



The challenges of the green transition in the building industry

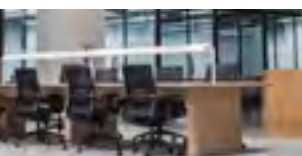
- and three steps on how to work on them



CONTENT



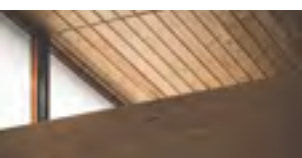
TOGETHER WE CAN ACHIEVE GREAT THINGS! 04



STEP 1 - COLLECT AND RETRIEVE 06



STEP 2 - IMPLEMENT PROCESSES 08



STEP 3 - ENHANCE VALUE AND DATA MODEL 08



STATSBYGG - ENVIRONMENTAL FRONTRUNNERS 10



EU TAXONOMI - GREEN DEAL 12



TOGETHER, WE CAN ACHIEVE GREAT THINGS!

Whether you are at the start of your sustainability journey or developing your existing green credentials to the next level, the MainManager solution enables you, to work towards your own local contribution and to support Global Goals.

We can help you with the challenges you may face when dealing with the green transition that works for you. It can be difficult to navigate all the tasks that have to be considered during transition.

MainManager has proven digital solutions and over 30 years of Experience in creating digital models of buildings for various purposes and processes. We can help guide you to make your operations more environmentally friendly within construction, facility management and energy consumption. We'll also give you the tools you need to document your activities and meet the requirements of EU funding for green projects.

UN sustainable goals

Amongst other things, we have taken as our starting point, and been inspired by, the World Goals 7, 9, 11 and 13.

The UN Global Goals consist of 17 goals and 169 sub-goals.

The Global Goals are very ambitious and support the global development agenda that we all need to pay attention to.

The Global Goals for Sustainable Development were passed at

the UN Summit in New York on the 25th of September 2015.

The goals came into effect on the 1st of January 2016 and will set the path towards a more sustainable future for us all.

7 AFFORDABLE AND CLEAN ENERGY



ACCESS TO ELECTRICITY AT AN AFFORDABLE PRICE BY 2030, EQUALS INVESTMENT IN CLEAN ENERGY SOURCES, AND AN OVERVIEW OF CONSUMPTION.

MAINMANAGER GIVES YOU THE FULL OVERVIEW.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



TECHNOLOGICAL DEVELOPMENT IS ALSO THE KEY TO FINDING LASTING SOLUTIONS TO BOTH ECONOMIC AND ENVIRONMENTAL CHALLENGES, FOR EXAMPLE BY PROMOTING ENERGY EFFICIENCY.

11 SUSTAINABLE CITIES AND COMMUNITIES



SUSTAINABLE DEVELOPMENT CAN NOT BE ACHIEVED IF WE DO NOT CHANGE THE WAY WE BUILD AND MANAGE OUR BUILDINGS AND OUT-DOORS AREAS.

MANY OF OUR SOLUTIONS CAN HELP YOU WITH THIS.

13 CLIMATE ACTION



EMISSIONS TODAY ARE MORE THAN 50% HIGHER THAN THE LEVEL IN 1990. WE MUST ALL HAVE CHANGED THAT. TOGETHER.

WE WOULD LIKE TO GUIDE YOU IN HOW YOU CAN MOVE FORWARD IN THIS WORK.

STEP 1 COLLECT AND RETRIEVE

Pinpoint environmentally vulnerable objects in your MainManager database

If you have an existing portfolio of buildings and outdoor areas, start mapping all buildings, sites and components/objects that have special environmental conditions, either for the conservation of special areas outdoors, plants or wildlife, or hazardous materials, objects or liquids that can have detrimental environmental consequences if not treated properly.

Mark these with the “environment” theme in MainManager. Describe special procedures for operation and maintenance of these objects. This will give you a good overview of objects to take special care of or target for future projects. This is the first step towards making your portfolio more sustainable.

In the operational phase the MainManager system flags to the user where a deviation or work order is connected to these objects.

Range your buildings heating efficiency

Create warm-up ratings for the buildings in your portfolio. The heating rating is based on a five-stage ranking from red to green and according to a calculation based on the systems installed for heating rooms and water in the home/building.

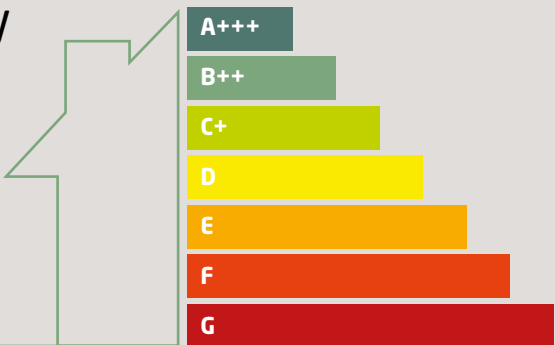
Green is the best grade and is given where the home or building has systems where one can use a high proportion of energy products other than electricity, oil or gas, while the use of only fossil fuels and direct use of electricity gives a red grade.

The grade is independent of the energy needs in the building and of the energy performance grade marked on your EPC for example. Each time you upgrade the rating of your heating, the system can give you an high level report of the heating characteristics of the building stock and build trend data over time.

Range your buildings energy efficiency

Create energy ratings for your buildings. The energy rating goes from A to G, and is based on the estimated energy delivered to the building.

A means an energy efficient building and G means an inefficient building.



Document how waste is sorted in the building

Start recording how waste is segregated and sorted within the building, and receive feedback from your waste contractor i.e. weight and type of waste removed. The system documents sorted waste and provides trend analysis.

Document environmental deviation

Take action against incidents raised via connections to building objects or areas that have been flagged as environmental items within MainManager themes and provide links and documentary guidance on how to manage your flagged objects in case of accidents or registered incidents.

Monitor sensors for energy and other measures that indicate waste or environmental hazards and set up active responses within MainManager to send alerts to responsible personnel in real time.

Document the usage of sqm in the building

Start to monitor how your spaces are used and put in place a strategy to measure how much energy by type per sqm is necessary. Report key figures and trends in space usage across your portfolio. Reducing the usage per sqm is the most effective way of saving money across your building portfolio and also impacts your environmental footprint.

One can also record internal cost per sqm by department or division using the MainManager space management module or by integrating the Worksense workplace management application to optimise the use of spaces.

STEP 2 IMPLEMENT PROCESSES

Prepare preventive maintenance

Put in place preventive maintenance regimes for building objects to prolong the lifecycle and minimise replacements due to failure.

Develop your lifecycle maintenance strategy for the repair and replacement of your building including environmentally friendly items. By prolonging the lifecycle of items within your building stock such as windows, you can reduce your CO2 emissions over time. For example, the total CO2 emissions associated with the production of a single UPVC window - ranges from 100 to 2000 kg.

Implement energy management

Implement Energy Management in alignment with ISO 50001 across your buildings.

- **Measuring CO2 emission and trends**
- **Measure your water consumption**
- **Measure your energy consumption**
- **Make goals for the reduction of CO2**
- **Benchmark your buildings against others across portfolios.**
- **Calculate key figures.**

Use certified service providers

Start to select and monitor service providers that are committed to sustainable materials and work ethics.

Use the Service Management module to track contract dates and performance as well as certificates and renewal dates.

STEP 3 ENHANCE VALUE AND DATA MODEL

MainManager, EPD & BIM

The MainManager software includes a data model which allows the user to upload different materials with EPD information either in the design phase or for existing building models.

Each material type is linked to a building classification code. If your BIM models are also coded with the same classification system, one can assign specific material or product data to the objects.

Once this is completed either in full or in part, the MainManager system can then calculate the environmental impact by adding together all EPD values within each lifecycle stage. This means that one can use the system to create design scenarios by changing assigned materials and calculate the results.

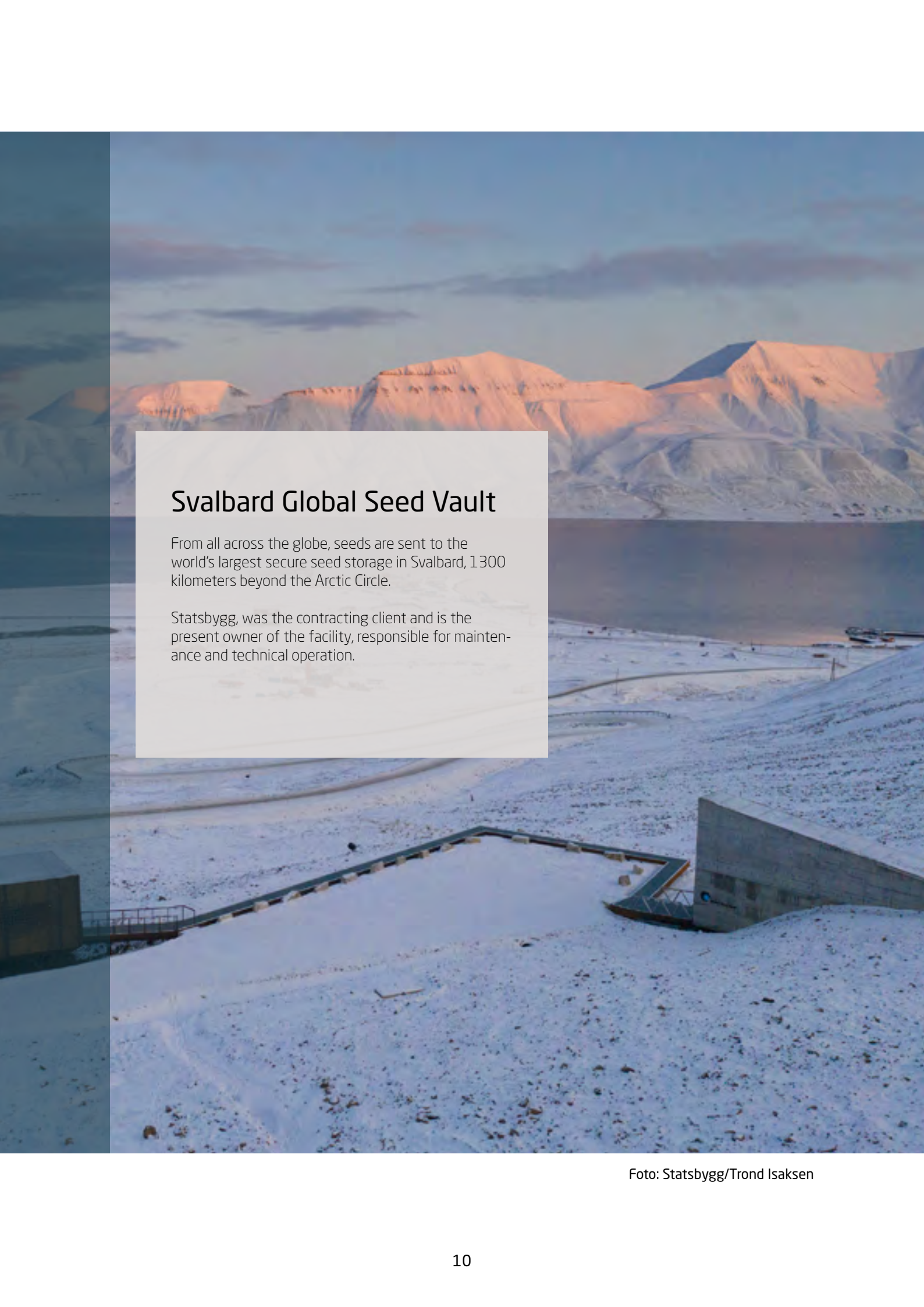
This is a perfect design tool for new buildings. MainManager is leading this revolution and although possible, EPD values are not yet readily available for all items found within our buildings. Work to improve this aspect is ongoing and should be available in the short to medium term.



WATCH
THE VIDEO:

“Building the
Bridge (use of
EPD in BIM)”





Svalbard Global Seed Vault

From all across the globe, seeds are sent to the world's largest secure seed storage in Svalbard, 1300 kilometers beyond the Arctic Circle.

Statsbygg, was the contracting client and is the present owner of the facility, responsible for maintenance and technical operation.

Foto: Statsbygg/Trond Isaksen

NORWEGIAN STATSBYGG, ENVIRONMENTAL FRONTRUNNERS

Statsbygg is one of our clients who started early, focusing on energy consumption. They have collected data, planned, prepared, and optimized to secure a sustainable Facility Management.



The most environmentally friendly construction projects are those that are not built. We know that the most climate-friendly thing we can do is to make the best possible use of the areas we already have.

Sometimes you still have to build new though. It is then crucial to build as climate-friendly as possible. We strive to use materials that produce low greenhouse gas emissions during production, which are robust and require little maintenance.

We are learning more and more about how materials from buildings that are demolished can be reused in other projects. Electric construction machines are gradually replacing diesel-powered ones. With greenhouse gas calculations, we can set clear requirements in our contracts, which is crucial for implementing climate measures in practice.

The measures produce clear results. In 2020, the CO2 emissions in our construction projects were reduced by 36 percent. This corresponds to one million Oslo-Bergen flights.

When the buildings are finished, it is crucial to reduce energy use as much as possible. Several of the large projects we are now building will use seawater for heating and cooling. More and more projects are being built with solar cells. In existing buildings, efficiency measures such as post-insulation of walls and roofs make a big difference.

As one of Norway's largest construction and property players, we have a responsibility to be a driving force and a role model. Going forward, we will only become even more ambitious in the fight for a greener industry.

Statsbygg

EU TAXONOMY - GREEN DEAL

The EU Taxonomy is one of the most significant developments in sustainable finance and will have wide ranging implications.

The Taxonomy sets performance thresholds (referred to as 'technical screening criteria') for economic activities which:

- **Make a substantive contribution to one of six environmental objectives**
- **Do no significant harm (DNSH) to the other five, where relevant**
- **Meet minimum safeguards**

To be able to qualify for green funding the owner or building operator must report its activities

on a regular basis and fulfill some KPI's to be eligible for green funding. For the construction industry the following areas are considered to make the largest „Substantial contribution to the “mitigation process“:

- **New buildings added to your portfolio**
- **Renovation projects of buildings in your portfolio**
- **Individual renovation measures and technical activities**

MainManager are addressing these tasks and are implementing documentation methods to meet the „technical screening criteria“ for each area.

We are also enabling the documentation of materials used in buildings to support concepts like the circular economy.

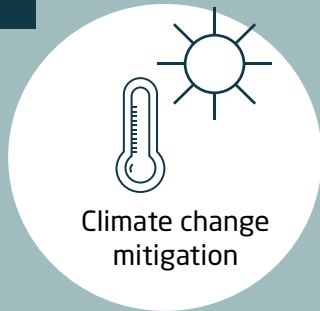


In order to meet the EU's climate and energy targets for 2030 and reach the objectives of the European green deal, it is vital that we direct investments towards sustainable projects and activities. To achieve this, a common language and a clear definition of what is 'sustainable' is needed. This is why the action plan on financing sustainable growth called for the creation of a common classification system for sustainable economic activities, or an "EU taxonomy".

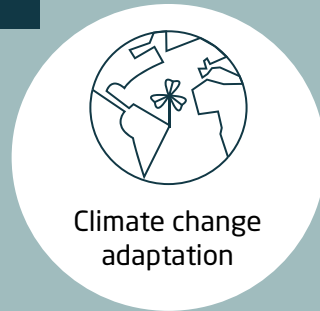
European Commission

To be classified as a sustainable economic activity according to the EU taxonomy regulation, a company must not only contribute to at least one environmental objective but also must not violate the remaining ones.

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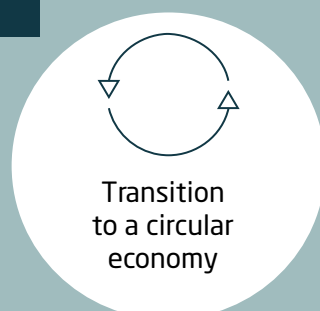
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3



4




5



6







EU Taxonomy – New buildings

Document the following:

- **Make risk analysis of the resistance to extreme weather events and resilience to future temperature increases in terms of internal control. Estimate the risk and create counter actions as maintenance tasks or operation tasks**
- **Document how effective water appliances are within the building and reduce the potential waste of water**
- **Document how construction waste is handled and reduce the impact on the environment. Develop and define strategies for recycling/reuse**
- **Document the environmental credentials of building materials including no presence of asbestos and/or harmful substances that may be present. This applies also to the ground within the building site, confirming that it contains no hazardous materials or contaminants**
- **Document that your building location has been chosen carefully and has no impact on ecosystems if say, built on a greenfield site, in a conservation area or high biodiversity value area**
- **Document that your building materials do no indirect damage to woods or forest ecosystems due to use of timber products originating from forests that are not sustainably managed.**

EU Taxonomy – Renovation of buildings

In order to qualify for green funding, the building owner or the operator has to document that certain criteria are met. A renovation is eligible when it meets either one of the following thresholds:

- **Major renovation: the renovation is compliant with the requirements set in the applicable building regulations for 'major renovation' transposing the Energy Performance of Buildings Directive (EPBD)**
- **Relative improvement: the renovation achieves savings in net Primary Energy Demand of at least 30% in comparison to the baseline performance of the building before the renovation. The baseline performance and predicted improvement shall be based on a specialised building survey and validated by an accredited energy auditor. The methodology used for the measurement of floor area must be declared by referring to the categories established by the International Property Measurement Standard.**



EU Taxonomy - Individual renovation measures, and technical activities

The following individual measures are eligible if compliant with requirements set for individual components and systems in the applicable national regulations transposing the Energy Performance Building Directive (EPBD), and must meet Ecodesign requirements pursuant to Directive 2009/125/EC:

- a) Addition of insulation to the existing envelope components
- b) Replacement of existing windows with new energy efficient windows
- c) Replacement of existing external doors with new energy efficient doors
- d) Installation and replacement of HVAC and domestic hot water systems
- e) Replacement of inefficient gas boiler with highly efficient condensing boiler.





The following individual measures are eligible if specific requirements are met:

- f) Replacement of old pumps with efficient circulating pumps
- g) Installation of efficient LED lighting appliances and systems
- h) Installation of low-flow kitchen and sanitary water fitting in top two categories of the EU Water Label scheme.

The following individual measures are always eligible:

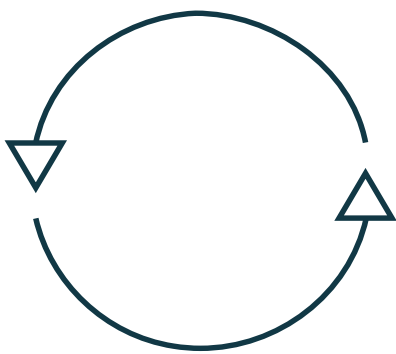
- i) Installation of zoned thermostats, smart thermostat systems and sensing equipment
- j) Installation of Building Management Systems (BMS) and Energy Management Systems (EMS)
- k) Installation of charging stations for electric vehicles
- l) Installation of smart meters for gas and electricity
- m) Installation of façade and roofing elements with a solar shading or solar control function, including those that support the growing of vegetation.

The following individual measures are eligible if installed on-site as building services:

- n) Installation of solar photovoltaic systems (and the ancillary technical equipment)
- o) Installation of solar hot water panels (and the ancillary technical equipment)
- p) Installation and upgrade of heat pumps contributing to the targets for renewable energy in heating and cooling in accordance with Directive 2018/2001/EU (and the ancillary technical equipment)
- q) Installation of wind turbines (and the ancillary technical equipment)
- r) Installation of solar transpired collectors (and the ancillary technical equipment)
- s) Installation of thermal or electric energy storage units (and the ancillary technical equipment)
- t) Installation of High Efficiency Micro CHP (combined heat and power) plant
- u) Installation of heat exchanger/recovery systems.

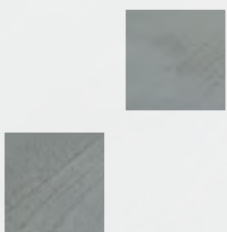
The following professional services are eligible:

- v) Technical consultations (energy consultants, energy simulation, project management, production of EPC, dedicated training, etc.) linked to the individual measures mentioned above
- w) Accredited energy audits and building performance assessments
- x) Energy Management Services
- y) Energy Performance Contracts
- z) Energy Service Companies (ESCOs).



EU Taxonomy - Circular economy

At least 80% (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material defined in category 17 05 04 in the EU waste list) generated on the construction site must be prepared for re-use or sent for recycling or other material recovery, including backfilling operations that use waste to substitute other materials.



 **EG MainManager**
global.eg.dk/it/eg-mainmanager