activities, facilities or infrastructure that the issuer is financing.
- Report on Scope 1 and Scope 2 emission reductions as defined by the Greenhouse Gas Protocol.
- If feasible, issuers are encouraged to integrate Scope 3 reporting.

CO_2 baseline for electricity

- European mainland mix including Norway is recommended as the default baseline emission factor for electricity, for projects located in the European Union and Norway.
- Factor calculated as Combined Margin according to IFI Harmonized Framework methodology[5], combining an Operating Margin and a Build Margin. Same combination of Operating Margin (1/3) and Build Margin (2/3) used for all electricity projects.
- Combined Margin to be applied: 191 g CO_2/kWh. This baseline is to be updated regularly, subject to availability of data.

CO_2 baseline for district heating

- Issuers should choose a baseline that is relevant and that reflects the national/local situation.
- Swedish issuers may draw on the methodology as outlined in Appendix B.

Material changes compared with the previous (2020) version

- The baseline emission factor for electricity has been revised downwards, from 315 g CO_2e/kWh to 191 g CO_2e/kWh, based on i) updated grid factors in the underlying dataset provided by the IFIs and ii) a slightly revised methodology for calculating impact where we henceforth align with the IFI approach for all electricity-based projects except for intermittent generation. See #28 and Appendix B, including visualization of alternative baselines on page 47.
- Baseline emission factors for district heating have also been revised downwards. See Appendix C.
- The paper includes new and/or updated reporting recommendations regarding:
  - situation when an issuer is reporting on a portfolio where assets have been approved under different framework vintages, see #15 on page 17;
  - look-back period, when green bonds are used to refinance eligible projects with a longer operating lifetime than the tenor of the bond, see #14 on page 16;
  - allocation period, providing transparency on the expected timeframe for allocating bond proceeds, see #14 on page 17;
  - how to report compliance with the Nordic position paper, see #1 on page 10;
  - reporting on ESG risk management / sustainability strategy, see #18 and #19 on page 19;
  - regulatory referencing (EU Taxonomy page / SFDR), see #21 and #22 on page 20.

5 International Financial Institution Framework for a Harmonised Approach to Greenhouse Gas Accounting, November 2015

Reporting principles

Reporting principles

This section outlines some of the main principles we have agreed on. Unless otherwise indicated, they will be in alignment with the core principles and recommendations as outlined in the IFI Harmonized Framework and with the voluntary guidelines for green bonds, the Green Bond Principles.

We have concluded the following:

1. Reporting compliance with the Position Paper

- Issuers are encouraged to disclose whether they comply with the Position Paper recommendations
- Issuers which state compliance to the Position Paper should comply with all "should" recommendations and explain any deviations from them.

In order to facilitate market understanding of the impact reporting published by various issuers, this Position Paper encourages issuers to disclose whether they comply with the Position Paper recommendations, or other initiatives to promote harmonized, robust and conservative approaches to impact reporting.

Recommendations in this Position Paper are structured on three levels, with a sliding scale of imperative to follow:

- "…should…"
- "…are encouraged to…"
- "… may choose to…"

Issuers which state compliance to the Position Paper recommendations should comply with all "should" recommendations in this Position Paper and explain any deviations from them.

2. Maximize transparency and useability

- Publish impact reports and other relevant information at a single access point on the issuer website
- Aggregate information or data on individual projects to the bond level or project category level
- Structure and present overarching data early on in reports
- Incorporate an executive summary, which summarizes green bond and green investment activities, early on in reports
- Make project information used for the impact report available in spreadsheet format
- Evaluate whether aggregation platforms for impact reporting can be used to maximize transparency and useability

Impact reporting is a feature of green bonds issuance that is becoming increasingly valuable for investors and other stakeholders, who may be spending a significant amount of time simply searching and aggregating such impact data.

Issuers are therefore encouraged to consider both ease of access and ease of use when they make their impact reporting data available to stakeholders. This includes, for instance, publishing impact reports and other relevant information at a single access point on the issuer website; aggregating information or data on individual projects to the bond level or project category level; and structuring overarching data in visually appealing and functional manner early on in reports.

We recommend that issuers' reporting incorporate a) an executive summary, which summarizes green bond and green investment activities, see Appendix C for a suggested example, and b) that issuers make project information presented in the impact report available also in spreadsheet format on their website.

There is an emerging trend for platforms that aggregate impact reporting data from many issuers, allowing issuers to report on green bond impacts and investors to access impact data on multiple portfolio investments from a single access point. Such developments are spearheaded both by stock exchanges and other entities. We encourage issuers to evaluate whether such platforms can be used to maximize transparency and useability.

3. Report on bond-by-bond or on portfolio approach to issuance and allocation

- Provide transparency regarding the chosen approach for green bond issuance and allocation

Green bond issuers typically follow one of two existing market practices for green bond issuance and allocation. The proceeds of green bonds can be managed per bond (bond-by-bond approach) or on an aggregated basis for multiple green bonds (portfolio approach). Issuers should be transparent about which approach they follow.

This paper makes the following distinction between the bond-by-bond vs portfolio approach:

Bond-by-bond approach

Bond proceeds are linked to one or more specific projects or linked to a portfolio of projects/assets if a large number of small-sized projects/assets is financed by one green bond.

For non-dynamic portfolios where allocation is complete, each outstanding green bond will finance a designated sub-portfolio of projects. In such cases, the impact report should clearly state the estimated impact of each sub-portfolio/bond. Issuers are encouraged to report aggregated impact data for all outstanding green bonds, so that is possible to associate all bonds from the same issuer with one aggregated set of impact results. Using the aforementioned approaches will serve to meet reporting demands both from investors which prefer impact reporting data relevant to the specific bond that they have purchased as well as from investors who prefer an aggregated approach.

Portfolio approach

Bond proceeds are allocated from a portfolio of one or more outstanding green bonds to a portfolio of fixed assets or financial assets.

For dynamic portfolios where the composition of projects financed by the outstanding green bonds changes on a regular basis through addition or removal of assets, issuers may instead choose to report impact on a portfolio basis. Such reporting can either assess the impact of the green projects to which disbursements have been made during the reporting year, or the impact of the aggregate portfolio of eligible assets as of the reporting date.

For such dynamic portfolios, issuers should provide a breakdown of impact attributable to each bond, typically using a simple pro-rata allocation of aggregated impact to each outstanding bond. A template for reporting specific bond impact is found in Appendix C, see table "Impact attributable to green bond investors".

4. Provide both allocation and impact reporting

- Allocation reporting is a necessary first step to present impact reporting
- Both allocation and impact reporting are intimately linked, should use the same methodology and should be presented together, in a consistent manner.

Reporting should include information on the proceeds raised by the green bond and information on the amounts allocated to projects (the “allocation reporting”). It is recommended that such allocation reporting is verified by an independent external verifier to guarantee, on an annual basis until full allocation, the actual allocation of use of proceeds.

Reporting should also provide information on the actual environmental and social impacts of the project financed by the green bond (the “impact reporting”), which is the actual purpose of this position paper. Both allocation and impact reporting are intimately linked, should use the same methodology and be presented together, in a consistent manner.

5. Provide annual reporting

- Annual reporting recommended for both bond-by-bond and portfolio approaches
- Issuers should report on impact as long as there are green bonds outstanding
- Disclose reporting period and process for project inclusion
- Bond-by-bond issuers may elect more simplified approach

We undertake to report on impact as long as we have green bonds outstanding. For dynamic portfolios, i.e. where the composition of assets financed by green bonds change on a regular basis through addition or removal of assets, reporting will be annual.

Issuers are recommended to define and disclose the period and process for including projects in their report, and to explain the key characteristics of the approach for approving projects that meet the issuer's predefined eligibility criteria.

Reporting may nonetheless consist of e.g. a list of projects on the issuer's webpage, which may not need amendments for several years unless input variables change (e.g. disbursements / repayments / baselines / estimates vs actual etc.).

Issuers following a bond-by-bond approach or projects where allocation is complete and no new additional information has arisen since previous reporting, it is recommended to provide annual reporting. Issuers may however elect a simplified approach (for instance, a confirmation of status quo; an update on the progress of project implementation; or a recalculation on impact due to updated baseline emissions factors).

Impact and allocation reporting

6. Report expected impact, aiming for actual impact

- Report expected impact, and strive to report on actual impact
- Reporting should include the estimated reduction in greenhouse gases, as well as other green indicators appropriate to describe environmental impact and performance
- Distinguish between reduced and avoided CO_2 emissions.
- Target net benefits, consider to report gross emissions if feasible
- Highlight methodologies used and the uncertainty of environmental data to readers

We undertake our impact reporting based on the expected environmental impact (ex-ante) from the projects we finance or co-finance[6]. Issuers that have the ability to provide impact reporting based on actual (ex-post) impacts, are encouraged to do so.

In their reporting, issuers should distinguish between impacts based on ex-ante and ex-post calculations.

Reporting should include both green indicators (which the project owner has control over) and resulting emissions reductions (which require certain assumptions). Green indicators, such as renewable energy produced or electricity saved, should be easy to report on with good quality. Emissions reductions should be reported if calculations can be made with satisfactory quality. If emission reductions are indirect and/or outside the scope of the project(s) financed, they should not be included. Generally, a conservative approach is recommended.

7. Focus on environmental impact

This position paper deals with reporting environmental impact related to projects financed through green bond issuance. We have attempted to include recommendations regarding a range of project categories, including renewable energy, green buildings, energy efficiency, clean transportation, waste management, water and wastewater management, and sustainable land use/environmental management.

We commit to reporting on environmental impacts in our annual green bond investor reporting.

However, individual issuers may choose to add social and/or economic impacts when deemed feasible and relevant. These may include, for example:

- number of jobs created and/or preserved;
- number of dwellings and/or beneficiaries for green buildings;
- number of students for green school buildings.

6 A significant share of the use-of-proceeds from green bonds are typically directed at investment projects that are either planned or in the process of completion. Therefore, actual impact data is typically not available to issuers in the project selection and verification phase.

8. Report based on annual impact
We commit to report impact on the projects we finance based on annual impact (as opposed to life time results). Issuers may choose to add life-time perspective when relevant.

Where projects are constructed during a prolonged time period and where expected impacts are not to be realized until far out in the future, issuers may elect to disclose the expected future timing of impact. However, this is only recommended if the project/projects are material to the green bonds issuance.

When possible, reporting should be normalized to reflect a representative year. In the case of renewable energy and green buildings normalization includes the consideration of weather- related irregularities in energy consumption or production. Normalization should be conducted in accordance with established national or international practice.

Normalization may not be applicable for all project categories, and in the case of clean transportation may be complicated, see position #36 on page 34.

9. Provide quantitative and qualitative reporting
Recognising the wishes of the investor community for relevant quantitative information, issuers are encouraged to provide quantitative reporting as far as possible. However, both qualitative and quantitative perspectives may be appropriate and should be reported upon depending on the type of project financed and the availability of information.

Suggested core indicators can be found in the eight respective project categories, starting on page 29.

For practical reasons, issuers are, at least initially, recommended to target net benefits rather than disclosing gross emissions before and after project completion. Disclosing the full carbon intensity of portfolios, as well as the net CO_2 reduction, may be considered by issuers, if feasible. Issuers may choose to include such reporting gradually, for selected projects or project categories.

Issuers are recommended to be transparent about estimations and assumptions that may need to be made as part of the impact reporting. The report should include information about the precision of environmental data, attributable to the scientific uncertainty regarding the measurement methods, as well as uncertainties regarding the data that the measurement methods are applied to.

10. Report project-by-project, where feasible
Issuers are encouraged to report on a project-by-project basis, where feasible. We encourage aggregating to portfolio level reporting for individual project categories. However, we also recognize that some issuers for confidentiality reasons, competition considerations, a large number of underlying projects, or other may have to limit the amount of detail that can be made available on a project-by-project basis, and may thus be restricted to reporting on a portfolio basis. In these cases, issuers may want to reference an external review, which can potentially increase transparency. For green bond frameworks where no commitment is made to reporting on smaller projects, i.e. projects below a defined investment size, project-by-project reporting is not required.

11. Report based on the share financed

- Report impact attributable to the share of the project's total investment cost that the issuer has financed with green bonds
- Report impact based on amounts disbursed and outstanding to a project (as opposed to amounts committed).

The impact report should account for the expected annual environmental impact realised through projects to which green bond proceeds have been allocated and disbursed. The reported impact of a project should reflect the share of the total investment cost the issuer has financed through the green bond issuance. The total investment cost may be subject to change but should be reported as accurately as possible. Generally, a conservative approach to impact calculation is recommended.

In some cases, it may be relevant to take into account the full environmental benefit of an investment, even though additional investments by other parties are required to reap such benefits. One relevant example is an investment in infrastructure to support electrical vehicle transports, such as electrical charging posts, where the full environmental benefit requires investments also by vehicle owners. Another example is additional production of renewable energy, where additional grid investments may be required.

In such cases, issuers should strive to ensure that double-counting of environmental benefits is avoided. This also underlines the importance of including in the reporting not only emissions reductions, but also the project-specific green indicators.

For conservative purposes, it is recommended to report impact based on amounts disbursed to a project (as opposed to amounts committed). If disbursements are made gradually, environmental impact will also be taken into account gradually. The same logic applies for amortisations.

Amortisations will gradually reduce the issuer's reported environmental impact of a project, while at the same time freeing up capacity to finance new projects with potential for incremental impact to the portfolio. In other words, projects to which funds are no longer outstanding should not be included in the impact reporting, even if the project is still operating.

12. Report impact by $ only when quantifiable and relevant

- Report CO_2-reduction and other impact per invested monetary unit solely for investments made in projects or project categories where such impact is quantifiable and relevant

We recognize the desire of the investor community for clear and simple metrics to evaluate green bonds.

One such measure is the CO_2 impact of an investment in relation to the invested monetary unit, i.e. X kg of CO_2 avoided annually per invested USD (or other relevant currency). While this measure makes it easy to compare green bond issues against each other, it may create a false sense of quantitative rigor, as such an approach puts faith in the precision of numbers related to uncertain environmental calculations, which in many cases are performed ex-ante.

Such an approach may also fail to recognize that some green bond frameworks are broad in scope, targeting environmental project categories that do not provide impacts measurable in CO_2. This could, for instance, be climate change adaptation and water management projects or sustainable buildings that have other significant environmental values apart from the CO_2 reduced/avoided.For certain projects, the major efficiency-enhancing investments may have been made already, thus increasing the marginal cost for additional improvements.

Issuers are therefore recommended to report CO_2 impact per invested monetary unit solely for the share of investments in projects or project categories where such impact is quantifiable and relevant. The share of total investments for which this reporting is made should be clearly stated. If an issuer's entire portfolio consists of projects where the CO_2 impact is measurable, the issuer may communicate impact per monetary unit in relation to all portfolio investments. When relevant, other metrics can be reported on in relation to invested monetary unit such as added capacity of renewable energy or energy savings in kWh per invested USD.

13. Financing/refinancing

- Report the share of financing and refinancing
- Be transparent on the approach used to distinguish between financing and refinancing
- Be transparent on project eligibility assessments over time
- Be transparent on whether bond proceeds are destined for CapEx/OpEx.

In line with market practice, issuers should report on the share of bond proceeds used for financing and refinancing. Such reporting should be made according to the reporting commitments set out in the issuers' green bond frameworks.

There are various approaches on how to make such distinction, including i) the date when the project was taken into operation, ii) the date when the project was deemed eligible, iii) the allocated amounts to projects during and before the year of reporting, or iv) the allocated amounts in the year of issuance or after the year of bond issuance. Issuers should be transparent about the approach they use to distinguish between financing and refinancing.

Issuers are encouraged to be transparent about the methodology used to determine project eligibility over time for refinanced projects. Issuers which in their project portfolio include assets approved under different framework vintages should clarify which vintage of eligibility criteria that apply upon refinancing.

Issuers may choose to include other relevant information, including the average physical age and expected remaining lifetime of eligible projects and, if relevant, the maturity profile of any associated financing, such as Green Loans. This type of information can provide transparency on the composition and financing of the asset pool.

Issuers should be transparent about whether green bond proceeds are allocated to capital expenditures (CapEx), operating expenditures (OpEx), or a combination of the two.

14. Look-back period / Allocation period

- Be transparent regarding the absence of or details of a look-back period in the bond framework.
- Provide transparency on the approach for management of proceeds, including allocation period and temporary placement of any unallocated bond proceeds.

Look-back period

The proceeds from green bond issuances are often used to refinance eligible projects/assets that have a longer operating lifetime than the tenor of the bond/bonds. In line with market practice, projects assets should only qualify for refinancing as long as i) they are in use, ii) follow the relevant eligibility criteria at the time of issuance and/or inclusion in the asset pool, and iii) are still deemed to have a meaningful impact.

Some issuers have established a look-back period in their frameworks, which refers to a maximum period in the past that an issuer will look back to identify eligible projects/assets that should be included in the impact reporting.

Issuers should be transparent about whether they use a look-back period or not in their bond frameworks. Issuers with a look-back period should disclose the look-back period for refinanced projects/assets.

Note that investors may differentiate between the refinancing of CapEx and OpEx, and as a result may expect a shorter look-back period for OpEx. In addition, investors may request additional information on the environmental impacts of refinanced projects/assets with longer look-back periods. Therefore, if relevant, issuers are encouraged to provide transparency on this matter in the impact reporting.

Allocation period and management of unallocated bond proceeds

Allocation of funds can in some cases take time. Issuers are encouraged to allocate the proceeds raised from green bond issuances to eligible projects/assets as soon as possible, and generally within 12 months of issuance.

Some issuers have introduced a specific "allocation period", which refers to a maximum period before which an issuer needs to have allocated the proceeds to eligible projects/assets. Issuers that have included an allocation period in their framework, are encouraged to disclose this in the reporting.

As projects/assets may disburse over time, there might be temporarily unallocated bond proceeds. In their reporting, issuers should disclose how unallocated proceeds, if any, have been temporarily managed.

15. Vintage reporting

- When the asset pool consists of assets belonging to different framework vintages, issuers should be transparent regarding the process for project selection and allocation of new bond proceeds
- Issuers should be transparent about any significant changes in the most recent framework, compared to the previous one
- The impact reporting should indicate the extent to which the aggregated bond issuance, and/or individual bonds, are allocated to different framework vintages.

By vintage reporting, this paper refers to the situation when an issuer is reporting on a portfolio where assets have been approved under different framework vintages. This is relevant primarily for issuers following a portfolio approach to green bond issuance and whose presence in the green bond market stretches over several years.

When the asset pool consists of assets approved under different framework vintages, issuers should be transparent regarding the process for project selection and allocation of new bond proceeds. New projects should solely be included in the portfolio based on the most recent framework.

In their impact reporting, issuers should be transparent about any significant changes in the most recent framework, compared to the previous one. Issuers may choose to provide such transparency also at the project category level.

Issuers may choose to include information on the key characteristics of older framework vintages and how the environmental benefits differ between the different framework vintages, for example in separate table format. This is particularly relevant for issuers which may allocate new bond proceeds also to assets approved under previous framework vintages.

On their web pages issuers are encouraged to make available relevant supporting documents, including the different frameworks and any external assurance, such as second party opinions and other assurance documentation.

Issuers are encouraged to be transparent about their approach to outstanding assets and bonds, considering e.g. the alignment of assets approved under different framework vintages with the latest framework. This may include transparency around any process to re-assess assets approved under previous framework vintages for compliance with the most recent framework criteria.

The impact reporting should indicate the extent to which the aggregated bond issuance, and/or individual bonds, are allocated to different framework vintages.

In addition, issuers are encouraged to indicate, in any detailed project-by-project reporting, the framework under which the project was originally approved and its alignment with the most recent framework.

16. Provide breakdowns on asset type, geography and sector

- Report a breakdown of projects by the nature of what is being financed, and also by geography and sector level.

Issuers are encouraged to provide a breakdown of allocations by the nature of what is being financed (tangible or intangible assets, capital expenditures (CapEx), operating expenditures (OpEx), working capital, public expenditures).

It is also recommended that disbursements and impacts are reported at geography and sector level. For issuers with projects located in multiple countries, reporting should be done at geography and sector level combined.

17. Framework age limit

- Be transparent regarding the approach to framework updates and whether any age limits apply.

Issuers are encouraged to be transparent regarding their approach to green bond framework updates, e.g. whether they occur because of a predetermined eligibility period or whether the framework is updated when significant changes occur in the market and/or in the issuer's own operations. Significant changes in the market could be key developments regarding green technologies and innovations for the issuer, major updates in EU directives, or other major regulatory changes that can affect an issuer's green bond/finance framework.

Issuers are encouraged to be transparent regarding whether framework updates are accompanied by new/updated external assurance.

Issuer ESG risk management and strategy

18. Communication of sustainability strategy

- Provide information on the sustainability strategy

In recent years, investors have increased their focus on analyzing the entire ESG profile of an issuer. The details of the issuer's sustainability strategy and targets are important elements in this assessment. Furthermore, it is relevant for investors to understand how the issuance of green bonds can contribute to the broader sustainability strategy of the issuer. Issuers are hence encouraged to include information in their impact reporting on their sustainability strategy and objectives, but also about the rationale for issuance of green bonds in relation to the strategy.

19. Process for identification and management of ESG risks

- Provide information on the process for identification and management of ESG risks related to the financed projects / assets.

Investors are pressured by their stakeholders to improve the management of ESG risks and in particular, climate related risks. Hence, they more frequently demand information from issuers on how they identify and manage ESG risks in their business operations and strategies, but also in the context of their green bonds. Some issuers are also subject to increased disclosure requirements of ESG risks due to new rules (e.g. ESG Pillar 3).

Issuers are encouraged to disclose appropriate processes designed to assess and mitigate potential social and environmental risks associated with the relevant projects/assets. It is also recommended to report on if any projects / assets that primarily were identified as eligible has been excluded due to significant ESG risks.

20. Climate-related risks

- Provide information regarding climate related risks.

We recognize that green investments are subject to climate related risks, including physical and transition risks related to climate change. Physical risks can be related to growing severity of extreme weather events, longer-term shifts in precipitation and temperature, as well as increased variability in weather patterns, such as sea level rise. Transition risks arises in businesses for example as the result of policy, legal, technology and behavioral changes, and could impact other risks for example credit risk when not managed.

The financial implications of climate related risks on organizations may be related both to direct damage to assets and indirect impacts from supply chain disruption. Organizations' financial performance may be affected by changes in water availability, sourcing, and quality, food security, and extreme temperature changes affecting organizations' premises, operations, supply chain, transport needs, and employee safety.

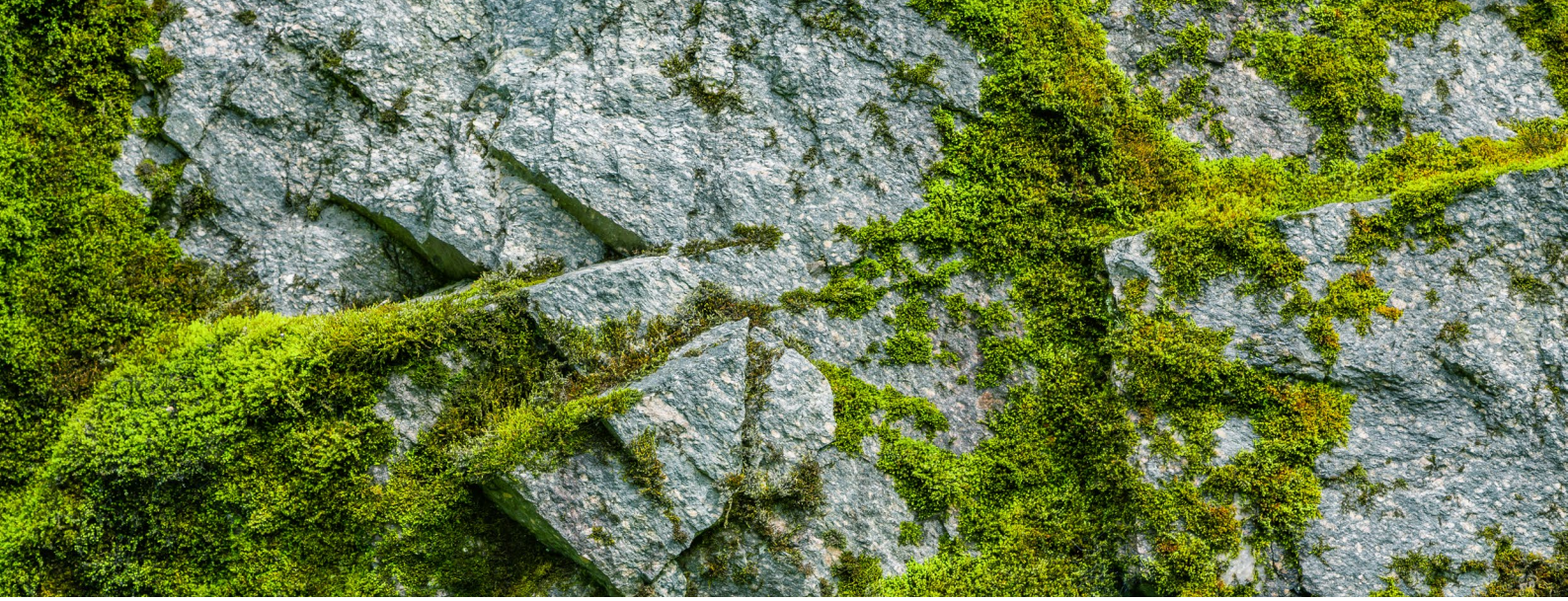
Issuers are encouraged to be transparent about how they identify climate-related physical and transition risk associated with their projects / assets. If any risks are detected, issuers should be transparent about how these risks will be mitigated.

Sources that can be useful in this context include (note non-exhaustive list): i. the TCFD guidance, ii. the report "Advancing TCFD guidance on physical climate risks and opportunities"[7] published by EBRD (the European Bank for Reconstruction and Development) and the Global Centre of Excellence on Climate Adaptation, iii. JASPERS Guidance – The Basics of Climate Change Adaptation Vulnerability and Risk Assessment[8], and iv. Thinkhazard[9].

7 EBRD and the Global Centre of Excellence on Climate Adaptation, Advancing TCFD guidance on physical climate risks and opportunities. Available at: https://www.physicalclimaterisk.com/media/EBRD-GCECA_Executive_summary.pdf

8 Jaspers (2017), The Basics of Climate Change Adaptation, Vulnerability and Risk Assessment. Available at: https://jaspers.eib.org/LibraryNP/JASPERS Working Papers/The basics of climate change.pdf.

9 Additional historical event database of information on current and recent events are provided at https://www.thinkhazard.org/static/documents/list_realtime_eventdb.pdf



Regulatory referencing

21. EU Taxonomy approach

- Be transparent regarding the absence of or details of any alignment with the EU Taxonomy

The EU Taxonomy Regulation, which came into effect in January 2022, is a classification system established to clarify which economic activities are environmentally sustainable, in the context of the EU's climate and environmental objectives[10].

Since the implementation, issuers have started to integrate the EU Taxonomy in their green bond frameworks, but on various levels.

Issuers are encouraged to be transparent in their impact reporting about the EU Taxonomy approach chosen, alternatively the lack thereof. Issuers that have been able to align partially or fully with the Taxonomy criteria are encouraged to be transparent about i) which activities/project categories that are covered, ii) details about the criteria used and how they have been applied (especially for the DNSH criteria), iii) any plans to align bond issuance with the EU Green Bond Standard, and if feasible, iv) disclose the proportion of portfolio/project categories that are aligned/partially aligned.

Issuers that have asked an external party to perform an assessment for assurance/verification of alignment with the EU Taxonomy are encouraged to disclose details about such external assurance/verification.

22. SFDR communication

- Provide references to ESG information and data relevant for SFDR.

The Sustainable Finance Disclosure Regulation (SFDR), adopted since 2019, stipulates disclosure requirements both at the entity (financial market participants & advisors), and at the financial product level. It aims to improve transparency relating to sustainable investment products, to prevent greenwashing and to increase investor comfort regarding sustainability claims made by asset managers, pension funds and insurance firms.

As a result of these increased disclosure requirements, investors in scope of the SFDR reporting are looking for relevant ESG information and data on issuer level for their investments (incl. reporting on Principal Adverse Indicators, PAIs). To help investors, issuers may choose to provide a text reference or hyperlink in their impact reporting to where such information and data can be found.

10 An economic activity must meet the following criteria in order to qualify as environmentally sustainable: i) Making a substantial contribution to at least one of the six EU environmental objectives (SC); ii) Do no significant harm to any of the other five environmental objectives (DNSH); iii) Complying with minimum social safeguards (MSS); and iv) Complying with the technical screening criteria set out in the EU Taxonomy delegated acts.

Mapping vs the EU Environmental Objectives and the SDGs

This suggested mapping may be adapted by individual issuers, to reflect their specific portfolio of assets and their overall sustainability strategy.

Position Paper Project Category	Primary EU Environmental Objective	Secondary EU Environmental Objective(s)	Relevant SDGs
Renewable energy	Climate change mitigation	n/a	
Green buildings	Climate change mitigation	Climate change adaptation	
Energy efficiency	Climate change mitigation	n/a	
Clean transportation	Climate change mitigation	Pollution prevention and control	
Waste management	Transition to a circular economy	Pollution prevention and control Climate change mitigation	
Water and wastewater management	Sustainable use and protection of water and marine resources	Climate change adaptation Pollution prevention and control Climate change mitigation	
Sustainable land use / environmental management	Protection and restoration of biodiversity and ecosystems	Climate change adaptation Climate change mitigation	
Climate change adaptation	Climate change adaptation	n/a	

Environmental impact methodology

Environmental impact methodology

Reporting benefits and comparing with relevant baselines

In this section we describe the methodological choices we have made for environmental impact and the reasoning behind them, with the ambition of meeting high standards of transparency.

23. Core indicators
Issuers should strive to calculate and aggregate the impact of individual projects and project categories where this is feasible. A number of suggested impact indicators are listed in the Project category recommendations section, see below. We recognise that other indicators may be of relevance for certain projects; in such cases issuers are encouraged to use these as a complement or even substitution.

24. Baselines
Deciding upon a baseline against which the environmental impact can be measured is important, as the chosen baseline will determine the calculated environmental benefits.

This paper outlines recommended baseline approaches for certain project categories and for electricity. Issuers may choose to disclose impact relative to other relevant baselines, additionally or instead of the suggested baselines. For instance, this may be relevant for projects located outside the European Union. Issuers are recommended to be transparent about the choice of baselines, and to stay true to the general principle of conservative impact calculations.

Whenever feasible and relevant we base the suggested baselines on the IFI Harmonized Framework and their standards for GHG-accounting[11]. This approach is also in accordance with GHG Protocol guidelines for grid-connected electricity projects[12] and ICMA guidelines[13]. (See Appendix B)

25. Calculating greenhouse gas (GHG) emissions
In the absence of one single commonly-used standard for the calculation of GHG emissions reduced/ avoided, issuers may follow their own methodologies while making these available to investors. Issuers are encouraged to report GHG emissions data only when they can provide full transparency on the applicable GHG accounting methodology and assumptions, which can be referenced.

26. Project boundary and scope of emissions
The project boundary for greenhouse gas calculations should include all activities, facilities or infrastructure that the issuer is financing. The Nordic issuers at this stage commit to report on Scope 1 and Scope 2 emission reductions in the impact reporting, as defined by the Greenhouse Gas Protocol, whilst recognizing that reporting on Scope 3 is gradually becoming a mandatory reporting commitment at the entity level. Issuers are encouraged to integrate Scope 3 reporting also into their impact reporting, if feasible.

Issuers should clarify which Scope is used for the impact report.

11 https://unfccc.int/climate-action/sectoral-engagement/ifis-harmonization-of-standards-for-ghg-accounting

12 See "Guidelines for Quantifying GHG Reductions from Grid-Connected Electricity Projects", published by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBSCD)

13 ICMA Handbook Harmonised Framework for Impact Reporting, June 2023

27. Energy savings vs energy reduced and energy avoided
The IFI Harmonized Framework highlights "energy savings" as a core indicator in impact reporting. We recommend further granulating this indicator into reduced and avoided energy use and CO_2 emissions. We view reduced energy use as a direct or absolute reduction in operation; avoided energy use refers to a baseline/ alternative reference scenario.

When we refer to energy savings, we mean both energy reduced and energy avoided and the sum of the two. When presenting aggregated impact results, issuers are encouraged to report the total energy savings, with a break-down on energy reduced and energy avoided.

28. CO_2 baseline for electricity

- Factor calculated as a Combined Margin based on IFI Harmonized Framework methodology for projects, (ie. based on a consequential assessment), combining a grid Operating Margin (OM) and a Build Margin (BM) from potential new generation capacity that is affected by the project.
- Unlike the IFI we use the same default combination of OM and BM (1/3 OM and 2/3 BM) for all electricity-related projects, as a reflection of an open Nordic electricity system interconnected to neighboring northern European systems, which gives more potential to replace existing OM, and less competition with other potential BM.
- EU excluding Cyprus and including the UK and Norway is recommended as the geographic grid area for the default baseline emission factor for electricity.
- Issuers are recommended to use the following resulting default baseline emission factor for electricity: **Combined Margin: 191 g CO_2/kWh**
- It is recognized that there are a number of different methodologies for estimating and reporting GHG emissions. Issuers which choose to report impact based on an attributional or accounting assessment, ie. using national grid factor averages, are encouraged to report impact also according to the project method, to facilitate comparisons.

In line with the IFI Harmonized Framework, the baseline emission factor is constructed using a Combined Margin (CM) for the electricity grid, comprised of an existing Operating Margin (OM) and a Build Margin (BM) from potential new generation capacity[14].

The IFIs use a Combined Margin factor of 1/3 OM: 2/3 BM for both generation of firm renewable energy, energy efficiency projects and electrification projects (increased use of electricity). For generation of intermittent renewable energy, the IFI methodology uses a CM of 3/4 OM and 1/4 BM, a higher and more favorable factor, to reflect a higher substitution of fossil energy. We have chosen to deviate from the IFI methodology in a conservative direction by using the same CM for intermittent generation as for energy efficiency and firm generation, in order not to over-value intermittent generation. This is a reflection of an open Nordic electricity system with a high potential to replace existing OM, a high share of interconnection to neighboring northern European systems, a high and increasing share of renewable (wind) energy on the margin and a high energy demand in wintertime with less benefit of solar energy. See Appendix B for a more detailed discussion and a comparison between the Nordic issuers' approach and the IFI approach.

A baseline emission factor for Nordic green bond issuers could be chosen from several, geographically different, grid factors: project specific, local, national, Nordic, Baltic Sea region or European.

This position paper suggests an emission factor based on a European grid, however excluding Cyprus which is not connected to the EU grid and including the UK and Norway, as the default baseline for accounting and disclosure of electricity. We have chosen this grid factor as the relevant baseline because the Nordic electricity market is already characterised by a high level of interconnection, also with neighboring countries in the Northern European region. Furthermore, the integration of European electricity markets is planned to increase in the coming years and decades, which is the relevant time perspective for most investments.

14 International Financial Institution Framework for a Harmonised Approach to Greenhouse Gas Accounting, November 2015

The chosen pan-European baseline is higher than one comprising only Denmark, Finland, Norway and Sweden but more conservative than one comprising the Baltic Sea Region including the three Baltic states, Germany, Poland, UK and the Netherlands, which would reflect current grid interconnection, as detailed in Appendix B.

The recommended baseline emission factor for electricity is a **Combined Margin of 191 g CO_2/kWh.** This CO2 baseline has been calculated based on grid factors for OM and BM in a dataset (IFI Dataset of Default Grid Factors v 2.3 November 2021) provided by the Nordic Investment Bank, one of the signatories to the IFI Framework for GHG-accounting. Available figures are generally Scope 2.

Our ambition is to review this baseline emission factor on a regular basis, subject to availability of new data. This version of the Nordic Position Paper introduces the third iteration of a suggested emission factor (191 g CO_2 per kWh compared with 315 g CO_2 per kWh in the 2020 version and 380 g CO_2 per kWh in the 2017 version). The decreased emission factor primarily reflects a less carbon intensive electricity production, both existing and planned. A minor part of the decrease is attributed to a change in the Combined Margin (CM), using 1/3 OM and 2/3 BM, compared to previously 50:50. The reason for this change is primarily the rationale for aligning with IFIs, which have agreed to use the 1/3:2/3 ratio also for electrification projects. We are open to future further harmonization on the shares of OM-BM with the IFIs as methods develop.

Project method vs attributional/accounting method

According to the ICMA guidelines , there are 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. Appendix B outlines two common yet different methodologies that issuers could choose from: the consequential approach ("project method") and the attributional/accounting method ("accounting method"). In their impact reporting, issuers should be transparent about the chosen method. If the accounting method is chosen, issuers are encouraged to report impact also according to the project method, to facilitate comparisons.

29. Certificates of origin

Issuers are recommended not to use certificates of origin and/or residual mix as the basis for CO2 values. The principal reason is that we do not consider such certificates to be a main driving force for deployment of more renewable energy, in comparison with more substantial market setting policy measures such as the EU emissions trading system (EU-ETS), CO_2-taxation and the previous Swedish and Norwegian green electricity certificates.

30. The EU emissions trading system (EU-ETS)

With the EU emissions trading system in place and expanding, it could be previously argued that all investments covered by the system contributed to achieving the overall target and that additional reduction from one investment may effectively be levelled out by increased emissions from other projects and in other member states. However, the system is modified over time (e.g. recently to allow for cancellations for unused volumes), which shows that the total quotas and mechanisms of the EU-ETS is a political issue and also influenced by the actual performance of emissions reductions. We have therefore not made any distinctions between investments and emissions inside and outside the EU-ETS.

31. CO_2 emission baseline for district heating[15]

- No common baseline emission factor for district heating has been established
- The baseline selected should reflect the national/local situation, including the situation prior to the investment
- Swedish issuers may draw on the methodology as outlined in Appendix C

The district heating and district cooling systems are fundamentally local/regional and not interconnected on a national or Nordic basis even though the fuels used (bio, solid waste, fossil) may be often traded over long distances. Local mixes for both direct and avoided emissions are considered most relevant in impact reporting, however, issuers may choose to use a national mix to simplify reporting. One such national calculation (from Sweden) is presented in Appendix C.

One crucial question is which alternative situation to compare a district heating investment to. Issuers may consider applying a "no project" scenario as baseline when financing new district heating systems, and "the actual situation before project implementation" for investments related to expanding or improving existing systems.

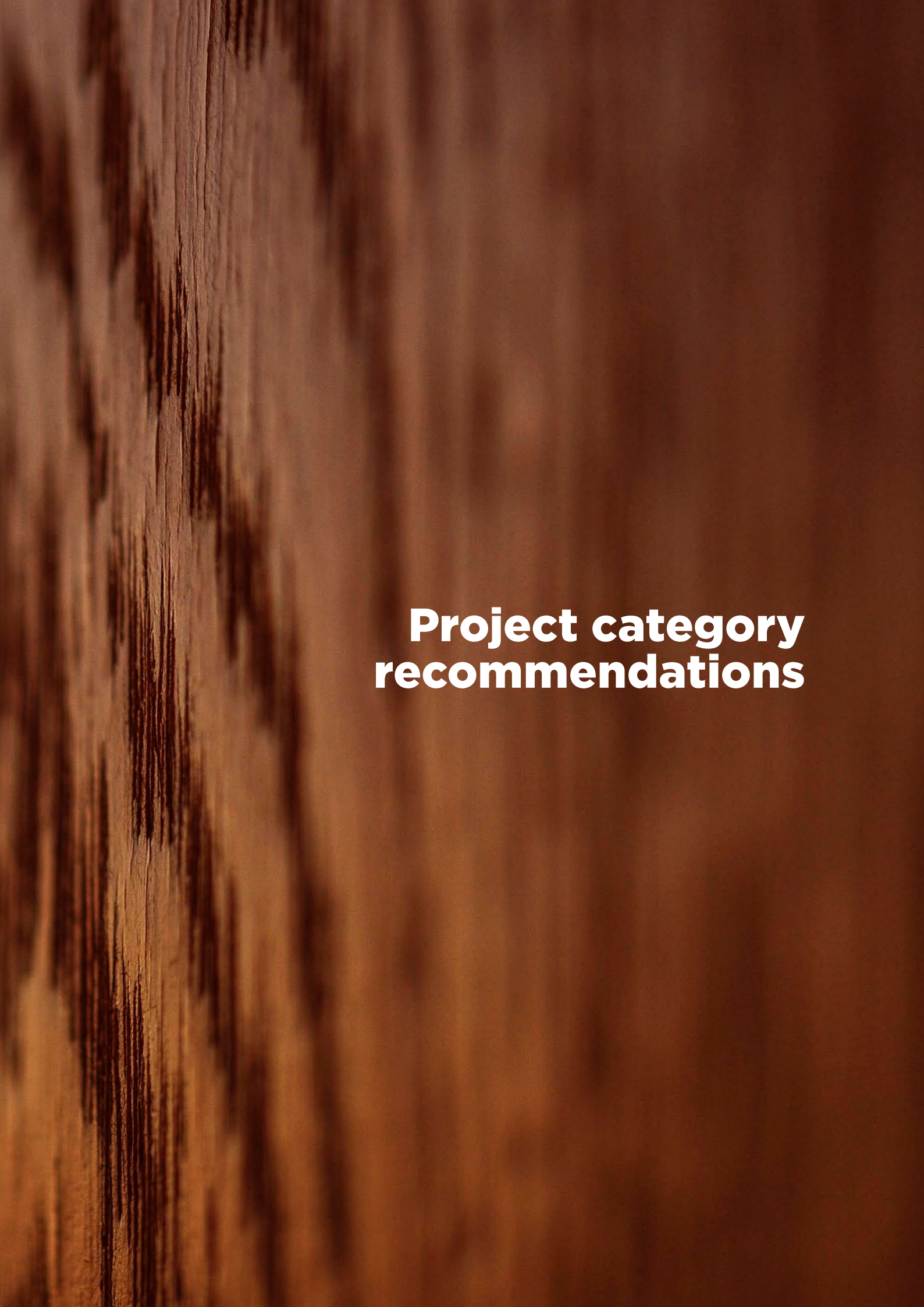
The chosen baseline should reflect national/local circumstances and regulations. The calculation method should consider both emissions caused by the production of district heating, cooling, steam or combined heat and power (CHP) (including Scope 2), as well as avoided emissions from alternative sources of energy.

32. Energy units: kWh or appropriate multiples recommended

In the Nordic countries, the most commonly used energy unit is kilowatt-hours (kWh). We therefore intend to use kWh or appropriate multiples as the energy unit in our impact reporting (i.e. MWh, GWh etc. along with installed effects in kw, MW and GW, etc.).

However, issuers are recommended to include a Joule (J) conversion factor, where 1 kWh represents 3.6 MJ and 1 MWh represents 3.6 GJ. Issuers may also choose to report aggregate energy savings or added capacity in Joules, alongside Wh.

15 District heating is a system for distributing heat generated in a centralized location for residential and commercial heating requirements. In the Nordic countries, the heat is often obtained from a cogeneration plant burning principally renewable energy sources, including biomass, but plants also use waste, excess heat, and, to a minor extent, fossil fuels. District heating plants may also be used to produce electricity (combined power and heating plants, CHP), and cooling.



Project category recommendations

Project category recommendations

This chapter presents impact reporting recommendations specifically relevant to eight project categories that typically dominate Nordic public sector green bonds frameworks:

- Renewable energy (incl. wind, solar, hydro, wave, bioenergy, geothermal, excess heat)
- Green buildings
- Energy efficiency
- Clean transportation
- Waste management
- Water and wastewater management
- Sustainable land use / environmental management
- Climate change adaptation

This list may be updated as the universe of projects eligible for green bond funding by Nordic issuers evolves.

33. Renewable energy

Issuers are encouraged to report the impact from renewable energy investments (wind, solar, hydro, bio energy, etc.) in terms of capacity added and estimated annual production, as well as the associated amount of CO_2 avoided, according to the guidelines established by the IFIs[16].

We however recommend using the same Combined Margin for electricity for all types of projects (see section #22: "CO_2 baseline for electricity" above).

The emission factor to be applied when calculating CO_2 avoided depends on the type of energy replaced. 1 kWh of renewable electricity production may be reported as replacing 1 kWh of electricity from the grid, applying the grid factor suggested in section #22 (assuming zero (0) emissions net in scope 1 and 2 from renewable energy production). If the renewable energy produced replaces other forms of energy than electricity, e.g. fossil heating oil, a relevant emission factor for the substituted energy source may be applied. In such cases, issuers should be transparent about their choice of emission factor.

Issuers may also elect to report other greenhouse gas emissions that have been reduced or avoided, where relevant and applicable.

Suggested indicators

- Capacity of energy generation of plant (MW)
- Annual renewable energy generation in MWh or GWh
- Annual GHG emissions reduced/avoided, in tonnes of CO_2-equivalent

Suggested EU Environmental Objectives

Primary Objective:
Climate change mitigation

Secondary Objective:
n/a

Suggested SDGs

16 IFI Approach to GHG Accounting for Renewable Energy Projects, November 2015

34. Green buildings

- Disclose energy savings from green buildings as a net value compared to national building requirements. Alternatively, performance can be reported in comparison to a relevant reference building.
- Issuers are encouraged to disclose the building area, in square meters.
- Refurbishments and retrofits are to be compared against status pre-investment.
- Energy produced on-site may be subtracted from the energy use of the building if this is clarified in the report.
- Issuers are encouraged also to include information about materials used, the location of the building, and other features that may contribute to the environmental benefits of the project.

Energy savings from green buildings should be disclosed as a net value, based on energy use per square meter and per year, and compared to a baseline scenario in which the building complies with applicable national regulations for the respective Nordic country[17]. Standards and methods for calculating energy use differ by country and are not easy to compare. Regarding use of baselines for savings in electricity and in district heating, see above positions #28 and #31.

Issuers are encouraged to disclose the building area, in square meters. As additional information, issuers may choose to report a green building's performance in comparison to a reference building based on e.g. the average energy performance of the national building stock, considering relevant type of building and climate zone. Reporting in relation to averages should solely be for informational purposes (not to be used in aggregation) and where relevant (for instance refurbishments of existing buildings).

Energy produced on-site (behind the meter) that is used in the building may be subtracted from the reported energy performance of the building, if this is in line with national building regulations. (A house with an energy use of 45 kWh per sq.m. with solar panels producing 5 kWh per sq.m. may be reported as having an energy performance of 40 kWh per sq.m. considering an energy production of 5 kWh per sq.m.) Issuers are in that case encouraged to separately report the energy produced on-site (that is subtracted from the energy use of the building), as well as additional energy produced on-site and exported to the grid.

In their reporting, issuers should distinguish between new buildings and major refurbishments, where the former should be compared to national building standards and the latter to the status pre-investment.

In addition to information about the energy performance and -production of a building, issuers may elect to describe other environmentally relevant features of the building, if feasible. This information may include the main material groups used in the construction, the location of the building, water intensity, waste management, any use of fossil-free construction machinery and equipment, waste management policies on the construction site, mitigation efforts related to physical climate risks, etc. Issuers are not required to calculate CO_2 impact of building materials at this stage, as these emissions are outside scopes 1 and 2.

17 Calculating impact based on buildings standards, as opposed to comparing against the average for the national building stock, represents a more conservative approach to impact reporting.

Suggested indicators

- Avoided kWh/sq m, or in percentage terms (%) below national building standards
- Annual energy avoided in MWh or GWh compared to the relevant building code (for new buildings)
- Annual energy reduced in MWh or GWh compared to the pre-investment situation (for refurbishments)
- Annual energy production on-site, in MWh or GWh
- Annual GHG emissions reduced/avoided, in tonnes of CO_2-equivalents

Suggested EU Environmental Objectives

Primary Objective:
Climate change mitigation

Secondary Objective:
n/a

Suggested SDGs

35. Energy efficiency

We encourage issuers to apply the IFI Harmonized Framework approach for GHG accounting for energy efficiency projects[18]. So far we do not commit to using the IFI method for differentiating effects during remaining and prolonged lifetime for a project. We deem this a reasonable approach, given that we are committed to annual reporting and do not report on life-time effects.

Issuers should report on both the absolute reduction (in kWh or other metric) and the percentage reduction in energy use for the same output/service. Regarding use of baselines for savings in electricity and in district heating, see above sections #28 and #31.

For energy efficiency project that are part of a larger retrofitting or refurbishing project, where parts of the project cost is not directly linked to a reduction in energy use, we recommend a cautious approach. This means reporting impact (such as energy reduced) in relation to the entire project cost. An example is the refurbishment of a building that involves both energy efficiency components such as improved insulation and ventilation systems, as well as purely esthetical components such as a façade upgrade.

Suggested indicators

- Annual energy reduced/avoided in MWh or GWh (electricity) and MWh or GWh (other energy savings)
- Annual GHG emissions reduced/avoided, in tonnes of CO_2-equivalent

Suggested EU Environmental Objectives

Primary Objective:
Climate change mitigation

Secondary Objective:
n/a

Suggested SDGs

18 IFI Approach to GHG Accounting for Energy Efficiency Projects, November 2015

36. Clean transportation

While clean transportation projects may differ in character, the primary objective from an impact reporting perspective is to report on avoided emissions of CO_2, in comparison with an alternative scenario. What represents the most relevant alternative scenario, is likely to vary greatly depending on the local context of the project as well as the type of transport mode to be invested in.

For larger investments in transportation systems, a pre-study of the mobility situation and the related energy consumption/emissions can be helpful in order to measure the impact of the investment. Another resource to issuers may be the cost/benefit assumptions used in the project's "business case" evaluation. We do however recognize that many smaller projects may not be backed up by pre-studies and other analysis and therefore such reporting cannot always be required from issuers.

For projects involving the purchase of low-carbon vehicles, issuers are recommended to compare the emissions of the acquired vehicles with those of a comparable conventional new alternative, such as a modern fossil-fuel driven car. Calculations should be based on the same emission factor for electricity as applied e.g. to added renewable energy and energy efficiency projects, see positions #33 and #35.

Whenever possible, issuers may include reporting on other avoided GHG emissions, such as NOx. If relevant, reporting may also include other benefits, such as noise reductions.

Issuers are encouraged to select and report on indicators that are relevant and feasible for each individual project and for their portfolio of transport investments as a whole, including but not limited to those mentioned below. These include suggested reporting metrics as outlined in the ICMA Handbook - Harmonized Framework for Impact Reporting.

Suggested indicators

- Annual GHG emissions reduced/avoided, from cars and other vehicles, due to the investment (by comparison to average emissions by km for alternative transportation)
- Number of km of new train lines, bicycle lanes etc. created
- Passenger-kilometres in new means of transportation
- Estimated reduction in car use and car kilometres the project will replace
- Project's effect on increased resilience to climate change

Suggested EU Environmental Objectives

Primary Objective:
Climate change mitigation

Secondary Objective:
Pollution prevention and control

Suggested SDGs

37. Waste management

A number of quantitative and qualitative indicators may be relevant for impact reporting on waste management projects. Issuers are encouraged to select and report on indicators that are relevant and feasible for each individual project and for their portfolio of waste management investments as a whole, including but not limited to those mentioned below. These include suggested reporting metrics as outlined in the ICMA Handbook - Harmonized Framework for Impact Reporting.

Suggested indicators

- Estimate of the reduction in greenhouse gas emissions avoided as a result of the investment (See also Appendix B for an example methodology on district heating and waste treatment).
- Waste that is prevented, minimised, reused or recycled before and after the project in % of total waste and/or in absolute amount in tonnes per year.
- Annual absolute (gross) amount of waste that is separated and/or collected and treated (including composted) or disposed of (in tonnes per year. and in % of total waste)
- Number of metric tons processed in the facility
- Material recovery rate, in %
- Expected improvement in material recovery rate or other target for improved resource use
- Number of households delivering to the facility
- Energy produced (in case of biogas/waste-to-energy plant)
- Energy saving attributable to the investment
- Project's effect on increased resilience to climate change

Suggested EU Environmental Objectives

Primary Objective:
Transition to a circular economy

Secondary Objective:
Pollution prevention and control
Climate change mitigation

Suggested SDGs

38. Water and wastewater management

A number of quantitative and qualitative indicators may be relevant for impact reporting on water and wastewater management projects. Issuers are encouraged to select and report on indicators that are relevant and feasible for each individual project and for their portfolio of water and wastewater management investments as a whole, including but not limited to those mentioned below. These include suggested reporting metrics as outlined in the ICMA Handbook - Harmonized Framework for Impact Reporting.

Suggested indicators

- Annual water savings
- Annual volume of wastewater treated or avoided
- Capacity of plants being built
- Number of meters of piping/conduit laid, upgraded or replaced
- Number of person equivalents (PE) of water or wastewater the plant processes, identifying any increase that can be attributed to the investment
- Reduction of emissions into the local environment (nitrogen and phosphorous, Biochemical Oxygen Demand, etc)
- Where relevant, amount of electricity, biogas or other energy carrier expected to be produced each year, along with avoided CO_2 emissions (see above sections on electricity and district heating)
- Health metrics (such as air and water quality)
- Biological metrics: biological diversity, wildlife
- Project's effect on increased resilience to climate change

Suggested EU Environmental Objectives

Primary Objective:
Sustainable use and protection of water and marine resources

Secondary Objective:
Climate change adaptation
Pollution prevention and control
Climate change mitigation

Suggested SDGs

39. Sustainable land use / environmental management

Projects in this category are primarily intended to focus on environmental management in areas other than climate change. They may include nature conservation, biodiversity measures, sustainable agriculture, improving eco-systems, converting land from industrial/business use to wild life reserves/recreational areas etc.

For these types of projects, issuers are recommended to identify both qualitative and quantitative indicators, where qualitative measures may be of particular relevance. These may include i) surface area of the land converted (measured in square meters or square kilometers), ii) area under conversation or preservation, iii) area under certified land management (ideally with breakdown, FSC, PEFC, Rainforest Alliance), iv) monitoring of chemical use, v) biological diversity and vi) air quality. If annual energy savings and/or reduction in greenhouse gas emissions or other emissions are relevant for the project, issuers are encouraged to report on such measures as well.

Suggested indicators

- Number of species
- Number of individuals in target population
- Area reforested or converted
- Area of habitat or wetland restored
- Certified sustainable land area

Suggested EU Environmental Objectives

Primary Objective:
Protection and restoration of biodiversity and ecosystems

Secondary Objective:
Climate change adaptation
Climate change mitigation

Suggested SDGs

40. Climate change adaptation

The objective of projects in this category is to improve local communities' resilience in the face of a changing climate. Projects in this category may include facilities and installations to manage urban runoff, floods, landslides, avalanches, rising sea levels etc. This list is not comprehensive, as there is considerable local variance in the types of measures needed.

The resilience-enhancing qualities of a project are preferably documented through quantitative indicators, if feasible. Quantitative indicators can be complemented by qualitative descriptions of the project's characteristics and the weather-related and climate-related effects it seeks to address.

Suggested indicators

- Areas protected against heat (such as building fasades) or number of heat shields etc m^2 or number of items of heat protection
- Areas protected against storms (building fasades or land such as school yards, hospital facilities, city centres) m^2 or number of items
- Capacity of system or area covered, for example for water management or regarding enhanced resilience

Suggested EU Environmental Objectives

Primary Objective:
Climate change adaptation

Secondary Objective:
n/a

Suggested SDGs

Appendices

Appendix A

Summary of "should" recommendations

Issuers which state compliance to the Nordic Position Paper on Green Bonds Impact Reporting should comply with all "should" recommendations in this Position Paper and explain any deviations from them. The list below indicates all such instances in the paper, structured by the respective reporting principle. Recommendations are structured on three levels, with a sliding scale of imperative to follow: "should", "encouraged to" or "may choose to".

3. Report on bond-by-bond or portfolio approach to issuance and allocation (page 11)
- Issuers should be transparent about which approach they follow.
- For non-dynamic portfolios where allocation is complete, the impact report should clearly state the estimated impact of each sub-portfolio/bond.
- For dynamic portfolios, issuers should provide a breakdown of impact attributable to each bond, typically using a simple pro-rata allocation of aggregated impact to each outstanding bond.

4. Provide both allocation and impact reporting (page 11)
- Both allocation and impact reporting are intimately linked, should use the same methodology and should be presented together, in a consistent manner.
- Reporting should include information on the proceeds raised by the green bond and information on the amounts allocated to projects (the "allocation reporting").
- Reporting should also provide information on the actual environmental and social impacts of the project financed by the green bond (the "impact reporting"), which is the actual purpose of this position paper.
- Both allocation and impact reporting should use the same methodology and be presented together, in a consistent manner.

5. Provide annual reporting (page 12)
- Issuers should report on impact as long as there are green bonds outstanding.

6. Report expected impact, aiming for actual impact (page 13)
- Reporting should include the estimated reduction in greenhouse gases, as well as other green indicators appropriate to describe environmental impact and performance.
- Issuers should distinguish between impacts based on ex-ante and ex-post calculations.
- Reporting should include both green indicators and resulting emissions reductions. Emissions reductions should be reported if calculations can be made with satisfactory quality.
- The report should include information about the precision of environmental data, attributable to the scientific uncertainty regarding the measurement methods, as well as uncertainties regarding the data that the measurement methods are applied to.

8. Report based on annual impact (page 14)
- When possible, reporting should be normalized to reflect a representative year.
- Normalization should be conducted in accordance with established national or international practice.

9. Provide quantitative and qualitative reporting (page 14)
- Both qualitative and quantitative perspectives may be appropriate and should be reported upon depending on the type of project financed and the availability of information.

11. Report based on the share financed (page 15)

- The impact report should account for the expected annual environmental impact realised through projects to which green bond proceeds have been allocated and disbursed.
- The reported impact of a project should reflect the share of the total investment cost the issuer has financed through the green bond issuance. The total investment cost may be subject to change but should be reported as accurately as possible.
- Issuers should strive to ensure that double-counting of environmental benefits is avoided.
- Projects to which funds are no longer outstanding should not be included in the impact reporting, even if the project is still operating.

12. Report impact by $ only when quantifiable and relevant (page 15)

- Issuers are recommended to report CO_2 impact per invested monetary unit solely for the share of investments in projects or project categories where such impact is quantifiable and relevant. The share of total investments for which this reporting is made should be clearly stated.

13. Financing/refinancing (page 16)

- Issuers should report on the share of bond proceeds used for financing and refinancing. Such reporting should be made according to the reporting commitments set out in the issuers' green bond frameworks.
- Issuers should be transparent about the approach they use to distinguish between financing and refinancing.
- Issuers which in their project portfolio include assets approved under different framework vintages should clarify which vintage of eligibility criteria that apply upon refinancing.
- Issuers should be transparent about whether green bond proceeds are allocated to capital expenditures (CapEx), operating expenditures (OpEx), or a combination of the two.

14. Look-back period / Allocation period (page 16)

- Projects should only qualify for refinancing as long as i) they are in use, ii) follow the relevant eligibility criteria at the time of issuance and/or inclusion in the asset pool, and iii) are still deemed to have a meaningful impact.
- Issuers should be transparent about whether they use a look-back period or not in their bond frameworks.
- Issuers with a look-back period should disclose the look-back period for refinanced projects/assets.

15. Vintage reporting (page 17)

- When the asset pool consists of assets belonging to different framework vintages, issuers should be transparent regarding the process for project selection and allocation of new bond proceeds.
- Issuers should be transparent about any significant changes in the most recent framework, compared to the previous one.
- The impact reporting should indicate the extent to which the aggregated bond issuance, and/or individual bonds, are allocated to different framework vintages.
- When the asset pool consists of assets approved under different framework vintages, issuers should be transparent regarding the process for project selection and allocation of new bond proceeds. New projects should solely be included in the portfolio based on the most recent framework.

16. Provide breakdowns on asset type, geography and sector (page 18)

- For issuers with projects located in multiple countries, reporting should be done at geography and sector level combined.

20. Climate-related risks (page 19)

- If any climate-related risks are detected, issuers should be transparent about how these risks will be mitigated.

Appendix B

The Nordic electricity grid and baseline emission factors

The Nordic electricity grid

Generally speaking, a local or national mix for electricity does not exist in the Nordic countries, since electricity is widely traded cross-border with neighboring countries. Since the mid-1990s, all Nordic countries have liberalized their electricity markets, opening up both electricity trading and electricity production to competition. The highly interconnected market is the cornerstone of the Nordic energy system and is expected to serve as a key enabler for further emission reductions towards long-term climate objectives.

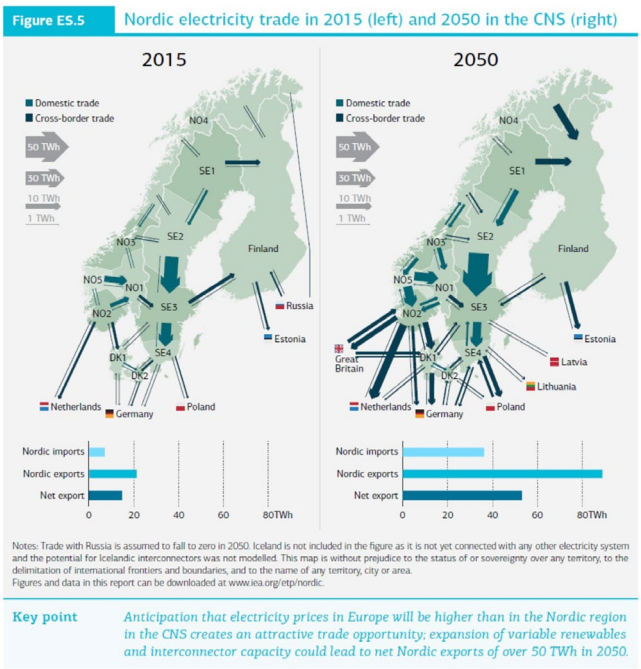
A unified perspective on the development of the Nordic electricity grid is presented bi-annually in a report – Nordic Grid Development Perspective – prepared collaboratively by the four Nordic transmission system operators Energinet, Fingrid, Statnett, and Svenska kraftnät.

The 2023 report concludes that the Nordic energy system is well integrated due to a long history of cross-border cooperation related to the grid, operations, and market development. This has been a core prerequisite for the increasing and already high level of renewable/fossil free energy production in the area, a trend expected to continue. According to the report, the Nordic energy system is expected to be fossil free around 2035/40.

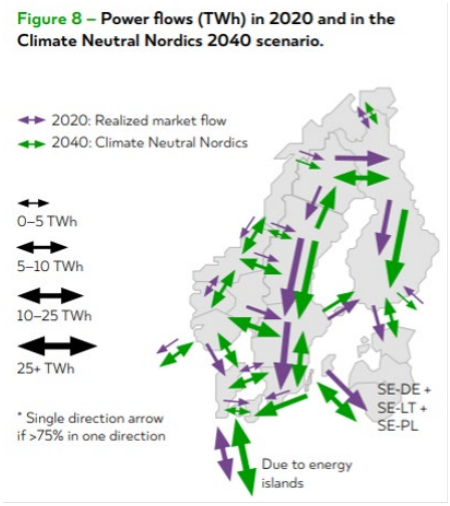
There is also a high and increasing level of interconnection with the neighboring northern European countries as visualized below.

Actual and forecasted electricity trade

2015

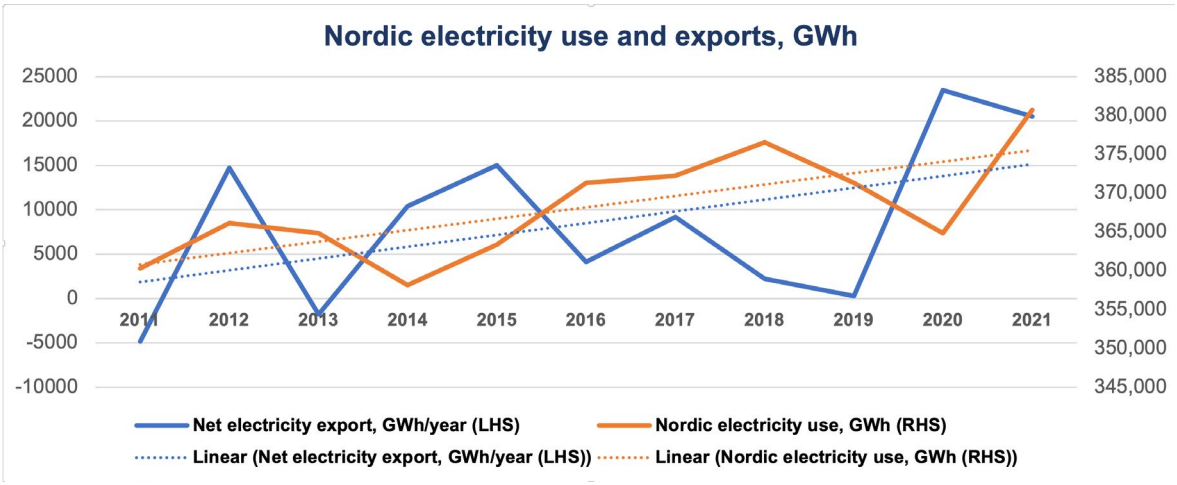


2020



Note: CNS = Nordic Carbon-Neutral Scenario;
VRE=Variable Renewable Energy; CCS=Carbon Capture and Storage
Source: Nordic Energy Technology Perspectives (NETP) 2016, Nordic Grid Development Perspective 2019

Nordic power exports to other European countries have been on an upward trend for over a decade, as illustrated by the graph below. The increase in net exports has been supported by increased domestic power balance, energy efficiency initiatives and increased renewables capacity. Capacity has also been boosted by the launch of Finland's 1.6 GW Olkiluoto 3 nuclear reactor in 2023.



Source: Nordic Investment Bank / Eurostat

Baseline emission factors for the electricity grid

Whenever feasible and relevant we base the suggested baselines on the IFI Harmonized Framework and their standards for GHG-accounting (IFI Framework for GHG-accounting).[19] This approach was initially developed for projects associated with the Clean Development Mechanism and is supported by GHG Protocol guidelines[20] and the ICMA guidelines [21].

It should be noted that these methods are based on a **consequential assessment**, aiming to describe how environmentally relevant flows will change in response to possible decisions - in this case the effects of investment projects on emissions from the electricity grid margin. This can be contrasted with the **attributional or accounting assessment**, that is concerned with attributing a relevant share of the global environmental burdens that belong to an existing organization or activity, based on average data and typically used for annual reporting ("accounting method").[22] This latter attributional approach is more common and well known through yearly environmental reporting by organizations and through national reporting to UNFCCC.

Both approaches are in some way simplifications, since the individual effect is hard to determine. E.g. both use yearly factors, that do not reflect the varying/seasonal profile of the individual project and the level of interconnection.

19 https://unfccc.int/climate-action/sectoral-engagement/ifis-harmonization-of-standards-for-ghg-accounting

20 See "Guidelines for Quantifying GHG Reductions from Grid-Connected Electricity Projects", published by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBSCD). See https://www.wri.org/publication/guidelines-quantifying-ghg-reductions-grid-connected-electricity-projects

21 ICMA Handbook Harmonised Framework for Impact Reporting, June 2023

22 See "Attributional and Consequential Life Cycle Assessment", 2019, authored by Tom Ekvall, IVL Swedish Environmental Research Institute: https://www.intechopen.com/online-first/attributional-and-consequential-life-cycle-assessment

Why does the choice of approach matter?
The choice of factor will have an effect on the reported impact of Nordic investment projects, as measured in terms of CO_2. Reporting according to the "project method" – with a higher baseline emission factor – will typically result in higher reported impact for renewable energy or energy efficiency projects, whereas reporting according to the "accounting method" – with a lower baseline emission factor – will typically result in lower reported impact.

The choice of approach matters also to perception of and incentives for the use and supply of electricity and capacity. A high value will benefit energy efficiency projects and expanding low-carbon production. A low value will benefit an increased use of electricity. The factor for electricity relative to factors for alternative technologies, such as district heating and biofuels, will determine the attractivity of the alternatives.

The consequential/project approach – Developing a Combined Margin
According to the IFI Framework for GHG-accounting, the baseline emission factor is constructed using a **Combined Margin (CM)** for the electricity grid, comprised of an existing **Operating Margin (OM)** and a **Build Margin (BM)** from potential new generation capacity.

The OM represents the marginal generating capacity in the existing dispatch hierarchy that will most likely be displaced by the project. The BM is calculated based on an assessment of planned and expected new capacity generation of the grid, projected over the next 8 years under the New Policies Scenario (NPS) of the most recent IEA World Energy Outlook. This BM is a mix of renewable and fossil production, depending on regions, starting points of grids and GDP/capita. For most grids, the present OM has a much higher emission factor than the expected BM.

When adding new generation capacity to a grid, this is assumed to only partly replace existing generation capacity on the margin (OM), since it is likely that in the absence of the project implementation, other generation projects would at least to some extent be implemented to meet the demand for power (BM). Introducing relative weightings to the OM-BM is used for simplification and as a proxy to estimate a Combined Margin (CM), to avoid undue and costly simulations on the effects of investments in the grid system.

The IFI's deploy two versions of the CM. For variable renewable energy generation (e.g. wind and solar PV), the weighting is 75% OM + 25% BM. For firm renewable energy generation (e.g. hydropower, concentrated solar power, geothermal and biomass), energy efficiency projects, the weighting is 33% OM + 67% BM. These CM's were established in a July 2019 revision, in which the CMs for firm renewable electricity generation and energy efficiency projects were changed from their previous default weights of 50 % OM + 50 % BM. The factor for electrification was established at a later stage.

This means that the IFI method now assumes that new projects for energy efficiency and firm renewable energy are more in competition with alternative new investments (BM) than with the existing OM of the grid. On the other hand, the IFI method credits variable renewable electricity generation with 75% OM + 25% BM. The resulting higher CO2 displacement value is given because variable energy is less likely to displace alternative new investment in capacity that is also available at peak load times.

Appropriate Combined Margin weightings for the Nordic electricity system
During the revision of this paper we have been in dialogue with the EIB and NIB representatives of the IFI approach, concerning the Combined Margin assumptions and the merits of harmonization. For now, we have resolved to continue to partially deviate from the IFI approach, for simplification purposes and in order to better reflect the Nordic electricity system. We are however open for future further harmonization with the IFI:s as methodologies develop.

We view the above IFI assumptions on the CM to be better aligned with "closed" electricity systems, where, implicitly, there is a fixed level of older (non-BM) production. For highly integrated electricity markets, such as the Nordic electricity system, which has a high and increasing level of interconnection also to neighboring northern European countries, the prerequisites are different in our view. The northern European electricity system also has excess capacity, which combined with existing political ambitions to expand renewable energy should result in new investment contributing to more rapid closing-down of older fossil-based energy plants.

We would expect this to result in potential for more projects that can affect and replace the OM of the (entire) grid, and less be in competition with other potential projects (BM).

We therefore recommend using a Combined Margin factor of 1/3 OM + 2/3 BM for all electricity- based projects, including all renewable energy (RE) and energy efficiency/saved energy (EE). This approach also avoids giving more credit to variable energy generation, even though such generation is less likely than firm renewable energy generation and energy efficiency projects to displace older and fossil-rich capacity that is also available at peak load times. In using the same factor for energy efficiency and renewable energy we also believe we are aligned with the principle of "Energy Efficiency First", advocated by the EU Commission.

In order to simplify reporting requirements, we apply this approach also to electrification projects that lead to an increased use of electricity, e.g. transportation projects. We believe the use of a single factor also will simplify for issuers and investors wishing to deploy own alternative emission factors.

Combined margin applied by the Nordic Issuers
We recommend using a grid factor based on EU-27 excluding Cyprus, which is not physically interconnected to the rest of the EU) and including the UK and Norway as the default baseline emission factor for accounting and disclosure of electricity. We believe this is the relevant baseline because the Nordic electricity market is already characterized by interconnection and export surplus. Furthermore, the integration of European electricity markets is planned to increase in the coming years and decades, which is the relevant time perspective for most investments (see figure on page 35).

For now, we apply the following baseline emission factor for electricity:

Combined Margin: 191 g CO_2/kWh
→ = 1/3 Operating Margin (358 g CO_2 e/kWh) + 2/3 Build Margin (108 g CO_2 e/kWh)[23]
This CM grid factor corresponds to the geographic area of EU–Cyprus+UK+Norway. The baseline emission factor is to be updated on a regular basis (subject to availability of data), reflecting new grid factors and other relevant changes in conditions and assumptions.

23 Calculation by Kommuninvest in November 2023, based on IFI Interim Dataset of Harmonized Grid Factors v 2.3 November 2021, as provided by Nordic Investment Bank.

IFI harmonized framework approach[24] vs. Nordic issuers' approach

Type	IFI Approach	Nordic issuers' approach
Firm generation (e.g. hydropower, geothermal and biomass)	Combined Margin = 33% Operating Margin + 67% Build Margin (191 g CO_2e/kWh for EU25+UK&Norway)	Combined Margin = 1/3 Operating Margin + 2/3 Build Margin (191 g CO_2e/kWh for EU25+UK&Norway)
Variable generation (wind and solar)	Combined Margin = 75% Operating Margin + 25% Build Margin (296 g CO_2e/kWh for EU25+UK&Norway)	Combined Margin = 1/3 Operating Margin + 2/3 Build Margin (191 g CO_2e/kWh for EU25+UK&Norway)
Energy efficiency projects, avoided electricity consumption from the grid, e.g. green buildings and energy efficiency in power plants	Combined Margin in the receiving electricity grid (Depending on lifetime of existing equipment etc. For simplification) = 33% Operating Margin + 67% Build Margin (191 g CO_2e/kWh for EU25+UK&Norway)	Combined Margin = 1/3 Operating Margin + 2/3 Build Margin (191 g CO_2e/kWh for EU25+UK&Norway)
Electrification projects	Combined Margin = 33% Operating Margin + 67% Build Margin (191 g CO_2e/kWh for EU25+UK&Norway)	Combined Margin = 1/3 Operating Margin + 2/3 Build Margin (191 g CO_2e/kWh for EU25+UK&Norway)

Alternative geographic boundaries

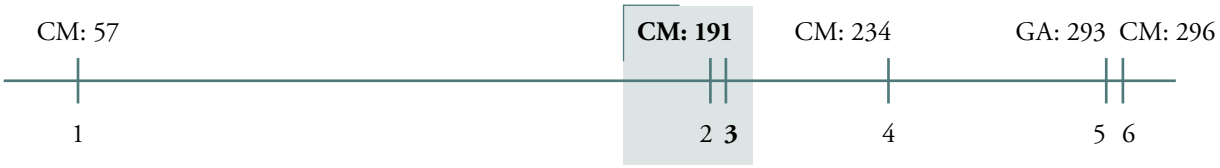
Alternative geographic boundaries could be based on production in the Nordics only (excluding Iceland) or in the Baltic Sea Region including Germany, Poland and the Netherlands. The latter would reflect current grid interconnection. Selecting a factor based on production in the **Nordics only** would result in a lower baseline for electricity (57 g CO_2e/kWh) but would disregard the value of existing and expanding exports of low-carbon electricity production. On the other hand, basing the grid factor on the **enlarged Baltic Sea region** (Nordic-Baltic with interconnected Poland, Germany, Netherlands and UK) would result in a higher baseline (234 g CO_2e/kWh), effectively increasing the reported environmental benefits from increased renewable energy capacityor energy efficiency savings[25].

24 https://unfccc.int/climate-action/sectoral-engagement/ifis-harmonization-of-standards-for-ghg-accounting

25 Combined Margin in g CO2e/kWh, based on 1/3 OM: 2/3 BM: Denmark 155, Finland 114, Norway 17, Sweden 25, Estonia 625, Latvia 117, Lithuania 102, Germany 313, Poland 532, Netherlands 203, UK 219.

The illustration below compares alternative baselines and their relative reported environmental benefits.

Comparing alternative baselines (g CO_2e/kWh)



1: Alternative Nordic Position Paper (Four Nordic countries only):
CM = 1/3 OM + 2/3 BM = 57 g CO_2e/kWh

2: IFI Harmonized Framework:
CM = 1/3 OM + 2/3 BM = 191 g CO_2e/kWh

3: Nordic Position Paper (EU-Cyprus+UK+Norway):
CM = 1/3 OM + 2/3 BM = 191 g CO_2e/kWh

4: Alternative northern European interconnected system (Nordics + Baltic States + Germany + Poland + Netherlands + UK):
CM = 1/3 OM + 2/3 BM = 234 g CO_2e/kWh

5: European grid average, for EU-Cyprus+UK+Norway (GA)
= 293 g CO_2e/kWh

6: IFI Harmonized Framework for intermittent generation (IFI I):
CM = 3/4 OM + 1/4 BM = 296 g CO_2e/kWh

Other alternative baselines may include national average or marginal grid factor (reflecting import/exports/ interconnection).

Evolving factor over time

This version of the Nordic Position Paper introduces the third iteration of a suggested emission factor ([191] g CO_2 per kWh compared with 315 g CO_2 per kWh in the 2020 version and 380 g CO_2 per kWh in the 2017 version). The decreased emission factor primarily reflects a less carbon intensive electricity production, in both the operating grid margin (OM) and the planned new margin to be built (BM). The IFIs update their factors every second year. As before, there is a time lag for the OM, also reflecting an average over three years.

A minor part of the decrease is attributed to a change in the Combined Margin (CM), using 1/3 OM and 2/3 BM, compared to previously 50:50. The reason for this change is primarily the IFIs have agreed to use the 1/3:2/3 ratio also for electrification projects.

Appendix C

Calculating impact from district heating projects

To calculate the net CO_2-effect for district heating projects, the Swedish local government debt office Kommuninvest relies on methodology developed by Profu, an envirotech consultancy. The first version was developed in 2017, and has since been updated twice, most recently in December 2023[26].

The methodology introduces a national-average-baseline emission factor for district heating, representing the avoided emissions from alternative heating sources. The baseline established in the 2023 update is set at 56 g CO_2/kWh (Scope 2), being a mix of avoided alternative individual heating sources using current technologies for wood pellet boilers and various types of heat pumps (5% pellet-fired boilers, 55% geothermal heat pumps/ground source heat pumps, 17% air/water heat pumps, 21% air/air heat pumps and 2% gas boilers).

Since energy recovery from waste forms part of the energy mix in certain Swedish district heating facilities, additional environmental benefit is ascribed to such projects due to the avoidance of land fill and methane leakage, in other countries where land fill is still used.

This corresponds to 28 g CO_2/kWh as a national average for solid waste in district heating, based on a baseline emission factor set in the 2023 update of 109 g CO_2e/kWh for waste. The total national-average-avoided baseline emission factor applied in district heating projects that include waste-to-energy and are financed with Kommuninvest Green Loans is therefore 84 g CO_2e/kWh.

When calculating the total climate impact from district heating projects, direct emissions from the production also need to be considered. A national average emission factor for district heating in Sweden is used (which could be substituted with a factor for the local energy mix). The average 2022 was 46 g CO_2/kWh (scope 2, including 5 % fossil fuels), source: Swedenergy – Energiföretagen Sveriges.

Using a national average as a baseline factor for district heating is feasible for a portfolio of investment projects and expansion of production and supply, but local circumstances and actual changes in production mix need to be considered for projects such as energy efficiency, increased interconnection and other changes in the production mix.

26 Profu report (in Swedish only): ”Stöd till klimatutvärdering av gröna investeringar inom fjärrvärmeområdet – Översyn och uppdatering 2023”, Decenber 2023.

Appendix D

Executive summary template

DOWNLOAD TEMPLATE

Template in Excel format

Executive Summary

as of 31 Dec 2022

Green Loans and Green Bonds

Basic information

Green Bond Frameworks applied	Report comprises projects financed under frameworks dated May 2021, March 2018, January 2016 and May 2015
Related Green Bond ISIN(s)	XS1897258098; XS2081157401; XS1968465572; XS2311395169; XS2530407340; XS2351401109; XS2259127269; XS2402061530; XS2462606489
External verifier of allocation report	KPMG
Reporting period	Reporting for calendar year 2022. Comprises all eligible projects financed from GB programme start in 2015 until year-end 2022.
Report publication date	April 28, 2023
Frequency of reporting	Annual
Next reporting planned for	March 2024
Reporting approach	Portfolio-based and project-by-project reporting

Green project portfolio distribution

based on disbursed amounts

CO_2 Impact and Green Indicators

based on outstanding disbursed amounts[1]

Project category	GHG emissions reduced/-avoided, tonnes CO_2e/year	Outstanding disbursed amounts to projects, SEK mn	Impact, tonnes CO_2e per SEK mn
Renewable energy	614,491	10,367	59
Green buildings	10,299	40,351	0.3
Energy efficiency	29,675	470	63
Clean transportation	26,771	3,761	7
Waste management	5,595	520	11
Water management	15,390	9,551	2
Climate change adaptation	n/a	0	n/a
Enviromental manegement	n/a	276	n/a
Total	**702,221**	**65,296**	
Disbursed amounts with CO_2 impact		**54,198**	
Impact, tonnes CO_2e per SEK mn			**13.0**
Annual renewable energy generation, MWh			**2,544,714**
Annual energy reduced/avoided, MWh			**81,701**

1) This table presents the calculated impact in terms of CO_2 reduced or avoided. Aggregated project data reported represent both ex-ante estimates and ex-post outcomes. Reporting methodology presented on pages 41-49. The complete project-by-project-reporting is available in spreadsheet format at kommunin vest.se ==> For investors ==> Green Bonds ==> Impact Reporting.

Impact attributable to green bond investors[1]

Whereof impact attributable to each Green Bond outstanding as of 31 Dec, 2022	**97 %**
G2304: USD 1bn, maturing 24 April, 2023	15 %
G2306: SEK 11bn, maturing 1 June, 2023	17 %
G2403: SEK 8.5bn, maturing 27 March, 2024	13 %
G2406: USD 1bn, maturing 19 June, 2024	13 %
G2509: SEK 3.5bn, maturing 1 September, 2025	5 %
G2606: SEK 5bn, maturing 10 June, 2026	8 %
G2711: SEK 7bn, maturing 26 November, 2027	11 %
G2905: SEK 5bn, maturing 16 May, 2029	8 %
G2909: EUR 0.5bn, maturing 1 Sep, 2029	8 %

1) Total amount of outstanding green bonds divided by total outstanding disbursed amounts to projects (in SEK).

Appendix E

Summary of recommendations

Project category	Project examples (non-exhaustive)	Document reference	Indicators	Unit	Mandatory	Baseline / benchmark	General principles for all categories
Renewable energy GBP category for reference: Renewable energy	• Wind power generation • Solar power plants • Geothermal energy • Bio-energy	#33	Capacity of energy generation of plant Annual renewable energy generation Annual GHG emissions reduced/avoided	MW MWh or GWh Tonnes CO_2e	Y Y Y	Emission factor for electricity: European mainland mix including Norway, 191 g CO_2 per kWh (or detailed approach), see apendix B. Emission factor for district heating: Swedish issuers may apply 56 or 84 g CO_2 per kWh, see Appendix C.	1. Report expected impact, aiming for actual impact 2. Report based on annual impact 3. Provide annual reporting 4. Provide quantitative and qualitative reporting 5. Focus on environmental impact 6. Report project-by-project, where feasible 7. Report based on the share financed 8. Report impact by $ only when quantifiable and relevant 9. Report bond-by-bond or on bond-programme basis 10. Incorporate climate-related physical risks when possible 11. Report contributions to the Sustainable Development Goals (SDGs) 12. Scope 1 and 2 are mandatory to report and Scope 3 is voluntary
Energy efficiency GBP category for reference: Energy efficiency	• Retrofitting of existing buildings or installations • Smart technology aimed at reducing energy consumption	#35	Annual energy reduced/avoided (electricity and other energy savings) Reduction in energy use Annual GHG emissions reduced/avoided	MWh or GWh Percentage Tonnes CO_2e	Y Y Y		
Green buildings GBP category for reference: Green Buildings	New or retrofitted buildings satisfying the issuer's energy and /or building standard requirements	#34	Energy avoided below national building standards Annual energy avoided compared to the relevant building code (for new buildings) Annual energy reduced compared to the pre-investment situation (for refurbishments) Annual energy production on-site Annual GHG emissions reduced/avoided	kWh/m², or percentage (%) MWh or GWh MWh or GWh MWh or GWh Tonnes CO_2e	 Y Y Y	National building codes or standards National building codes or standards	
Clean transportation GBP category for reference: Clean transportation	• Non-fossil public transportation systems • Infrastructure for bicycles and pedestriants • Infrastructure for electric vehicles	#36	Annual GHG emissions reduced/avoided, from cars and other vehicles, due to the investment Number of km of new train lines, bicycle lanes etc. created Passenger-kilometres in new means of transportation Estimated reduction in car use and car kilometres the project will replace Project's effect on increased resilience to climate change	Tonnes CO_2e Km Km Km	Y	Average emissions by km for alternative transportation. N/A	
Waste management GBP category for reference: Pollution prevention and control	• Energy efficient and resource-preserving waste treatment • Biogas production from organic waste	#37	Reduced/avoided GHG emissions as a result of the investment (See also Appendix B) Amount or share of waste that is prevented, minimised, reused or recycled before and after the project Amount of waste that is separated and/or collected and treated (including composted) or disposed of Number of tonnes processed in the facility Material recovery rate Expected improvement in material recovery rate or other target for improved resource use Number of households delivering to the facility Energy produced (in case of biogas/waste-to-energy plant) Energy saving attributable to the investment Project's effect on increased resilience to climate change	Tonnes CO_2e Tonnes, Percentage (of total waste) Tonnes, Percentage (of total waste) Metric tonnes Percent Percent Number of households kWh/MWh/GWh kWh/MWh/GWh Tonnes CO_2e		N/A	
Water and wastewater management GBP category for reference: Pollution prevention and control	• Energy-/ emission efficient water and wastewater management • Biogas production from wastewater	#38	Annual water savings Annual volume of wastewater treated or avoided Capacity of plants being built Number of metres of piping/conduit laid, upgraded, replaced Number of person equivalents (PE) of water or wastewater the plant processes, identifying any increase that can be attributed to the investment Reduction of emissions into the local environment (nitrogen and phosphorous, Biochemical Oxygen Demand, etc) Amount of electricity, biogas or other energy carrier produced annually expected to be produced each year, if relevant. Include avoided CO_2 emissions Health metrics (such as air and water quality) Biological metrics: biological diversity, wildlife Project's effect on increased resilience to climate change	m^3 m^3 m^3 or litres/m^3 per minute/hour/day or year Metres Number of people or PE Kilos/tonnes or litres/m^3 kWH or MWh, tonnes CO_2e		N/A	
Sustainable land use / environmental management GBP categories for reference: Terrestrial and aquatic biodiversity conservation; Environmentally sustainable management of living natural resources and land use	• Biodiversity conservation • Reforestation • Restoration of wetlands	#39	A number of qualitative and quantitative indicators may be relevant, see section #31 Number of species Number of individuals in target population Area reforested or converted Area of habitat or wetland restored	 Number Number m^2 or hectares m^2 or hectares		N/A	
Climate change adaptation GBP category for reference: Climate change adaptation	Climate change adaptation measures such as: • Heat protection • Storm protection • Systems for enhanced resilience • Water management systems (to prevent or mitigate flooding)	#40	A number of qualitative and quantitative indicators may be relevant, see section #32 Areas protected (such as building fasades) or number of heat shields etc Areas protected (building fasades or land such as school yards, hospital facilities, city centres) Capacity of system or area covered	 m^2 or number of items m^2 or number of items m^3 or drainage areas covered in km^2 or hectares		N/A	

The *Nordic Position Paper on Green Bonds Impact Reporting* is a practical guide on impact reporting. It primarily targets persons engaged in impact reporting in Nordic public sector issuer organizations, but may be beneficial to other issuers and the Green Bond market as a whole. Crédit Agricole CIB, the Nordic Investment Bank and SEB have acted as advisors to the group of signatories.

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