

# Biodiversity at Catena



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# 1. Introduction

Biodiversity entails variation in multiple forms. This includes diversity among species, within species, and across ecosystems. Biodiversity is essential for all life on Earth, providing critical services and functions for humanity, such as food, clean air, and water. It also protects us from extreme events like floods, wildfires, and droughts. Without these services, our societies cannot survive – we are directly dependent on biodiversity and the natural benefits it provides.

The loss of biodiversity is an escalating threat to humanity, driven primarily by changes in land and water use and the overexploitation of natural resources. The real estate sector contributes to both of these issues, making it crucial for companies to have thorough knowledge and awareness of their impact on biodiversity. As a society, we must act collectively to reduce the loss of species and instead create new conditions that support the conservation and development of rich and diverse plant and animal life.

In 2021, Catena adopted the sustainability goal: "The entire portfolio must be net-positive in terms of biodiversity by 2030" as part of its business plan. This means that by 2030, Catena must demonstrate a more positive than negative impact on biodiversity across all properties.

This handbook is part of achieving that goal and serves as a tool for working towards global and national targets, as well as frameworks like Agenda 2030, the EU Taxonomy, CSRD, and TCFD guidelines.

This biodiversity handbook compiles information and practical recommendations for enhancing and preserving biodiversity at Catena's properties, as well as how these efforts can be measured and reported. A typical logistics property generally consists of one or more large buildings surrounded by asphalt or other hard surfaces. Green areas and other natural spaces are often deprioritized to accommodate heavy traffic requiring large areas for navigation.

In such paved environments, even small natural areas become vital green spaces. Preserving and creating such natural environments is crucial for species to travel through large areas and disperse between habitats. Without such green spaces, the cumulative effect could lead to more species being negatively affected. Biodiversity is a key concern for Catena, and by actively addressing it, we can contribute to achieving both national and global goals, while helping to secure a safer future for people and society.

Wildflower meadow at Logistics Position Sunnanå in Arlöv



## Purpose

The handbook is designed to serve as a tool for preserving, enhancing, and promoting biodiversity. It aims to increase awareness of the importance of protecting and improving biodiversity in the built environment and to propose concrete and straightforward solutions to enhance green values across different types of properties.

Its purpose is also to be a guide for other property companies, stakeholders, and landowners who wish to accelerate their biodiversity efforts. The handbook provides guidance and practical tips on how to advance these initiatives and how efforts can be measured, targeted, and reported. Together, we can foster collaboration on this issue and create opportunities for collective progress.

## Focus and Content

Catena is a logistics property company that both manages existing properties and develops new ones. As a result, Catena has a significant impact through changes in land use during new construction and expansions, as well as a reliance on natural resources, including building materials. This handbook focuses on spreading awareness about the importance of working with biodiversity, how it can be measured and reported, and the tools and strategies Catena employs.

It also emphasizes providing simple and practical measures to improve conditions for biodiversity. These measures are designed to be applicable to environments typical of logistics properties. These properties are often located near major roads with heavy traffic, typically outside cities and frequently adjacent to natural areas and forests. Catena owns properties ranging from Luleå in northern Sweden to Odense in southern Denmark. Therefore, the handbook does not propose location-specific measures. Instead, it is intended to serve as a guide for new construction projects, property maintenance, and the development of natural environments on existing properties.





## 2. Background

### Biodiversity

Biodiversity is key in creating stable ecosystems and habitats. Biodiversity refers to the richness of variation among living organisms and natural environments, serving as the foundation for all life on Earth. It is because of biodiversity that many vital functions are possible in nature. Our food supply depends directly on the intricate web of life that biodiversity represents. It filters the water we drink and purify the air we breathe. A healthy and resilient natural environment is equally important for human mental and physical health as for society's ability to handle global climate changes, health threats, and disasters.<sup>1</sup>

An **ecosystem** is a defined area in nature in which all living organisms and their physical environment together form an ecological system. An ecosystem can be small or large in scale, for example the ecosystem of the ocean or that of a small pond. There may also be several different ecosystems within the same landscape, such as in a forested area where a stream, a meadow, or an old oak tree can each constitute distinct ecosystems.

A **diversity** of habitats and ecosystems influences the number of species that can exist in an area. The greater the variety of environments, the higher the species richness, and vice

versa. The opposite of biological diversity is areas with only one or a few species, such as tree plantations, lawns, or large monoculture crop fields. Such environments support only a limited number of species.

**Species** refers to the fact that a habitat can contain a high level of species richness. A meadow may host many different flowers and insects, a forest edge various bird species and small animals, and a pond different amphibians and aquatic plants.

When preserving, developing, or creating conditions for diverse plant and animal life, it is important to consider multiple factors. For plants to thrive and establish themselves, the site must be suitable and offer favorable soil conditions. Moisture, soil quality, and the depth of the planting substrate are important elements that must be ensured before species are introduced. For different animal species to survive in an area, there must be sufficient space, access to food, areas for reproduction, and places for shelter and overwintering.

When these criteria are met, there are good conditions for the measures to be beneficial and to contribute to increased biodiversity and well-functioning ecosystems.

” The term biodiversity is an umbrella concept encompassing all the variation that exists between and within species and habitats on Earth. Biodiversity plays a critical role in the fundamental functions of nature, such as pollination and the purification of air and water.<sup>2</sup>

<sup>1</sup> [Biologisk mångfald](https://naturvardsverket.se) (naturvardsverket.se)

<sup>2</sup> [Vad är biologisk mångfald? - Naturskyddsforeningen](https://naturskyddsforeningen.se) (naturskyddsforeningen.se)



Wildflower meadow at the Hästhagen 4 property in Helsingborg



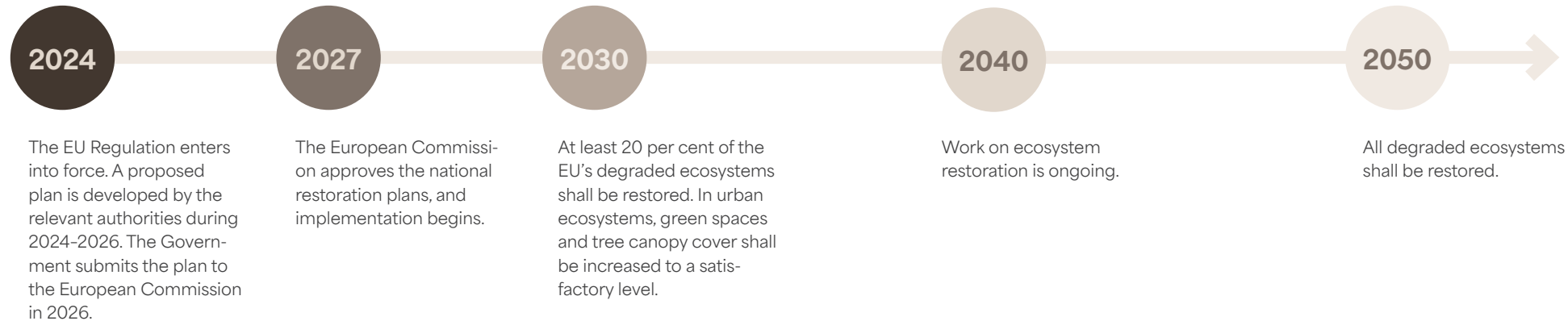
# Environmental Scanning

Biodiversity has risen on the global agenda alongside climate change. At the end of 2022, the UN body for biodiversity adopted a global target to halt biodiversity loss by 2030. The strategy is a long-term plan to protect nature and prevent ecosystems from being degraded and destroyed. It also aims to ensure that Europe’s biodiversity begins to recover by 2030 at the latest, in order to withstand future threats such as climate change, wildfires, food insecurity, and disease outbreaks.<sup>3</sup>

In 2024, the EU Nature Restoration Regulation (EU) 2024/1991 entered into force. Under the Regulation, each EU Member State is required to develop a national restoration plan. In Sweden, the Government has tasked the Swedish Environmental Protection Agency, in cooperation with the Swedish Agency for Marine and Water Management, the Swedish Forest Agency, the Swedish Board of Agriculture, and the National Board of Housing, Building

and Planning, with preparing a proposal for such a plan. The EU Regulation includes a provision on the restoration of urban ecosystems (Article 8). The purpose of this article is to highlight urban ecosystems as important habitats for biodiversity, particularly for plants, birds, insects, and pollinators. Urban ecosystems also play an important role in the provision of ecosystem services, including reducing the risk of natural hazards such as flooding and contributing to local climate regulation.<sup>4</sup>

Nature restoration is a long-term process aimed at achieving lasting and sustained recovery of biodiversity, both on land and at sea. Catena’s target of achieving a net-positive impact on biodiversity by 2030 is aligned with the EU Regulation, where the company’s properties can play an important role in supporting habitats and ecosystem services.



<sup>3</sup> [Global Risks Report 2024](#) (weforum.org)  
<sup>4</sup> [Naturrestaurering](#) - Boverket

## Ecosystem Services

Ecosystem services are all the products and services that ecosystems provide to humans, contributing to welfare and quality of life. Some services are more visible—such as picking fruits and berries from trees and bushes or using timber from forests for construction. Other ecosystem services are less noticeable – such as plants purifying the air, coastal forests protecting against floods, or wetlands delaying and filtering polluted water. Ecosystem services are a way of describing the functions and benefits nature provides to humans, highlighting our dependence on well-functioning ecosystems.<sup>5</sup>

A logistics property is generally covered with asphalt and may be particularly vulnerable to sudden heavy rainfall, as water cannot drain away, or during heatwaves, where the lack of vegetation causes temperatures to rise quickly. Stormwater running off hard surfaces also carries pollutants into lakes and waterways. The real estate sector relies on ecosystem services provided by nature, such as stormwater management and temperature regulation.

Stormwater management can protect against flooding as well as purify and filter water. Trees and other vegetation can shield against wind, while providing shade and cooling during hot periods. Ecosystem services can mitigate the effects of a changing climate, making them important tools for future-proofing Catena's properties over time.

There is a clear connection between biodiversity and climate change. As the climate changes, there will be greater fluctuations in both climate and extreme weather, creating more challenging conditions for both people and nature. This could mean more precipitation across all seasons, heatwaves, stronger storms, sudden downpours, and increased flooding risks. Preserving nature and utilizing ecosystem services on properties to protect against unforeseen extreme weather should therefore be seen as a priority for property owners.

Ecosystem services are commonly divided into four categories: supporting, regulating, provisioning, and cultural services. Read more about these in the box to the right.

Ecosystem services are typically divided into four types:



### SUPPORTING ECOSYSTEM SERVICES

Supporting ecosystem services are the foundation all other types of ecosystem services need to function. They include biodiversity, soil formation, oxygen production through plant photosynthesis, nutrient and water cycles, and the creation of various habitats for plants and animals. They can be described as the ecosystems' "subcontractors."



### REGULATING ECOSYSTEM SERVICES

Regulating ecosystem services are more specific benefits provided by natural systems. This category includes all services produced through nature's regulation of critical processes, such as purifying air and water, regulating local and global climates, preventing floods and soil erosion, and pollinating crops and wild plants.



### PROVISIONING ECOSYSTEM SERVICES

Provisioning ecosystem services are tangible benefits that are a direct result of nature's processes. Examples include the food we obtain from plants and animals, fresh water, renewable fuels, and genetic materials. They form the resource base of society.



### CULTURAL ECOSYSTEM SERVICES

Cultural services encompass all types of intangible benefits provided by nature. Examples include experiential values, nature's importance for human health and cognitive development, recreation, and aesthetic values.

Source: [Typer av ekosystemtjänster](https://naturvardsverket.se/typer-av-ekosystemtjanster/) (boverket.se)  
Illustrations: The New Division/Boverket.

<sup>5</sup> [Vad är ekosystemtjänster?](https://naturvardsverket.se/typer-av-ekosystemtjanster/) (naturvardsverket.se)



# Catena's Context and Impact

Among the primary drivers of biodiversity loss are changes in land use and the over-exploitation of resources – issues to which the real estate sector contributes. One of the industry’s greatest dependencies is access to and production of essential raw materials. The extraction of these materials has a significant negative impact on biodiversity by reducing or degrading habitats. This occurs, for example, during the extraction of stone materials for concrete production or the mining of minerals for various metals. Construction and the development of new buildings claim large land areas, which can negatively impact ecosystems and reduce the natural habitats of many organisms.

Urban expansion and infrastructure development fragment landscapes, disrupting and degrading ecosystems and habitats. As a company operating in a sector that drives changes in land use and occupies large areas, Catena must act responsibly and transparently.

Catena’s sustainability goal of demonstrating a net positive impact on biodiversity across its properties by 2030 presents significant challenges. New logistics hubs are often built on greenfield or agricultural land near transport routes. It is crucial to aim to preserve parts of the land and take measures to strengthen and enhance biodiversity on the property to reduce negative impacts on living organisms and their habitats. Through various initiatives and strategies, there are substantial opportunities to develop, conserve, and strengthen biodiversity on Catena’s properties, leaving a positive mark.

## Drivers Behind Biodiversity Loss

The figure below illustrates the drivers of biodiversity loss as defined by IPBES, along with an indication of their distribution. IPBES is the UN’s scientific panel on biodiversity and ecosystem services, aiming to provide scientifically based information to policymakers, businesses, and civil society.



## The Property Owner’s Dependencies on and Impact on Biodiversity:

Parts of the real estate sector depend on the benefits created by biodiversity. A significant dependency is the availability and production of essential raw materials.

- Materials such as wood, stone, concrete, and other fundamental building components all come from nature. As natural products, these materials require biodiversity for sustainable supply.
- A secure and long-term supply of raw materials relies on well-functioning ecosystems to ensure the continued availability of these resources.
- Many other industries that the real estate sector indirectly depends on, such as forestry, energy plants, and electricity, are also reliant on biodiversity and healthy ecosystems.

At the same time, the real estate sector negatively impacts nature in various ways throughout different parts of the value chain.

- The extraction of steel and metals, cement, concrete, and timber generally has a negative impact on biodiversity by degrading and reducing habitats for various species.
- Forestry often causes significant disruption to land and ecosystems, creating homogeneous, impoverished environments where few species can survive.
- As infrastructure and communities are developed, the landscape becomes fragmented, which deteriorates habitats and limits the ability of species to move and spread in nature.
- When land is claimed for the construction of new buildings, nature is affected, often resulting in the loss of habitats for animals and plants.
- The amount of impervious surface increases with the development of new properties. These surfaces hinder water infiltration into the ground, which increases the risk of flooding.

# 3. Tools and Strategies

## Green Area Factor

Catena uses Green Area Factor (GAF) calculations to measure and ensure that green and blue qualities are achieved and/or preserved during construction and in existing properties. GAF is a common tool in urban planning and is used by municipalities across Sweden. Both Stockholm, Malmö, and Gothenburg have their own versions of the tool. The method involves identifying green and blue areas in a region to assess the ecosystem services they provide. It also offers a strategy for addressing multiple key issues simultaneously, such as climate adaptation, biodiversity, and social values. A single area can deliver multiple services at the

same time and thus possess several associated qualities. For Catena, a GAF value is calculated per property, meaning the defined area is within the plot boundaries.

Using GAF calculations, Catena can plan early in the project and construction process to preserve and add green and blue spaces while strengthening biodiversity. The ambition is for GAF to serve as a transparent tool that systematically facilitates the development of green qualities at different stages – from mapping to implementation, monitoring, and maintenance. The calculations are also used to measure

how the property's green area factor evolves and shifts over time. Results are presented in tabular form as numerical data.

Catena uses GAF calculations both because it is a well-established tool used by ecologists and landscape architects, and because its methodology is clear and transparent. The method was applied for the first time in 2022 across all of Catena's properties, based on baseline values from the end of 2021. All values are monitored annually and updated as needed to reflect changes to the properties. Updates may include completed biodiversity

projects, the paving of surfaces, extensions, or other changes to land cover.

For more information on how Catena reports on the green area factor, see [our Sustainability Report](#).

### From Sandy Soil to Meadowland - Major Investment in Biodiversity in Borås

At the Åre 92 property in Borås, a comprehensive biodiversity project was carried out in the autumn of 2024, transforming 40,000 square meters of sandy soil into thriving meadowland. Before the project began, detailed calculations were performed using the GAF method to map the initial conditions and identify measures with the greatest potential to create positive impacts on biodiversity at the site.





# Calculation of Green Area Factor

For the calculation of the Green Area Factor, Catena has chosen to draw inspiration from Stockholm's work with GYF and their model, both in terms of descriptions and weighting of factors. We see it as an advantage to build on an existing model with defined factors, as this enhances both transparency and credibility.<sup>6</sup>

The GYF model is based on a point system where different types of surfaces are assigned varying scores depending on their benefits. Green areas (vegetation), blue areas (water), and hard surfaces (asphalt, roofs, concrete) are categorized as subfactors, forming the foundation of the model. Their total area must correspond to the total property area. Before other values can be evaluated, it is essential to ensure that the entire property area is divided into different subfactors.

Additional factors are then applied to each subfactor for individual elements or key functions such as greenery, vegetation, and stormwater management. Additional factors may include various types of greenery, stormwater handling features, or spaces for social activities like patios or cultivation areas. In a GAF calculation, higher scores are assigned to green or blue areas that provide multiple benefits. For example, if vegetation serves several purposes, such as supporting pollination, providing shade, creating green spaces for recreation, delaying stormwater runoff, and featuring attractive flowering plants, it receives higher scores.

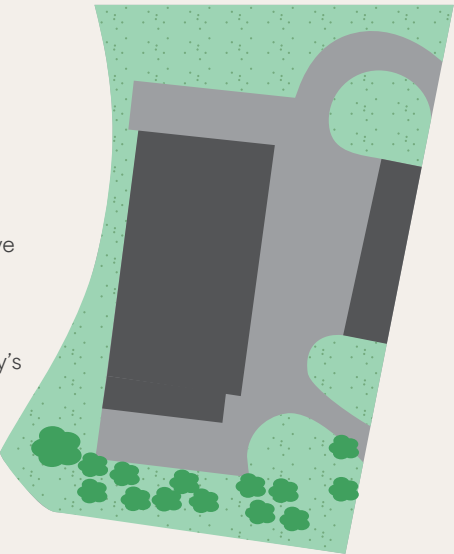
The scores for subfactors and additional factors are weighted based on quantifiable values linked to biodiversity, ecology, climate, water management, and ecosystem services. The weighting follows different principles. Hard surfaces, such as asphalt and roofs, are scored low due to their lack of ecological benefits and minimal contribution to ecosystem services. Deep planting beds, trees, and accessible water increase the likelihood of resilient biodiversity and are assigned higher scores. Preserving existing nature, large trees, and greenery is critical and scores higher than newly created green spaces. Areas assessed as having positive effects on the ecosystem are categorized as eco-efficient.

The green area factor is calculated as a ratio of the amount of eco-efficient area to the total area of a property. The GAF calculation involves summing all green and blue areas and dividing by the property's total area, yielding a ratio that represents the final GAF value. This ratio reflects the quality and quantity of green and blue spaces within an area. A high GAF value indicates that the area or property has high ecological value with numerous important functions and ecosystem services, benefiting both people and the environment.

<sup>6</sup> [GYF - Grönytefaktor för kvartersmark](#) (Stockholms stad)





## Example Calculation

In the example below, the proportion of green areas and the proportion of hard surfaces on Catena's Tuvängen 1 property are presented according to the GAF method. The eco-efficient area is calculated by multiplying the area in square meters by the respective ecological value. The sum of the areas from all subfactors and additional factors is then divided by the total property area, resulting in the property's GAF value.



### Tuvängen 1, Södertälje

The total area of the site is 14,300 m²

Subfactor	Ecological value	m²	Eco-efficient Area (Value)
 Soil, grass	0,3	6,420	1,926
 Roof Area	0	3,590	0
 Asphalt	0	4,290	0
<b>Additional factor</b>			
 Trees, 14 pcs	3,2	700 <sup>1</sup>	2,240
<b>Sum</b>		<b>15,000<sup>2</sup></b>	<b>4,166</b>

<sup>1</sup> A tree is counted as 50 m².

<sup>2</sup> The grass area under the tree and the area of the tree itself are counted separately. Therefore, the sum exceeds the total area.

$$\text{Green Area Factor} = \frac{\text{The sum of the eco-efficient areas of all subfactors and additional factors}}{\text{Total area}} = \frac{4,166}{14,300} = 0,29$$

Please note that the property's values and areas are simplified.

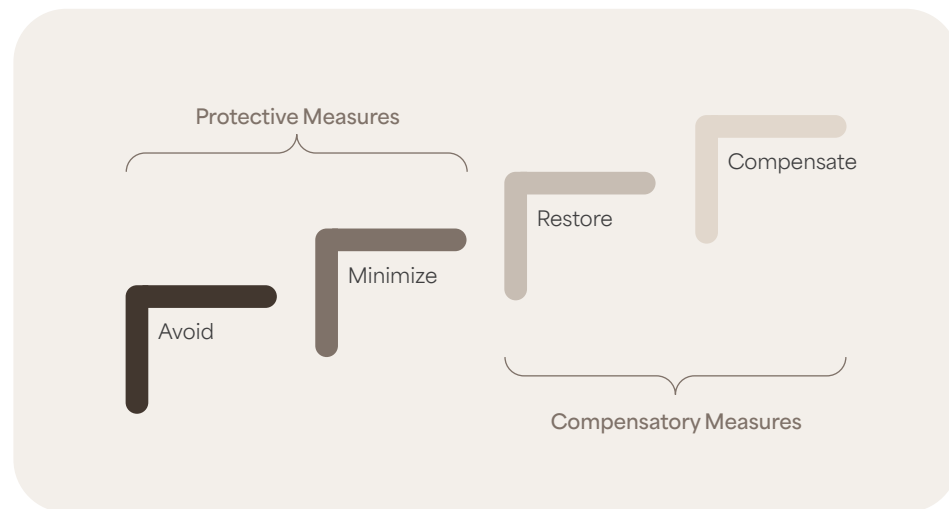
## The Mitigation Hierarchy

Catena's work on biodiversity follows the mitigation hierarchy, an established framework aimed at avoiding biodiversity loss when land is developed. The approach is based on identifying solutions and methods through four sequential steps: avoid, minimise, restore, and, as a last resort, compensate. The primary objective is to preserve existing natural values. If this is not possible, solutions should be explored to the greatest possible extent before proceeding to the next step in the hierarchy.

Applying the mitigation hierarchy is a stepwise and hierarchical process which, when followed, creates conditions that support biodiversity as well as the company's economic performance. Ecological compensation should never be viewed as a standalone measure,

but must always be considered within the framework of the mitigation hierarchy. Compensation is applied only as a final step, through the creation of new values where necessary to avoid net loss

The more that can be achieved in the early steps of the hierarchy, the fewer interventions are required at later stages, which may otherwise become more extensive and costly. In all types of land development, the mitigation hierarchy shall be applied, and it is also embedded in the Swedish Environmental Code.



## Nature Value Inventory (NVI)

In Sweden, there is an established standard for Nature Value Inventory (NVI) regarding biodiversity, SS 199000. Through this standard, nature values within an area are identified, classified, and documented. The purpose is to assess an overall nature value based on species value (the presence of conservation species) and habitat value (the conditions for supporting a rich biodiversity) within a geographically defined area.

When a nature value inventory is commissioned for a property, the following should be included in the report:

- Nature value inventory according to SS 199000 with a medium or detailed level of

specificity (nature value habitats without a lower size limit are sought and mapped in the field, with detailed reporting of species occurrence and an in-depth inventory of other habitats assigned value class 5-7).

- Areas for all nature value biotopes/other biotopes shall be given in square metres.
- For environmental certification, action proposals should be included, linked to ecological indicators.
- Proposals for measures of varying scale, with a priority list to quickly determine what should be done on the property.
- Maintenance plans for the proposed measures.



Preserved older trees at the property  
Plantehuset 3 in Helsingborg



## Part of Environmental Certification

Catena has adopted the sustainability goal that all properties should be environmentally certified by 2030. When a property undergoes the certification process, indicators related to biodiversity and efforts for a greener environment are included.

For Catena's existing portfolio, buildings are certified according to BREEAM In-Use, an international standard that assesses the sustainability of a building and aims to reduce its environmental impact through various improvement measures. The indicators related to ecology aim to measure and encourage the development of greenery on the property (Lue 1) as well as identify and evaluate existing ecological values on the property (Lue 2). Catena's strategy for including ecological indicators is to commission an external ecologist to conduct a Nature Value Inventory (NVI) according to Swedish standards, which identifies the site's ecological values, direct and indirect ecological risks, as well as location-specific recommendations to improve ecology and biodiversity on the property.

For new construction, the BREEAM-SE certification is used, which is similar to the above but focused on new builds. The same type of NVI according to Swedish standards is carried out, where an ecologist classifies the area's natural values before any ground work begins on the site. The report should investigate the site's ecological conditions, identify natural values, include recommendations for improvement, and provide instructions on how to work toward net-zero biodiversity loss on the property.

## Invasive Alien Species

Invasive alien species pose a significant threat to biodiversity, both in Sweden and globally, and their numbers are increasing year by year. Once an invasive species becomes established in an area, it can spread aggressively and displace native species. Rapid spread can also have substantial negative impacts on other ecosystems.<sup>7</sup> The spread of invasive alien species is a complex environmental challenge in which cooperation is a key factor for effective management

There is no statutory process or established routine governing how property owners should manage invasive species on their properties, beyond the obligation to control them. This requires property owners to have sufficient knowledge to both identify invasive species and manage and remove them in a manner that does not risk further spread to other locations. Catena follows the recommendations of the Swedish Environmental Protection Agency, which include rapid removal upon detection, careful handling of waste to prevent further spread, and cooperation with neighbouring properties when necessary.

The EU list of invasive alien species provides information on which animal and plant species may not be introduced into a country, spread in the natural environment, or encouraged to increase in number. These species are prohibited from being kept, sold, and imported. In addition, there are several problematic invasive species that have not yet been included on the EU list but are under assessment for potential inclusion in a national list that would be subject to various restrictions. Catena closely monitors

this list to ensure that none of these species are included in measures or actions carried out on its properties.

For planting measures, only Swedish-origin plants and seeds are used, and this is always verified prior to delivery. The use of Swedish species can be ensured by engaging local suppliers, such as local nurseries, and by selecting plants and species certified with a Swedish quality label.

### Examples of species that should be avoided

- Garden lupine
- Japanese rose
- Lilac
- Large daffodil
- Various types of hyacinths
- Various species of cotoneaster
- Snowberries

1

Upon the discovery of invasive alien species on a property, efforts should be made to quickly control these species. Invasive alien species can rapidly take over an area and displace native species.

2

Waste should be carefully managed to reduce further spread. Improper handling can lead to increased dispersal of these species, resulting in a negative impact on other species in the area.

3

A follow-up visit is conducted on the property after the cleaning process to ensure that the effort was successful and that the invasive alien species has been removed. If necessary, the process is repeated until the species is completely eradicated from the property.

<sup>7</sup> [Invasiva främmande arter](https://naturvardsverket.se) (naturvardsverket.se)



## 4. Actions and Initiatives

Before any measures are implemented, an external ecologist shall always be consulted. Each property is unique and has different conditions, meaning that actions and interventions may deliver varying benefits. A property located in close proximity to forest areas requires different measures than a property situated in a more urban environment. Similarly, a measure that is successful at one property does not necessarily yield the same positive results when applied at another property.

To determine which measures should be implemented at a property, an ecologist prepares an ecological assessment in accordance with Swedish standards. This assessment includes,

Before working to increase biodiversity on the property, the following should always be checked:

- What existing values are present on the property? Are there any specific biological values that should be preserved or can be easily enhanced and developed through simple measures?
- Future values? Does the area have suitable conditions for other types of varied plant and animal life?

among other things, site-specific recommended measures listed in order of priority, as well as guidance for future management. The ecological assessment is an important tool and can be used for many years, provided that no significant changes occur at the property.

A good example of where it is particularly important to consult ecologists is the decision

on whether to install beehives. Bees and other pollinators play a crucial role in ecosystems by contributing to plant reproduction and human food supply. Without pollination, many plants would not produce fruit and would therefore decline in number, which in the long term could threaten food security. It is easy to assume that placing a beehive on a property creates significant environmental benefits;

however, research has shown that a high density of managed honey bees can have a negative impact on wild bees. This is because honey bees compete with wild bees for local resources such as pollen and nectar. To ensure that beehives with managed honey bees genuinely provide ecological benefits, an ecologist must always be consulted before a beehive is installed on a property.<sup>8</sup>

Beehive at Logistics Position Surnanå in Arlov



<sup>8</sup> [Bin och deras livsmiljö \(naturskyddsforeningen.se\)](https://www.naturskyddsforeningen.se/) + [Vilda bin och honungsbin konkurrerar om blommorna \(forskning.se\)](https://www.forskning.se/)



## Existing Properties

To increase biodiversity in the most common environments, there are both specific and general measures that can be taken. On Catena's developed properties, strengthening measures are sought that can contribute to the area's ecological infrastructure.

### Replacing Hard Surfaces with Green Areas ↓

A general focus is to reduce hard surfaces on a property and replace them with green spaces, such as flower beds or meadows. Often, larger areas than necessary are paved, and there may be room to create smaller natural areas. A logistics property is often large, and by creating smaller green islands that can connect different green environments, the ecological infrastructure can be strengthened, and important corridors for the movement of animals

and plants can be created.

A meadow is one of the most species-rich environments and is home to hundreds of different species. It is important to manage meadowland to preserve biodiversity. Generally, a meadow requires less maintenance than a mowed lawn. A mowed lawn does not provide any biological value, and it can be investigated whether certain grass areas can be replaced with meadow seeding and flowering plants. The meadow should be mowed once a year after the plants have finished blooming. This usually takes place from mid-July to the end of August. The hay can be left for a week but must then be removed to prevent it from smothering the remaining vegetation.



Flower beds and seating areas at the Norra Varalöv 31:5 property in Ängelholm

### Creation of a Pond ↓

Restoring or creating wetlands can be an important measure to create habitats for various species while also providing different ecosystem services. Shallower areas such as ponds and other small water bodies can create environments for frogs, insects, and plants. It can also create important corridors for species, allowing them to move more freely within the area.

By designing the pond in various ways, such as varying the shoreline with different materials, space can be created for more habitats. Frogs and salamanders thrive if there are shallow edges where the water warms up quickly. The pond should also have one or two deeper areas to prevent it from drying out. A pond requires ongoing maintenance to preserve the values that it holds.



### Planting Flowers and Shrubs →

Planting flowers and creating butterfly beds are simple measures that greatly benefit insects and other pollinators. Even small plantings can support pollinators and does not require large areas. Shrubs provide habitats for various types of animals and insects. They also act as effective erosion control and retain water in their foliage. Additionally, they create a pleasant environment and offer aesthetic value to those who spend time and work on the property. For properties with large areas of hard surfaces, flowering beds can be a good alternative. When selecting annual and perennial flowering plants, it is important to choose species that bloom at different times of the year to spread out the blooming period.





### Create Habitats for Species' Settling

#### *Install Insect Hotels →*

Insect hotels can help create new habitats. Ideally, an insect hotel should be placed near flowers, fruit trees, or other vegetation and not in areas exposed to rain and wind. If possible, it should face east to capture the morning sun, but not be in direct sunlight for the rest of the day. An insect hotel is relatively easy to maintain and requires little upkeep. After a year or two, worn-out materials can be replaced, and materials that have not been used as much can be swapped for those that appear to have been more frequently occupied.

#### *Lay Out Dead Wood ↓*

Many species depend on old trees, brush piles, or dead wood for habitat, shelter, food, or reproduction. Both standing and fallen trees can be used and become vital environments for species' survival. There are various regulations in the forest management law about how dead wood should be left and handled. These regulations aim to prevent infestations, such as those from the spruce bark beetle.



### Create Habitats for Wild Bees

Many wild bees live in cavities in dead wood, but the majority of species dig their own tunnels in sand. To support wild bee nesting sites, piles of sand can be placed in warm and sunny locations, or sand can be uncovered from the ground. Exposed sand becomes warmer than areas covered by vegetation and can be used by many heat-dependent insects to raise their body temperature. The sand surface should be at least a few square meters large and 50 cm thick.

#### *Create Stone Piles*

Stone piles are larger or smaller heaps of stones, such as blasted rock. Walls and stone piles provide protective environments that various reptiles, spiders, and land snails need. They also serve as growing areas for different types of lichen and moss, often with elements of meadow vegetation that benefit pollinators. Stone piles warmed by the sun are particularly important for ectothermic animals such as snakes and lizards.

#### *Install Bird Boxes →*

In built environments, birds and bats may struggle to find natural nesting sites. Different types of bird and bat boxes can help provide access to nesting areas, suitable breeding sites, and resting places.





## New Construction

In all new construction projects, it is important to plan for biodiversity measures early in the process, well before construction begins, and ideally during the preparation of the program documents. The primary goal is to preserve existing nature rather than compensating for its loss later. Therefore, it is crucial for an external ecologist to assess the property and produce an ecological report that identifies environmental values and highlights areas that should be preserved and where efforts should be focused. This is also a requirement in the building certification process. The ecological report creates good opportunities to preserve existing nature both during construction and after the building is completed. To facilitate the process of preserving environmental values during new construction, the following topics should be discussed:

### How can existing trees/woodland be preserved? →

If there are woodlands and trees on a property, they should be preserved to the greatest extent possible. Tree removal should be a last resort. Trees provide numerous benefits. They capture carbon dioxide, purify air and water, create habitats for various species, help with climate adaptation, provide shade, and protect against weather conditions. The older the tree, the more beneficial it becomes, and it takes many years for a tree to grow. Whenever possible, construction should be adapted to the existing vegetation on the property to take advantage of the services nature provides.

### What other habitats should be preserved? →

An ecological report with a nature value inventory identifies different environmental values on the property and where conservation efforts should be focused. A general goal should always be to reduce the amount of hard surfaces on a property. A logistics property is used by heavy traffic, and a certain amount of hard surfaces is necessary. Therefore, it becomes more important to identify the square meters that can be preserved as green areas, as they provide important benefits for biodiversity and allow species to find safe passages between different habitats. By carefully calculating which areas are required for the property's operations, the remaining environments and habitats can be preserved, with a focus on strengthening them.



### Are there natural water surfaces? →

Water bodies are crucial environments for a variety of organisms. If there are natural water surfaces on the property, efforts can be made to preserve or develop them. This could include creating ponds, restoring water surfaces in overgrown ponds, or creating environments for amphibians and other species. Planting vegetation can also take place in vegetation-poor aquatic environments, but always in consultation with the County Administrative Board and other nature conservation experts. In addition to contributing to biodiversity, water bodies can also become an important part of the stormwater management on the property.





#### Other Alternatives and Solutions ↓

**Grass-reinforced concrete** can be an effective solution for areas such as parking lots and other surfaces that are not heavily trafficked. The ground is prepared in the same way as when laying paving stones, with a supporting layer of gravel and sand. Then, the grass reinforcement is laid and filled with humus soil, in which grass is subsequently sown. Over time, the grass can grow into the voids in the reinforcement, creating a strengthened lawn that can also handle the weight of vehicles. Grass-reinforced concrete allows stormwater to filter into the ground and be purified, while also enabling more effective stormwater management by reducing the risk of flooding during heavy rains.

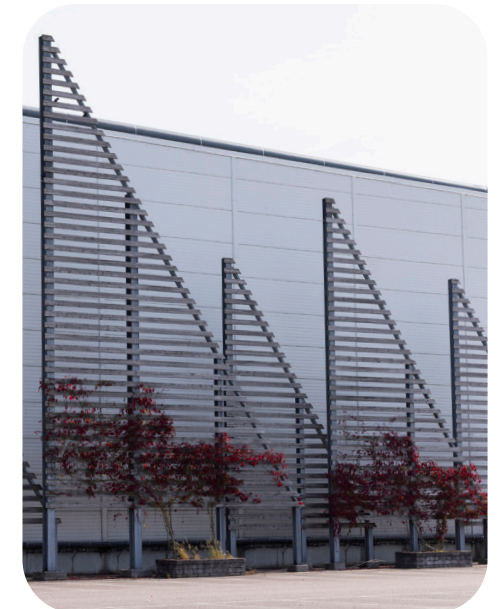


← Another good idea could be to have a **dialogue with the tenant** moving into the property. Do they have any specific requests regarding green spaces? Can collaboration be achieved on this issue? Do they have their own goals related to biodiversity? Can the land be planned so that excess hard surfaces are avoided, and instead, space is made for green areas with biodiversity-enhancing measures? A variety of species not only creates ecological benefits but also provides comfort and other aesthetic values to the site. An outdoor patio or walking path for outdoor activities and recovery can be attractive features for a workplace, and by raising the question, opportunities are created to collaboratively build green qualities on the property.



Reinforced concrete at the Stigamo 1:49 property in Jönköping

→ Large buildings can offer **green solutions on roofs and walls** that contribute to temperature regulation. Vegetation-covered surfaces help moderate temperatures and lower air temperatures during summer. The temperature difference between a hard surface and a vegetated area can sometimes be several degrees. Green facades consist of vegetation that can climb up installed support structures along the wall or through modular systems where plants are placed. Green roofs also have the added benefit of delaying and reducing the amount of stormwater. However, when installing a green roof, careful planning of the roof structure is required. Waterproofing solutions and roof drainage must be considered and adapted to the planned depth of the plant bed.





# 5. Evaluate Initiatives

## Document

All efforts made on a property should be documented. To evaluate how the effort is progressing, all documentation should be marked with dates. A good method is also to photograph the site and save all images, as they provide a way to track how different measures develop over time and whether they are beneficial or not.

All ecological reports that are produced should be saved and can be used over time. If no significant changes have occurred on the site, the action proposals made by the ecologist can still be applied at a later date.

## Inform

When a measure has been implemented on a property, it can be a good idea to inform the tenant about the values present on the site and the actions taken to support them. A simple sign can provide an explanation for why brush piles or logs have been left on the property, why only the edges of the lawn have been mowed, why the meadow is allowed to grow tall, why a pond or ditch has been created, or why an insect hotel or beehive has suddenly appeared on the property.

Informing people about the reasons behind certain actions is important as it can create engagement and spark interest among those present on the site.

## Follow up

It is important to follow up on the work and the actions taken to assess whether the right measures were chosen or if adjustments are needed. Have the meadow plants established themselves? Have birds settled in the birdhouses? Are there tadpoles in the pond that was created?

Returning to the site and inspecting the measures that have been implemented is crucial for the ongoing work to improve biodiversity. By evaluating, developing, and potentially adapting maintenance or future actions, good opportunities are created to strengthen biodiversity on the properties and leave positive impacts.



# CATENA

Catena is a listed property company that sustainably develops and durably manages efficient logistics facilities through collaboration. Its strategically located properties supply the Scandinavian metropolitan areas and are adapted for both current and future flows of goods. The overarching objective is to generate strong cash flow from operating activities to enable sustainable growth and stable returns.

Catena shares are traded on NASDAQ Stockholm, Large Cap.

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