

New construction and refurbishment 2.0



NoII CO₂



SWEDEN
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METHODOLOGY



1. TERMS AND ABBREVIATIONS

Term	Explanation of how terms are used in the NollCO ₂ manual
Baseline	Climate impact calculated for a typical building using a number of project- and activity-specific parameters.
Biogenic carbon	Carbon formed by, or derived from, living organisms.
Building element	A part of the building that can be a material, product or system.
Calculation period	The calculation period is the delimited period of 50 years after commissioning of the building used in the building utilisation calculations.
Cancellation	Carbon credits from certified projects are cancelled, i.e. permanently recorded, in registers upon purchase.
Cancellation certificate	Certificate or extract from register proving the buyer, volume, project name and standard with a time stamp of the carbon credit (vintage) and the cancellation.
Carbon credits	The carbon credits purchased as an offset are equivalent to one tonne of carbon dioxide equivalents.
Carbon dioxide equivalents	Unit for measuring the total climate impact of emissions of various greenhouse gases, abbreviated here as kgCO ₂ e.
Climate actions	Collective name for measures authorised under the NollCO ₂ framework that reduce, avoid or sequester greenhouse gases.
Climate data	Used here to express the climate impact as kgCO ₂ e.
Climate impact	The impact on the Earth's climate caused by emissions and removals of greenhouse gases by human activity.
Commissioning	The building is considered to be in operation when the final certificate is issued.
Energy performance	The Swedish National Board of Housing, Building and Planning's building regulations use the primary energy figure, EP_{pet}, as a measure of the building's energy performance. EP_{pet} is determined by applying geographical factors and weighting factors to the energy supplied to the building. EU Member States can decide on weighting factors themselves. The energy performance determines the energy class of a building, with A being the best and G the worst.
Energy use of the building	NollCO ₂ complies with the Swedish National Board of Housing, Building and Planning's definition according to BBR section 9:12.
Environmental integrity	For a carbon offset to have 'environmental integrity', the environment and society must benefit at least as much as if the buyer had reduced its own emissions by the same amount of CO ₂ e.
EU Level(s)	The European Commission's voluntary framework for the sustainability performance of buildings.
EU Taxonomy	The EU Green Taxonomy Regulation (2020) provides a framework for determining which economic activities are considered environmentally sustainable. For a given economic activity to be classified as environmentally sustainable, it must contribute significantly to one or more of six identified environmental goals, not cause significant harm to any of the other objectives, and fulfil certain minimum social sustainability requirements.
Ex-ante	Refers to the fact that the climate benefit will occur after the issuance of the carbon credit.
Ex-post	Refers to the fact that the climate benefit has occurred before the issuance of the carbon credit.
Fossil greenhouse gases	Greenhouse gas emissions resulting from the combustion of fossil fuels.

Term	Explanation of how terms are used in the NollCO ₂ manual
Generic climate data	Climate data representative of a particular material or element type. Such representative data are usually based on average values for different construction products within a single product group.
IPCC	The UN climate panel.
IVL:s Anvisningar för LCA-beräkning av byggprojekt version 2024-06	Guidelines adapted for the Swedish market with clarifications regarding climate declaration, EPBD and taxonomy.
Life cycle phases	According to the standard SS-EN 15978, the life cycle phases of a building consist of the product phase (module A1-A3), construction production phase (modules A4-A5), utilisation phase (modules B1-B7) and final phase (modules C1-C4).
Limit value	In this manual, a limit value for climate impact of A1-A5 and a limit value for energy performance, B6.
Material	In the NollCO ₂ manual, the term material is used as a collective term for material/product/system.
Miljöbyggnad	A Swedish certification scheme for buildings. The certification covers the building's energy, climate impact, indoor and outdoor environment, and circularity.
Module	Part of the life cycle phases according to the standard SS-EN 15978.
National climate database	The database of national generic climate data, representative of national conditions. In Sweden, the Swedish National Board of Housing, Building and Planning publishes the national climate database. Both conservative and typical climate data are published in the Swedish National Board of Housing, Building and Planning's climate database. NollCO ₂ uses only typical climate data from the Swedish National Board of Housing, Building and Planning's climate database.
Net zero climate impact	A NollCO ₂ project is in line with Sweden's 1.5-degree pathway to net zero GHG by 2045. SGBC requires that NollCO ₂ projects invest in high-quality offsets that contribute CO ₂ e reductions and/or removals inside or outside the project equal to the value of the remaining life-cycle based CO ₂ e emissions of the project. When the offset between CO ₂ e reductions and/or removals and remaining life-cycle based CO ₂ e emissions in the project is achieved, what NollCO ₂ calls "net zero climate impact" of a certified building is achieved.
Offsite generated energy	Energy produced outside the property where the building is/was constructed.
Onsite generated energy	Energy produced on the property where the building is/was constructed.
Operational energy	NollCO ₂ complies with the Swedish National Board of Housing, Building and Planning's definition according to BBR section 9:12.
Property energy	NollCO ₂ complies with the Swedish National Board of Housing, Building and Planning's definition according to BBR section 9:12.
Renewable electricity	Electricity produced using only renewable energy sources.
Renewable energy sources	According to Directive (EU) 2018/2001 of the European Parliament and of the Council, renewable energy sources are: renewable, non-fossil energy sources, namely wind energy, solar energy (solar thermal and solar photovoltaic) and geothermal energy, ambient energy, tidal energy, wave energy and other ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogas. Ambient energy is naturally occurring thermal energy and energy accumulated within a defined area, which can be stored in the ambient, but not exhaust, air or in surface or waste water. Geothermal energy is energy stored in the form of heat below the solid earth's surface.
SS-EN 15804:2012+A1:2013	Swedish standard SS-EN 15804:2012 Sustainability of construction works. Environmental product declarations. Core rules for the product category of construction products defining which phases a building's life cycle includes and how an Environmental Product Declaration (EPD) for these can/must be calculated.
SS-EN 15804:2012+A2:2019	Update A2 of SS-EN 15804:2012 made in 2019. The update includes requirements for: reporting for end-of-life management C1-C4, non-life cycle impacts D, and separate reporting of fossil and biogenic greenhouse gas emissions.

Term	Explanation of how terms are used in the NollCO ₂ manual
SS-EN 15978	Swedish standard SS-EN 15978 Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method. At the time of publication of the manual, the current version is 2011, version 2023 is not yet published.
The Climate Declaration Act	From 2022, climate declarations will be required for the construction of new buildings. This means that developers must report on the climate impact of a new building. The Climate Declaration Act and the NollCO ₂ Act differ in scope and the life cycle phases they include. NollCO ₂ has requirements for reporting more building elements and more life cycle phases than the Climate Declaration Act, which is also referred to as the National Board of Housing, Building and Planning's Climate Declaration Act in this manual.
Vintage	Designation of when the carbon credit was created by the project.

Abbreviations	Explanation of how abbreviations are used in the NollCO2 manual
A_{temp}	A_{temp} is the area to be used when calculating the energy performance of a building. A_{temp} is the total conditioned internal area of floors, attics and basements in the building heated to more than 10°C.
BGO	SGBC's digital tool, Building Green Online (BGO), <i>bgonline.sgbc.se</i>
BSAB 96	BSAB categorisation of building elements is carried out by Svensk Byggtjänst (The Swedish Construction Service) with the aim of ensuring that everyone in the construction sector is on the same page. BSAB 96 consists of codes for building elements and is used in NollCO ₂ to set system boundaries.
BVD	Declaration of construction products. Contains, among other things, information on the proportions of different constituent materials in a product.
CO ₂	CO ₂ is the greenhouse gas carbon dioxide.
CO ₂ e	CO ₂ e refers to one or more greenhouse gases (e.g. CH ₄ , N ₂ O) converted into 'carbon dioxide equivalents'.
CRCF	EU Carbon Removals and Carbon Farming.
E_{bea}	According to BBR section 9:12, the building's energy use, E_{bea} , is the energy that in normal use in a normal year needs to be supplied to a building (usually called purchased energy) for heating (Euppv), comfort cooling (Ekyl), domestic hot water (Etvv) and the building's property energy (Ef).
EPD	Environmental Product Declaration, environmental declaration of goods or services, see <i>Environdec.com</i> . In this manual, EPD refers to environmental product declarations that follow the calculation rules in SS-EN 15804:2012+A2:2019 and SS-EN 15804:2012+A1:2013. EPDs are also known as product-specific data.
GFA	The Gross Floor Area (GFA) is the sum of the areas of all storeys and is limited by the outside of the enclosing building elements. Calculated according to SS 21054:2020.
GHG	"Greenhouse gases". The gases contributing to global warming.
GWP	"Global warming potential". In order to compare different greenhouse gases, all emissions, except carbon dioxide, are multiplied by a Global Warming Potential (GWP) based on a 100-year value (GWP100). The factor is different for each greenhouse gas and the GWP indicates the total contribution to global warming of that gas. Using the GWP of the gases, the values are converted to carbon dioxide equivalents. For example, methane contributes 25 times more to the greenhouse effect per tonne of gas emitted than carbon dioxide, so a methane emission of 1 tonne is equivalent to 25 tonnes of carbon dioxide equivalents. Source: The Swedish National Board of Housing, Building and Planning.
LCA	Life cycle assessment. Environmental assessment of the whole life cycle of a product or service. Equated with the term climate calculation in this manual.
LCE	Life Cycle Emission analysis. An analysis done according to LCA principles but only looking at climate impacts.
PCR	Product Category Rules, reporting rules for an EPD, see <i>Environdec.com</i> .
tkm	tonne-kilometre - one tonne-kilometre means the movement of one tonne of goods one kilometre. Used to allocate a vehicle's emissions to the transport work performed.
VMK	Värmemarknadskommittén (The Heating Market Committee).

2. INTRODUCTION

NollCO₂ is a certification system for buildings developed by SGBC and our members. The certification system consists of criteria for significantly reduced climate impact and criteria for measures that offset the remaining climate impact to net zero over the calculation period of the building.

Standard SS-EN ISO 14021:2017 prescribes how claims, symbols, evaluation and verification must be laid out in ecolabelling and environmental declarations. NollCO₂ works in line with the standard in that our claims must be accurate and not misleading, must be relevant to the NollCO₂ project and used in context. Net zero climate impact refers to a building whose reduced climate impact is offset with reductions or removals of greenhouse gas emissions inside and / or outside the system boundary of the NollCO₂ project to a net zero climate impact, in line with the IPCC's 1.5° pathway.

NollCO₂ is driving the development of the industry's climate action through two main avenues:

- NollCO₂ requires that the building's greenhouse gas emissions are reduced by setting limits for greenhouse gas emissions from the construction phase A1-A5 and indirectly from the building's energy use B6 by setting requirements for energy performance.
- NollCO₂ requires that the building's residual climate impact is balanced with climate actions to a net zero climate impact.

The primary focus is on reducing emissions and secondarily on climate actions. As technologies with lower climate impact become available, the limit value for the climate impact of the construction phase (A1-A5) will be tightened within NollCO₂.

The NollCO₂ 2.0 manual covers requirements for both new constructions and refurbishments.

3. BASIC PRINCIPLES

NollCO₂ is a cutting-edge certification that aims to drive the construction industry's climate transition towards Sweden's climate goal of net zero climate impact by 2045. NollCO₂ certification is based on standards, adopted policies, directives, regulations, regulatory requirements, guidelines and practices.

New constructions and refurbishments are preliminarily certified. The certification is based in whole or in part on design documentation, which is verified no later than three years after the building has been preliminarily certified and has been in operation for at least one year. This ensures that the performance of the finished building fulfils the requirements of NollCO₂ certification.

4. MANUAL VERSIONS

Each manual has a version number (e.g. 2.0). The two indicates that it is the second generation of the manual, the zero indicates that it is the first version within the current generation. Updates within the same generation (2.X) will not significantly tighten the criteria, but clarifications may be added.

Updates to the NollCO₂ manual 2.0 compared to the NollCO₂ manual 1.2:

- Tightening of requirements for A1-A5 limit (A1-A3 and A4-A5 limit values merged).
- Adjustments to the valuation of the climate impact of energy.
- Changes to the climate actions.
- Reduced administration for LCA reporting with digital LCA tools.
- Some adjustments to the calculation methodology in order to harmonise LCA calculations across the industry.
- Changed future scenario for LCA calculations.
- Interpretations and clarifications incorporated.
- Framework incorporated in manual.
- Refurbishment added as a building type.
- Previous indicators regarding chemical content and legally harvested and procured timber and wood products has been removed. These are however included in the requirement of a base certification.
- Structure of manual is changed, with a methodology section and three indicators.

5. EU TAXONOMY

For alignment with the EU taxonomy as a whole, NollCO₂ refers to the project's base certification.

For climate calculations, NollCO₂ aligns with the EU taxonomy 7.1 *Construction of new buildings*, which includes two delegated acts with requirements for climate calculations for the entire life cycle of a building (A-C). These requirements apply to make a significant contribution to the relevant goal. The goals that include this type of requirement are *climate change mitigation and the transition to a circular economy*.

6. BUILDINGS ELIGIBLE FOR CERTIFICATION

A building is defined in the Swedish Planning and Building Act (PBL) as a permanent structure consisting of a roof or a roof and walls, permanently located on the ground or wholly or partly underground, or permanently located in a particular place in water, and intended to be constructed for human occupancy. In order for an engineering structure to be registered as a building in NollCO₂, the building must: be perceived as a building, be subject to the law on energy declarations, have uniform technical building conditions, have a common indoor climate and common technical supply systems.

For certification of 3D properties, contact SGBC.

The NollCO₂ manual contains both criteria and requirements for new constructions and refurbishments. See definitions for new constructions and refurbishments below.

New constructions

New construction, detached:

- New construction is defined in the Swedish Planning and Building Act (PBL) as the construction of a new building or the relocation of a previously constructed building to a new location. In NollCO₂, the relocated building is not included in “New construction, detached”.
- The new construction must not have been in operation for more than five years at the time of application for preliminary certification.

New construction, extension:

- An extension is defined in the Swedish Planning and Building Act (PBL) as a change to a building that involves an increase in the volume of the building.
- An extension can be certified separately provided that the energy and water use
- in the extension can be distinguished by measurement and that the location of the NollCO₂ plaque on the extension clearly indicates that it is the extension to which the plaque applies.
- The extension must not have been in operation for more than five years at the time of application for preliminary certification.

Criteria, requirements and methodology for the certification of a NollCO₂ 2.0 new construction can be found in the manual for New construction.

Refurbishment

Certification for NollCO₂ 2.0 refurbishment covers major refurbishments for buildings, see definition below.

Definition of refurbishment (PBL).

Refurbishment is a type of building alteration. For an alteration to a building to be considered as refurbishment, either the whole building or a significant and definable part of the building must be substantially renewed.

The following criteria must be met:

- Be subject to planning permission and notification.
- Implies a large financial investment.
- Have a certain character and scope.

At the time of registration, the applicant submits a description of the scope of the refurbishment to the SGBC. The SGBC assesses whether the criteria for a refurbishment are met.

7. TYPES OF ACTIVITIES ELIGIBLE FOR CERTIFICATION

For NollCO₂ new constructions, the following types of activities can be used:

- Garage, detached or as part of a building
- Industrial hall, detached
- Logistics centre, detached
- Shopping centre, detached
- Detached sports hall or gym as part of building
- Office activities, detached or as part of a building
- Care facilities, such as a family doctor's office, detached or as part of a building
- Pre-school activities, detached or as part of a building
- Small business premises as part of a building
- School, detached
- Retirement home, detached
- Apartment block, detached or apartment area as part of building
- Restaurant/dining room, detached and as part of a building
- Single-family house, can be either detached or attached in the form of terraced housing or chain housing
- Laboratory including office and teaching parts, detached

The *Baseline NollCO₂ projektuppgifter* tool that new construction projects use to fill in building and activity data automatically calculates the building type. A combination of activities gives the building type "Mixed use". A restaurant in a building that otherwise only has office activities gives the result "Office building", where the restaurant's requirements for different rooms and areas are taken into account, but where the office building's typical construction method for external walls, intermediate floors, etc. is used.

For NollCO₂ refurbishment, all types of activities can be certified.

8. INTERNATIONAL PROJECTS

Buildings can also be NollCO₂ certified outside Sweden. International NollCO₂ certifications follow the same methodology as Swedish projects, with the exception of energy performance and the climate impact of energy, which is unique to each country. Base certifications can also be unique to each country.

See specific reporting requirements under each indicator.

Contact SGBC regarding questions about the authorisation of international base certifications.

9. CERTIFICATION PROCESS

Certification means that the certification-specific properties of the building are assessed by an external party, i.e. outside the project organisation and management. The certification process starts with the registration of the project and the formalisation of the project's administrative data. During the certification process, the documents required by each indicator are reviewed as a record for pre-certification, verification, and periodic follow-up reporting.

Interpretations and clarifications are published on *sgbc.se*. Interpretations apply if they are published before the date of registration. Application of interpretations published after the registration date is optional. The clarifications published can be applied regardless of the registration date.

NollCO₂ certification is valid as long as the certification criteria are met and this is reported to the SGBC with verification and follow-up reporting every five years.

The price list for NollCO₂ certification can be found at *sgbc.se*.

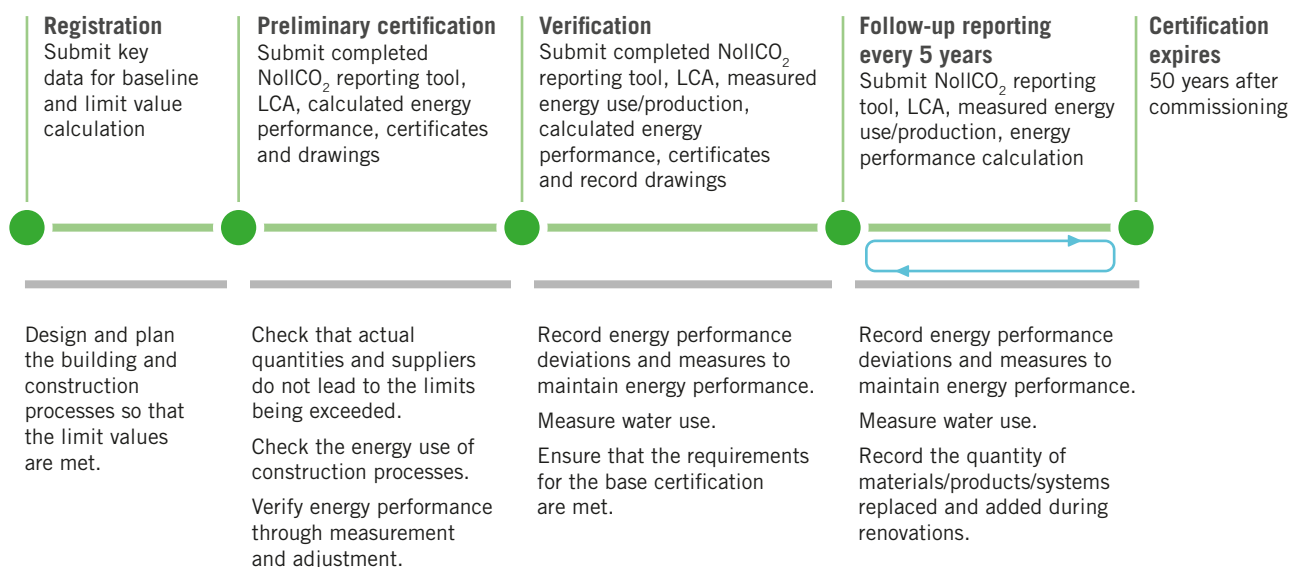


Figure 1. NollCO₂ certification process, illustration.

9.1 Validity period

A NollCO₂ certification is valid for 50 years and as long as the verification and periodic follow-up reporting requirements are met.

Read more about the rules for revoking NollCO₂ certification at *sgbc.se*.

9.2 Building with classified information

When certifying a building where parts of the building or information about the building are classified, the review procedure and documentation management can be customised according to the actual requirement.

Management is ensured at an early phase through dialogue with the SGBC certification department.

9.3 Registration

A certification in NollCO₂ consists of several different steps that take place at different times. A building to be NollCO₂ certified must first be registered in SGBC's digital tool, Building Green Online (BGO). Please note that a registration applies to a building and is invoiced with a registration fee.

When registering a new construction, projects submit certain building and activity data in order to obtain a project-specific baseline and limit value.

When registering a refurbishment project, the project itself submits data for all building elements included in the refurbishment with quantities and generic climate data (typical values from 2021 or later). The registration must include a summation of total CO₂e/GFA.

Upon successful registration, the project receives the baseline value, limit value and the reporting tools developed by SGBC for NollCO₂ projects.

Registration is valid for three years, i.e. the application for preliminary certification must be made within three years of the registration being approved.

9.4 Preliminary certification

Preliminary certification means that the project reports its fulfilment of the indicators' criteria according to the indicators' reporting requirements for preliminary certification. This is usually done during the phase when the design is finalised and before construction starts.

Once the application is approved, the building receives a preliminary certification and a certificate. Preliminary certification is valid for three years from the date of commissioning of the building.

9.5 Verification

Verification means that the project reports its fulfilment of the indicators' criteria according to the indicators' reporting requirements for verification. This is a reconciliation that the actual outcome is consistent with the preliminary certification's calculated or estimated reporting. Once verification is approved, the building receives the certification and a plaque to attach to the building.

If the application submitted for verification is not received within three years after the building has been put into service, the preliminary certificate is revoked.

Upon approved verification, the building is certified for five years, after which approved follow-up reporting is required for continued certification.

For single-family houses, exceptions apply for energy verification.

If tenant adaptations are not made for a small part of the building area, conservative assumptions can be used for this part at the time of verification.

It is possible to sub-verify indicators.

9.6 Periodic follow-up reporting

Periodic follow-up reporting means checking that the building maintains the performance of the approved verification.

Replacements and refurbishment of building elements are reported during periodic follow-up reporting. Indicators subject to reporting are indicated in the reporting requirement for each indicator.

If the periodic follow-up report is not accepted, the certification is revoked and the certificate and plaque are returned to SGBC.

Follow-up reporting occurs every five years after successful verification during the calculation period of 50 years, or until the building is decommissioned.

There are no periodic follow-up reporting requirements for single-family houses.

10. REPORTING FOR NOLLCO₂

NollCO₂ has the following requirements for reporting documents, supporting documents, certificates and calculations. In addition, there is a requirement for NollCO₂ projects to have a NollCO₂ coordinator who compiles and submits reporting documents.

LCA for climate impact is equated in the manual with the term climate calculation.

Registration - Baseline

- When registering a NollCO₂ new construction: *Baseline NollCO₂ projektuppgifter* is an excel tool in which the project fills in building and activity data and uploads into BGO. SGBC calculates baseline and limit value and uploads baseline and limit values to BGO.
- The baseline calculation may need to be updated at the time of submission of the preliminary certification and/or verification if major changes to the input data have occurred, for example in the case of a change in GFA.
- When registering a refurbishment, reporting is done according to 9.3 Registration.

LCA (climate calculation)

- When reporting a building's climate calculation, digital LCA tools can be used, which fulfil the NollCO₂ 2.0 criteria for calculation methodology. The following LCA tools fulfil the methodological requirements of NollCO₂ 2.0: One Click LCA, Plant, Anavitor LCA and Produkt.
- If more LCA tools follow the NollCO₂ 2.0 methodology, SGBC will publish the information on *sgbc.se* under Interpretations and clarifications.
- The LCA calculation from these tools must be used for the purposes of preliminary certification, verification and reporting.

Net Zero Balance calculator

- SGBC's tool, *NollCO₂ Balansberäkning*, must be used for reporting the climate actions. Information about data on construction, energy and water use, utilisation phase, end-of-life phase, and climate actions can be entered there to calculate the project's climate impact and net zero balance.
- Used when reporting for preliminary certification, verification and periodic follow-up reporting.
- The results from the climate calculation and the Net Zero Balance calculator should be summarized in the report: *NollCO₂ Klimatpåverkan rapport*.

Verification documents

- Registration certificate and proof of fulfilment of the base certification.

Under each indicator, it is indicated whether there are special requirements and specific reporting requirements for a particular type of activity, such as single-family houses. Unless otherwise stated, the same requirements apply to all types of activities.

NollCO₂ Coordinator

The person who prepares and submits reporting documents to the SGBC on behalf of the NollCO₂ project must have attended the NollCO₂ coordination course. The coordination course has the introduction course as a prerequisite. The coordination course certificate is valid until the next major generation update, after which a new coordination course must be completed.

11. SYSTEM LIMITS

11.1 Life cycle

NollCO₂ follows the calculation standard EN 15978 for the climate impact of a building. EN 15978 divides the building life cycle into life cycle stages and these in turn into modules, see Figure 2. The four stages are:

- A. Product stage, divided into modules A1-A3 product stage and A4-A5 construction stage
- B. Use stage, modules B1-B7
- C. End of life stage, modules C1-C4

Other Supplementary Information Since NollCO₂ uses the concept of net-zero climate impact, NollCO₂ includes the climate impact of the entire life cycle of the building. Climate impacts, outside the building system boundary (physical and life cycle), module D, both positive and negative are not included in NollCO₂.

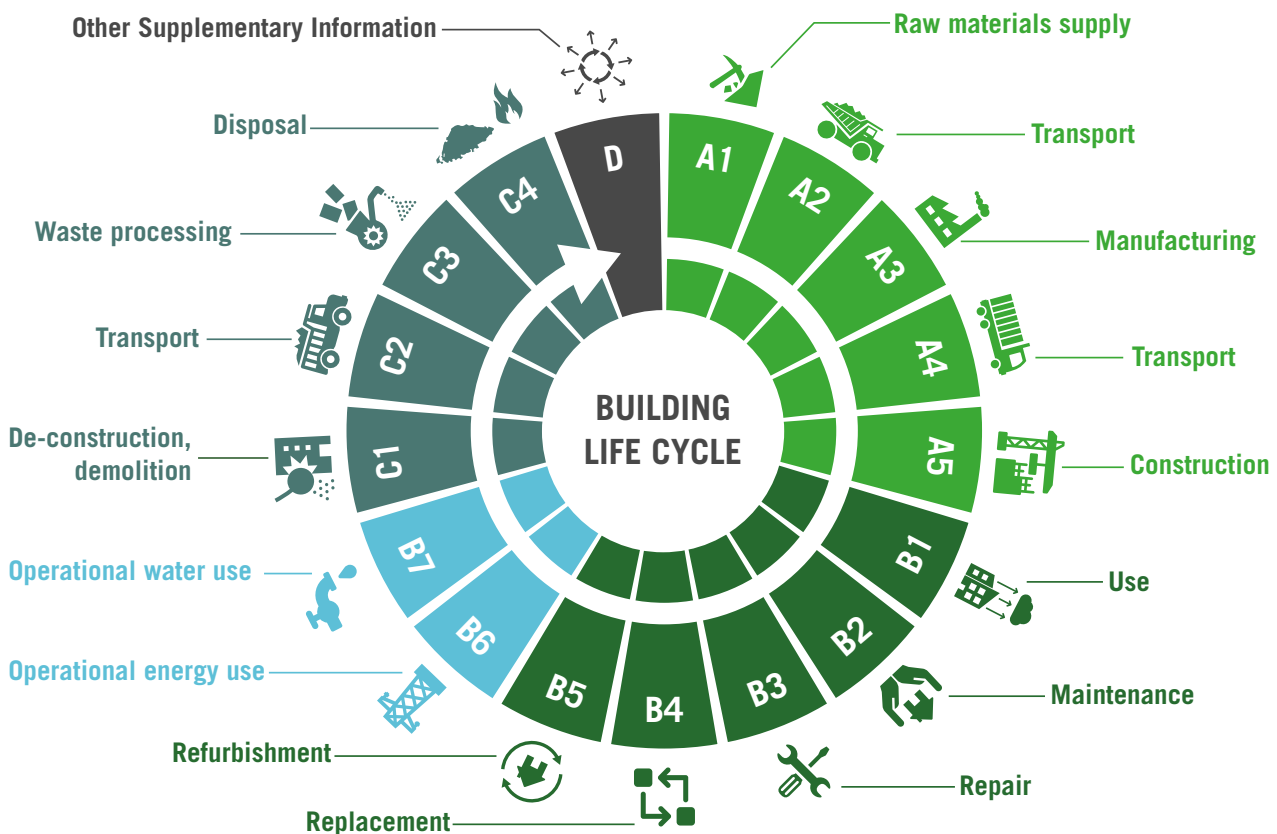


Figure 2. The EN 15978 standard describes the life cycle phases and modules A-D of a building.

Calculation period

NollCO₂ assumes a calculation period of 50 years for new constructions.

EU Taxonomy chapter 7.1 Construction of new buildings includes two delegated acts with requirements of the life-cycle Global Warming Potential for each stage in the life cycle of a building. The two delegated acts are climate change mitigation and the transition to a circular economy. The LCA requirements in these delegated acts also specify a 50-year calculation period, which is in line with NollCO₂.

The period starts when the building is put into operation.

11.2 The building

Functional unit

NollCO₂ uses the functional unit kg CO₂e/ m² gross floor area (GFA) for reporting climate impact according to the Swedish National Board of Housing, Building and Planning's Climate Declaration Act for new buildings. GFA (Swedish = BTA) is defined by the Swedish standard, SS 21054:2009, "Area and volume of residential buildings - Terminology and measurement rules", as the sum of usable area and enclosed construction area.

The gross area includes the living area/room area, ancillary areas and other areas. Open areas under car ports and similar extended parts are not included in the calculation of gross area.

Outer physical system boundary

The outer physical system boundary for calculating the building's climate impact in NollCO₂ is, according to SS- EN 15978, the outer boundary of the building with its surroundings. This means that construction and landscaping work outside the periphery of the building is not included in the NollCO₂ climate calculation of A1-A3. Balconies and other projecting parts of the building are included. Landscaping on roof terraces or on balconies is not included in A1-A3 unless they form an integral part of the building. For single-family houses, this means that verandas fixed to the house are included.

The climate impact of water supply infrastructure outside the periphery of the building is not included in the calculation of the climate impact of the building A1-A3. The climate impact of domestic hot water systems permanently installed in the building is included in A1-A3.

Building elements

The building elements included in the calculation of the climate impact of the NollCO₂ building are illustrated in *Figure 3* and are listed in *Table 1*.

NollCO₂ has a broader scope for building elements compared to the Climate Change Declarations Act. NollCO₂ also does not use the term coverage, (täckningsgrad) which appears in the Swedish Act on Climate Declarations.

In NollCO₂, all building elements included in the scope and *Table 1* must be reported.

Building-integrated garage shared by several building structures

If a building-integrated garage is shared by several building structures, it must be accounted for separately and the climate impact must be distributed among the buildings based on the size of the GFA of each building in relation to each other.

Included building elements

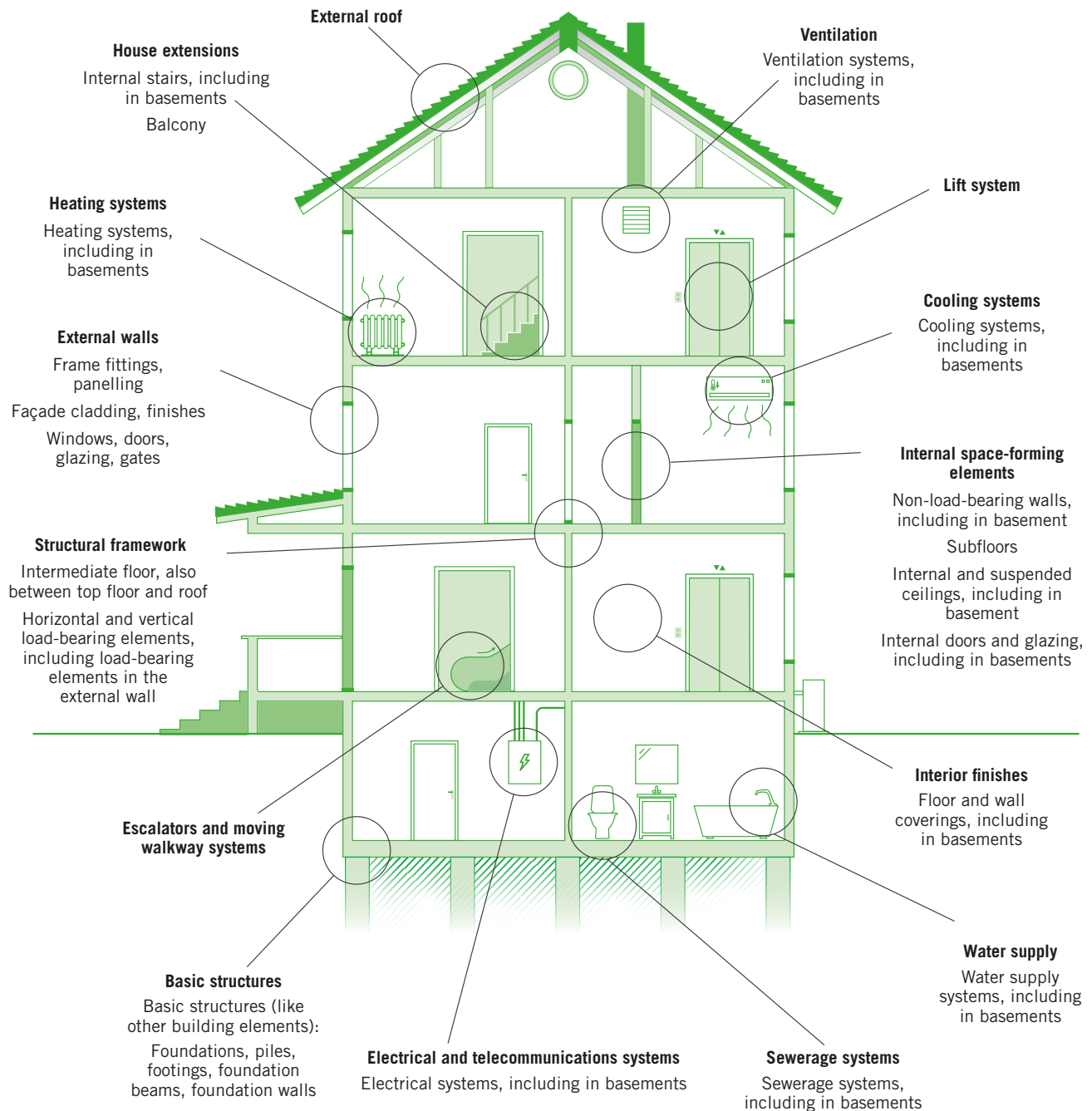


Figure 3. Illustration showing system boundaries for building elements included in A1-A3 for the climate calculation of a building according to NollCO₂. The figure contains examples of building elements, for a detailed list see Table 1.

NollCO₂ uses the Swedish Construction Federation's BSAB 96 codes for building elements. BSAB is shown in Table 1 96 codes which building elements, and what in the building elements, are included and what is excluded in the NollCO₂ calculations and in the NollCO₂ baseline model for each building type.

Table 1. Building elements included in and excluded from NollCO₂ calculations of climate impacts A1-A3, B2-B5, and C1-C4 and in the NollCO₂ baseline model.

Building element included in NollCO ₂ calculation	Building elements included	Building elements excluded
BSAB 13 Ground layers for the protection of buildings	13.G Thermal insulation in ground for the protection of building structure	
BSAB 15 Basic structures	15.S/11/SB/SC/SE/SF/SG/SH/SJ/SK/SL/ST/SU. Basic structures for houses. e.g. foundations, piles, pile caps, pile plates, piers, foundation columns, foundation beams, foundation walls, pile caps, and production of crushed rock.	15.SZ Other basic structures for houses
BSAB 16 Bearing structures	Any retained bearing structures.	
BSAB 27 Supporting structure in house frame	Above and below ground: 27.A Composite structure in house frame (can have two main functions simultaneously) 27.B Frame interior walls 27.C Frame exterior walls 27.D Pillar frames 27.E Beam frames 27.F Frame floor 27.G Roof and outer joist frames 27.H Supplementary bearing structures for example, horizontal and vertical load-bearing elements, cast and prefabricated internal and external perimeter walls, reinforcement, beams, columns, hollow core slabs, tension steel, wear plates, press plates, high profile plates, beam shoes, screws and bolts and other fittings/forging required for the strength of steel and timber frames.	27.Z Other supporting structures of building frames
BSAB 41 Climate separating elements and additions in roofs and floor joists	41.A Composite climate-separating elements and additions in roofs and floor joists (can have two main functions at simultaneously) 41.C External climate screens in roofs and floor joists 41.D Internal climate screens in roofs and floor joists 41.E Opening extensions in roof and floor joists 41.F/FB/FC Exterior and interior drainage systems from roofs and floor joists For example, waterproofing moisture barrier, insulation, joists, fittings, and profiles.	41.FD/FE/FY Extensions for roofs and floor joists 41.Z Other climate-separating elements and extensions in roofs and floor joists

Building element included in NollCO ₂ calculation	Building elements included	Building elements excluded
BSAB 42 Climate separation elements and extensions in outer walls	Above and below ground: 42.A Composite climate-separating elements and extensions in the outer walls (can have two main functions simultaneously). 42.B Exterior climate screens in outer walls 42.C Internal climate screens in outer walls 42.D Opening additions in outer walls 42.E Outer wall additions For example, façade cladding, surface layers, fittings, sealants, sealing strips, windows, doors, partitions, and gates.	42.Z Other climate-separating elements and additions in outer walls
BSAB 43 Internal building elements for room construction	Above and below ground: 43.B Supplementary wall structures 43.C Interior walls (other than frame interior walls) and opening additions 43.D Floors and floor openings 43.E Ceilings For example, non-load-bearing walls, subfloors, interior doors and glass sections, interior and suspended ceilings, cast-in-place concrete, joists, fittings, profiles, insulation, putty, plasterboard, other board materials, acoustic boards, sealants, frames and suspended ceiling structures.	43.Z Other elements for room construction
BSAB 44 Internal surface layers	Above and below ground: 44.B Surface layers on floors and stairs 44.C Surface layers on walls 44.D Surface layers on ceiling for example, parquet, wooden floors, linoleum, fabric woven carpets, textile tiles, tiles, wallpaper, paint, waterproofing, adhesives, grout, and putty.	44.Z Other internal surface layers
BSAB 45 House extensions	Above and below ground: 45.BB Balconies 45.BC Walkways 45.BE Entrance stairs 45.CB Internal staircases, including stair treads, coverings, fittings and banisters	45.A Composite house extensions 45.BD Canopy 45.BF Façade ladders 45.BG dormers 45.BH Ramps 45.Z Other building extensions
BSAB 46 Room additions	Above and below ground: 46.B Furnishings (fixed)	
BSAB 49 Other building elements for room construction etc.	Above and below ground: 49.B Shafts in house Includes any extra fire protection boards.	
BSAB 52 Water supply	Above and below ground: 52.B Domestic water system	

Building element included in NollCO ₂ calculation	Building elements included	Building elements excluded
BSAB 53 Wastewater system	Above and below ground: 53.B Sewerage system	53.C Waste collection and vacuuming systems 53.D Suction systems for industrial processes 53.E laundry suction system
BSAB 54 Fire extinguishing system	Above and below ground: 54.B Water extinguishing system > 54.B/1 Sprinkler system	54.B/2 Water extinguishing system - water mist system 54.B/3 Fire hydrant system and risers 54.C Foam extinguishing system 54.D Gas extinguishing system
BSAB 55 Cooling system	Above and below ground: 55.B Refrigerant system 55.C Brine system 55.D Coolant system 55.E Heat transfer system 55.F Recovery system	
BSAB 56 Heating systems	Above and below ground: 56.B Hot water system	56.C Steam heating system 56.D Hot oil heating system
BSAB 57 Air treatment system	Above and below ground: 57.B General ventilation system 57.C Process ventilation system 57.F Air heating system	57.D Fire gas control system
BSAB 6 Electricity and telecoms system	Above and below ground: 61 Ducting system - conduits, cable trays, electrical ducts, cable pits 63.B Electricity distribution network 63.FE/FF/FH Lighting and illumination systems 63.H/1/21 Electric heating system 64 telecoms system	63.FB/FC/FD/FG/FJ/FK/FL/FM 63.G Light distribution system 63.H/22/3/4/HB/HG
BSAB 7 Transport system	Above and below ground: 71 Lift system 73 Escalator and moving walkway systems	74 Crane system 75 Pneumatic tube system 76 System with machine-operated gate, gates, door etc 78 Various transport systems

12. METHODOLOGY CALCULATIONS

12.1 Climate impact principle

The climate impact of the building element is calculated as the climate data of the building element ($\text{kgCO}_2\text{e/kg}$) multiplied by the quantity of the building element (kg) or other functional unit.

12.2 Prioritisation of climate data

Unfortunately, there is not a complete set of generic climate data in just one database for all products and materials used in a calculation of the climate impact of a NollCO₂ project. Therefore, NollCO₂ refers to several databases of generic climate data that are used in a certain order of priority. This means that climate data from the priority 2 database are used before climate data from the priority 3 database and so on.

- Priority 1 is given to product-specific Environmental Product Declarations (EPDs), i.e. EPDs for the product being incorporated into the building. If there is an EPD for the product being incorporated, this EPD must be used. The EPD must follow the calculation rules of the EN 15804 standard and be third party verified. The subsidiary EPD can be used if it fulfils the Swedish National Board of Housing, Building and Planning's requirements for use in climate declarations.
- Priority 2 is given to the Swedish National Board of Housing, Building and Planning's national climate database developed for the Swedish market. Typical data from the Swedish National Board of Housing, Building and Planning is used for NollCO₂.
- Priority 3 is given to the Finnish EPA database co2data.fi. These climate data are priority 3 because the Swedish National Board of Housing, Building and Planning and the Finnish Environmental Protection Agency have co-operated in the development of their respective databases. Typical data is used for NollCO₂.
- Priority 4 is given to the German database "Ökobau.dat" and its generic climate data developed according to EN 15804+A2.
- Priority 5 is given to simplified life cycle emission (LCE) calculations. LCEs are made using BVD which lists the proportion of materials contained in the declared product. The percentage of each constituent material in the construction product declaration is multiplied by its climate data according to priorities 2-4. The LCE calculation must be made with a 25 percent mark-up.
- Priority 6 is given to proxy EPDs produced according to EN 15804+A2 or EN 15804+A1 for an equivalent product. Proxy EPDs must be reported with a 25 percent mark-up.

12.3 EPD

Once the project has specified a certain material and the manufacturer offers an EPD, the project must use the climate data (GWP) in the EPD on the condition that:

- The EPD has been produced according to the standard SS-EN 15804:2012+A2:2019 and is valid at the time of first review in preliminary certification and at the time of purchase in verification.
- If the EPD performed according to the standard SS-EN 15804:2012+A2:2019 is missing, a valid EPD performed according to SS-EN 15804:2012+A1:2013 can be used.

When projects derive the GWP indicator from an EPD, it is important to ensure that the reported climate impact is derived per kg of building element. Many EPDs use a unit other than kg but usually provide a conversion factor; if this is not the case, data must be taken from, for example, product descriptions. For example, if an

EPD states the climate impact per m³ of building element and also states the density in kg/m³, the project can recalculate the climate impact as the stated climate impact per m³ divided by the density, which gives a result in climate impact per kg to be used in NollCO₂ reporting.

12.4 GWP Indicators

The NollCO₂ climate impact calculation does not include GWP biogenic. When using EPDs for products containing biogenic carbon, extra care should be taken to ensure that values used do not include GWP-biogenic. Table 2 shows GWP indicators in generic climate databases and EPD standards and how they are used for NollCO₂ reporting.

Table 2. GWP indicators in generic climate databases and EPD frameworks.

EPD framework	GWP indicators	Explanatory text on how the indicator is used in NollCO ₂ reporting
EN 15804+A2	GWP-GHG A1-A3	Used for the calculation of A1-A3. Top priority.
EN 15804+A2	GWP fossil A1-A3	Used for the calculation of A1-A3. Second highest priority.
EN 15804+A1	GWP A1-A3	If an EPD according to EN 15804+A2 is missing, a valid EPD according to 15804+A1 can be used.
EN 15804 NO	GWP-IOBC A1-A3	Used for the calculation of A1-A3. Only reports on fossil carbon dioxide emissions because GWP-IOBC is calculated according to the "Instantaneous oxidation of biogenic carbon" principle, i.e. the biogenic carbon dioxide absorbed in the tree is counted as instantaneously oxidised upon felling.
EN 15804+A2	Total GWP	Cannot be used in NollCO ₂ when the indicator reports a summation of biogenic and fossil GHG removals and emissions.
EN 15804 NO	GWP A1-A3	Cannot be used in NollCO ₂ when the indicator reports a summation of biogenic and fossil GHG removals and emissions.
EN 15804 NO	GWP A1-A3	Explanatory text on how the indicator is used in NollCO ₂ reporting
The Swedish National Board of Housing, Building and Planning's climate database	A1-A3 Climate impact of the construction product GWP-GHG, typical value	"Global Warming Potential-Greenhouse gas". Climate impact excluding uptake and release of biogenic carbon. Has the same meaning as GWP100.
co2data.fi	TYPICAL VALUE, GWP (A1-A3 fossil)	Climate impact excluding biogenic carbon removals and emissions. Has the same meaning as GWP100.
Ökobau.dat	See EN 15804+A2	Ökobau.dat reports data according to EN 15804+A2. Generic dataset is used.

When using EPDs in reporting, GWP-GHG must be used first and GWP-Fossil second. Converting the GWP fossil value to GWP GHG is optional. Some EPDs use GWP-IOBC, which is equivalent to GWP-GHG.

EPDs with a market-based energy mix should be avoided if possible.

If alignment with the EU taxonomy is desired, additional LCA reporting is required, see below:

EU Taxonomy 7.1 *Construction of new buildings* includes two delegated acts with requirements for the climate calculation of the whole life cycle of a building in order to significantly contribute to the relevant area. These are *climate change mitigation and the transition to a circular economy*. The requirements for the climate change mitigation goal do not set a requirement for the GWP factor to be calculated, opening the way for the use of GWP-GHG. However, the requirement for the goal of *transitioning to a circular economy* requires separate reporting of climate impacts of fossil origin (GWP-fossil), biogenic origin (GWP-biogenic) and from land use and change (GWP-luluc), as well as the sum of these (GWP-total).

If compatibility is also desired with EU taxonomy 7.1 for significant contribution to *the transition to a circular economy*, GWP indicators GWP-fossil, GWP-biogenic, GWP-luluc and GWP-total must also be reported. (Source: IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06).

12.5 Reused construction products

For reused products, NollCO₂ follows IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06, see below.

When reused products are incorporated, either by purchasing reused products externally or by reusing products within the project, they must be included in the calculation as follows.

LCA stage A

- The climate impact of the original production of the product (A1-A3) is set to 0 (zero) for all reused products.
- The climate impact from materials and energy for any reconditioning of reused products is included in the calculation and allocated to A1-A3. Where transport occurs in connection with reconditioning, for example from the original building to the warehouse, workshop for repair etc., this is reported to A2.
- The climate impact of transporting reused products to the construction site is included in the calculation and allocated to A4.
 - Reconditioning can take place both at the building and elsewhere. In the calculation, this is simplified by including all transport in A4.
- The proportion of waste and the energy process from the construction and installation process A5, can be assumed to be equivalent regardless of whether it is a reused or newly manufactured product.

LCA stage B

If reused products have been used in A1-A5, they cannot be credited in B2-B5; instead, newly produced products must replace the reused ones in phase B.

12.6 Service life of building elements

Service life times of building elements according to IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06 or secondarily Level(s). Service life times from EPDs must not be used.

13. FUTURE SCENARIOS

The climate improvement scenario is based on agreed climate action and comes from the European Commission (European Commission (2020). EU Reference Scenario 2020 - European Commission (*europa.eu*)). Selected scenarios are taken from a Swedish perspective.

For the climate improvement scenario calculation, two different scenarios are applied with the following breakdown:

- B1.2-B5, B7 and C1-C4: Linear reduction in climate impact from 100 percent in the current year to 63 percent in 2050, then constant. (Scenario taken from EU Prime 2020, Total GHG emissions, excluding international excluding LULUCF).
- B6: Linear reduction in climate impact from 100 percent in the current year to 60 percent in 2050, then constant. (Scenario taken from EU Prime 2020, Carbon intensity indicators-Residential).

Source: Text and formulae are reproduced from IVL:s *Anvisningar för LCA-beräkning av byggprojekt* Version 2024-06.

The equation for calculating LCA data for B1 (refrigerant leakage, not carbonation) -B5, B7 and C1-C4 in a specific year:

$$\text{Years before 2050: } X_i + X_i * \frac{63\% - 100\%}{2050 - A\ddot{a}} * (\ddot{A}_i - A\ddot{a}) \quad (\text{F1.a})$$

$$\text{Years after 2050: } X_i * 63\% \quad (\text{F1.b})$$

Where X_i is the LCA data for the resource in the current year. Y_y is the current year when the calculation is submitted and Y_i refers to the specific year for which you wish to produce LCA data. Note that C1-C4 will occur after 2050 and thus always applies equation F1.b.

Equation for calculating LCA data for B6:

$$\text{Years before 2050: } X_j + X_j * \frac{60\% - 100\%}{2050 - A\ddot{a}} * (\ddot{A}_j - A\ddot{a}) \quad (\text{F1.c})$$

$$\text{Years after 2050: } X_j * 60\% \quad (\text{F1.d})$$

Where X_j is the LCA data for energy carrier j in the current year. Y_y is the current year when the calculation is submitted and Y_j refers to the specific year for which you wish to produce LCA data.

Reference: IVL:s *Anvisningar för LCA-beräkning av byggprojekt* Version 2024-06.

14. STRICTER REQUIREMENTS

NollCO₂ will continuously tighten limits to align with national climate goals and achieve at least 90 percent reduction compared to baseline by 2045. NollCO₂'s baseline is based on the reference year 2021, see *Figure 4*.

In the NollCO₂ 1.0-1.2 manuals for new construction, the limit value was a 30 percent reduction compared to the baseline for A1-A3.

In NollCO₂ 2.0, the limit value for A1-A5 has been tightened:

- NollCO₂ 2.0 new construction has a limit value for A1-A5, which means a 45 percent reduction compared to the baseline.
- NollCO₂ 2.0 refurbishment has a limit value of A1-A5, which means 30 percent reduction compared to the baseline.

Requirements for limit values will be continuously tightened and reviewed for each new generation of the manual.

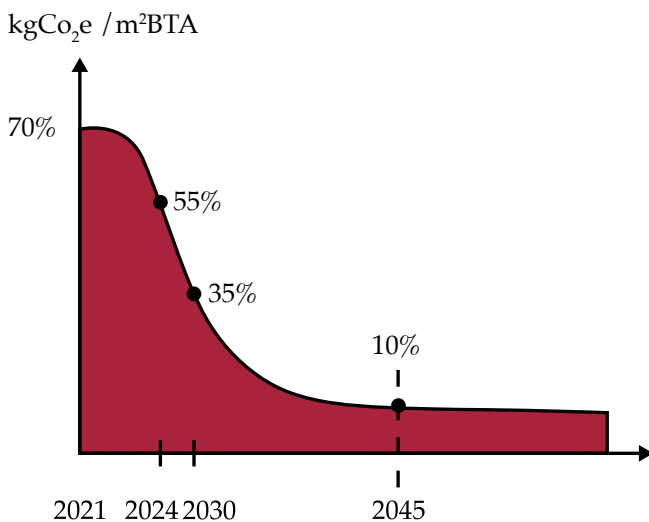


Figure 4. Graph illustrating NollCO₂'s tightening of the limit value in relation to the baseline for new construction.

15. HOW DOES THE BASELINE WORK?

15.1 Baseline for new buildings

In order to calculate a reduced climate impact compared to a standard building, a starting point, called a baseline, must be available for comparison. The start of the comparison in NollCO₂ is set on the basis of material data and standardised design as it was in 2021.

NollCO₂ uses generic climate data for materials, together with a building-specific design based on the Swedish construction market and divided into different building categories. The model uses several databases in the same order of priority as the NollCO₂ certification.

The building is scaled according to input data such as number of floors, GFA, foundations, lifts, stairwells and façade materials. A building can contain different types of activities and can also be divided into different building bodies that are joined by sections, in order to calculate different geometries and special cases. In the model, each type of activity has its own values for e.g. floor height, installations, window share and frame construction, which are therefore not included in the input data but are defined automatically in the model.

In order to equalise differences in climate impact resulting from the nature of the ground, the basic construction (BSAB 15) is calculated separately and is not affected by the percentage reduction when calculating the limit value.

For more information on how the NollCO₂ baseline and limit value work, see the article: *Baseline and carbon limit values A1-A3 for new buildings in Sweden Green Building Council's Net Zero Building certification system "NollCO₂" - version 1.1 2022*, available at sgbc.se.

Input data for baseline and limit value, new buildings

In order for the SGBC to calculate a baseline, information about the building is needed. In the *Baseline NollCO₂ projektuppgifter* file, data on the projected design is entered, e.g. with regard to GFA, type of activity, number of floors, lifts and stairwells, façade types and foundations. SGBC uses this data to generate a model of a standard design built with generic materials with climate impacts corresponding to the reference year 2021.

From the baseline, the limit value is calculated; without reduction for basic construction (BSAB 15) and with a 45 percent reduction for the remaining building elements. To this is added a fixed value (43 kg CO₂e/GFA) for the construction stage (A4-A5). It is then up to the project to allocate the climate impact between A1-A3 and A4-A5.

15.2 Baseline for refurbishment

The baseline for a refurbishment project is calculated differently from new construction because the scope of a refurbishment can vary widely.

When registering a refurbishment project, the project reports information on the building elements covered by the refurbishment and the quantities. Generic climate data (typical values from 2021 or later) are used to calculate the climate impact of the replacement of these building elements as if it took place in the base year 2021. From the baseline, the limit value is calculated with a 30 percent reduction. Basic construction (BSAB 15) is exempted from reduction and is fully included in the limit value.

The baseline and limit value, expressed in the unit kgCO₂e/m² GFA, are reviewed and set by the SGBC based on documents uploaded in BGO summarising current building elements, quantities and climate data. To this is added the construction stage, A4-A5 calculated with generic values. The building elements to be preserved must be clearly described but not included in the baseline value.



NEW CONSTRUCTION AND REFURBISHMENT MANUAL



INDICATOR 1.**BASE CERTIFICATION NEW CONSTRUCTION****Purpose**

NollCO₂ will be used in conjunction with an additional sustainable building certification, a base certification. NollCO₂ is an ambitious certification that focuses solely on the issue of climate. Requiring a base certification ensures that the building is of good quality from a broader sustainability perspective and that the building does not negatively impact other environmental indicators when the building contributes to climate change mitigation.

What is assessed

That buildings have an approved sustainable building certification.

Criteria

The building and all its activities must be certified with one of the following sustainable building certifications at a specified minimum level:

- Miljöbyggnad minimum level Silver,
- BREEAM-SE minimum level Very Good,
- LEED minimum level Gold, or
- Nordic Swan Ecolabelling of buildings*.

*See svanen.se for information on which types of business can be Nordic Swan Ecolabelled.

If the base certification does not require that building elements fulfil legal requirements regarding chemical content and legal requirements regarding legally harvested and traded timber and wood products, this must be reported in this indicator.

Reporting**Preliminary certification**

- Registration proof for the chosen sustainable building certification.

Verification

- Certification that the chosen sustainable building certification has been achieved or is planned to be achieved at minimum level.

Periodic follow-up reporting

- The certification statement for the selected sustainable building certification must be presented at the first reporting occasion (5 years after the approved NollCO₂ verification). The certification statement must indicate that the minimum level or higher has been achieved.
- Certification that the chosen sustainable building certification has not been revoked during the validity period of the certification.
- Single-family houses are not reported in NollCO₂.

INDICATOR 1.**BASE CERTIFICATION FOR REFURBISHMENT****Criteria**

The building and all its activities must be certified with one of the following sustainable building (refurbishment) certifications with the minimum level indicated:

- Miljöbyggnad Ombyggnad minimum level Silver,
- BREEAM SE Bespoke refurbishment minimum level Very good,
- LEED BD+C minimum level Gold, or
- Nordic Swan Ecolabelled renovation.

*See *svanen.se* for information on which types of business can be Nordic Swan Ecolabelled.

Depending on the scope of the refurbishment, base certifications for existing buildings can also be approved for NollCO₂ 2.0 Refurbishment. If the project wants to use any of the below approved certifications for existing buildings, this must be justified and asked as a project-specific question. This is because the base certification is compatible with major refurbishment.

- Miljöbyggnad iDrift minimum level Silver
- BREEAM In-Use minimum level Very good
- LEED O+M minimum level Gold

If the base certification does not require that building elements fulfil legal requirements regarding chemical content and legal requirements regarding legally harvested and traded timber and wood products, this must be reported in this indicator.

Reporting**Preliminary certification**

- Registration proof for the chosen sustainable building certification.

Verification

- Certification that the chosen sustainable building certification has been achieved or is planned to be achieved at minimum level.

Periodic follow-up reporting

- The certification statement for the selected sustainable building certification must be presented at the first reporting occasion (5 years after the approved NollCO₂ verification). The certification statement must indicate that the minimum level or higher has been achieved.
- Certification that the chosen sustainable building certification has not been revoked during the validity period of the certification.
- Single-family houses are not reported in NollCO₂.

INDICATOR 2.

LCA CALCULATION

Purpose

To calculate and limit the climate impact over the life cycle of a building.

What is assessed

Climate impact for the whole life cycle of a building with the following modules: A1-A5, B1-B5, B6, B7 and C1-C4.

Criteria and requirements

For Indicator 2, the climate impact of a building is calculated and reported. NollCO₂, both new construction and refurbishment follow the calculation standard SS-EN 15978 for the climate impact of a building. The assessment and methodology are described under this indicator for each life cycle phase. Some minor elements differ between new construction and refurbishment, including the development of baseline and limit value. These differences are described in the manual.

NollCO₂ new construction buildings must meet the following two limit values to obtain a NollCO₂ certification:

- **Limit value A1-A5:** The climate impact must not exceed the project-specific limit value for A1-A5.
- **Limit value B6:** The energy performance of the building must be Energy Class B (according to the Swedish National Board of Housing, Building and Planning) or better.

NollCO₂ refurbished buildings must meet the following two limit values to obtain a NollCO₂ certification:

- **Limit value A1-A5:** The climate impact must not exceed the project-specific limit value for A1-A5.
- **Limit value B6:** After the refurbishment, the building's energy performance must be Energy Class C (according to the Swedish National Board of Housing, Building and Planning) or better, or a 50 percent reduction in primary energy.

Methodology

The methodology for each life cycle phase and module is described under the respective sections of this indicator, 2.1-2.5. Where there are differences between refurbishment and new construction, these are described in the manual.

Reporting

When reporting for the climate impact of the life cycle phases of the building at preliminary certification, verification and follow-up reporting, one of the following LCA tools for climate calculations can be used: Plant, Anavitor LCA, Oneclick LCA or Produkt. The LCA tools above follow the NollCO₂ calculation methodology and can therefore be used. If more LCA tools follow the NollCO₂ methodology and are approved, they will be published under interpretations and clarifications on *sgbc.se*. The reporting from the LCA tools must fulfil the reporting requirements described under each life cycle phase, see *Appendix 1*. The project will also provide SGBC with access to the digital LCA tool for review. Other reporting for Indicator 2 must be done using the following tools and is described in *Appendix 1*:

- *NollCO₂ Klimatpåverkan rapport*
- *NollCO₂ Balansberäkning*

2.1 CONSTRUCTION PHASE A1-A5

What is assessed

The climate impact of the building elements used for the construction of the building, as well as from transport of building elements to the construction site, transport of construction equipment to and from the construction site and construction processes on the construction site.

Criteria and requirements

For the production phase, A1-A5, there is a limit value that the project must fulfil in order to obtain NollCO₂ certification.

- **Limit value A1-A5:** The climate impact must not exceed the project-specific limit value for A1-A5.

For **NollCO₂ new constructions**, the project-specific limit value A1-A5 is calculated by SGBC based on the completed *Baseline NollCO₂ projektuppgifter*.

For **NollCO₂ refurbishments**, the project-specific limit value A1-A5 is calculated using the building elements covered by the refurbishment.

See the methodology section, for information on how baselines and limit values are derived for new constructions and refurbishments.

Methodology

NollCO₂ new construction: Establishment of baseline and limit value

When registering, a number of details about the building and its activities are provided in order for the SGBC to establish a baseline and limit value for the building. Use the *Baseline NollCO₂ projektuppgifter* tool found in bgonline.sgbc.se.

The project-specific limit value for A1-A5 (kgCO₂e/m² GFA) is derived from the equation below. Where basic construction includes BSAB 15.

The A1-A5 limit value (kgCO₂e/m² GFA) is calculated:

$$A1-A3 \text{ for basic construction} + (0.55 - A1-A3 \text{ for total GFA}_{\text{baseline}} (\text{excluding basic construction})) + (A4-A5).$$

NollCO₂ refurbishment: Establishment of baseline and limit value

When registering for a refurbishment project, the project submits information on the building elements covered by the refurbishment, as well as quantities and generic climate data, typical values for these. This data allows the project to establish the building baseline and limit value.

The baseline and the limit value, expressed in the unit kg CO₂e/m² GFA, are reviewed and set by the SGBC after the project has loaded the compilation of current building elements, quantities and climate data into the BGO. As well as generic values for transport and construction processes, A4-A5. The building elements to be preserved must be clearly described and not included in the baseline value.

To help the project develop a baseline, generic climate data for building elements is available at sgbc.se.

The project-specific limit value for A1-A5 is derived by the project using the equation below. Where basic construction includes BSAB 15.

The A1-A5 limit value ($\text{kgCO}_2\text{e}/\text{m}^2$ GFA) is calculated:

$$A1-A3 \text{ for basic construction} + (0.70 \bullet A1-A3 \text{ for total GFA}_{\text{baseline}} \text{ (excluding basic construction)}) + (A4-A5).$$

To reach the limit value for a refurbishment and reduce the carbon footprint by at least 30 percent from the baseline, the focus is on choosing materials with a low carbon footprint, recycling, but also reducing the amount of standard design materials (i.e. a basic design without any modifications and innovative solutions). If the refurbishment project has an innovative solution and manages to reduce the amount of material compared to a standard design, e.g. shorter installation ducts, reduced amount of material for insulation and building products, this needs to be justified. Justification is assessed by SGBC.

Climate impact of product stage, A1-A3.

A1-A3 reported using one of the approved LCA tools.

Reporting of building elements and climate data

Building elements to be included in the project calculation of A1-A3, see methodology part, section 11. *System Limits*. Guidelines for calculation and prioritisation of climate data, see section 12. *Methodology Calculations*.

For NollCO₂ 2.0 refurbishment, the building elements covered by the refurbishment are included.

Climate impact of renewable energy production technologies

The climate impact of renewable energy production equipment is derived from EPDs or generic climate data. The climate impact for on-site technical equipment is recognised in A1-A5 (but outside the limit value) and in the carbon offset calculation.

The climate impact of the technology equipment used to produce renewable energy must be reported in the *NollCO₂ Balansberäkning* to offset for its climate impact with climate actions.

Where energy producing technologies are integrated into a material, for example solar cells in roof tiles or windows, the project estimates how much of the climate impact of the material can be attributed to the building function of the material and reports this in A1-A3 and it is included in the limit value.

Similarly, the project estimates how much of the climate impact of the material can be attributed to the energy production function of the material and accounts for this in A1-A3 but is not included in the limit value. An example is if the window is fitted with a thin film of solar cells with associated electronics, then it is the climate impact of the film and electronics that is excluded from the limit value, while the rest of the window's climate impact is reported in A1-A3 and included in the limit value.

Climate impact of construction stage, A4-A5

A4-A5 reported using one of the approved LCA tools.

A4 transport

- In NollCO₂, A4 denotes the transport of materials and products from factory gate to construction site. If the factory location is not known, generic transport scenarios from the Swedish National Board of Housing, Building and Planning's climate database for the respective material/product can be used.
- If the location of the factory is known, the project can report project-specific transport data in terms of transport distance, transport mode and fuel. For transport distances for different modes of transport, data from suppliers can be used or simple mapping tools, such as Google Maps, can be used to measure distances between the factory site and the construction site. In the event that materials are purchased from a wholesaler, both transport from material factory to wholesaler and transport from wholesaler to construction site must be included if specific distances are used. The Swedish National Board of Housing, Building and Planning's database can be used for climate data for fuels and energy use per tonne-km for certain modes of transport. If other sources are used, it must be ensured that any empty runs/empty returns are included and evidence provided.
- It is also possible to account for the climate impact of transport with the help of documentation for the amount and type of fuel from the party responsible for the transport. This can then replace distance and mode of transport.

A5 Construction and installation process**A5 construction waste:**

- The following must be reported: Climate impacts from the product phase and transport to the construction site, which becomes waste at the construction site.
- The following need not be reported: Climate impact of transport to the waste disposal site and disposal of construction waste generated on site. The climate impact of any packaging and other waste generated at the construction site.

A5 energy:

The climate impact of all electricity, heat and fuel use on the construction site, for example for:

- construction site vehicles, machinery and tools
- heating and operation (including ventilation, lighting, lifts and similar) of temporary sheds, offices, storage rooms and other buildings including the building under construction
- other energy goods, such as LPG and diesel for heaters, dehumidifiers and similar, purchased electricity, district heating, etc.

A5 water:

- The amount of water (m³) used on site is reported.
- For water climate data, see module B7.

Climate impact of demolition during refurbishment

For a refurbishment, the demolition of existing materials and waste management must be reported in the LCA calculation in A5 Demolition.

2.2 USE STAGE B1-B5

What is assessed

Climate impact of the utilisation phase of the building.

Criteria and requirements

Reporting the climate impact of the building use stage, B1-B5. However, B1-B5 and its criteria are withdrawn for single-family houses.

Methodology

- *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06* calculation methodology must be followed when calculating the use stage B1-B5.
- *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06* calculation methodology must be followed for calculation gaps for B2-B4.
- In the first instance, the results of A1-A5 are used for the calculation of B2-B4.
- Climate data for the entire B-phase must be aligned with scenarios described in section 13. *Future Scenarios*.
- Approved LCA tool calculates a forecast of the climate impact of B1-B5. The same tools are used
- for follow-up reporting.
- For single-family houses that do not follow-up report, the B-phase must be calculated conservatively.

B1 Use

B1 is divided into sub-modules: Carbonation of concrete and refrigerant leakage. In NollCO₂, calculating this module is optional. When calculating, *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06* calculation methodology must be followed.

B2 Maintenance

B2 includes planned and unplanned maintenance so that each part fulfils its necessary functions, for example painting the façade.

For estimated maintenance intervals for different building elements, *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06*, must be used.

The system boundary for building elements is according to *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06*.

Methodology must be followed according to *IVL:s Anvisningar för LCA-beräkning av byggprojekt version 2024-06*.

B3 Repair

In NollCO₂, it is optional to calculate this module because it is considered small and lacks data. B3 includes work carried out to repair a building element with the aim of restoring its function, for example repairing a broken window. Instead of calculating this in B3, repairs can be included in B2 maintenance. When calculating, *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06* calculation methodology must be followed.

If B3 is calculated, it must either be reported separately or together with B2 in accordance with the methodology of *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06*.

B4 Replacement

B4 includes the replacement of building elements and products that have a shorter service life than the calculation period, such as the replacement of windows or technical systems.

- The forecast for B4 during the 50 years calculation period of the building uses:
 - The service life of categories of building elements used in the calculation according to *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06*.
 - Assuming that the replaced material is replaced with the same amount of the same material.

B5 Refurbishment

- B5 includes renovation and/or tenant fit-out during the 50-year calculation period of the building.
- In contrast to *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06*, this includes NollCO₂ future tenant adaptations in the calculation. The purpose of this is to reflect replacements that take place without reaching the service life of the building element, because these can have a large climate impact and can also be influenced by the choice of materials and design.
- B5 renovation must not be confused with major refurbishments, as per NollCO₂ refurbishment.
- The forecast for B5 uses the specified renovation intervals and scope of renovation, reported quantities for building elements A1-A3, transport impacts A4 and A5.
 - The scope of the renovation is expressed as a percentage of building elements replaced, e.g. 20 percent of plasterboard on internal walls is replaced at the 5-year renovation interval.
 - Assuming that the amount of material demolished during the renovation is the same as the amount of the same material added during the renovation.
- When specifying renovation intervals, end-of-life replacement must not be included, it is reported in B4, see above. Only renovations that are expected to take place before the end of their useful life are included.

2.3 OPERATIONAL ENERGY B6

What is assessed

Energy performance of the building and climate impact of energy use.

Criteria and requirements

B6 limit value for new construction and refurbishment:

NolCO₂ new construction:

- Energy class B or better (according to the Swedish National Board of Housing, Building and Planning).

NolCO₂ refurbishment:

- After the refurbishment, the building's energy performance must be Energy Class C or better (according to the Swedish National Board of Housing, Building and Planning) or a 50 percent reduction in primary energy demand.

Energy use of the building

- Energy performance requirements according to criteria and requirements above.
- The energy performance of the building must be maintained on an annual basis after verification. Does not apply to single-family houses.
- For single-family houses, the energy performance must be maintained for two years after occupation, as demonstrated by an energy declaration submitted to The Swedish National Board of Housing, Building and Planning.

Measurement plan

- A measurement plan is developed for the building's energy use and the property's renewable energy production used in the building.
- For single-family houses, no measurement plan is required, but property energy must be metered separately from household energy.

Climate impact of building energy use

- The climate impact of the delivered energy used in the building (not operational energy) is recognised in B6 as an annual climate impact. This is annualised to net zero in *Indicator 3. Net Zero Balance*.

For international projects, the requirements differ slightly in terms of energy requirements and the climate impact for energy. For projects outside Sweden, the requirements for and calculation of the climate impact of energy at national level must be agreed with SGBC.

Methodology

Energy use of the building

Calculation at preliminary certification:

- The energy performance requirements for a building are determined by the version of the BBR in force at the time of the building permit for the project.
- When calculating the energy use of the building, appropriate margins should be applied.
- Calculations must be based on the local climate, normal indoor temperature, normal use of domestic hot water and ventilation.
- Building operational and domestic energy are not included in the energy use of the building.
- Energy calculation can be made with any of the following tools: BV2, IDA ICE, VIP-Energy or equivalent.
- Energy use for communal garages is allocated according to the A_{temp} of the buildings.
- In residential and non-residential buildings, energy requirements are weighted according to A_{temp} .
- Note: this reporting point must be included in the application if the building produces photovoltaic energy. It must be clearly stated in the submitted energy calculation that for the calculation of the amount of building property energy that can be replaced by produced photovoltaic energy, the project has simulated the hourly contribution of solar cells.

Calculation and measurement during verification and follow-up reporting:

- The Swedish National Board of Housing, Building and Planning's regulations on determining the building's energy use, in the case of a building permit, normal use and a normal year (BEN) must be applied for verification of the building's energy use.
- Verified energy performance must be based on measured values.
- The energy performance of the building is verified by measuring the energy performance of the building over a continuous 12-month period, ending no later than 24 months after the building is put into use.
 - Measurement is done according to the measurement plan.
 - To improve the possibility of achieving the energy performance, the first 12 months of operation should be used for optimisation and subsequent years for verification.
 - Verification of the number of occupants may be needed in order to analyse the energy performance of the building and correct it to normal occupancy. For the same reason, operating times and activities should be recorded monthly during the verification period.
 - The measurement period should reflect the intended activity and normal operation. Examples of events that can affect the energy use of the building are refurbishment and temporary changes in activities.
 - For buildings in operation, the climate impact of energy use must be calculated for normalised measured data.
- Energy performance calculation according to BBR shows that the required level or better is achieved.
- During the reporting period (except for single-family houses), logged measurement data are used to identify deviations in operation compared to instantaneous measurements.
 - If it is determined that the energy performance of the building cannot be achieved for the year, the reason and planned measures must be documented to be reported at the time of reporting.
 - If deviations in use, internal loads and other special events have occurred during the reporting period, a new dynamic energy calculation for the property may be needed.

- For single-family houses, SGBC checks two years after occupancy that there is an energy declaration for the house with the Swedish National Board of Housing, Building and Planning, and that this shows that the house has obtained an energy class in accordance with the requirements.
- If a house does not achieve the required energy class, the house is not verified as NollCO₂ certified and is deregistered as a certified project.

Energy production on the property

- The amount of renewable energy from ambient energy, for example renewable energy from heat pumps, is calculated according to Appendix VII to Directive (EU) 2018/2001 or the Swedish National Board of Housing, Building and Planning's transposition of Appendix VII to Directive (EU) 2018/2001, if applicable.

Measurement plan

- The measurement plan is constructed according to the Sveby program's "Measurement guidelines version 2.0" (10/06/2020).
- Measurement formulae are reported to illustrate how different values are calculated from measurement data.
- During commissioning, the measurement plan is verified in the measurement system. The functioning of the meters is checked.
- Monthly reports showing that metrics are being recorded and that data collection is working properly are generated from the collection system. Monthly reports must include:
 - Monthly summary of measurement values.
 - Non-conformities noted, measures planned and measures taken to address non-conformities.
- For single-family houses, property energy is measured separately from household electricity. Measured property energy is used as the basis for the energy declaration two years after occupancy.

Climate impact of building energy use B6

- Future scenarios must be applied for the climate impact of B6, see section 13. *Future Scenarios*.

Electricity

- National electricity mix according to the Swedish National Board of Housing, Building and Planning's generic climate database, category "Energy and fuel" must be used.
- Guarantee of origin climate data cannot be used. This means, for example, that Good Environmental Choice may not be credited.

District heating

- The restriction for the LCA data used is local district heating. Data used is location-based, data for district heating can be replaced by national values if local values are missing.
- Data used is location-based for district heating. Location-based refers to an average value of the energy produced. Market-based (origin-labelled) data may not be used and refers to, for example, green contracts, Good Environmental Choice or similar.
- Local values according to the VMK (Värmemarknadskommittén) methodology published by the energy companies are used. The latest published data for the year in which the calculation is performed must be used.
- EPDs for district heating networks are not authorised for use.

District cooling

- The scope of the LCA data used is local district cooling.
- Data used is location-based or can be replaced by national values if local values are missing.
- The EPD of the local district cooling network can be used if available. Data from the local network connecting to the building must then be used.

Other energy

- For other types of energy, such as biofuels, the Swedish National Board of Housing, Building and Planning uses published generic climate data.

Self-produced energy

- The climate impact of technical equipment for renewable energy production on the property is reported in A1-A5, but is reported separately and is not included in the limit value.

2.4 OPERATIONAL WATER B7

What is assessed

Climate impact of the building's annual water use.

Criteria and requirements

- Annual water use is reported in cubic metres.
- The report must include all water use during the use of the building:
 - Drinking water
 - Sanitised water
 - Domestic hot water
 - Irrigation
 - Water for heating, cooling, ventilation and humidification
 - Other specific water use for building-integrated systems, such as swimming pools
- According to the standard EN 15978, water use that is not building-related, such as dishwashers and washing machines, is not reported. In NollCO₂ it is optional to exclude this water use.
- A measurement plan to be developed and used.

Methodology

Annual water use of the building:

- The project can either rely on past experience or use the project designers' estimate of water use per m² GFA for the estimation of water use for preliminary certification.
- A measurement plan is used for verification and follow-up reporting.
- Climate data for the climate impact of water use infrastructure outside the building periphery, expressed in the unit kgCO₂e/m³ water, is multiplied by the water use and divided by the gross floor area to obtain the climate impact expressed in kgCO₂e/m² GFA. Climate data from the EPD is used when the supplier offers it. Reported in A1-A3.
- The climate impact of the domestic hot water systems in the building is reported in A1-A3.

Measurement plan:

- The measurement plan describes the location of the meters and the type of monitoring (manual or automatic including time resolution).
- Any templates or calculation models used where measurement is not possible.

Climate impact of water use in the building:

- Future scenarios must be applied for the climate impact of B7, see section 13. *Future Scenarios*.

LCA data for water

The following LCA data for B7 can be used:

- Upstream climate impact: 0.08 kg CO₂e/m³ water.
- Downstream climate impact: 0.3 kg CO₂e/m³ water.

Methodology taken from: Nordic Innovation (2024). Nordic view on data needs and scenario settings for full life cycle building environmental assessment. <https://pub.norden.org/us2024-428/index.html>

2.5 END OF LIFE STAGE C1-C4

What is assessed

Climate impact of end-of-life management of building elements.

Criteria and requirements

For buildings, the overall climate impact is reported by:

- Deconstruction/ demolition of building (C1)
- Transport to waste management (C2)
- Waste processing (C3)
- Disposal (C4)

Methodology

Approved LCA tools calculate the climate impact for C1-C4 based on the data entered for A1-A3.

- The future scenario must be applied to the C-phase (C1-C4) calculations, see guidelines in section 13. *Future Scenarios*.
- The calculations for the C-phase follow the methodology in *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06*.

All materials and products incorporated in the building from the ground upwards and reported in A1-A3 must be included in the calculation of C1-C4. This means that the total weight of the entire building is included in the calculation.

C1, Deconstruction and demolition:

Calculation for deconstruction and demolition must be done according to *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06*. Quantities are taken from A1-A3 and the GFA of the project. Same data for electricity and diesel as in A5 energy.

C2, Transport of demolition waste:

The climate impact of transporting demolition waste must be calculated based on weight, distance travelled and vehicle type according to the equation below:

$$\text{GWP-GHG}^* = \text{WEIGHT} \times \text{LCA data} \times \text{DISTANCE} \times \text{TRUCK}$$

where

- WEIGHT (tonnes) = total embedded quantity in tonnes
- LCA data (kg CO₂e/MJ) = The same LCA data for diesel must be used as for A5.
- DISTANCE travelled (km) = assumed to be 50 km.
- TRUCK (MJ/tonne, km) = Assumed to be 1.5 MJ/tonne, km

C3-C4, Waste processing and disposal:

The calculation must be carried out in accordance with *IVL:s Anvisningar för LCA-beräkning av byggprojekt Version 2024-06*. Quantities are taken from A1-A3.

INDICATOR 3.

NET ZERO BALANCE

Background

To reach net-zero climate impact over the building's 50-year calculation period, the building must offset its emissions with carbon removal. For climate actions to be recognised in NollCO₂, they must be additional, permanent, quantifiable and traceable.

Purpose

To offset the climate impact of construction and operation of the building with climate actions to achieve net zero balance over the 50-year calculation period of the building.

What is assessed

The amount of climate emissions (CO₂e/m² GFA) from construction and operation is offset by 2045 with the same amount of CO₂e/m² GFA from approved climate actions described below.

Criteria and requirements

The following climate actions are approved by NollCO ₂	Measure category according to Oxford principles
1. Initialisation of renewable electricity generation	1
2. Carbon credits	1,2 or 4
3. Rewetting of drained wetlands	4
4. Local tree planting	4
5. Embodied biogenic carbon	4
6. Biochar as a carbon sink	5
7. BECCS	5
8. DACCS	5

- A maximum of 50 percent of the climate actions can be climate credits (climate action 3.2).
- At least 5 percent of the climate actions must be Oxford Principle Category 5.

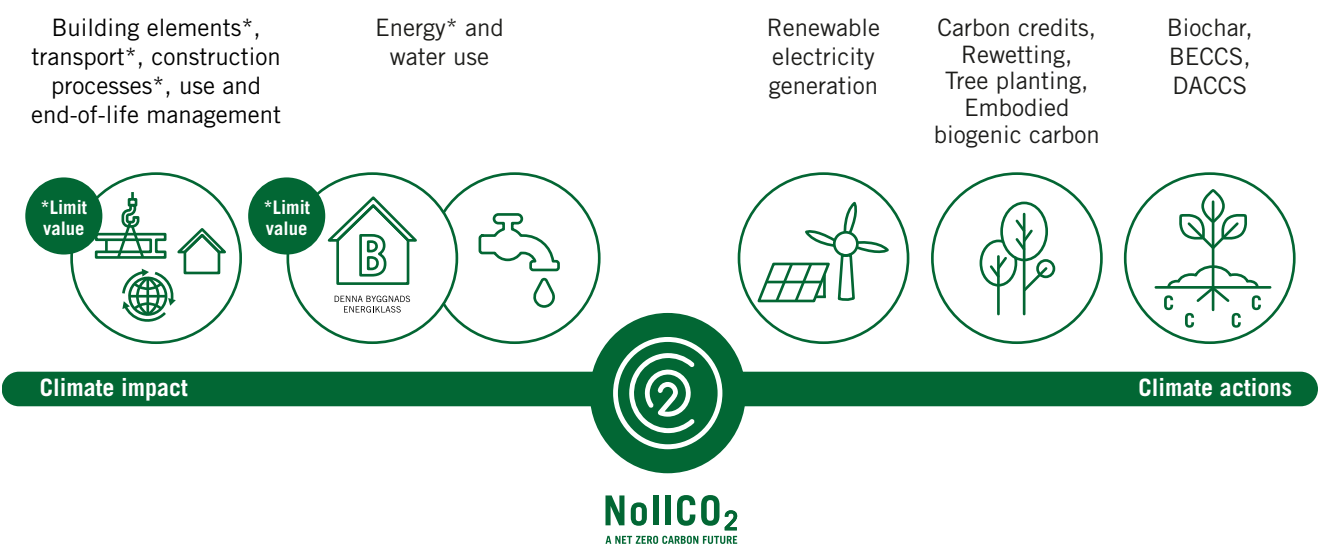


Figure 5. NollCO₂ net-zero offset between reduced climate impact in line with the IPCC’s 1.5° pathway and offset GHG uptake and mitigation measures that contribute to society’s net-zero climate impact by 2045.

Methodology

The approved climate actions for NollCO₂ are categorised according to the Oxford Principles for Net Zero Aligned Carbon Offsetting (revised 2024).

Measures are categorised into emission reductions and removal of carbon from the atmosphere, and further categorised according to the lifetime of the measure, see classification in Figure 6. In the beginning, all measures are needed and authorised to bring emissions down quickly. The measures then gradually shift to atmospheric carbon removal, which is the only measure that remains after the target year. The changes in distribution between measures over time are summarised in Figure 7.

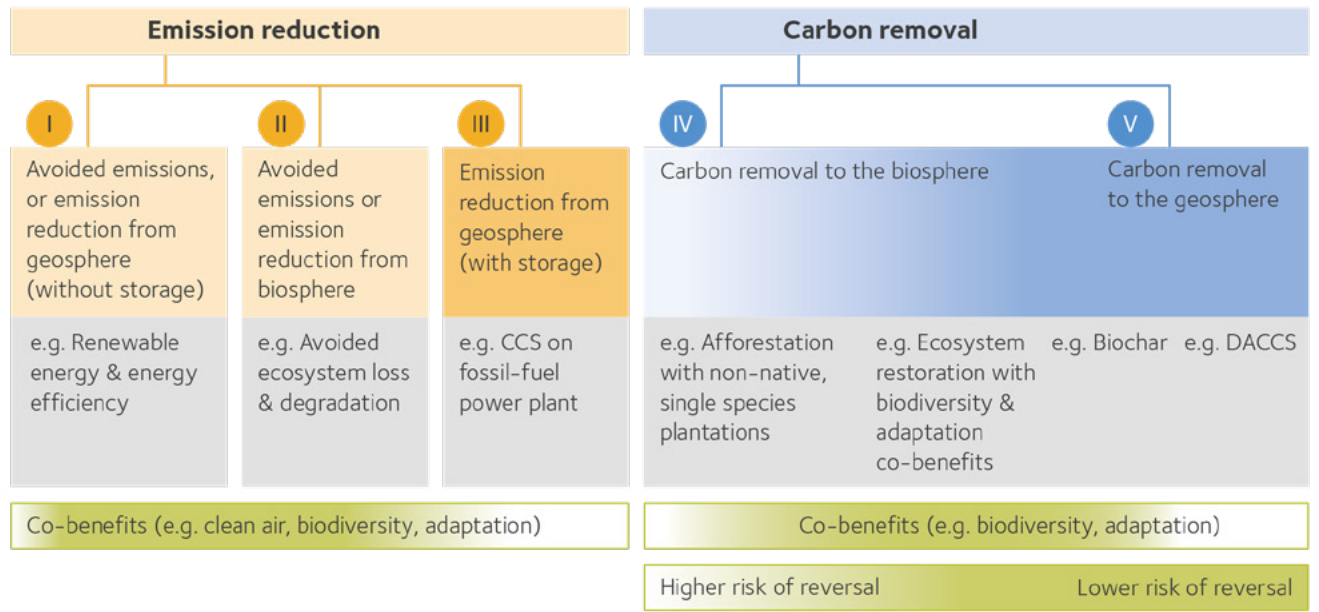


Figure 6. The Oxford principles table of measures. Source: Oxford Principles for Net Zero Aligned Carbon Offsetting (revised 2024).

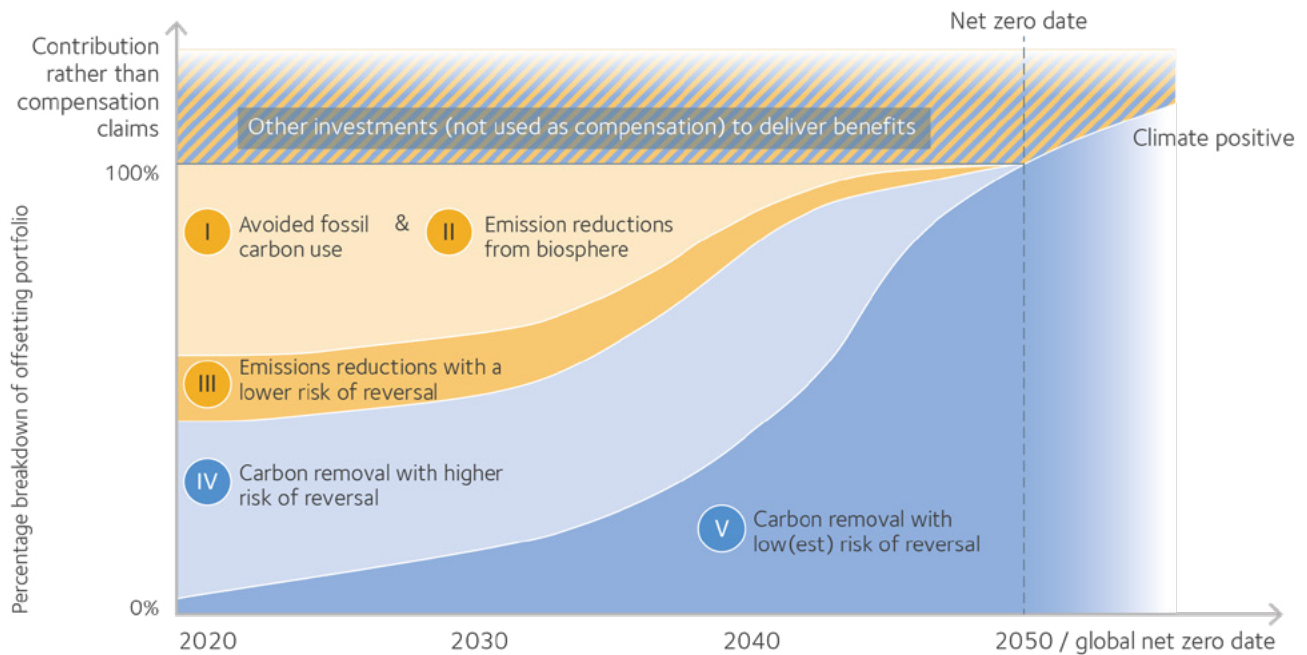


Figure 7. *The Oxford principles time graph.* Source: *Oxford Principles for Net Zero Aligned Carbon Offsetting* (revised 2024).

Each climate action is described in section 3.1-3.8 and *Appendix 2* describes how the reporting must be carried out. The project specifies details of selected measures and net zero calculations are made in the *NollCO₂ Balansberäkning*.

Climate actions

- Authorised climate actions can be used to balance A1-A5, C1-C4 to net zero over the 50-year calculation period of the building and B1-B7 to net zero on an annual basis.
- Annual surplus of B1-B7 goes towards balancing A1-A5 and C1-C4.
- Any annual surplus of A1-A5 and C1-C4 goes to the next year's balancing of B1-B5, B6 (supplied energy), and B7 and so on.
- The climate actions must be implemented by the time of the verification of the project at the latest.

3.1 INITIALISATION OF RENEWABLE ELECTRICITY PRODUCTION

Oxford Principles category 1.

Background

Increasing the production of renewable electricity is crucial for the green transition and reducing climate impact.

Criteria

- The climate value of renewable electricity production is calculated as the emission reduction that results when the climate impact of the national electricity network is reduced.
- For projects in Sweden, the climate impact of the Swedish electricity mix is used according to the Swedish National Board of Housing, Building and Planning's climate data.
- The climate impact of renewable energy production equipment is derived from EPDs or generic climate data. The climate impact for on-site technical equipment is recognised in A1-A5 (but outside the limit value) and in the offset calculation. For offsite technical equipment, the climate impact is reported directly in the offset calculation.
- In other countries outside Sweden, the climate impact of the national electricity network is calculated as an average value over the last 6 years and is retrieved from app.electricitymaps.com/map.

Methodology

- To ensure additionality, the NollCO₂ project must demonstrate that the installation of renewable electricity production will only start after the NollCO₂ project is registered. In addition, the NollCO₂ project must declare how much of the production is financed by the NollCO₂ project. This is so that the proportion of the climate value represented by the financing share can be considered.
- The project can take credit for the proportion (%) of installed renewable electricity on/offsite corresponding to the proportion (%) initiated and financed by the developer/property owner/contractor and where installation took place after the project's registration date in BGO. Proportion is specified in the *NollCO₂ Balansberäkning*.
- Renewable network-connected electricity generation must be in operation, and evidence thereof submitted, at the time of NollCO₂ verification. SGBC keeps a logbook of installations, and the part utilised by production as a climate action.
- NollCO₂ projects may use the entire production of the NollCO₂ project's initiated and financed renewable electricity production as a climate action. The developer, contractor or property owner can be the financier.
- SGBC accepts investment in a solar park as a climate action in NollCO₂, if it is clear from the letter of intent or similar that the installation of the agreed capacity is done on-demand, i.e. that the installation would not have been done without an agreement with the developer/contractor/property owner behind the NollCO₂ project.

3.2 CARBON CREDITS

Oxford Principles category 1,2 or 4.

Background

The climate actions takesplace through the purchase of carbon credits, each corresponding to one tonne of carbon dioxide equivalent (tCO₂e). Carbon credits are generated from projects and activities that either avoid, reduce or sequester greenhouse gas emissions.

Criteria

- The project may benefit from developer / property owner / contractor funded carbon credits from the following program organisations that meet the NollCO₂ environmental and social integrity criteria (additional, permanent, quantifiable and traceable):
 - Gold Standard, www.goldstandard.org.
 - Plan Vivo, www.planvivo.org.
- Carbon credits must be purchased and evidence thereof submitted at the time of NollCO₂ verification.
- A maximum of 50 percent of the climate actions may consist of carbon credits.

Methodology

- The amount of purchased carbon credits is entered into the *NollCO₂ Balansberäkning* as a climate action for the year they are purchased.

3.3 REWETTING OF DRAINED WETLANDS

Oxford Principles category 4.

Background

In wetlands, low oxygen conditions in the land mean that biomass is not broken down, instead carbon slowly accumulates over time and forms peat, this is called organogenic soil. When the land is drained, carbon is converted into carbon dioxide, nitrous oxide and methane, contributing to climate change. Rewetting these wetlands reduces these emissions quickly and in many cases without much impact on society¹.

Different land has different potential to reduce emissions, and the degree of rewetting is important. The land should be drained and rewetted by at least 30 cm with the new water table just below ground level. Rewetting agricultural land in southern Sweden almost always means a net reduction in greenhouse gas emissions. In forests on organogenic soils further north, the measure may instead be counterproductive.

Criteria

- The climate action can be carried out on own land approved for rewetting agreements by the Swedish Forest Agency².

Rewetting agreements

- The Swedish Forest Agency handles a rewetting agreement, on behalf of the Swedish Environmental Protection Agency, which NollCO₂ has chosen to use to ensure that the measure is carried out on land that is suitable and in a correct manner.
- The agreement provides the landowner with assistance in designing and carrying out the plugging of ditches in areas deemed favourable for the measure, as well as a small one-off payment.
- The landowner undertakes to keep the land rewetted for 50 years. The long duration of the agreement thus makes the rewetting permanent, which is a crucial factor for the measure to have a long-term effect on reducing net greenhouse gas emissions.
- Currently, the agreement can only be used for forests. However, agricultural land may be considered if it has lain fallow and has thus been transferred to the Swedish Forest Agency's area.

Methodology

Calculation of the amount of emission reductions is made according to the methodology in *Peatlands, climate and rewetting. Reducing emissions and promoting carbon sequestration*. Å. Kasimir, A. Lindgren. 2024³. Pre-measure emission values are based on Swedish climate reporting and are categorised into land type, climate and nutrient status with the addition of ditches.

To calculate the climate benefit of rewetting, the difference between the value before and after the measure is taken.

- First, the emissions before rewetting are calculated according to *Table 3* multiplied by the area in hectares.
- Emissions after the measure depend on the water level, which shifts over larger areas. Therefore, the surface is divided into areas based on the water depth after rewetting and multiplied by values from *Table 4*.

1 The Swedish Environmental Protection Agency, Rewetting of organogenic agricultural land in Sweden - scenarios with calculation of total areas. 2023.

2 www.skogsstyrelsen.se/atervatningsavtal.

3 *Peatlands, climate and rewetting. Reducing emissions and promoting carbon sequestration*. Å. Kasimir, A. Lindgren. 2024. www.gu.se/forskning/atervatning.

Table definitions of average annual groundwater surface area:

- Marsh/marshy meadow = -5 to -30 cm
- Overgrown with reeds = -5 cm and above
- Overgrown other = -5 cm and above
- Open water

Table 3. *Discharge from drained wetland.*

Land type	Climate	Nutritional status	Tonne CO ₂ e/Ha
Forest land	Boreal	Nutrient rich	5.4
		Nutrient poor	1.8
	Temperate	Nutrient rich	11.4
		Nutrient poor	11.4
Agricultural land			30.0
Grassland	Boreal	Nutrient rich	5.4
		Nutrient poor	1.8
	Temperate	Nutrient rich	11.5
		Nutrient poor	11.5
Peat extraction			11.7

Table 4. *Climate emissions from rewetted wetlands.*

Category	Land type	Tonne CO ₂ e/Ha
Boreal	Marsh - Forest	0.5
	Marshy meadow - Agriculture	1.9
	Overgrown with reeds	15,7
	Overgrown other	4.9
	Open water	3,3
Temperate	Marsh - Forest	2.0
	Marshy meadow - Agriculture	3.4
	Overgrown with reeds	9.3
	Overgrown other	12.7
	Open water forest	1.8
	Open water agriculture	1.0

Although the rewetting agreement can currently only be used for forest land, more land types have been included in the tables. These may be covered by other similar agreements in the future. It may also be that the legal definitions and actual land conditions differ.

Tables recreated from:

Peatlands, climate and rewetting to reduce emissions and promote carbon sequestration.

ISBN 978-91-89823-59-4

www.gu.se/forskning/atervatning

3.4 LOCAL TREE PLANTING

Oxford Principles category 4.

Background

Trees and other vegetation in urban environments provide important ecosystem services, carbon sequestration being one of them.

Criteria

- The NollCO₂ building may utilise carbon stored in trees planted on the property as a result of the construction project.
- The project can only utilise the sequestered carbon if the measure takes place in an urban environment with a net supply of trees.
- Trees planned or planted by other parties do not belong to the project.
- Calculation must be made in the I-tree tool.

Methodology

The carbon storage of trees depends on several factors, geographical location, species, size.

The amount of carbon stored also depends on how long the tree lives. An urban environment often means difficult living conditions for trees, parks tend to be slightly better leading to increased lifespans. However, for built environment purposes, the maximum timeframe for tree planting is 50 years.

- Offsets from tree planting are calculated by carbon sequestration minus the climate impact of the action.
- Carbon sequestration can be calculated with the I-tree tool available at mytree.itreetools.org/#/ or download the full version at itreetools.org/i-tree-tools-download.
- I-Tree considers various factors such as species, size, local environmental conditions and growth patterns to predict the benefits of trees in urban environments.

Calculation is made in i-Tree or equivalent. The program can be used at mytree.itreetools.org/#/

Input data:

- Geographical location
- Tree species
- Condition of the tree
- Stem diameter at a height of 1.3 m
- Amount of sun

The climate impact of growing the tree is taken from value and *Table 5* and entered in phase A-C or taken from the EPD.

Seedling emergence GWP is assumed to be 5 kg CO₂e.⁴

The table below provides assumptions for the planting of park trees and street trees. If it can be justified / proven that, for example, peat is not used, the values can be adjusted.

⁴ Nordic Innovation (2024). Nordic view on data needs and scenario settings for full life cycle building environmental assessment. s138. pub.norden.org/us2024-428/index.html

Table 5. *Climate emissions (GWP kg CO₂e) from park and street trees over a 50-year lifetime.*

Park trees					
Module	Phase		Quantity	Unit	GWP, kgCO₂e
A1-A3	Preparation of land	Peat	1	m ³	26.0
A1-A3		Lime	2.25	kg	1.1
A1-A3		Dolomite	2.25	kg	1.1
A1-A3		Nursery production	1	p	5.0
A5	Maintenance	Planting of pre-planting material	1	p	2.0
A5		Spreading of wood chips	900	MJ	2.4
A5		Spreading of growing medium	0.0025	ha	0.6
B1		Emissions from peat	1	m ³	183.0
B2		Maintenance	1.7	hr	3.1
C1	Harvesting	Harvesting	0.058	hr	3.1
C2		Transport of harvest	48	tonnes*km	2.0
C3	Waste management	Leaf management	85	Kg	4.3
C3		Chipping	479	Kg	3.2
		Total			237
Urban trees					
Module	Phase		Quantity	Unit	GWP, kgCO₂e
A1-A3	Preparation of land	Peat	1	m ³	26.0
A1-A3		Sand	25,500	kg	48.5
A1-A3		Land preparation	25	m ³	14.6
A1-A3		Lime	2.25	kg	1.1
A1-A3		Dolomite	2.25	kg	1.1
A1-A3		Nursery production	1	p	5.0
A5	Maintenance	Planting of pre-planting material	1	p	2.0
A5		Spreading of wood chips	900	MJ	2.4
B1		Emissions from peat	1	m ³	183.0
B2		Maintenance	0.75	hr	1.4
C1	Harvesting	Harvesting	0.058	hr	3.1
C2		Transport of harvest	48	tonnes*km	2.0
C3	Waste management	Leaf management	85	Kg	4.3
C3		Chipping	479	Kg	3.2
		Total			298

Reproduced from *Nordic Innovation (2024). Nordic view on data needs and scenario settings for full life cycle building environmental assessment.* pub.norden.org/us2024-428/index.html

3.5 EMBODIED BIOGENIC CARBON

Oxford Principles category 4.

Background

Sustainably produced and long-life wood products can help achieve net zero climate impact by storing carbon in a building.

In its forest strategy for 2030, the EU states that harvested wood should be turned into long-life wood products in the construction industry to a greater extent. The aim is to sequester carbon in long-life wood products.

Criteria

- The amount of wood products that can be credited, converted to a carbon uptake value from the GWP biogenic value in the EPD (according to the 15804+A2 standard).
- NollCO₂ has set the limit for a long-lived wood product at 35 years in line with proposals from the CRCE.
- To be eligible for carbon uptake as a climate action CCF certificates must be purchased and copies submitted for this quantity.
- Recycled products cannot be used as carbon sinks because they would be double counted.

Methodology

- In order to utilise the carbon uptake from Embodied biogenic carbon in long-life building elements, NollCO₂ requires Continuous Cover Forestry (CCF) certification.
- Swedish certificates for CCF that meet NollCO₂'s criteria for environmental integrity are currently only held by the organisation Plockhugget, *plockhugget.se*. If organisations are added, these are notified under *Tolkningar & Förtydliganden (Interpretations & Clarifications)* on *sgbc.se*.

3.6 BIOCHAR AS A CARBON SINK

Oxford Principles category 5.

Background

Biochar is currently used mainly as a land conditioner but also as a filler in some materials. For example, biochar is produced by partially charring organic material from forestry or agriculture through pyrolysis, a process in which biomass is heated in an oxygen-free environment. Biochar is classified as a long-lived carbon sink according to the Oxford Principles and is classified as a Negative Emission Technology by the IPCC.

Criteria

NollCO₂ recognises biochar as a carbon sink if the certification is carried out by Carbon Standards International in accordance with the EBC C-Sink Standard (or its successor, the Global Biochar C-Sink Standard), which is based on the European Biochar Certificate (EBC), a certification for biochar materials and production. Alternatively, certification to the Puro.earth standard can also be used to issue carbon credits CORCs (CO₂ Removals Certificates).

Methodology

Certification of the biochar carbon sink involves one process:

1. Material certification: The biochar material is certified according to the EBC to ensure its sustainable origin and that it fulfils the technical requirements for biochar quality.
2. Certification of potential carbon sinks: The potential carbon sink of biochar is certified according to the EBC, which considers emissions from raw material to the factory gate of biochar production. This means that the biochar is produced but not yet finalised, so the carbon sink is considered potential at this phase.
3. Certification of actual carbon sinks: The biochar is finally stored in a long-term application, and its actual carbon sink is certified according to the EBC/Global Biochar C-sink by Carbon Standards International or according to the Puro. earth standard. Tracking the life cycle of biochar is done through a tracking system, such as Carbonfuture, which documents all emissions linked to processing, transport and final storage.

NollCO₂ currently approves the Carbonfuture and Puro.earth tracking systems to trace the biochar to its end use where the carbon sink potential is fulfilled.

It is only when the biochar is finally stored that EBC/Global Biochar C-sink or CORC certificates can be issued and used as a climate action.

Further information is available at:

- www.european-biochar.org
- www.carbon-standards.com
- www.carbonfuture.earth
- www.puro.earth/

3.7 BECCS

Oxford Principles category 5.

Background

Bioenergy with carbon capture and storage (BECCS) involves the extraction of energy from biomass to generate energy, and the capture and long-term storage of carbon dioxide from combustion.

Criteria

- To use emission reductions from BECCS, the project must demonstrate that the emission reduction is not double-counted, and that the reduction accrues to the project.
- The measures must comply with requirements, including for sustainable forest management, in the EU Carbon Removals and Carbon Farming (CRCF) Regulation.
- The project applies for BECCS as a climate action by presenting certificates as proof of the measure in good time before reporting.

Methodology

Approved certificates that fulfil the criteria are published regularly under *Tolkningar & Förtydliganden* (*Interpretations & Clarifications*) on sgbc.se.

3.8 DACCS

Oxford Principles category 5.

Background

Direct Atmospheric Carbon Capture and Storage (DACCS) requires significantly more energy than capture in, for example, an incinerator stack because the concentration of carbon dioxide is much lower. The greatest potential is in places with a lot of excess energy, for example in volcanically active parts of the world like Iceland.

Criteria

- To use emission reductions from DACCS, the project must demonstrate that the emission reduction is not double-counted, and that the reduction accrues to the project.
- The measure must comply with the requirements of the EU Carbon Removals and Carbon Farming (CRCF) Regulation.
- The project applies for DACCS as a climate action by presenting certificates as proof of the measure in good time before reporting.

Methodology

Approved certificates that fulfil the criteria are published regularly under *Tolkningar & Förtydliganden* (Interpretations & Clarifications) on sgbc.se.

APPENDIX 1.

REPORTING REQUIREMENTS FOR LCA

LCA reporting is done by giving SGBC access to the project LCA tool for review. In addition, the project must summarise the results of its LCA calculation in a PDF demonstrating that the project has followed the NollCO₂ methodology. The LCA calculation must be reported at preliminary certification, verification and follow-up reporting. Guidelines and the following reporting requirements must be followed. It must be clearly stated in the report that the project has met the requirements for the relevant limit values.

In addition, the *NollCO₂ Klimatpåverkan rapport* must be completed at the time of preliminary certification, verification and follow-up reporting. The results of the LCA calculation must also be reported in the *NollCO₂ Balansberäkning*.

The same reporting applies to new construction and refurbishment. What differs is the registration, which is described below.

NollCO₂ 2.0 new construction - registration

- Fill in the project file *Baseline NollCO₂ projektuppgifter*.

NollCO₂ 2.0 refurbishment - registration

- Description of the project and its scope; the SGBC assesses whether the project fulfils the criteria for refurbishment based on this.
- Summary of the building elements included in the refurbishment.
- Quantities and climate data for the relevant building elements.
- Description of the building elements to be preserved and thus not covered by the scope of the NollCO₂ refurbishment.

Preliminary certification

A1-A3

- The BGO ID of the project, the year of estimated completion of the building, the GFA of the whole building in m² as well as limit value.
- Project design materials and their climate and transport data.
- For each building element, the name of the materials included in the building element and if there is the intended supplier.
- Quantity (tonnes) of material of the building element. In the case of preliminary certification, quantities are obtained from the design documents.
- Lifetime of materials.
- If LCE calculation has been made: report on which construction product declaration(s) BVD and climate data used for materials included in the BVD.
- Façade drawings for the building façades and floor plans for the building floors according to the system document or construction document.
- Climate impact totalled for A1-A3, and broken down into BSAB 96 building elements.

A4-A5

- Proportion of waste (%) of each material.
- Transport distances and climate data for the modes of transport planned to carry the materials of the building element to the construction site from the factory gate.
- Estimated energy/fuel use by energy source.
- Climate impact totalled for A4-A5, and broken down into BSAB 96 building elements.
- Source of climate data for fuels used.

B1-B5

- Total summation and reporting of climate impact per product and BSAB 96 building element for B1-B5.
- Renovation interval (B5) in years for the material of the building element.
- The proportion of the material of the building element that is renovated at the renovation interval (B5).

B6

Results of LCA calculation for B6 and energy calculation report must include:

- Energy performance of the building and current energy performance requirements.
- Calculation of air flow additions must be reported and justified, follow Sveby's PM air flow additions, dated 03/06/2024.
- Energy calculation program used.
- Energy calculation inputs: building location, internal loads, climate shield, ventilation, heating and comfort cooling, etc.
- Calculation results separated by heating, ventilation air heating, hot water use, HVAC, comfort cooling, building energy and resulting electricity to operations.
- Energy use for any garages.
- Important! Energy input from, for example, photovoltaics or solar collectors where it is clearly stated that the project has simulated the hourly contribution of photovoltaics, for the calculation of the amount of building energy that can be replaced by the photovoltaic energy produced.
- Energy supplied is reported in the NollCO₂ Renewable Electricity Production tool.
- Distribution and control losses and safety margin.
- Summary showing the amount of planned renewable energy production on the property, broken down by energy items and the installation date of the renewable energy production.
- Draft of measurement plan. For single-family houses that do not require a measurement plan, documentation from the electrical designer must show that sub-meters for property energy are installed.
- Measurement formulae are reported to illustrate how different values are calculated from measurement data.
- Completed *NollCO₂ Balansberäkning* with climate data and amount of supplied and produced energy to/from the building.

B7

- Standardised/estimated value of annual water use.
- Climate impact of annual water use.
- Draft measurement plan.
- Completed file *NollCO₂ Balansberäkning*.

C1-C4

- Report calculations from approved LCA program.

Verification**A1-A3**

- Equivalent reporting requirements to preliminary certification but with actual outcome for completed building.
- Façade drawings for the building façade and floor plans for the building floors according to the set of record drawings.

A4-A5

Equivalent reporting requirements to preliminary certification but with actual outcome for completed building.

- Proportion of waste (%) of each material. The project can use the difference between invoiced material and reported embedded material as waste reporting if the project wishes to report better values (less waste) than standard values.
- Transport distances and climate data for the modes used to transport materials to the construction site from the factory gate. Calculation/estimation of distance per mode of transport used between factory gate and construction site for delivered building elements A1-A3 may be made. It is also possible to account for the climate impact of transport with the help of documentation for the amount and type of fuel from the party responsible for the transport. This can then replace distance and mode of transport.

B1-B5

- Equivalent reporting requirements to preliminary certification but with updated construction forecast.

B6

- Equivalent reporting requirements to preliminary certification but with the achieved energy performance and energy class of the completed building.
- The energy performance requirement that would apply to the construction of a new building of the same type is indicated as the primary energy rating of the building.
- Specific energy use.
- Measured monthly energy consumption for heating, comfort cooling, domestic hot water and property energy. Measured values must be reported for the months since the building was put into use.
- Details of the building's heating system.
- Heated area, A_{temp} .
- Hourly measured renewable energy production by energy type reported per month, broken down into energy produced and energy used.
- Measured values must be reported for the months since the energy production was commissioned.
- The above can be part of monthly reports from the building data collection system.
- Measurement plan, established and used since the building was commissioned.
- Monthly reports, from the measurement system collection system, since the building was commissioned.
- Update of the *NollCO₂ Balansberäkning* file with measured values and planned values for the years ahead.

- For single-family houses, an energy declaration must be submitted to the Swedish National Board of Housing, Building and Planning two years after occupation, based on measured values.
- For single-family houses, documentation from the electrical engineer must show that sub-meters for the property's energy have been installed. Can be previewed upon occupation.

B7

- Equivalent reporting requirements to preliminary certification but with the actual outcome for climate data and measured water use for the years since the building was occupied. And updated forecast for the years ahead.
- Update of the *NollCO₂ Balansberäkning* file with measured values and planned values for the years ahead.
- Measurement plan, adopted and in use.

C1-C4

- Report calculations from approved LCA program.

Periodic follow-up reporting

The project must present a summary of its LCA calculation with results at the time of reporting. Single-family houses are not reported.

A1-A5

- No follow-up reporting. The building elements acquired / replaced during the use of the building are reported for B1-B5.

B1-B5

- Equivalent reporting requirements to preliminary certification but with actual results at the time of reporting.
- At each reporting occasion, the report is updated with the amount of material removed / dismantled and the amount of material installed for the year(s) in which the replacement took place.

B6

- Achieved energy class and energy performance for the years since the last follow-up reporting / verification.
- Specific energy use for the years since the last follow-up reporting / verification.
- Details of the building's heating system.
- Heated area, A_{temp} .
- Hourly measured renewable energy production by energy type reported per month, broken down into energy produced and energy used.
- Measured values must be reported for the months since verification / last follow-up reporting.
- The above can be part of monthly reports from the building collection system.
- Measurement plan, established and used since the building was commissioned.
- Monthly reports, from the measurement system's collection system, since verification / last follow-up reporting date.
- Update of the *NollCO₂ Balansberäkning* with measured values and planned values for the years ahead.

B7

- Equivalent reporting requirements to preliminary certification but with actual outcome for measured water use for the years since the building was commissioned. And updated forecast for the years ahead.
- Update of the *NollCO₂ Balansberäkning* with measured values and planned values for the years ahead.
- Measurement plan, if updated.

C1-C4

- If changes have occurred, calculations for C1-C4 must be updated.

APPENDIX 2.

REPORTING REQUIREMENTS FOR CLIMATE ACTIONS

Preliminary certification

The following reporting is required for each climate action in the NollCO₂ project.

Reporting in the NollCO₂ Balansberäkning:

- Climate impact preliminary certification A1-A3, A4-A5, B1-B5 and C1-C4 are taken from approved LCA tool.
- Climate actions are indicated with the start year in the net zero balance calculation (must be after registration of the project).
- Climate benefit in tCO₂ for each climate action.

Separate reports for Initiation of renewable electricity production

- Inspection report showing the date of commencement of installation and start of operation of (month and year) renewable electricity production.
- Calculation of expected renewable electricity production on an annual basis over the expected lifetime of the installation (30 years).
- Certificate/report of the developer's and/or building owner's share in financing the installation.
- Investment in a solar park requires a letter of intent or similar that demonstrates that the installation of the agreed capacity is done "on demand", i.e. the installation would not have been done without the agreement with the developer/contractor/property owner behind the NollCO₂ project.
- Documentation for the climate impact of the technical equipment, such as an EPD.

Separate reporting for carbon credits

- No reporting beyond that done in the *NollCO₂ Balansberäkning*.

Separate reporting for biochar as a carbon sink

- No reporting beyond that done in the *NollCO₂ Balansberäkning* is required.

Separate reporting for embodied biogenic carbon

- No reporting beyond that done in the *NollCO₂ Balansberäkning* is required.

Separate reporting for the rewetting of drained wetland

- Property designation and general map documentation.
- Documentation of the suitability of the land for a rewetting agreement, or a copy of the signed rewetting agreement.
- Basis for land classification, e.g. nutrient-rich boreal forest land.
- Map documentation with area of each range of water depth after rewetting in *Table 21*.
- Calculation of climate benefits according to calculation methodology.

Separate reporting for local tree planting

- Number of planned trees entered in *mytree.itreetools.org* and cumulative climate impact.
- Site plan showing planned planting.

Verification

The *NollCO₂ Balansberäkning* tool is used and the following reporting is required for each climate action.

Separate reporting for carbon credits

- Name of project and certifying standard.
- Type of project (tree planting, etc.).
- Cancellation certificate with information.
- Cancellation must be made in the name of the purchaser and, if possible, the name of the building.
- The serial number of the carbon credits.
- The number of tonnes purchased and the purpose of the purchase.
- Year in which the carbon credits were issued (vintage).
- Credits purchased must not have been issued later than 5 years from the date of the purchase. Credits can either refer to a benefit that has already occurred, which is referred to as “ex-post”, or a benefit that will occur in the future, which is referred to as “ex-ante”.

Separate reporting for the rewetting of drained wetland

- Copy of the rewetting agreement.

Separate reports for Initiation of renewable electricity production

- Certificate/report showing that the installation has been commissioned.
- Updated calculation of expected renewable electricity production on/offsite on an annual basis over the expected lifetime of the installation (30 years).
- Updated certificate/account of the developer’s proportion of financing of the installation(s).
- Investment in a solar park requires documents proving that the installation of the agreed capacity has been made, and that the installation would not have been made without the agreement with the developer/contractor/property owner behind the *NollCO₂* project.

Separate reporting for embodied biogenic carbon

- Copies of certificates for the amount of timber in long-life wood products whose carbon uptake has been entered as a climate action in the *NollCO₂ Balansberäkning* reporting tool.
- If the certificate does not indicate that the developer/property owner/contractor financed the certificate, a statement that this is the case.
- It must be indicated that the certificates have been purchased before verification.

Separate reporting for carbon credits

No reporting beyond that done in verification is required.

Separate reporting for local tree planting

- Number of planted trees entered in *mytree.itreetools.org* and totalled climate impact.
- Site plan showing planted areas.

Separate reporting for biochar as a carbon sink

- The carbon sink is entered as a climate action in the *NollCO₂ Balansberäkning*.
- EBC/Global Biochar C-sink or CORC certificate with building designation and purchaser's name and ID number.
- The certificate from Carbonfuture or Puro.earth must be "purchased and retired".
- The certificate from Carbonfuture or Puro.earth needs to include the building name, property name, city and country. Enter the purpose of cancellation under "retirement purpose".

BECCS and DACCS

- Approved certificates as proof of the measure.

Periodic follow-up reporting

The *NollCO₂ Balansberäkning* tool is used and the following reporting is required for each climate action.

Single-family houses are not reported.

Separate reports for Initiation of renewable electricity production

The following is reported if on/offsite renewable electricity production is used as a climate action in the *NollCO₂* project:

- Updated calculation of expected renewable electricity production on/offsite on an annual basis over the expected lifetime of the installation (30 years).
- Update of energy produced and used on an annual basis.

Separate reporting for embodied biogenic carbon

- Copies of certificates for the volume of timber in long-life wood products whose carbon dioxide uptake has been entered into the *NollCO₂ Balansberäkning* reporting tool, if the offset has changed since verification.
- If the certificate does not indicate that the developer/property owner/contractor financed the certificate, a statement that this is the case.

Separate reporting for carbon credits

- No reporting beyond that done in verification is required.

Separate reporting for biochar as a carbon sink

- No reporting beyond that done in verification is required.

Separate reporting for the rewetting of drained wetland

- Photo documentation showing that rewetted land is still rewetted, or another certificate showing that the action has not been reversed.

Separate reporting for local tree planting

- Photo documentation showing that trees planted locally on the property remain.

BECCS and DACCS

- In case of updates since verification, approved certificates are required as proof.



NoHCO₂

