

## Chapter 2. Land use and biodiversity management

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This chapter discusses the status and trends for land use and biodiversity management in Norway. It assesses related policies and processes and provides recommendations. Norway's ecosystems are rich and diverse but under threat. The chapter examines how the situation has evolved over the past decade. It points out many worrying trends are likely to continue unless development pressures are addressed and the protected areas network completed. It highlights the need to integrate specific, measurable and time-bound objectives for species, habitat and landscape protection into local planning, including through improved information systems. Finally, the chapter suggests local capacity needs to be strengthened and cross-sector co-ordination improved to achieve national objectives for conservation and sustainable use of land.

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## 2.1. Geography and ecosystems

### 2.1.1. Norway contains a rich and diverse set of ecosystems

Norway is located on the northwest coast of the Scandinavian Peninsula. It is one of the world's northernmost countries, with the mainland reaching beyond the Arctic Circle. It is bounded by the Barents Sea to the north, the North Atlantic Ocean to the west, the North Sea to the southwest and the Skagerrak strait to the south. Norway's primary land border is with Sweden to the east, but it also borders Finland and the Russian Federation (hereafter "Russia").

The archipelago of Svalbard and Jan Mayen Island are also part of Norway. These are sparsely inhabited and subject to special management regimes aimed at conserving their arctic wilderness landscapes of tundra, glacier and bare mountains, as well as their unique cultural environment (Box 2.1).

#### Box 2.1. Svalbard - conservation of Arctic wilderness under rapid climate change

Svalbard is a group of islands located about 1 000 km from the North Pole, with some of the Earth's northernmost permanent settlements. With the exception of a few areas surrounding the settlements and mining areas, the archipelago still appears as a large Arctic wilderness with no elements of heavy infrastructure development such as roads or power lines. Svalbard also has an abundant and largely intact High Arctic wildlife, which has been restored from historic overharvesting and is now extensively protected. The Svalbard Environmental Protection Act, which entered into force in 2002, serves to preserve a near-pristine environment in Svalbard with regard to contiguous areas of wilderness, landscape, flora, fauna and cultural heritage. Within this framework, the act allows for environmentally sound community, research and business operations. About two-thirds of Svalbard's land area of 60 000 km<sup>2</sup> is protected as national parks and large nature reserves. These protected areas also include 87% of Svalbard's territorial waters, preserving the wildlife of the seasonally ice-covered waters surrounding the archipelago.

With Norwegian coal mining being phased out, the main activities in Svalbard are now tourism, research, higher education and space-related activities. While Svalbard has only about 2 900 permanent residents, it typically receives more than 100 000 tourists each year. Before the COVID-19 pandemic, the number of tourists was increasing rapidly. Following the slow-down during the pandemic, numbers had begun to increase again in early 2022. Despite strict environmental management policy, the massive inflow of tourists and ever-growing tourism demand increase pressure on the environment and infrastructure.

Svalbard and the surrounding marine areas are among the parts of the Arctic where climate change is fastest. These changes are making both nature and cultural heritage sites more vulnerable to human activity and traffic. In addition to the direct environmental impacts of climate change, retreating sea ice is making more of Svalbard's coastal and marine areas accessible much of the year. This presents opportunities for a continued rise in maritime traffic related to cruise tourism and fishing around Svalbard and in the northern Barents Sea. At the same time, it increases the potential for environmental impacts and risks. An important objective, therefore, is to adapt management policy to the rapid climatic and environmental changes Svalbard is facing. Recent measures include expansion of a national park to enhance the protection of key habitats for sea-ice dependent species such as ringed seals and polar bears. Heavy fuel oil has also been banned in Svalbard's territorial waters. A set of additional regulations to reduce the impact from tourism and other human traffic is under discussion.

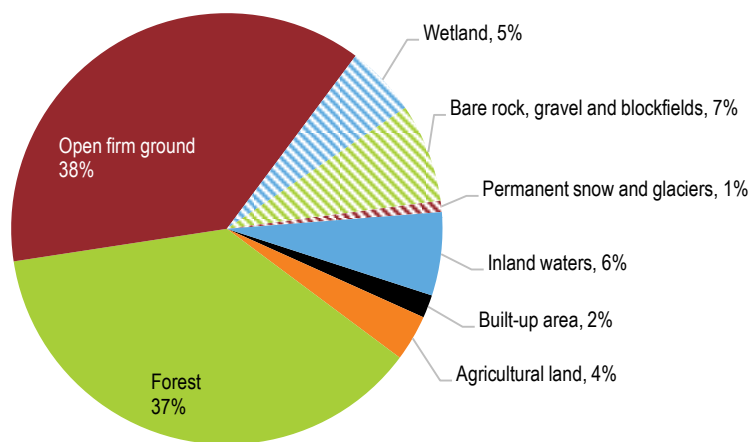
Source: Country submission.

Rugged mountains and high mountain plateaus divide Norway into oceanic western and continental eastern parts. The mountains are broken by fertile river valleys. There is also Arctic tundra in the northernmost parts of the country. The climate varies from temperate along the south coast to subarctic in the mountains and in the north. Atlantic winds and the Gulf Stream provide for a climate that is more favourable in Norway than is usual for high latitudes, but it is nonetheless typified by a cold and continental climate.

Norway's landscape is dominated by forest and bare mountains. Forests cover 37% of land area, about 70% of which is considered capable of producing more than 1 cubic metre (m<sup>3</sup>) of wood biomass per hectare (ha) per year. Above the treeline, mountains consist of bare rocks, as well as of permanent snow and glaciers (7% and 1% of the total area, respectively). Mountain valleys are rich in wetlands, including peatlands and ribbon lakes. The area suitable for farming is scarce, with agricultural land accounting for only 3% of the country's surface (Figure 2.1). Any land not used for agriculture, forests, built-up or traffic areas is known as open firm ground, which may be vegetated or bare. This includes hayfields, pastures and coastal heathlands.

**Figure 2.1. Most land is forest or mountains**

Land cover by category, 2021



Source: Statistics Norway (2021), "Land use and land cover", *StatBank* (database).

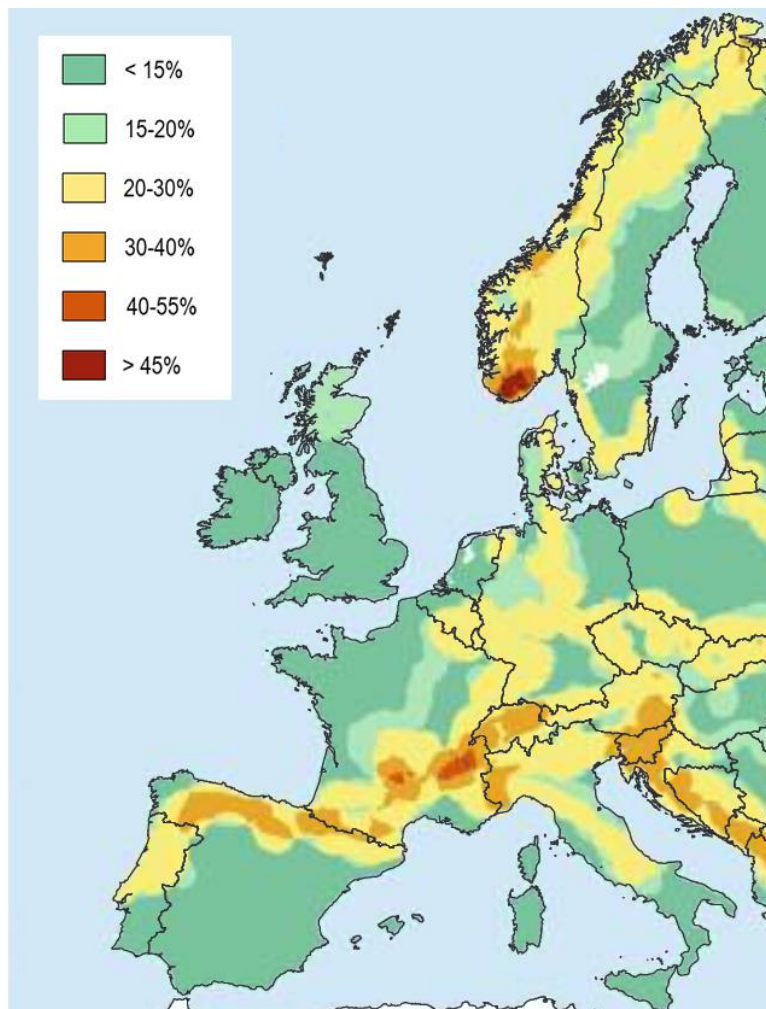
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Norway has a wide range of climatic conditions, landscapes, vegetation and land use in close proximity, making it one of the most diverse landscapes in Europe (Simensen, Erikstad and Halvorsen, 2021<sup>[1]</sup>) (Figure 2.2). More than one-third of the bioclimatic variation in all of Europe and North Africa is represented within mainland Norway (Metzger et al., 2005<sup>[2]</sup>).

Despite being dominated by forest and mountain landscape, Norway has rich landscape diversity, particularly in the southern regions. In addition, it also contains the largest and most pristine representations of many European landscape types. Consequently, Norway plays an important role in landscape and species conservation for the whole continent.

## Figure 2.2. Southern Norway has highly diverse landscapes

Share of landscape categories appearing within a 50 km radius of location, average for all classifications used



Note: Southern areas of Norway contain representations of more than 45% of all identified European landscape types in close proximity.  
Source: Ciglić and Perko (2013), *DragoEurope's landscape hotspots*.

### 2.1.2. Norway needs to deliver on its ambitious objectives for ecosystem protection

Norway's national objectives cover a range of areas and express a vision of a nation that is environmentally responsible at home and abroad. It aims to protect biodiversity and important landscapes, and maintain a strong economy that is progressively diversified in a just transition from fossil fuel production.

There has been good progress since the last OECD Environmental Performance Review (OECD, 2011<sup>[3]</sup>). The policy agenda has advanced with the 2009 Nature Diversity Act. National policies have been clarified in the 2019 central government planning guidelines, as well as the Circular T-2/16, which lays out guidance for national priorities and interests (revised in 2021). Government guidance to municipalities for biodiversity plans and environmental impact assessments (EIAs) has been improved. The River Basin Management System has been established to implement the EU Water Framework Directive (WFD). Marine management plans have been continually improved.

Norway has advanced its ability to understand and communicate the status of ecosystems. This is reflected in improvements to the Nature Index for Norway, the Nature in Norway (NiN) system, the *Naturebase* portal

and the 3Q monitoring system for agricultural landscapes, among others. This work provides important enabling conditions for better policy making, objective setting and knowledge-based management. Norway has increased the amount of protected areas and reformed their management system. More species have been assessed regarding their status than ever before.

Perhaps most significantly, the 2015-16 Biodiversity Action Plan “Nature for Life” provides a clear agenda for ecosystems and biodiversity. The plan’s timeline has proven ambitious. However, while not all of the goals for 2020 have been achieved, the action plan is well underway. The plan set goals for “good ecological status” in ecosystems, to safeguard threatened species and habitats, and to maintain a representative selection of Norwegian nature (Ministry of Climate and Environment, 2015<sup>[4]</sup>). As a first priority, it seeks to protect critically endangered species or endangered species that also have a substantial proportion of their population in Norway.

The plan also gives increased visibility to the benefits of biodiversity to citizens and communities. The value of nature to humanity, known as ecosystem services, include things that provide food and raw materials, purify air and water, or inspire and entertain. For example, Norway’s forests absorb carbon dioxide (CO<sub>2</sub>) each year in an amount equal to nearly half of domestic emissions (Figure 2.8). Forests underpin a robust forestry products sector and provide nature experiences for hikers, hunters and fishers, among others.

The government recognises the need to better integrate the values of biodiversity into decision making. It also seeks to strengthen cross-sectoral co-operation at the national level, and increase cohesion between different levels of government through, among other things, capacity building for local governments. However, despite advances since the last review, much work remains to be done. The status of ecosystems and threatened species, with some exceptions, has not improved in the past decade. Development pressures continue to grow due to economic growth and population movement, increased demand for leisure residences and the need to create jobs in smaller communities, among others. Climate change is also an important and growing threat. Norway cannot be complacent to the risks faced by nature. Meeting the challenge will require focused effort to set and achieve specific, measurable and time-limited goals. Most of the action in the past decade has been “getting the house in order”. It has established plans and objectives, as well as the knowledge and management systems required to put these plans into action. The next step is to deliver on the promise of these investments.

### **2.1.3. Knowledge systems for ecosystems are improving**

The Nature Index for Norway framework describes the status of ecosystems according to a large number of indicators. The index is updated every five years, most recently in 2020. The Nature Index data and assessments are maturing into a useful tool for setting national objectives related to ecosystem management. The quality status of ecosystems as measured by the index has the potential to become an important policy benchmark.

The Biodiversity Action Plan points to the need for measurement of ecological status to set related objectives:

One problem for the Norwegian authorities is the lack of clear, agreed management objectives for “good ecological status” in most ecosystems, even though “sustainable” management is specified as a goal in a number of statutes. The exceptions are coastal and freshwater ecosystems and to some extent marine ecosystems. Clearly defined and agreed management objectives for the different ecosystems would provide a better basis for making decisions in cases where a balance needs to be found between different interests and social objectives, and would help to achieve environmentally, socially and economically sustainable development.

*(Ministry of Climate and Environment, 2015<sup>[4]</sup>)*

The Nature Index supports indices of ecosystem quality by different ecosystem types. A value of 1.0 indicates a fully natural condition, while a status of 0.6 or better is considered “good”. This index shows that many landforms are in good condition but also points to some worrying areas, especially forests, open lowlands and wetlands (Table 2.1).

**Table 2.1. Overview of condition and trends for Norwegian ecosystems**

	Nature index value	Overall assessment	Key influencing factors	Trends
Ocean	0.70	Good	Climate Change Acidification Fisheries Litter	Positive development, slight decline over the last few years
Coastal waters	0.67	Fairly good	Pollution Loss of area Harvesting Alien species	Stable slight decline
Fresh water	0.74	Good	Acid rain Eutrophication Hydropower Alien species Interventions and degradation	Stable, slight improvement over the last years
Wetland	0.68	Fairly good	Area loss Overgrowth	Slightly improving
Forest	0.41	Relatively poor	Forestry	Improving
Mountain	0.56	Moderate	Area degradation and fragmentation Climate change	Gradual decline
Open lowlands	0.44	Relatively poor	Overgrowth More intensive farming Alien species	Continued negative development

Note: The Nature Index is a composite index based on the weighted average of scaled indicators representing major ecosystems.

Source: (Norwegian Environment Agency, 2021<sup>[5]</sup>); trends from (Lier-Hansen et al., 2013<sup>[6]</sup>).

NiN is a tool to document and develop knowledge about Norwegian natural variation, and can be used to map ecosystems for many purposes. It was developed in 2005 by the Norwegian Biodiversity Information Centre, which also provides financial support for the project. NiN version 1.0 was published in 2009. NiN version 2.0, which began in 2012, was published in 2015.

NiN is central to nature mapping, as called for in the Biodiversity Action Plan (Ministry of Climate and Environment, 2015<sup>[4]</sup>). It is designed to give professionals and institutions a common set of concepts that describe and map the variation in nature at all levels, and serve as a basis for mapping nature and habitat types. It is an important part of the Red List assessment of habitat types.

NiN is based on the Biodiversity Act's definition of a habitat type: a uniform area type that includes all living organisms that occur together in a given place and the environmental conditions that operate there. It also includes areas with a uniform character caused by systematic patterns in the presence of observable structures and elements. NiN aims to be the most complete system possible for describing biodiversity and ecosystems in Norway (Halvorsen et al., 2015<sup>[7]</sup>). It operates on many scales that are relevant for national and local planning.

### 2.1.4. Ecosystem accounting can help integrate nature into decision systems

The Nature Diversity Act aims to protect nature's diversity through conservation and sustainable use to secure a basis for human welfare, now and in the future. To fulfil that purpose, more weight must be attached to nature's use and non-use values, and ecological value. Accounting for these values systematically can allow the status of nature to be tracked over time, providing cross-sectoral knowledge of land-use change and its effects on ecosystems.

Natural capital or ecosystem accounting is an important step for making nature visible in measures of national performance and policy appraisal. It is also a prerequisite for assessing changes in inclusive wealth. Natural capital accounts organise biophysical and economic data on the stock of natural resources and the flows of resources and ecosystem services that support the economy (OECD, 2021<sup>[8]</sup>).

The UN System of Environmental Economic Accounting–Ecosystem Accounting (SEEA-EA) provides a comprehensive framework that could be applied in Norway (Box 2.2). Using an internationally consistent approach could help Norway to benchmark progress with respect to other countries. Such an approach could be used, for example, with respect to implementation of the Sustainable Development Goals (SDGs). This may be particularly useful in the European context, as the SEEA-EA is applied at European scale by the Joint Research Centre, the European Environment Agency and Eurostat. Important policy areas that are increasingly informed by SEEA-EA include climate change, circular economy, biodiversity and sustainable finance. SEEA-EA could also inform measurement of the environmental and economic impacts of managing COVID-19.

#### Box 2.2. Valuing ecosystems services highlights the role of nature in the economy

Natural capital accounting is an important step for making nature visible in measures of national performance and policy appraisal. It is also a prerequisite for assessing changes in inclusive wealth. Natural capital accounts organise biophysical and economic data on the stock of natural resources and the flows of resources and ecosystem services that support the economy.

Valuation of ecosystem services and assets in monetary units is of primary importance. This allows consistent comparisons between the UN System of Environmental Economic Accounting–Ecosystem Accounting (SEEA-EA) natural capital accounting and standard economic measures, such as gross national product (GDP) or produced assets, as recorded in the system of national accounts. To that end, the SEEA-EA applies the concept of exchange values, which are the market prices of goods and services exchanged in the markets, or the assumed transaction prices for goods and services that have no market. The SEEA-EA, however, does not include all potential economic values, in particular consumer surplus and non-use values. It acknowledges that alternative valuation concepts, including welfare values and total economic values, may be better suited to some policy contexts (e.g. cost-benefit analysis). Furthermore, the SEEA-EA emphasises that care is needed when analysing large, non-marginal changes, such as the permanent loss of water resources. In these cases, analyses should incorporate the assessment of physical changes in stocks in relation to appropriate thresholds. No matter the valuation approach, a pragmatic and necessary first step is to develop robust accounts of biophysical stocks and flows.

Source: OECD (2021), "Biodiversity, natural capital and the economy: A policy guide for finance, economic and environment ministers", *OECD Environment Policy Papers*, No. 26.

The SEEA-EA system is designed to answer the following questions (United Nations, 2021<sup>[9]</sup>):

- What is the contribution of ecosystems and their services to the economy, social well-being, jobs and livelihoods?
- How is the condition, health and integrity of ecosystems and biodiversity changing over time and where are the main areas of degradation and enhancement?
- How can natural resources and ecosystems be best managed to ensure continued services and benefits such as energy, food supply, water supply, flood control, carbon storage and recreational opportunities?
- How should conservation efforts be targeted?
- What opportunities exist for development of innovative incentive-based programmes to conserve nature such as payment for ecosystem services?
- What do estimates of a nation's wealth and economic potential look like once the state of its environment is considered?

At least 89 countries have implemented accounts consistent with the SEEA-EA. However, most accounts are incomplete and only 34 countries have developed ecosystem accounts. Adopting a robust SEEA-EA system could put Norway at the forefront of this type of environmental knowledge system.

## 2.2. Biodiversity

### 2.2.1. A significant share of assessed species is threatened

The Norwegian Red List of Species includes those assessed as at risk of extinction within Norway, with different risk categories. A large proportion of the red-listed species has declining populations, generally because of habitat loss, degradation or fragmentation as a result of human activity. Due to its long western coast and long north-south mountain range, many species have their most northern or western occurrence in Norway. For this reason, Norway has a high number of rare species or species with naturally small populations.

Of the 2 752 threatened species in Red List 2021, 289 are critically endangered, 959 are endangered and 1 504 are vulnerable (Artsdatabanken, 2021<sup>[10]</sup>). Moreover, 333 species assessed in 2015 as of least concern are now on the list. At the same time, 309 species have left the Red List owing to improved knowledge and oversight. In addition, 1 839 species have been assessed for the first time. Of the endangered or critically endangered species in 2015, 78 have 25% or more of their European population in Norway.

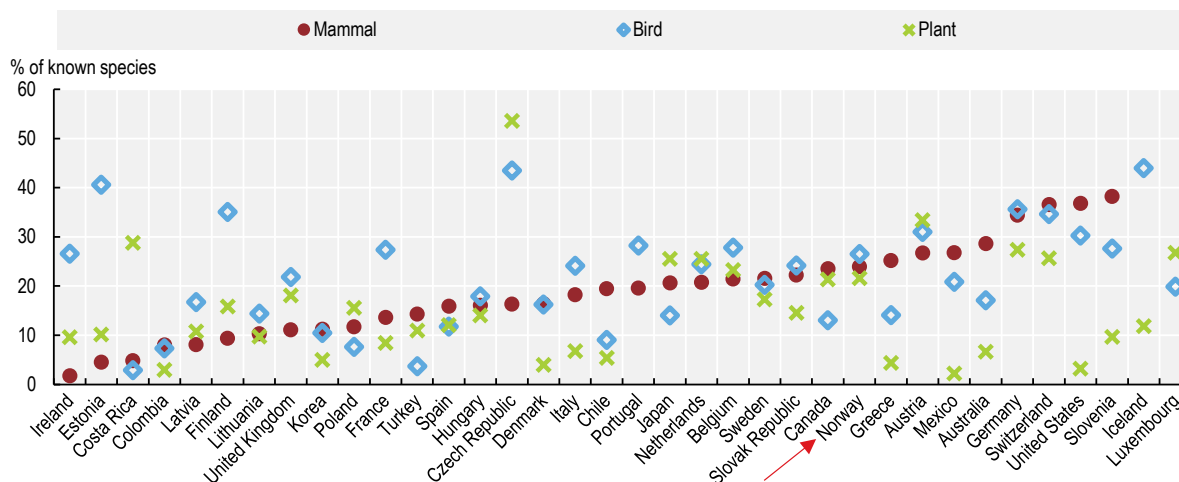
In 2021, 24% of mammals, 27% of bird species, 22% of mosses and 22% of plants were threatened. The share of threatened species in all four of these categories has increased since 2015. The total number of assessed species has also increased. Norway's profile is overall similar to its Nordic neighbours, with a comparatively large share of threatened birds. Finland is doing better overall but also has a large share of threatened birds (Figure 2.3)

Most threatened species are associated with forest, cultural landscapes (semi-natural areas or open land used for agriculture) and mountains, and to a lesser extent with wetlands and marine and coastal waters (Figure 2.4). More than half of the threatened mountain species (34 of 64 species), and most of the threatened mosses and vascular plants, are found in lime-rich areas (Ministry of Climate and Environment, 2015<sup>[4]</sup>). Threatened species are found mainly in the southern regions where species diversity is high and human activity widespread (Figure 2.4). These regions also have a large number of threatened habitats.



**Figure 2.3. The share of threatened species in Norway is similar to its Nordic neighbours**

Threatened species as a percentage of known species, 2015 or latest available data

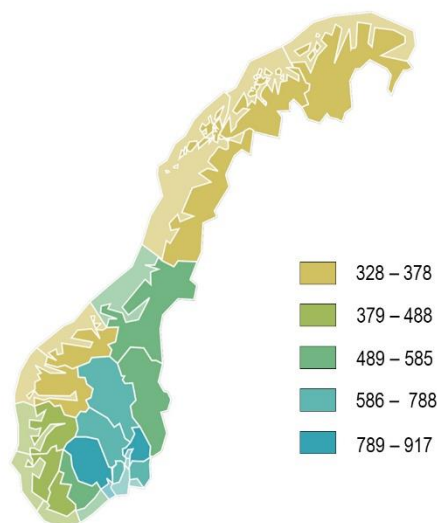
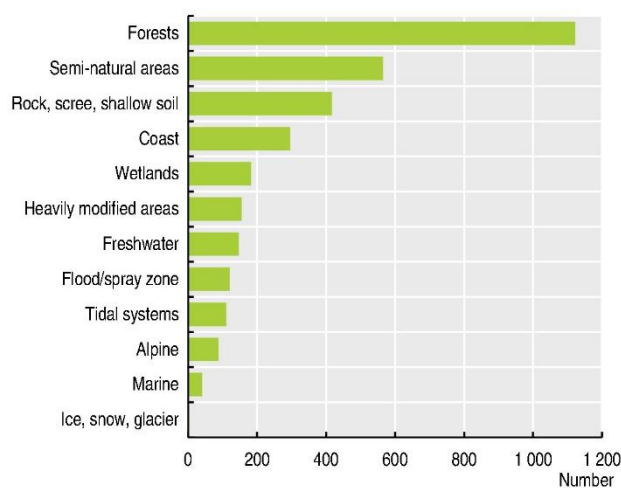


Note: The threatened category refers to critically endangered, endangered and vulnerable species, i.e. those plants and animals that are in danger of extinction or likely soon to be (for further information, see the IUCN Red List Categories and Criteria: Version 3.1, Second edition). Iceland, Luxembourg and Portugal: partial data. Norway: 2021 data.  
Source: OECD (2021), "Threatened species", *OECD Environmental Indicators* (database).

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**Figure 2.4. Most threatened species live in forests or semi-natural areas in southern regions**

Threatened species by main habitat



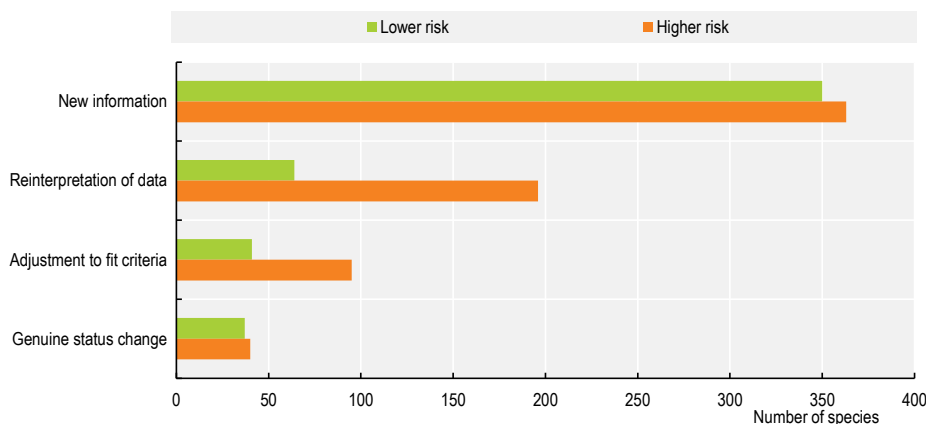
Note: Right panel: number of threatened species on the Red List 2021 with a known occurrence in the various (historical) counties.  
Source: Artsdatabanken (2021), *Findings: Norwegian Red List for Species 2021*.

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The overall trend in status of Norway's threatened species is worrying. There is a real increase in the number of threatened species, and more species have been moved to a higher risk category than a lower one. Between 2015-21, the status of 1 523 species changed. However, most changes in classification are due to improved information or re-interpretation of data rather than a genuine status change (Figure 2.5). Climate change is an important factor in the increased risk for mountain species.

**Figure 2.5. Relatively few species change status due to genuine changes**

Reason for transfer between Red List categories, from 2015 to 2021



Source: Artsdatabanken (2021), *Endringer fra 2015 til 2021, Norsk rødliste for arter 2021* [Changes from 2015 to 2021, Norwegian Red List for Species 2021] (database).

StatLink  <https://stat.link/uc0gyw>

The trend between 2015 and 2021 is worse than the one observed between 2010 and 2015 (Henriksen and Hilmo, 2015<sup>[11]</sup>). Efforts over the last decade have not improved the status of threatened species overall. The dependence of a high proportion of species on forested land or cultural landscapes is a particular challenge. These land types are relatively valuable and are implicated in sectoral objectives to maintain or increase commercial exploitation. In particular, forested land is only protected by landowners voluntarily. This limits the government's capacity to act with respect to the most important land category for threatened species.

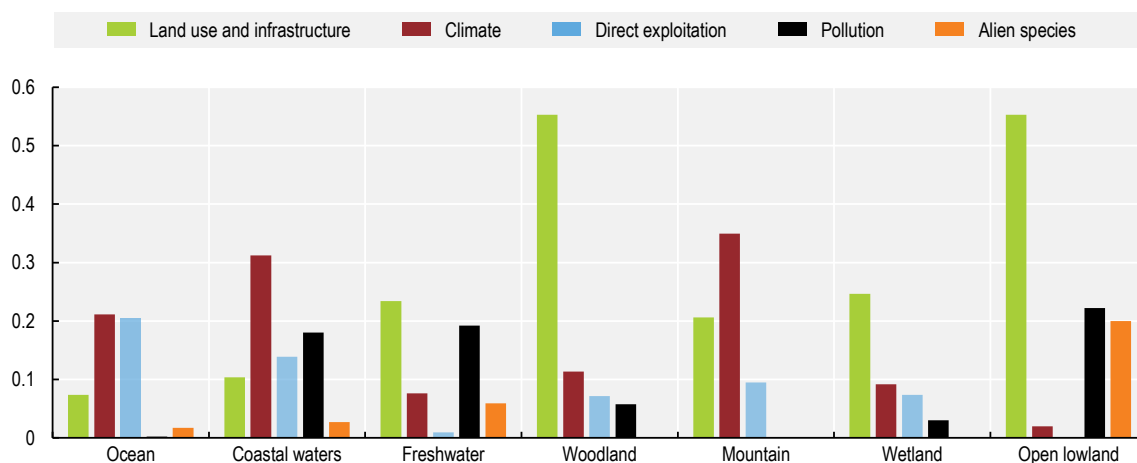
Protecting the habitats of threatened species via protected area status is the main policy tool to maintain or improve the status of red-listed species. However, the government also undertakes other measures to supplement this tool. For example, it allocated NOK 3.1 million (USD 361 000) in the 2021 budget to supplement measures to protect wild pollinating insects. From 2017, the budget for measures against invasive alien species has increased. About NOK 86 million (about USD 9.1 million) was spent on measures against alien species in the last five years, mainly to combat alien plant species. In 2018-20, the government devoted NOK 27 million (USD 2.9 million) to removing invasive tree species from protected areas.

### 2.2.2. Land-use change is the most important threat to species and habitats

Habitat loss and degradation of ecosystems are the primary reasons behind biodiversity loss and the loss of ecosystem services globally, and this is true for Norway as well (Figure 2.6). Land-use changes in forestry and in agriculture, as well as for housing and road purposes, are the most important driver of habitat loss in Norway. More than 90% of the threatened or near threatened species are threatened because their habitats disappear or change (Artsdatabanken, 2021<sup>[12]</sup>).

**Figure 2.6. Land use and climate change place the greatest pressure on Norwegian biodiversity**

Causes of deviation of the Nature Index from its pristine state (value 1), 2019



Note: The effect of five pressure categories on the Nature Index value is analysed for each ecosystem. Indicators sensitive to each pressure category have been grouped, and the effect of a pressure has been estimated as the contribution from these indicators to a reduced Nature Index value (deviation from the reference value 1). The effect has been analysed using the Nature Index values from 2019 for each ecosystem. A high value on the y-axis indicates the pressure category has a large negative effect on the ecosystem. The effects of the pressure categories do not sum to a "true" total deviation from 1 for an ecosystem, as indicators may be included in more than one pressure category within the same ecosystem.

Source: Norwegian Environment Agency (2021), *Nature Index* (database), [www.naturindeks.no/Pressure](https://www.naturindeks.no/Pressure).

StatLink  <https://stat.link/akmodp>

Land-use change affects nine out of ten threatened species. In the last 11 years, about 540 km<sup>2</sup> of land have been developed. Overall, this is a small amount, corresponding to 0.16% of the total area over the period and 0.015% per year, but these areas may have high ecosystem value. About 42% of developed land was formerly forest, 17% agricultural land and 2% bog (Kommunal- og moderniseringsdepartementet, 2021<sup>[13]</sup>).

Despite ongoing efforts to improve the representativeness of the protected area system, existing protected areas do not capture the breadth of variation in Norwegian nature. Further, there is a lack of ecological connection between the areas, which lowers their resilience.

### 2.2.3. Forest area is in relatively poor condition and challenging to protect

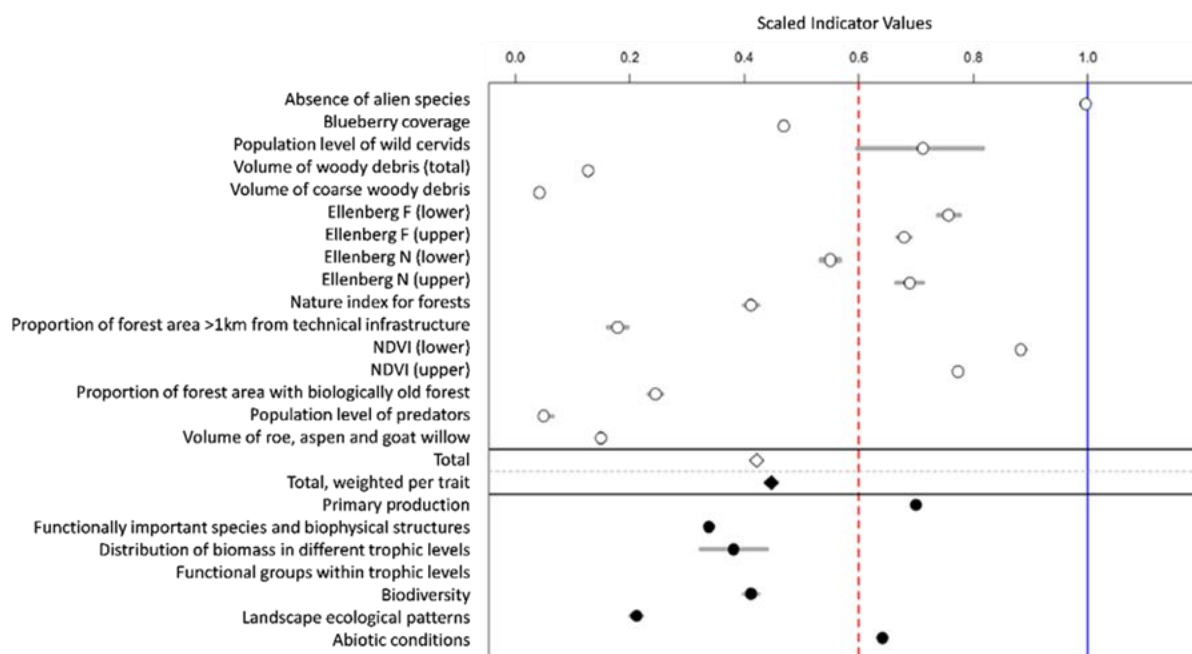
Forest and other wooded land cover approximately 37% of Norway's land area. About 70% of this is considered productive forest, which can produce 1 m<sup>3</sup> or more of wood per hectare each year. The most important commercial wood species are Norway spruce (47%), Scots pine (33%) and birch (18%) (Landbruks- og matdepartementet, 2020<sup>[14]</sup>).

Norway protects 5% of forest area, which is only half of the government's target. Productive forest land is relatively valuable compared with unproductive forest land, and ownership is diverse with many small landowners. This makes it challenging to increase the amount of protected forest area. Almost uniquely among land types, additional protection of forest area is voluntary, requiring the proactive agreement of landowners. This reduces conflicts with landowners but makes achieving the 10% target difficult without additional measures.

Forest area is largely stable over time, though the ecological condition of forest lands in aggregate is relatively poor. According to the system for assessing ecological condition, the Norwegian forest area has a 0.42 rating. This is significantly lower than 0.6, the limit value for good ecological condition (Figure 2.7). The ecological condition of forests in the coming decades is expected to deteriorate due to the continued influence of forestry activities, buildings and infrastructure development, and to a lesser extent climate change (Framstad et al., 2021<sup>[15]</sup>).

### Figure 2.7. The overall condition of forest lands is relatively poor

Estimated ecological condition of forest area in Norway: scaled indicator values, 1 = pristine, 0.6 = good condition



Note: White circles indicate the scaled values for the individual indicators included in the calculation. White diamond shows the total state value of the ecosystem based on these indicators directly, while the black diamond shows the total state value based on the state values of the various properties of the ecosystem (black circles). The symbols show median values for indicators or average state values, while grey and black bars show the 95% confidence interval. Some confidence intervals are so small that they are covered by the symbols. NDVI = Normalised Difference Vegetation index, a measure of vegetation cover. Ellenberg F = indicator of soil moisture. *Ellenberg N = indicator of soil productivity*.

Source: Framstad et al. (2021), Vurdering av økologisk tilstand for skog i Norge i 2020 [Assessment of Ecological Condition for Forests in Norway in 2020].

The state-owned company Statskog SF is the largest forest owner in Norway, with approximately 6% of productive forest area. Approximately 88% of forest area is privately owned, resulting in a diversified sector characterised by small-scale activity. Forestry operations are mostly co-ordinated through the forest owners' co-operative. The average size of clear cuttings is estimated to be approximately 3.2 ha.

Norway is active in international forest conservation efforts (Box 2.3). It was one of the earliest participants in the Programme for the Endorsement of Forest Certification (PEFC), an independent third-party certification system for forest products. Norway first joined PEFC in 1999, and its standard was first endorsed in 2000. It has subsequently been reviewed every five years, most recently in 2016. The system is now in its fourth revision, which covers 2020-22. Norway's standard covers activities related to forest management responsibilities and planning, felling and forestry operations and special environmental values (PEFC Norway, 2016<sup>[16]</sup>).

### Box 2.3. Norway is a leader in international forest conservation

Norway's International Climate and Forest Initiative (NICFI) is its biggest development co-operation programme in climate and environment. NICFI makes up more than half of environmental and sustainable development assistance expenditure since 2009. Most of NICFI's activities address forest and land-use policies and planning. This includes law enforcement, Indigenous People's territories and forest protection, combined with sustainable development, global drivers of deforestation and deforestation-free supply chains and financial markets.

Norway's approach to prevention of international deforestation and forest degradation has evolved since NICFI's inception in 2008. NICFI was initially set up as a payment mechanism focused on establishing carbon markets for reduced emissions from deforestation and forest degradation (REDD+). NICFI has also given attention to green development, and sustainable food and land use systems within planetary boundaries. It is one of the three national participants in the Lowering Emissions by Accelerating Forest Finance (LEAF) Coalition, which was set up in April 2021 after the Leaders' Climate Summit. The LEAF Coalition works to halt deforestation by financing large-scale tropical forest protection through a public-private partnership. A growing number of the world's leading companies take part in LEAF. In November 2021, LEAF signed letters of intent with five tropical forest countries (Costa Rica, Ecuador, Ghana, Nepal and Viet Nam) and memoranda of understanding with eight Brazilian states.

Addressing drivers of deforestation requires creating an enabling environment and more incentives for transformational change. This results in a bigger and more development-focused approach than payments for emissions reductions. NICFI has an advantage over other development partners that use annual budgeting: it can take a longer-term perspective on results and make use of results-based finance. It has a portfolio of projects and can redirect funding across them according to performance. In the past, NICFI has tried to increase its impact by leveraging its funding through co-financing with partners. This will continue through the LEAF Coalition and in other partnerships. Future approaches may better focus on its comparative advantages and institutional capacity.

Source: Country submission.

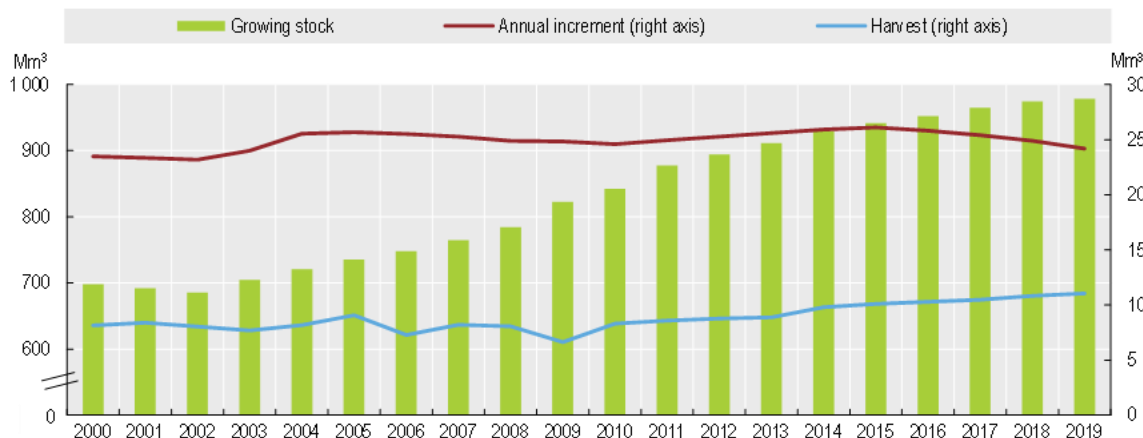
While forest land area is relatively stable, the total forest biomass is growing strongly. Harvests of around 10 million metric tonnes (MMT) per year are significantly below the annual growth rate (25 MMT) (Figure 2.8). The annual growth rate has been at or near its highest recorded amount continually since 2003, nearly double the amount since the start of record keeping in the 1930s. These growth levels are the consequence of longstanding forestry management activities that have reduced the age structure of the forest and promoted large-scale replanting.

The amount of carbon absorbed by forest growth is equivalent to about half of the total annual human-induced greenhouse gas (GHG) emissions in the country (Section 1.3). Norwegian forest policy recognises the important role of forests in combating climate change. Consequently, it aims to maintain a high level of wood production. This, in turn, aims to maintain a high annual growth rate and carbon sequestration in forests, while providing climate-friendly raw materials for a range of applications.

The high annual carbon uptake of forest area does not count towards Norway's Nationally Determined Contribution, as it is part of the policy baseline. However, increases in uptake above this baseline do count towards targets, leading to several actions to increase the forests' capacity to sequester carbon. These include measures for increased seedling density on regeneration sites, enhanced breeding of forest seedlings and fertilisation of forest stands. The amount of extra uptake is small but will increase over time.

**Figure 2.8. Forest biomass growth is well above the rate of harvest**

1 000 m<sup>3</sup> biomass on left axis, annual increment and harvest on right axis, 2000-19



Note: Total biomass and increment, including spruce, pine and broad-leaved forests. One cubic meter of biomass contains approximately one metric tonne of carbon that has been extracted from the atmosphere.

Source: Statistics Norway (2021), "The National Forest Inventory", *StatBank* (database).

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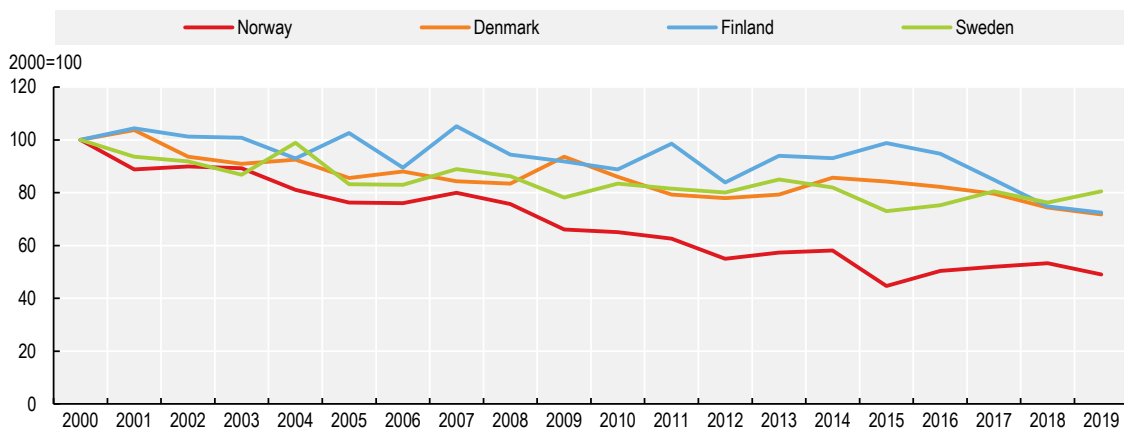
#### **2.2.4. Changing agriculture practices and the quality of cultural landscapes are closely associated**

Agricultural landscapes are important ecosystems that provide services such as food production, animal feed production, pollination and biodiversity. Agricultural activity creates a large number of different semi-natural landscapes. The cultural and ecosystem value of these landscapes depends on how they are used, making this landscape type uniquely intertwined with human activity. Around 50% of threatened species are linked to cultural landscapes and open lowlands. Mowing and grazing help maintain important habitat types in agriculture, such as hay meadows and coastal heaths (Landbruks- og matdepartementet, 2016<sub>[17]</sub>).

The interplay of ecosystems with human activity can be seen in the rapid decline of farmland bird species compared to other Nordic countries (Figure 2.9). The sector's transformation from low productivity, labour-intensive methods into more capital-intensive systems has altered the way it interacts with the landscape. Some landscape types such as hay fens have been red-listed as a result. This change is just as important as land conversion in terms of the effect on threatened species that depend on agricultural landscapes.

**Figure 2.9. Norway's farm bird populations are declining more strongly than in neighbouring countries**

Farm Birds index, year 2000=100



Note: Index for Norway includes eight species: *Alauda arvensis*, *Emberiza citrinella*, *Hirundo rustica*, *Motacilla alba*, *Numenius arquata*, *Saxicola rubetra*, *Stumus vulgaris* and *Vanellus vanellus*. The indices are geometric means of national population indices for the included species. Since 2009, all data have been extracted from the national network for monitoring common breeding birds (TOV-E). This includes point censoring in a national network comprising approximately 500 sampling routes, <https://tov-e.nina.no/hekkefugl>.

Source: OECD (2021), *OECD Agri-Environmental Indicators* (database).

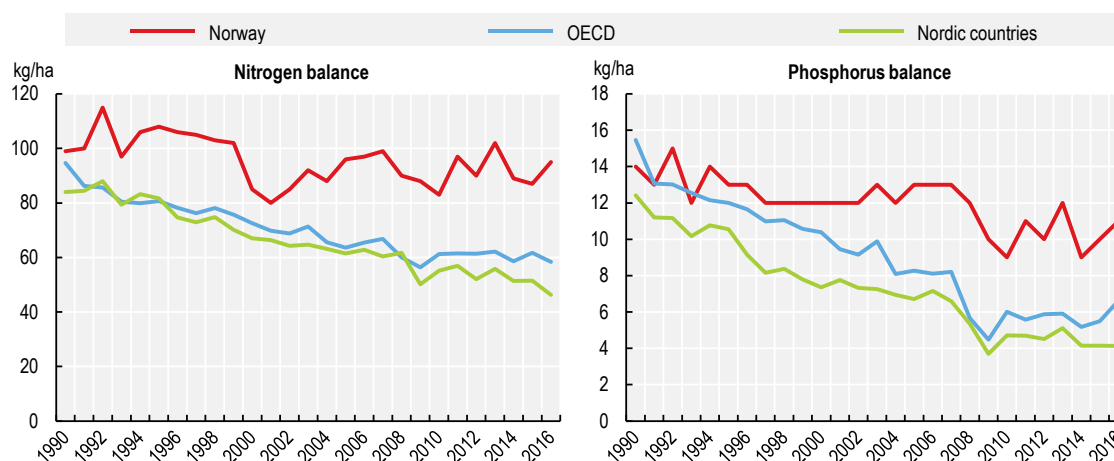
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Roughly one-third of active agricultural area is used to grow arable crops (327 000 ha in 2018, including 500 ha of fallow land), a share that has declined by 5% over the last 20 years (Statistics Norway, 2021<sup>[18]</sup>). The balance of agricultural land is mainly pastures, meadows and other permanent grasslands typically used for grazing pastures or harvesting of grass. Agricultural land use is largely determined by the small share of land that is technically feasible for farming combined with national policies designed to maintain and distribute production. The agricultural areas with the best growing conditions are dedicated to grain cultivation, while those with less favourable ones are used for animal husbandry. Policies in place maintain this distribution of production types, which maximises grain production.

Norway's levels of nitrogen and phosphorus surpluses, which place pressure on soil water and air quality, are among the highest in the OECD (Figure 2.10).

**Figure 2.10. Nutrient surpluses remain high in Norway despite declines across the OECD**

Nutrient surpluses per agricultural land area



Note: Manure accounts for 57% of phosphorus inputs and 47% of nitrogen inputs. Nutrient surpluses per agricultural land area (in hectares) are measured as the difference between the total quantity of nutrient inputs entering an agricultural system (mainly fertilisers, livestock manure), and the quantity of nutrient outputs leaving the system (mainly uptake of nutrients by crops and grassland).

Source: OECD (2022), "Environmental performance of agriculture – nutrients balances", *OECD Agriculture Statistics* (database).

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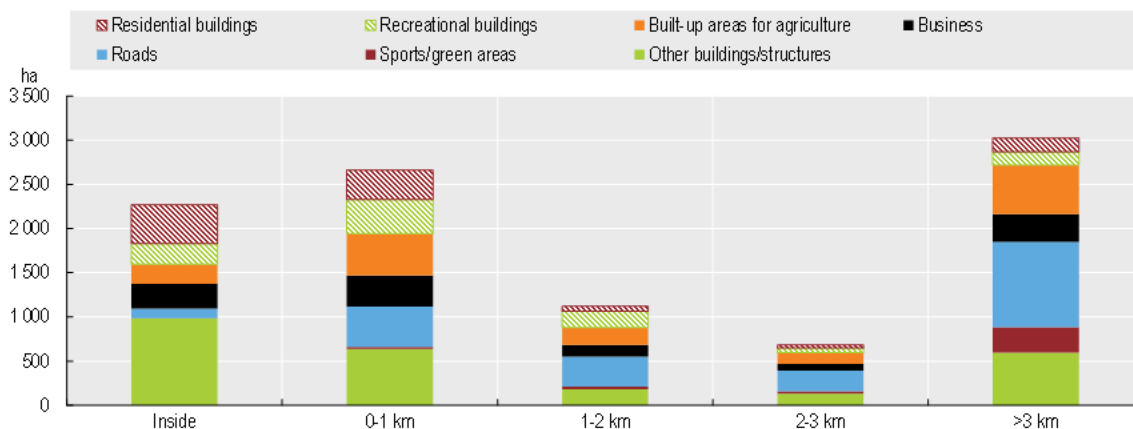
Total agricultural area has been stable over the long term, varying from a low of 0.90 million ha in 1976 to 1.05 million ha at its height in 2001. It was 0.985 million ha in 2021. Agricultural land used for farming reduced on average by 0.5% per year between 2006 and 2016. Unlike the OECD as whole, which has seen reduction in agricultural lands for all uses, the decrease in Norway affected only cropland (-0.7% per annum), while permanent pasture marginally expanded (0.3% per annum). Agropastoral systems make extensive use of unimproved pasture across the country. Agricultural area under organic certification expanded quickly from 1995 until 2012, reaching a maximum of 50 000 ha. Since then, it slowly declined to 4.7% of the total farm land in use in 2018, below average for the European Union (EU 27.8%) (OECD, 2021<sub>[19]</sub>).

The most productive agricultural areas are often near towns and are flat, accessible and cost efficient for development. This has led to a strong correlation between conversion of farmland and urban areas. Overall, 23% of the total conversion of farmland took place inside urban areas (Figure 2.11). Furthermore, 27% took place close to, and less than 1 km outside urban areas. Scattered development in rural areas (at least 3 km from the urban areas) accounted for 31%. In 2004-15, as much as 12% of all cultivated land in urban areas was converted to built-up areas. The corresponding share for locations less than 1 km outside urban areas was 1.1%. Residential areas constituted the greatest share of the converted land. A total of 2 530 ha of farmland was converted to residential areas, of which 80% was used for single-unit dwellings and semi-detached houses (Gundersen, Steinnes and Jostein Frydenlund, 2017<sub>[20]</sub>).



## Figure 2.11. Most agricultural land near settlements is converted to residential or recreational use

Converted agricultural area by distance from settlements and purpose, 2004-15



Source: Gundersen et al. (2017), *Nedbygging av jordbruksareal. En kartbasert undersøkelse av nedbygging og bruksendringer av jordbruksareal* [Degradation of Agricultural Land. A Map-based Study of Degradation and Changes in the Use of Agricultural Land].

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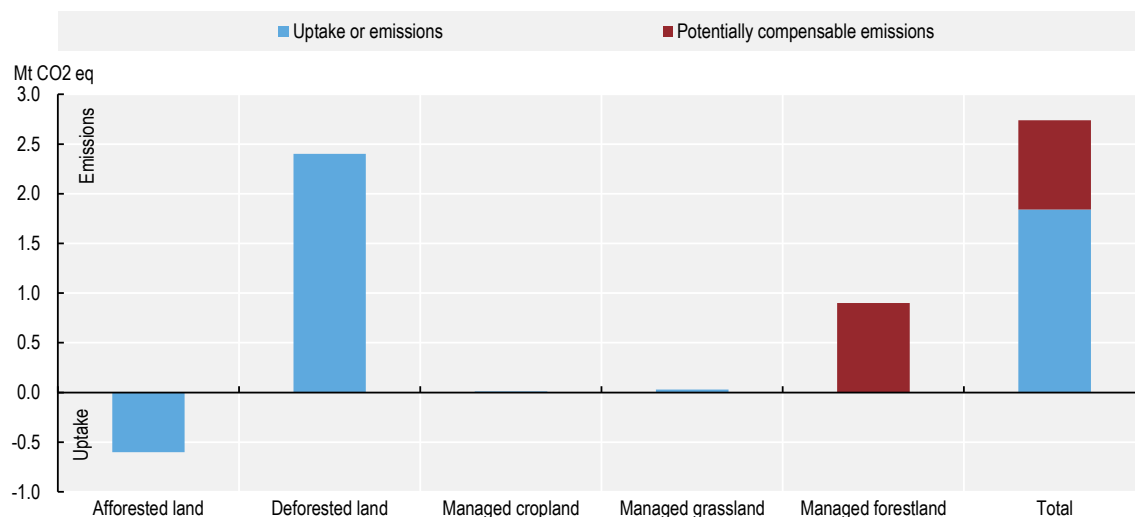
Agriculture emissions in 2019 were 4.4 million tonnes of CO<sub>2</sub> equivalent (CO<sub>2</sub>-eq), a decrease of 6.4% since 1990 (OECD, 2021<sup>[19]</sup>). GHG emissions from the agricultural sector represent 8.8% of total Norwegian emissions and 18% of non-ETS obligations. Objectives for agriculture are to reduce GHG emissions' intensity in production, increase the uptake of CO<sub>2</sub> and adapt production to a changing climate. The role of agriculture in Norway's climate change reduction plans was outlined in a voluntary agreement between the government and the main farmers' organisations, Norges Bondelag and Norsk Bonde- og Småbrukarlag.

According to the EU Land Use, Land-Use Change and Forestry (LULUCF) Regulation, Norway has committed to ensure that emissions do not exceed removals overall for the land-using sectors. As mentioned earlier, the baseline forest uptake of CO<sub>2</sub> is not counted, which actually makes forestry one of the largest LULUCF emitters under current EU accounting rules (Figure 2.12). Agricultural emissions are largely flat. Limiting conversion of peat bogs to agricultural land is one of the main tools available to control net LULUCF emissions. This would potentially save 450 000 tonnes CO<sub>2</sub>-eq for 2021-30, based on an assumption that the restrictions would prevent conversion of 200 ha per year.

Reduced GHG emissions from agriculture are in tension with the goal of increased food production. The potential for carbon leakage is cited as a reason to be less aggressive with respect to mitigation in agriculture [Meld. St. 11 (2016-2017)]. For agriculture to continue to be exempt from carbon taxation and other measures applied elsewhere, the sector must make a good-faith effort to reduce emissions. To follow up the 2019 letter of intent, the agricultural organisations drew up a climate action plan for the sector, published in 2020. This sets out how the agricultural sector intends to achieve the target through action in eight defined focus areas.


**Figure 2.12. Deforested land is the largest source of GHG emissions from LULUCF**

Projected total uptake or emissions from LULUCF, 2021-25



Note: LULUCF: land use, land-use change and forestry. Preliminary calculations of the projections of all land-use categories in the LULUCF sector. Agriculture uses (crop and grassland) have almost no projected impact on the LULUCF total. Under the EU forest management accounting rules, it is possible to exclude managed forest land emissions (so-called compensation) if the European Union has net removals and for countries with plans to increase removals in forest management.

Source: Norwegian Institute of Bioeconomy Research via Ministry of Climate and Environment (2019), *Norway's National Plan related to the Decision of the EEA Joint Committee No. 269/2019 of 25 October 2019*; and Ministry of Climate and Environment (2020).

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The plan is under the responsibility of the farmers' union and sets a voluntary target of 5 million tonnes of CO<sub>2</sub>-eq of abatement of GHG emissions and removals from agriculture between 2021 and 2030. This equals about 10% of 1990 emissions from agriculture on an annual basis. The plan has eight focus areas:

- Deployment of a climate calculator and increased investment in climate advice. By the end of the plan, all farms should be using the climate calculator and have been offered climate advice.
- Targeted efforts to improve roughage quality and use of feed additives, livestock breeding in cattle, sheep and pigs, and improved animal health.
- Adoption of machinery that runs on electricity, biofuels, biogas or hydrogen.
- Adoption of fossil-free heating sources.
- Better use of fertilisers through more environmentally friendly spreading methods, better storage capacity and timing.
- Increased use of livestock manure for biogas production to reduce GHG emissions in both agriculture and other sectors.
- Use of cover crops, biocarbon and grazing to remove carbon from the atmosphere and store it in plant biomass and soil.
- Development and application of new technologies that reduce GHG emissions and increase carbon storage.

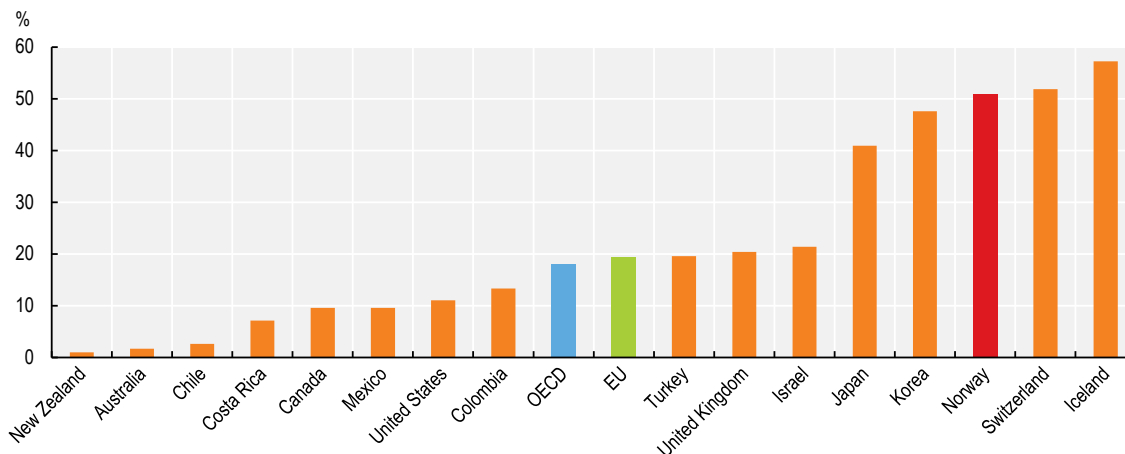
### Policy implementation regarding production and environmental objectives is not well balanced

Agricultural policy has four overarching goals: food security, agriculture across the country, increased value creation and sustainable agriculture with lower GHG emissions. Support payment rates vary by commodity and location to ensure a certain distribution of production in all regions (“canalisation” payments). State funding strongly shapes the agriculture sector; it accounts for more than half of farm incomes, among the highest in OECD countries (Figure 2.13). Each farm receives an average support of NOK 680 000 (about USD 72 200) per year (OECD, 2021<sup>[21]</sup>). Production support makes up 93% of total support to agriculture. Border protection results in effective prices received by farmers that were on average 1.8 times higher than world prices in 2018-20. Policy spending is focused on production, distribution and farm income objectives with relatively little spending on environmental sustainability objectives (OECD, 2021<sup>[19]</sup>).

Norway needs to better balance environmental policy goals with other objectives for the sector (OECD, 2021<sup>[21]</sup>). Environmental performance and the efficient creation of value added along the food chain are both compromised by support policies linked to production levels. Payments based on output incentivise production and risk over-use of natural resources. Moving to more decoupled support, even while maintaining payment rates that are adapted to different locations, would be more efficient.

**Figure 2.13. Producer support in agriculture remains among the highest in the OECD**

Producer Support Estimate transfers as a share of gross farm receipts, 2020



Note: Producer Support Estimate is the annual monetary value of gross transfers from consumers and taxpayers to agricultural producers, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on farm production or income. It includes market price support, budgetary payments and budget revenue forgone, i.e. gross transfers from consumers and taxpayers to agricultural producers arising from policy measures based on current output, input use, area planted/animal numbers/receipts/incomes (current, non-current) and non-commodity criteria.

Source: OECD (2021), “Producer and Consumer Support Estimates”, *OECD Agriculture Statistics* (database).

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Direct payments to farmers should be made conditional on proper implementation of an environmental plan. In addition, more can be done to internalise pollution externalities, especially for nutrient surpluses. Farmers can be aided through more targeted advice on sustainable technologies and practices. Moreover,

Norway should provide greater flexibility and stronger incentives for farmers to improve agri-environmental outcomes and develop climate-smart agriculture.

Soil protection policy is aimed at maintaining the resource base for food production. Norway has established a target of converting no more than 400 ha of cultivated land to other uses per year. This goal has been met in the last several years, but conversion rates were higher in the past. In 2004-15, 9 760 ha of agricultural land were converted to other uses. This is equal to just under 1% of total agricultural land area. Total agricultural land is just one factor determining ecosystem services from these landscapes, which depend in part on the way the land is farmed. From this perspective, an overall limit on land conversion is not a precise instrument. Moreover, maintaining agricultural land has important trade-offs for development, especially for housing. More flexibility in those areas where development needs are highest can bring net benefits.

While policies are designed in part to maintain the presence of small farms, average farm sizes have been increasing. Sector participants have invested strongly in capital to increase productivity and counteract the effects of labour outflows from the sector. Policies also exist (such as the Allodial Act) to encourage farmland to remain in the same family. This is intended to maintain family farms, but it leads to fragmentation of farmland ownership and a situation where the inheriting landowner may live in the city with someone else operating the land. This may result in under-use of land or poor land stewardship that leads, in turn, to a decline in the quality of agricultural land and reduced ecosystem services from it.

Maintaining ecosystem services from agricultural land cannot depend on preserving traditional agriculture structures and systems. Modernisation of the sector is desirable and likely inevitable. More flexibility in farmland markets can improve the structure of farm enterprises and the husbandry of farmland, with associated benefits for the environment. These benefits will be contingent in part on the presence of policies that encourage improving the quality of natural capital of farmland and the production of ecosystem services from it.

The Selected Cultural Landscapes in Agriculture (*Utvalgte kulturlandskap i jordbruket, UKL*) initiative supports farmers who want to make an extra effort to care for the cultural landscape in selected areas. The investment is based on voluntary agreements between the state and landowners. Co-ordination of these cultural landscapes nationally is the responsibility of the Norwegian Directorate of Agriculture, in collaboration with the Norwegian Environment Agency and the Norwegian Directorate for Cultural Heritage. Each of the selected areas is co-managed by the municipality, landowners and agricultural enterprises, in collaboration with regional agricultural, natural and cultural heritage management. The initiative had a budget of NOK 37.3 million (about USD 4 million) in 2020 (Landbruksdirektoratet, 2020<sup>[22]</sup>), an increase from NOK 12 million in 2016 (USD 1.4 million). However, this is only a small part (0.01%) of total agricultural support expenditure, which was NOK 26 billion (USD 2.8 billion) in 2020.

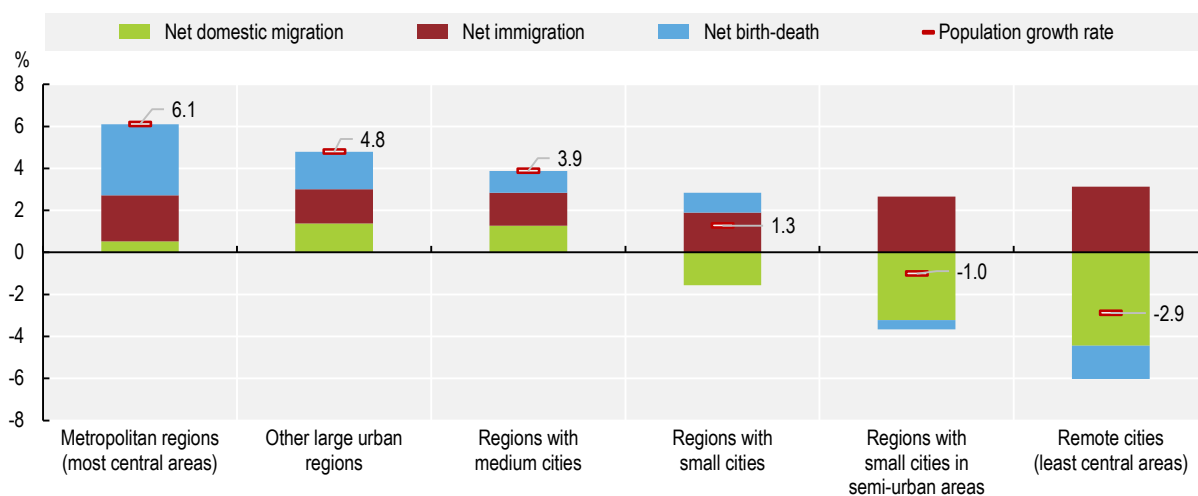
### **2.2.5. Development pressures on the environment are growing but uneven**

Compared with the rest of Europe, Norway's population has a large number of small and medium-sized cities spread over a large geographical area. The most central parts of the country, mostly in Norway's south, have the highest population growth and are the most attractive to immigrants. However, there are two major trends. On the one hand, the urban population in Norway's larger cities and surrounding areas, is rapidly growing (only ten cities have more than 50 000 inhabitants). On the other, the population living in smaller settlements in remote regions (still most people) is shrinking and ageing. This implies two different realities among these groups in terms of environmental impacts and ambitions, and the economic pressures they face. These differences can be expected to manifest in the objectives and outcomes of municipal planning.

Migration from rural to urban zones, particularly to the Oslo region, is expected to change the demand structure for ecosystem services, as urban and rural populations generally have different preferences in this regard (Figure 2.14). Urban populations may favour non-use or indirect ecosystem benefits, while rural populations make more direct use of ecosystems (such as for hunting and fishing).

**Figure 2.14. People move from remote regions to larger cities**

Drivers of population growth by type of regions, average yearly growth rate, 2016-21



Note: Remote cities include municipalities where the commuting distance to a large or small regional centre is more than a one hour drive.

Source: Ministry of Local Government and Modernisation (2021), *Regional Development Trends 2021*.

StatLink  <https://stat.link/y90ewa>

Demographic changes and population movements can affect ecosystem quality, as land-use changes have been the main driver of changes in ecosystem services and biodiversity (Miljøverndepartementet, 2011<sub>[23]</sub>). A government objective is to maintain the settlement pattern and slow or stop rural depopulation. Planning is important in this regard, as well-designed communities with connection to green spaces and a vibrant economy can make small towns and rural regions as a whole more attractive to population, visitors and business (Kommunal- og moderniseringsdepartementet, 2021<sub>[13]</sub>).

Development pressure is reflected in planning guidelines, which call for sufficient housing construction in areas that face housing market pressure. In this regard, the guidelines emphasise good regional solutions across municipal boundaries (Kommunal- og moderniseringsdepartementet, 2014<sub>[24]</sub>). These guidelines try to strike a balance among addressing pressure on housing markets, providing opportunities for development where needed and maintaining sustainability standards. For example, they prioritise infill development close to the city centre (which also contributes to the zero increase in vehicle traffic objective). They note the objective of agricultural soil protection but state this must be balanced against the needs of society at large. There is more flexibility in areas with low development pressure that need to increase the attractiveness of settlement areas.

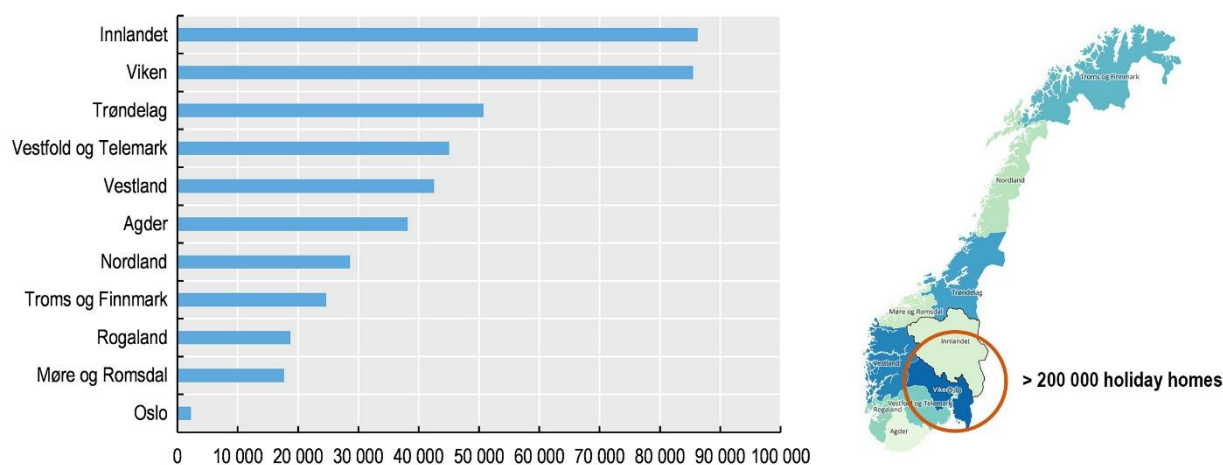
Population migration and growing affluence have increased demand for secondary residences for leisure purposes outside of urban areas. The COVID-19 pandemic has amplified this trend. There has been correspondingly large growth in the number of holiday homes being built – in mountain areas but also along the coast. This amount of new home construction is expected to continue. Most of this development

is infill of existing areas, but a significant share is in the form of diffuse development of scattered homes or new areas.


Part-time housing can be important for municipalities' finances and for land use. For many shrinking communities, holiday homes are the only realistic development opportunity. Several communities have more part-time than permanent residents (Figure 2.15). Many holiday homes are former farms, signalling an economic transition in the local community from agriculture to services and tourism.

**Figure 2.15. Demand for secondary residences is growing**

Number of holiday homes by region, 2021



Source: Østlandsforskning (2021), "Knowledge status holiday homes 1 June 2021".

StatLink  <https://stat.link/9yfexb>

The overlap between those area types planned for development and those likely in need of increased protection means that development activities need to be tracked and co-ordinated. This tracking would aim to ensure that development does not prevent achievement of national objectives for threatened species and protected areas. This requires a system that connects diffuse development activities with their expected cumulative environmental impacts. Such a system should feed information on expected impacts into land-use planning to help co-ordinate protection of biodiversity. Municipalities must already send their area plans to a national database in a manner that allows this information to be analysed (Steinnes, 2018<sup>[25]</sup>). EIA connected to a proposal is the main mechanism to identify these impacts. Regional and municipal plans identify related priorities with respect to land conservation and development. Both of these processes would be improved with greater integration of data on the overall state of the environment and the pressures on it. Chapter 1 also discusses how local EIA can be improved.

### 2.3. Protected areas

Norwegian protected areas have evolved through devolution of authority to local control. The first large protected areas were established following the Nature Preservation Act (1954) and drawing on national park plans developed by the Nature Conservation Council. Management of protected areas was largely top-down and based on "purist values". These promoted the absence of human influence as the most

important reason for protecting nature. The first national parks were established on state property in remote areas where traditional uses were allowed to continue. An amendment to the Nature Conservation Act (1979) that harmonised protected area planning with land-use planning legislation strengthened local participation in protected area management during the 1980s. A two-step process provided for negotiation on the designation, boundaries and regulations of protected areas before sending the plan for local hearings and municipal review (Hausner, Brown and Læg Reid, 2015<sup>[26]</sup>).

Today, protected areas are established under the 2009 Nature Diversity Act, with main emphasis on national parks, protected landscapes and nature reserves. The Act establishes a framework for protected areas, including general purposes and individual categories, general rules on permitted and prohibited actions, and governance (Fauchald and Gulbrandsen, 2012<sup>[27]</sup>). There will often be conflicts of goals related to protection, with a need to weigh the preservation of natural values against other societal interests (Norwegian Environment Agency, 2017<sup>[28]</sup>).

Protected marine and land areas are the most important policy tool for species and habitat protection, with other protection actions taken only as needed. When habitat protection alone is deemed insufficient, a species may be given priority status under the Nature Diversity Act. This makes it possible to prohibit all removal, damage to or destruction of the species in question. Protected areas make up just over 17% of Norway's mainland area. This is an increase from the 15% protected since the last Environmental Performance Review, meeting Norway's Aichi target for land protection. In the same period, Norway has added 4 000 km<sup>2</sup> of protected areas, including 656 new protected forest areas, 10 marine protected areas and 3 new national parks. The 40 mainland national parks represent around 10% of total protected area, with most of the rest managed mainly through the Planning and Building Act (PBA). This comprises more than 3 000 specific sites (Table 2.2). A smaller share of territorial waters, 3.5%, is protected, although Norway has committed to preserving 30% of marine areas as protected spaces. Considerably larger portions of land area in Svalbard (67%) and Jan Mayen (nearly all) are protected. About 87% of Svalbard's territorial waters and all of Jan Mayen's out to 12 nautical miles are protected areas.

**Table 2.2. Protected areas in mainland Norway by amount, percentage and count, 2020**

	Protected area total (km <sup>2</sup> )	Protected land area (km <sup>2</sup> )	Proportion of protected land area (%)	Protected sea area (km <sup>2</sup> )	Proportion of protected sea area – territorial waters (%)	Number of protected areas
All protection purposes	61 962	56 799	18	5 162	4	3 170
National parks	33 070	31 614	10	1 456	1	40
Nature reserves	9 159	7 554	2	1 606	1	2 457
Landscape protection areas	18 320	17 247	5	1 073	1	196
Marine protected area	1 081	0	0	1 081	1	16
Other protections	643	393	0	250	0	462

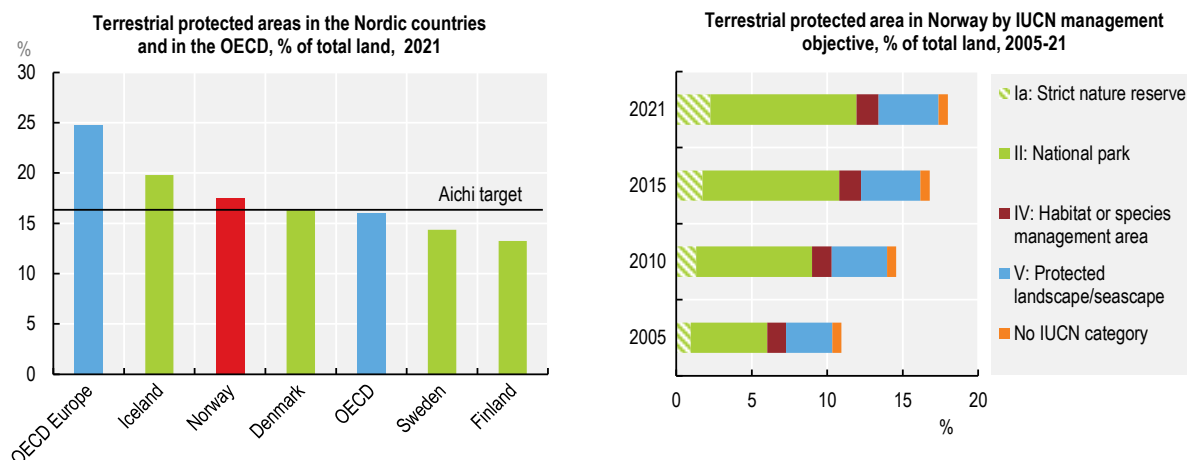
Note: Some protected areas belong to several protection categories. Total protected area is therefore smaller than the sum of protected area for all categories.

Source: Statistics Norway (2021), "Protected areas", *StatBank* (database).

The amount of protected land in Norway exceeds the OECD average and many of its Nordic neighbours (Figure 2.16). However, the amount of protected land is less than the EU average. Aichi target 11 covers area-based conservation measures. Norway's corresponding national target is that "a representative selection of Norwegian nature will be maintained for future generations". Promoting the conservation of "the full range of variation of habitats and landscape types" is mentioned in Section 33 of the Nature Diversity Act in a list of the objectives of establishing protected areas. Others include the conservation of endangered natural environments and major intact ecosystems.

**Figure 2.16. Protected area in Norway meets its Aichi 2000 target**

Terrestrial protected areas as percentage of land area in OECD countries, 2016-21



Note: Data exclude protected areas in overseas territories. In Norway, the share of terrestrial area protected, including Jan Mayen and Svalbard, is about 25%. Right panel: Protected areas under management categories of the World Conservation Unit (IUCN) classification. Strict nature reserve and national parks reflect the highest level of protection.

Source: OECD (2021), "Protected areas", *OECD Environmental Indicators* (database).

StatLink  <https://stat.link/0d2k6v>

Protected zones are identified in co-ordination with county governors and local governments, but identification itself does not ensure protection of areas of high merit. For example, some recently proposed national parks were cancelled due to lack of local acceptance (Norwegian Environment Agency, 2021<sup>[29]</sup>). Local acceptability is important. However, if the designation of an important natural area is purely a negotiation, this can make it more difficult to meet national objectives for conservation. As one sign of the important role of local economic trade-offs, most protected areas are high mountainous areas, with relatively little forest, coast or sea areas protected (Figure 2.17).

Norway is well below the OECD average for marine protected areas and failed to meet the Aichi target. According to the World Database on Protected Areas (WDPA), Norway protects 0.9% of its Exclusive Economic Zone (EEZ), compared to 21.5% (OECD), 18% (Denmark), 15.7% (Sweden) and 12% (Finland). Iceland is the only Nordic country that protects a smaller share of its EEZ, at 0.4%.

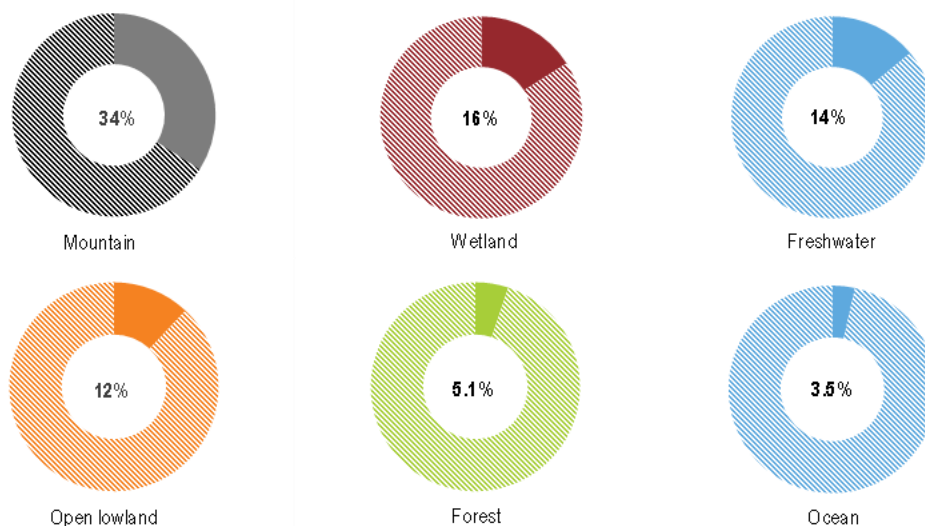
Large, contiguous protected zones are more effective at protecting biodiversity and threatened species. Many protected areas in Norway are small, in particular for habitat types most at risk (Norwegian Environment Agency, 2017<sup>[28]</sup>). In addition, protected areas along the western coast and northern Norway are often isolated from each other, especially wetlands. The protected areas along the mountain range in southern Norway and the Swedish border in the north have good connectivity (Framstad et al., 2012<sup>[30]</sup>).

Protected areas with a broad range of vegetation zones offer some protection against the effects of climate change, as species can migrate to different climatic zones within the same area. Only 5% of protected areas have climate variation over three vegetation zones or more, while only 8% include more than two vegetation zones. Many smaller protected areas have little variation in climatic conditions (Norwegian Environment Agency, 2017<sup>[28]</sup>). Including more vegetation zones in a single protected area would make these ecosystems more resilient to climate change and provide better habitat for species requiring large areas.



### Figure 2.17. Ocean and forest areas are relatively little protected

Proportion of protected area in Norway 2020



Source: Norwegian Environment Agency (2020), *Norway's environmental status*, <https://miljostatus.miljodirektoratet.no/norgesmiljostatus>.

Management of larger protected areas is devolved to 48 local management boards, an outcome described as a “grand experiment with delegation of authority” (Fauchald and Gulbrandsen, 2012<sup>[27]</sup>). This devolution was part of a comprehensive reform of national parks and protected areas. The budget for the management of protected areas (e.g. costs related to the boards, national park managers) has increased from NOK 60.1 million (USD 7 million) to NOK 85 million (USD 9.9 million) over 2014-21.

These protected area boards manage clusters of national parks, protected landscapes and nature reserves. The responsibility for small protected areas has been delegated to many municipalities (Hausner, Brown and Læg Reid, 2015<sup>[26]</sup>). Part of the reason for this devolution is to obtain local buy-in for environmental protection. The earlier, more centralised conservation management approach was viewed as bureaucratic and prioritising nature values over local values and user interests. Local resistance and conflict reduced its effectiveness.

Delegation of responsibility has reduced conflict between governments regarding protected areas. However, it has also led the management of some protected areas to become more responsive to local interests, potentially at the expense of national ones (Hovik and Hongslo, 2016<sup>[31]</sup>; Falleth and Hovik, 2009<sup>[32]</sup>). That said, there is evidence these management boards, which report to the Norwegian Environmental Agency, try to fulfil their obligations faithfully and can raise local awareness and anchoring (Hovik and Hongslo, 2016<sup>[31]</sup>). Thus, the management boards provide a useful balance between local and central government responsibility. The government has established an action plan to strengthen management of protected areas, with emphasis on increased staffing, improved mapping and measurement, and preparation of strategies.

Management boards must address the fundamental challenge of balancing conservation and sustainable use in protected areas. However, they are committed to doing this within the rules set by the government for each protected area. If they consider the board decisions to be in conflict with the established rules, non-governmental organisations and other stakeholders can complain to the Norwegian Environmental Agency. These boards have more promise of finding this balance than either a fully centralised or a fully devolved system. Other forms of co-management of protected areas between different levels of

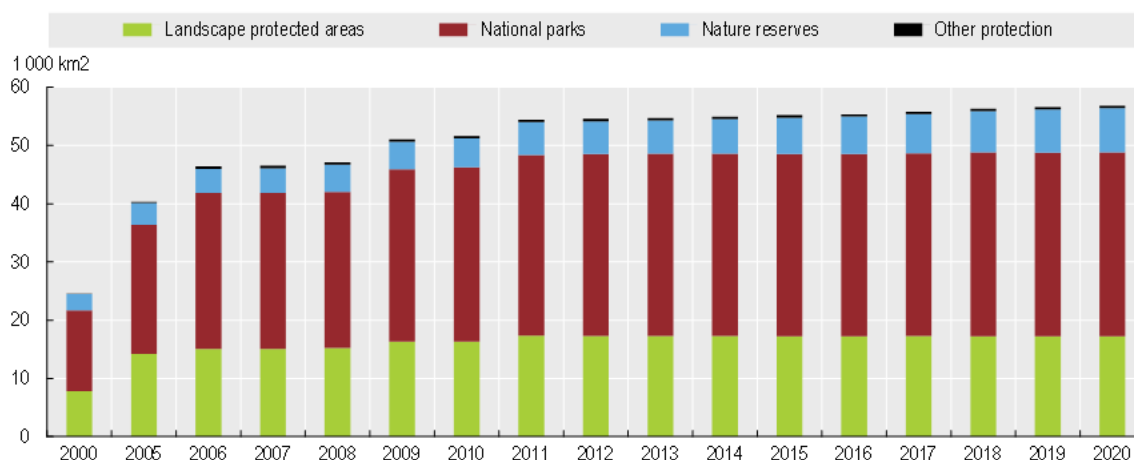
government can be found in Sweden, Scotland and Austria; this approach is also reflected in Norway's River Basin Management System.

### 2.3.1. Protected area policy focuses on improving quality of coverage rather than increasing overall area

The system was largely established between 1985 and 2000, a period that saw a rapid increase in protected areas (Figure 2.18). After 2000, increases in protected areas have been gradual. They have focused on coverage of areas of special interest, including conserving a representative sample of all landscape types for posterity. In the Nature for Life report, the government indicated that protected areas are largely sufficient and that no major expansion of protected areas was needed (Ministry of Climate and Environment, 2015<sup>[4]</sup>).

Figure 2.18. The protected area network has been relatively stable since 2011

Trend in protected areas, 2000-20



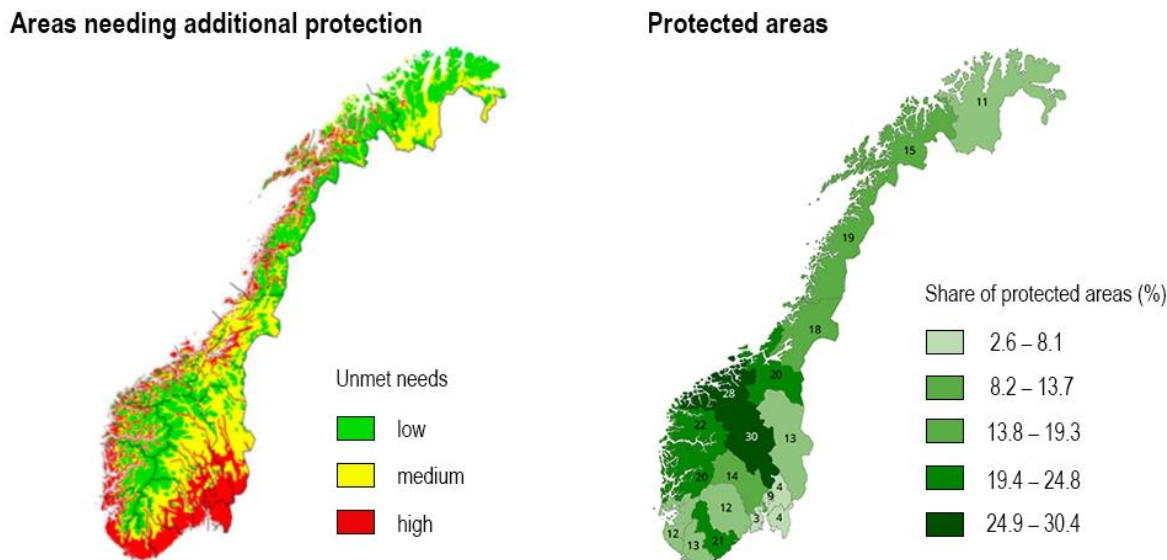
Note: Areas on Svalbard are protected according to the Svalbard Environmental Protection Act and areas on Jan Mayen are protected according to the Act of Jan Mayen and are not included. Landscape protected areas: flora and fauna protected areas. Since 2006 data also include nature relics with an area protection and biotops protected by the Act relating to Salmonids and Fresh-water Fish and the Wildlife Act. Other protection: areas with flora- or fauna protections are also included.

Source: Statistics Norway (2021), "Protected areas", *StatBank* (database).

StatLink  <https://stat.link/ip42nr>

The greatest need for additional terrestrial protection is in coastal areas and the south (Framstad et al., 2010<sup>[33]</sup>) (Figure 2.19). Several of the less protected habitat types appear on the Red List for habitat types.

**Figure 2.19. Most areas needing additional protection are in the south**



Note: The distribution of unmet protection needs is based on NINA's assessments and derived from the division of vegetation zones in Norway. Source: Norwegian Environment Agency (2017), *Forslag til plan for supplerende vern - Miljødirektoratets anbefalinger - Proposed plan for supplementary protection* [The Norwegian Environment Agency's recommendations]; Framstad et al. (2012), *Naturfaglig evaluering av norske verneområder. Verneområdenes funksjon som økologisk nettverk og toleranse for klimaendringer* [Scientific evaluation of Norwegian protected areas. The protected areas' function as an ecological network and resilience to climate change]; Statistics Norway (2016), *Norwegian Mapping Authority*.

While there is a need for additional protection of certain areas, this will be challenging. Most potential sites are either small, already affected by human activity or potentially affected (Norwegian Environment Agency, 2017<sup>[28]</sup>). In municipal area plans, areas set aside for agriculture, nature and outdoor purposes, as well as reindeer husbandry (LNFR areas), make up 87% of total planned area. LNFR areas have special development restrictions and allow only “scattered” dwellings. However, 75% of the remaining area planned for development is forest or open land, the two most important types for endangered species habitats (Steinnes, 2018<sup>[25]</sup>).

Many areas identified as worth protecting are in densely populated areas with intensive use of land for agriculture, industry, infrastructure and housing construction. This means development pressure will remain, as well as risk of increased fragmentation of associated ecological networks. Without a means of comprehensive and predictable protection of such areas, the national goal of representative conservation of Norway's areas is at risk (Norwegian Environment Agency, 2019<sup>[34]</sup>). Such areas that are simultaneously valuable for economic development and for a high level of ecosystem services pose a particular challenge for policy makers.

Conflict between social/economic versus environmental objectives may be an unavoidable part of area protection. Much of the land planned for development is of the types most relevant for threatened species. As mentioned, 75% of planned development is on forested or open land. Of this, agricultural land accounts for 6% of all land planned for development but 17% of land planned for residential development. Wetlands account for 9% of planned development area. Most of this is foreseen near urban centres; only 10% of residential development is planned for areas more than 5 km from a town (Steinnes, 2018<sup>[25]</sup>). Large-scale

development of secondary residences is expected to continue, especially in the central municipalities. The total area planned for development as of 2019 was 2 777 km<sup>2</sup>. Of this, 56% is forest and 20% is open land composed of agricultural land and wetlands (Rørholt and Steinnes, 2020<sup>[35]</sup>).

### **2.3.2. Expanding the protected area network and the voluntary forest protection scheme**

According to the Biodiversity Act, habitat types and ecosystems that are poorly represented in the protected area system should be progressively integrated into new or existing areas. This will ensure that threatened areas are conserved and a representative sample of Norwegian nature will be protected for future generations. Additional protection can also increase the robustness of protected areas.

The Norwegian Environmental Agency found deficiencies in area protection in all regions of Norway, including area types on the Red List for habitat types (Norwegian Environment Agency, 2017<sup>[28]</sup>). Its report found that not all habitat types requiring additional protection had examples worthy of protection, as many were too small or of poor quality.

The 2017 report started a process whereby county governors suggested areas suitable for additional protection. A May 2019 report describes 1 300 new protected sites, plus modification of some existing sites. Of these, 275 sites with a total area of 584 km<sup>2</sup> are ecosystem types that are either under-represented in protected areas or are in parts of the country with low protection coverage. For context, existing protected area is about 24 000 km<sup>2</sup>. The report also covers wetland areas in the region of Finnmark and proposed new national park areas as separate categories.

In the second phase, the Ministry of Climate Change and Environment will act on recommendations from the Norwegian Environmental Agency. To that end, it will proceed with protection plans under the Biodiversity Act. Related to the costs of compensation and establishment of new protected areas, the operating budget of the agency was increased by NOK 18 million (USD 1.9 million) in 2020. Grants for the care of endangered species and habitat types increased from NOK 33 million (USD 3.8 million) to NOK 42.8 million (USD 5 million) over 2013-21.

Protected area for forests is expanded through a process separate from other ecosystem types. For other land types, the government has discretion to designate a protected area, paying compensation after the fact (though local opposition may still be a decisive factor). For privately owned forest land, protection is at the discretion of the land owner. As a starting point, the authorities define priorities for the type of forests in the selection process. Private forest owners then suggest potential areas, which authorities evaluate. If the suggested area qualifies for protection, negotiations for compensation begin. If successful, the private owner receives a payment and the land is given long-term protected area status. This is done in co-operation with the Forest Owners' Association. The budget for forest protection has nearly doubled since 2013 and reached NOK 435 million (USD 50.6 million) in 2021.

A voluntary process for forest protection may be a pragmatic approach to this sensitive and often valuable land type, reducing conflict between landowners and government. However, it cedes control over outcomes as the government cannot target specific forest areas for protection, only choose among those sites offered. When threatened species depend on protection of specific forest areas, the government's capacity to act can be significantly constrained (Box 2.4).

### Box 2.4. Voluntary protection of forest land can put species at increased risk

Trøndelaven, *Erioderma pedicellatum*, is a rare lichen that is critically endangered both in Norway and in the world. This small lichen is coloured grey-blue to grey-brown with reddish-brown spheres, which are the fruiting bodies. It is only found in places with high humidity, which in Norway means two habitat types: boreal rainforest in Nord-Trøndelag and a brook gorge in Hedmark. Today, the species can be found only in one site: the brook gorge in Hedmark, and this is the only remaining known site in Europe. It can only be saved if the site is not logged and the humidity does not change for other reasons.

Area protection is the only practical policy tool available for this species. However, an inter-directorate group on threatened nature mandated to set out protection plans for endangered species declined to put this species on its priority list. It reasoned the voluntary protection policy was uncertain. This leaves the lichen without a protection plan and subject to landowners' forest harvest decisions for its survival.

Source: (Hovik and Hongslo, 2016<sup>[31]</sup>; NNV, 2011<sup>[36]</sup>).

Forests in Norway are vast, complex and diverse ecosystems that contain the largest share of all species. Forest land is the most important habitat for threatened species, where protection is well below targets, and for which the policy tool for protection is weaker than for other area types. This is a troubling combination that puts protection objectives at risk. The approach prioritises reducing conflicts with landowners, but conflict reduction for its own sake should not be a goal, however pragmatic.

## 2.4. Ecosystem quality outside of protected areas

### 2.4.1. Restoration, area neutrality or biodiversity offsets can help achieve national objectives for nature protection

As many important nature types are threatened and good candidate areas for protection in acceptable condition are not always available, restoring landscapes can help achieve biodiversity objectives. Until now, bogs, other wetlands and watercourses were the focus of restoration activity. Norway invested NOK 22 million (USD 2.6 million) in 2021 for such restoration measures in water management plans. For 2022, the government more than doubled the budget for restoring wetlands, watercourses, threatened nature and removal of alien species from NOK 17 million (USD 2 million) to NOK 41 million (USD 4.6 million).

The Norwegian Environment Agency has prioritised restoration projects in other ecosystems that can be implemented quickly and with good probability of success (Hovik and Hongslo, 2016<sup>[31]</sup>). Restoration work on some of these areas will start in 2022. It will begin inside protected areas on beach dune land, southern established beach dune land and open shallow limestone land in the southern boreonemoral zone. An important restoration measure will be removal of invasive alien species.

Area neutrality is an application of biodiversity offsetting that aims at no net loss of land-based natural capital relative to a reference state. The likely cumulative negative impacts of land use and land management decisions can be counterbalanced with measures to achieve equivalent gains elsewhere (Cowie et al., 2018<sup>[37]</sup>). Such offsetting is appropriate only after all practical steps have been taken to avoid and minimise impacts of the activity requiring offsetting. Area neutrality has been proposed as a solution that could balance development with conservation goals.

Area neutrality should occur only within specific land types to ensure “like for like” exchanges. As part of this, spatial characteristics such as ecosystem connectivity should be considered. Implementation should be managed at the local level as part of land-use planning. Meanwhile, achievement is assessed at national level according to objectives for landscape conservation, perhaps in the context of endangered habitats.

Mandatory biodiversity offset programmes are likely to be a much more powerful instrument than voluntary ones. The former tend to be more stringent, and associated with greater oversight, controls and the possibility of sanctions for non-compliance (OECD, 2016<sup>[38]</sup>).

There are several examples of such policies, also called biodiversity offsets, in OECD countries. One of the oldest is the US Wetlands Mitigation programme designed to achieve “no net loss” in wetlands (McKenney and Kiesecker, 2010<sup>[39]</sup>). In Europe, the Biodiversity Strategy to 2020 aims to ensure no net loss of biodiversity and ecosystem services. It foresees “an initiative to ensure there is no net loss of ecosystems and their services (e.g. through compensation or offsetting schemes)” (Tucker, Quétier and Wende, 2020<sup>[40]</sup>).

### **Box 2.5. The US Wetlands Mitigation Programme shows area neutrality can work if carefully implemented**

Each year, thousands of mitigation projects are undertaken in the United States under Section 404 of the Clean Water Act. Mitigation in the US Wetlands Mitigation Programme has at times been applied in ways that appear arbitrary, to lack transparency or that are seemingly uncoupled from the amount or type of impacts. However, these are fundamentally implementation issues and mitigation “design” challenges rather than any inherent problem with the basic concept or legal underpinnings of mitigation.

Without national policies, mitigation will be decided on a project-by-project, ad hoc basis, which invites arbitrary decision making. Ad hoc approaches are also time consuming for both oversight agencies and developers, and add significant unpredictability for developers.

Mitigation done right can support efficient and defensible government decisions, predictability for project proponents, and positive outcomes for communities and the environment. To achieve these benefits, clear national mitigation policies are needed that provide direction on how to meet the obligations of legal authorities and that establish a framework that can be applied consistently at the local level.

The success of mitigation projects depends on the following:

- carefully defined reference conditions
- a focus on groundcover restoration
- monitoring of plant and animal community structure, not just presence or cover of exotic or nuisance species
- consideration of the sustainability of mitigation within the landscape
- a focus on achieving success criteria and not task completion
- good co-ordination and standardisation across regions
- adequate compliance responsibilities of the regulatory agencies.

Source: (Hough and Harrington, 2019<sup>[41]</sup>; Chinners Reiss, Hernandez and Brown, 2007<sup>[42]</sup>).

### **2.4.2. Quality norms add an additional layer of protection**

The Nature Diversity Act allows for establishment of quality norms for biological, geological and landscape diversity when the biodiversity of a species or ecosystem has a negative status or trend. A norm could, for example, set standards for the abundance of a species or nature type, or the ecological state of a species or nature type.

Norms established under the Act are not legally binding but are considered stronger than policy recommendations. A norm can lead to an action plan of measures for its achievement. Two such action

plans are in existence, one for salmon and one for wild reindeer. Atlantic salmon are listed as “near threatened” on the Norwegian Red List for Species.

Quality norms can support better decision making by providing a benchmark for planning and objective setting. This can help close gaps between local planning and national objectives as part of an overall system of ecosystem assessment and accounting.

An example of a successful quality norm is that in place for wild reindeer. Norway is subject to an international obligation under the Berne Convention to protect wild reindeer herds and their habitats. As a result, wild reindeer are a national responsibility. They require large areas, and their habitats extend across municipal and county boundaries.

Wild reindeer were originally found in all mountain regions of Norway. However, due to human intervention, Norwegian wild reindeer are now found only in 24 areas in the south, and the population is at risk of fragmentation. Climate change is making grazing conditions for wild reindeer more difficult, and diseases and parasites can have a negative impact on herds. For example, in 2016, the entire wild reindeer herd in Nordfjella zone 1 was culled to fight chronic wasting disease. The quality norm is designed to ensure that viable populations of wild reindeer are maintained in southern Norway, and to contribute to more manageable and cost-effective management of wild reindeer.

The quality norm for reindeer sets values for good, medium and poor quality for wild reindeer in wild reindeer areas. The goal is to maintain or reach medium quality for each reindeer area as soon as possible, with a long-term goal of good quality. This goal may deliberately not be met in the face of important societal interests. The bar for such exceptions is higher in established national wild reindeer areas.

The quality norm has three components: the condition of the herd, grazing availability (especially winter forage) and human interactions with habitat (affecting the range and movement of the herd). Each area is assessed every four years. The overall classification is determined by the worst-performing component. For example, a wild reindeer area would be assessed as poor quality if human activity significantly restricts the herd, even if the population and grazing conditions are good.

The Norwegian Environment Agency identifies reindeer areas for classification under the quality norm and prepares a report explaining the assessed quality. Professionals carry out assessments supported by up to two local representatives familiar with the wild reindeer area. If the quality norm is not reached, or is at risk of not being reached, the Ministry of Climate and the Environment must prepare an action plan for improvement. Such plans consider activities in the area and balance social interests.

To date, the agency has appointed nine Wild Reindeer Committees following proposals from municipalities. These committees, among other things, approve stock plans and set annual hunting quotas. They also participate in spatial planning in counties and municipalities (according to the PBA), with a view to sustainable management of wild reindeer habitats.

## 2.5. Land-use planning

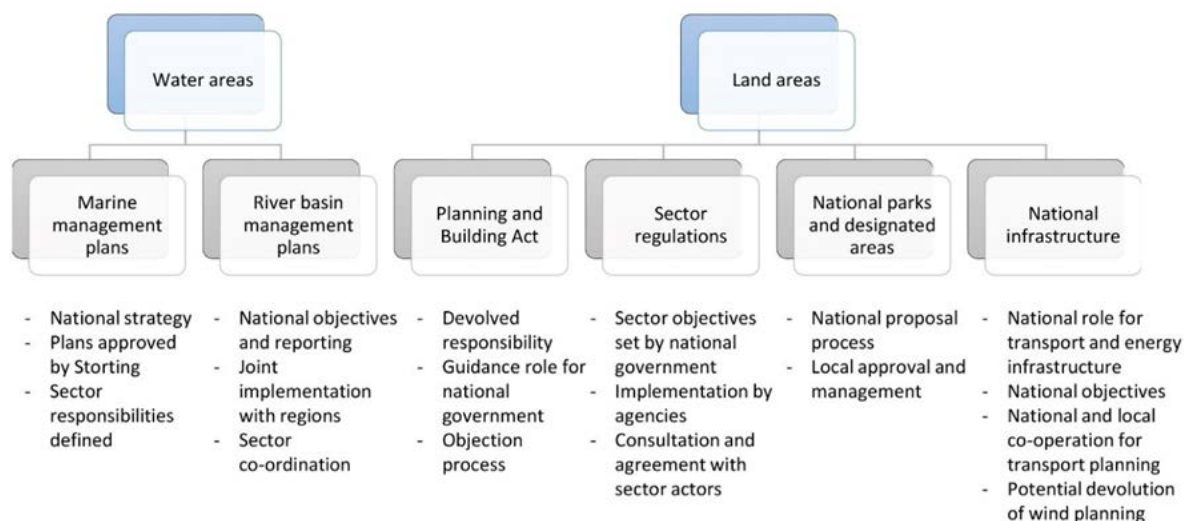
Best practice for spatial planning calls for an ecosystem approach to develop a multi-sector strategy that balances and achieves environmental, economic and social objectives. In an ideal scenario, spatial plans provide the environmental baseline and framework, including biodiversity targets, for strategic environmental assessments (SEAs) of proposed land-use plans, and EIAs for specific projects (Tucker, Quétier and Wende, 2020<sup>[40]</sup>).

Setting quantitative and time-bound biodiversity targets can help inform the design and sizing of mitigation and offsetting requirements for land-use plans. Spatial planning can, for example, identify target areas for ecosystem restoration, green infrastructure and offsetting. Norway is setting the stage with NiN ecosystem quality targets and quality norms for species and habitats as called for in the Nature Diversity Act. However,

these targets are not fully integrated into planning. Norway is not alone in this regard. Only a few regions in the European Union develop large-scale terrestrial spatial plans that identify desired land uses with respect to environmental, social and economic needs. Moreover, not all countries explicitly address biodiversity in spatial planning by identifying areas of land with different levels of biodiversity importance and protection to achieve biodiversity objectives (Tucker, Quétier and Wende, 2020<sup>[40]</sup>).

The national government manages its activities related to spatial planning through five main mechanisms. These are marine management plans, river basin management plans (RBMPs) (for ecosystem-based management of marine and coastal waters, and rivers and lakes), sectoral legislation, the PBA and the system of national parks (Figure 2.20). In addition, the government may take direct statutory action to preserve important habitat areas or designated species. Sectoral ministries and agencies are systematically involved; it is a principle of Norwegian environmental policy that each sector deals with pressures and impacts resulting from its own activities.

**Figure 2.20. Different domains have different approaches to spatial planning**



Source: Country submission.

Land regulation is seen as fragmented, with a complex division of authorities across sectors and between decision levels. A sector-based focus and division of responsibilities is in principle not a problem as long as authorities can co-ordinate. In many cases, however, one body's decisions will affect or interfere with another's areas of responsibility. Given interests are not always compatible or comparable, legislation allows broad discretionary assessments to balance conflicting interests. However, some sector bodies may face considerable pressure to deliver on sector-specific objectives at the expense of other important considerations (Ministry of Local Government and Modernisation, 2014<sup>[43]</sup>). For example, sector agencies may be under pressure to maintain timber or agriculture production levels, or complete transportation networks.

At the national level, the Ministry of Agriculture and Food (LMD), the Ministry of Climate and Environment (KLD) and the Ministry of Local Government and Regional Development (KDD) have the greatest responsibility for land management. KLD manages environmental legislation, including area protection, coniferous forest protection, game management, water management, inland fisheries management, motor traffic and nature supervision, and cultural heritage landscapes. The Norwegian Environment Agency and the Directorate for Cultural Heritage are government agencies under KLD but operate independently in many individual cases. The Norwegian Environmental Protection Agency is part of the umbrella agency



and has more than 60 local offices. LMD administers agricultural legislation, while KDD is responsible for the municipal sector and the PBA (Box 1.2, Chapter 1).

The county governor is a national appointed entity with wide responsibility to represent national interests and act on behalf of the government. This includes:

- serving as an oversight and appeals body for a number of laws concerning wilderness (*utmark*) management
- managing certain stocks of inland fish
- managing area protection according to the Biodiversity Act
- handling area management of wild reindeer.

The county municipality (elected regional government) is responsible for:

- management of inland fish, except for vulnerable and endangered species and anadromous salmonids
- game management and hunting, except wild reindeer
- regional plans and action programmes, including for the wild reindeer herd
- outdoor recreation.

The municipality is responsible for planning and development. SEAs are linked to municipal master plans, although regional bodies also undertake SEAs. This makes municipal bodies responsible for evaluating the environmental implications of their own planning decisions (Section 1.4.2).

### **2.5.1. River basin management planning provides an example of good co-ordination**

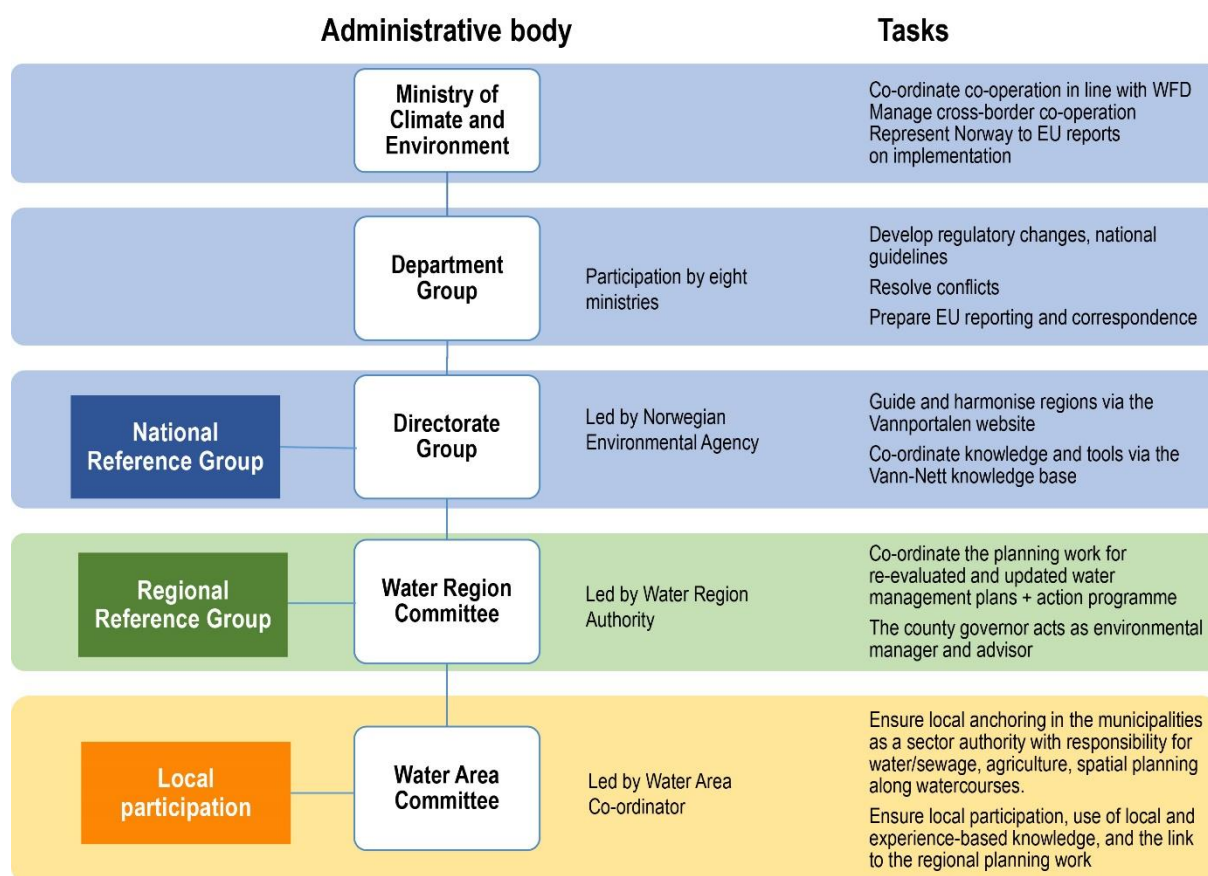
The national government sets out objectives and a national administrative structure, with different ministries and national agencies participating at different levels (Figure 2.21). This helps ensure that sector administrations harmonise their activities. Implementation responsibility is delegated to county and local governments. The county governments have primary responsibility for water regions (also termed river basin districts) and have been designated as *water region authorities*. Water regions may be divided into water areas. This is a devolved authority from the water region committee to allow for local participation.

The Norwegian Environment Agency is the national co-ordinating body. Its tasks include advising KLD, leading the Directorate Group, guiding water management authorities, co-ordinating water management with neighbouring countries and co-ordinating Norwegian participation in joint European water co-operation.

Water region authorities establish and lead water region committees. These committees are composed of representatives of the river basin district authority and other county governments, county governors' offices, and other affected sector authorities and municipalities. Representatives of affected licensees and private and public user interests advise the committee through a reference group.

All relevant authorities and stakeholders can participate in river basin work. The process helps ensure local anchoring by reflecting local knowledge and consent for environmental measures. In most river basin districts, a co-ordinator acts as an intermediary between the municipalities involved, the county municipalities and the state. As a planning authority, the municipality ensures that environmental goals and consideration for the aquatic environment are integrated into its local planning.

Figure 2.21. River basin management is co-ordinated and collaborative



Source: Water Portal (2021), *Ministries and Ministries Group for Water Management*, [www.vannportalen.no/organisering2/nasional-vannforvaltning/departementene-og-departementsgruppa](http://www.vannportalen.no/organisering2/nasional-vannforvaltning/departementene-og-departementsgruppa).

The water region authority for each river basin develops RBMPs, which the national government approves. This forms the basis for the relevant planning and implementation activities by national, county and local authorities. The authorities concerned implement the necessary legislation and measures in line with their legal and administrative responsibilities.

These management plans describe the river basin and set environmental objectives for the water bodies. They provide an overview of protected areas and analyse human impacts. They set out an action programme and monitor results. The action programme part of the management plan includes all the measures to achieve national objectives and guidelines, including measures to protect and improve water quality, water management and use, including by controlling water extraction and discharge of pollution.

### Box 2.6. River basin management planning works best with clear and realistic priorities

A survey of participants in the RBMP process produced generally positive results, with a few caveats. Some quotes from the survey sum up the results:

“The holistic process strengthens the aquatic environment compared with sectoral treatment. The work brings together all the actors, influences are seen in context and all contribute to common environmental goals. The work increases awareness of the value of a good aquatic environment, as well as current problems. The knowledge base is improved, ecosystem-based and comprehensive. The process is open and democratic with participation and participation regionally and locally.”

“The work on the management plans can be strengthened by better prioritization of measures and distribution over planning periods, simplifying and clarifying instruments and measures and clarifying the relationship between regional and national priorities.”

“Authorities can do more to go beyond sector thinking and be more holistic. Priorities should be set more clearly according to theme or geographical scope, with associated allocation of funds. It is also important to communicate better the objectives and benefits of water management.”

“The risk is having unrealistic plans that do not yield concrete results, and leave unresolved issues and goal conflicts at a central level. Sufficient funding is needed for monitoring, process, staffing and implementation of measures, as well as clear processes, roles and responsibilities, without becoming excessively bureaucratic.”

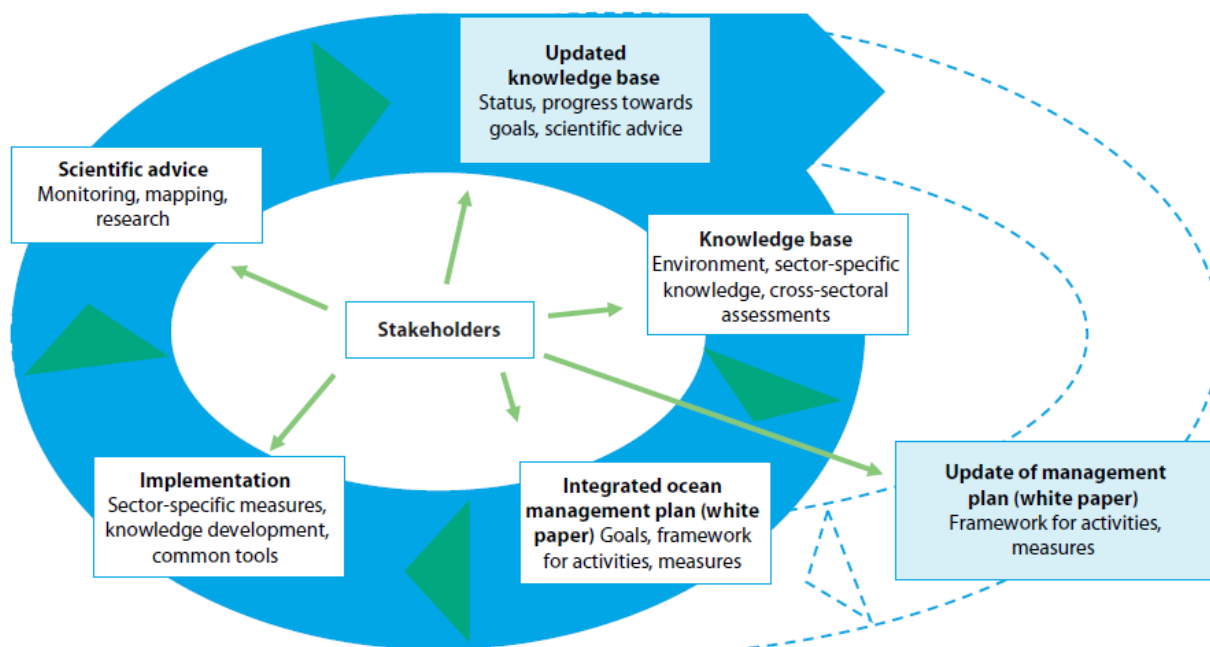
Source: Norwegian Environment Agency (2016), *Oppsummering av spørreundersøkelse: Evaluering av vannforskriftarbeidet 2010-15* [Summary of survey results: evaluation of work on water regulations 2010-15].

### 2.5.2. Marine management plans help sectors to co-ordinate

Marine management plans aim to facilitate value creation through the sustainable use of the sea areas' resources and ecosystem services, and at the same time maintain the ecosystems' structure, mode of operation, productivity and biodiversity. The management plans contribute to clarity in the overall framework, co-ordination and priorities in the management of the sea areas. Increased predictability for and better coexistence of marine-based industries is an important goal. Sector regulations form the basis for regulating activity in the management plan areas. Sector authorities also primarily implement measures in the management plans, in accordance with relevant laws and associated regulations (Kommunal- og moderniseringsdepartementet, 2021<sup>[13]</sup>).

Marine management plans are based on an integrated, ecosystem-based regime (Figure 2.22). Integrated, ecosystem-based ocean management balances conservation and sustainable use of rich, productive ecosystems. Ecosystem-based management uses available knowledge as a foundation, and considers ecosystems as a whole, including people, when decisions are needed on oceans and marine ecosystems. Marine management plans evaluate the cumulative effects of all human activities on the marine environment and by managing use of the oceans in a way that maintains the natural functions of ecosystems and ecosystem services.

Figure 2.22. Ecosystems-based ocean management balances conservation and use



Source: Norwegian Ministry of Climate and Environment, (2019), *Norway's integrated ocean management plans*.

Work on the management plans is co-ordinated by an inter-ministerial Steering Committee for integrated ocean management, led by KLD. Other ministries represented in the committee are Labour and Social Affairs; Finance; Defence; Justice and Public Security; Local Government and Regional Development; Trade, Industry and Fisheries; Petroleum and Energy; Transport; and Foreign Affairs.

Scientific support for the plans provided by two advisory groups: the Forum for Integrated Ocean Management (headed by the Norwegian Environment Agency) and the Advisory Group on Monitoring (headed by the Institute of Marine Research). The former provides the overall scientific basis for updating and revising the management plans in co-operation with the latter. The Advisory Group also co-ordinates monitoring for marine ecosystems and reports on environmental status in the management plan areas.

### 2.5.3. The Planning and Building Act governs much of land-use decision making

The PBA provides a broad framework for planning and building in Norway, regulating co-operation of the public, municipalities, county institutions and national bodies. The law applies to the landmass of the country, all watercourses and marine areas up to 1 nautical mile from the baseline.

The Norwegian PBA is similar to the legislation of many of its Nordic neighbours (Table 2.3). The main differences are the ministry responsible and the binding or advisory nature of national guidance. All of the Nordics involve national, regional and municipal bodies to some extent in planning. Norway's system is unique in that private entities are the source of most planning proposals and that it specifies a set timeframe for the process.

**Table 2.3. Responsibilities for planning legislation in Nordic countries**

Country	Law	Responsible ministry	National guidelines	Notes
Norway	Planning and Building Act	Ministry of Local Government and Regional Development	Advisory	Was under Ministry of Climate and Environment until 2013
Denmark	Danish Planning Act	Ministry of Business and Growth	Advisory	Was under Ministry of Climate and Environment until 2015
Finland	Finnish Land Use and Building Act	Ministry of Environment	Binding	
Iceland	Planning and Building Act	Ministry of Environment	Advisory	Ministry of Environment must approve municipal plans
Sweden	Swedish Planning and Building Act	Ministry of Enterprise and Innovation	None	County Administrative Boards monitor enforcement of national policy

Source: Adapted from Fredricsson and Smas (2013), *En granskning av Norges planeringssystem* [Analysis of Norway's planning system].

Section 3.1 of the PBA establishes the responsibility for municipalities to formulate a planning strategy and produce plans that safeguard land resources, landscape qualities and the conservation of valuable landscapes and cultural environments, among other areas. As noted, private bodies have the right to put forward planning proposals (detailed zoning that are within the frame of the municipal plan's area part or a less detailed zoning plan), and indeed most come from the private sector. When a private body puts forward a plan, it must assess whether they must produce an EIA that meets established criteria, or whether it is sufficient to make an investigation without a formal EIA. These assessments are also generally produced by private firms. There is no certification process for firms that produce EIAs, but firms must ensure their assessments meet the requisite quality; they can be penalised for non-conformance.

The county (regional) council formulates a planning strategy, master plans and planning provisions for the region. Only the regional planning strategy is mandatory. These plans are intended to stimulate physical, environmental, health-related, economic, social and cultural development. The county council is required to establish a regional planning forum to bring together relevant government agencies, including the Sami Parliament, to discuss and co-ordinate. The outcomes of this forum are not binding. The public and civil society organisations are informed about the outcomes and may provide comments but do not participate directly.

#### *National goals and objectives in the PBA are non-binding*

In most cases, the national government does not set explicit or binding goals for land-use planning. It generally respects the principles of local autonomy and self-determination. The national government provides land-use guidelines for local authorities but can safeguard national or regional interests (mostly for infrastructure projects). This guidance forms the basis of national participation in the planning process. It includes multi-annual national expectations with regard to regional and municipal planning, and central government planning guidelines, planning provisions and land-use plans.

Every four years, the government issues a non-binding document that outlines its priorities and guidance to regional and municipal governments (Miljøverndepartementet, 2011<sup>[23]</sup>; Ministry of Local Government and Modernisation, 2019<sup>[44]</sup>). These national expectations cover many important policy areas, including climate, nature, cultural environment, transport, health and quality of life. Earlier versions provide clear guidance regarding the desired environmental outcomes of the planning process, for which the Environment Ministry was responsible. The latest version of this document, prepared by KMD, focuses much more on ensuring good processes at the local level rather than specific outcomes (Strand and Næss, 2017<sup>[45]</sup>).

The government has put much responsibility for achieving the SDGs on county and municipal governments. In its national expectations document, it says “The county and municipal authorities [should] base their social and land-use planning on the United Nations’ Sustainable Development Goals.” The national government contributes through co-ordination between stakeholders, sharing of lessons learnt to build local competence and development of indicators for all the SDGs (Kommunal- og moderniseringsdepartementet, 2021<sup>[13]</sup>; Ministry of Local Government and Modernisation, 2019<sup>[44]</sup>). In other words, the national government’s role is enabling and supporting rather than leading.

### *The objection process*

The national government and affected regional bodies, neighbouring municipalities and the Sami Parliament have the right to object to proposals regarding land use in the municipal master plan and the zoning plan in certain cases. These relate to issues of national or significant regional importance, or which are significant to the sphere of responsibility of the body in question.

Two principles have been set out for land-use decisions that affect biodiversity (Ministry of Climate and Environment, 2015<sup>[4]</sup>):

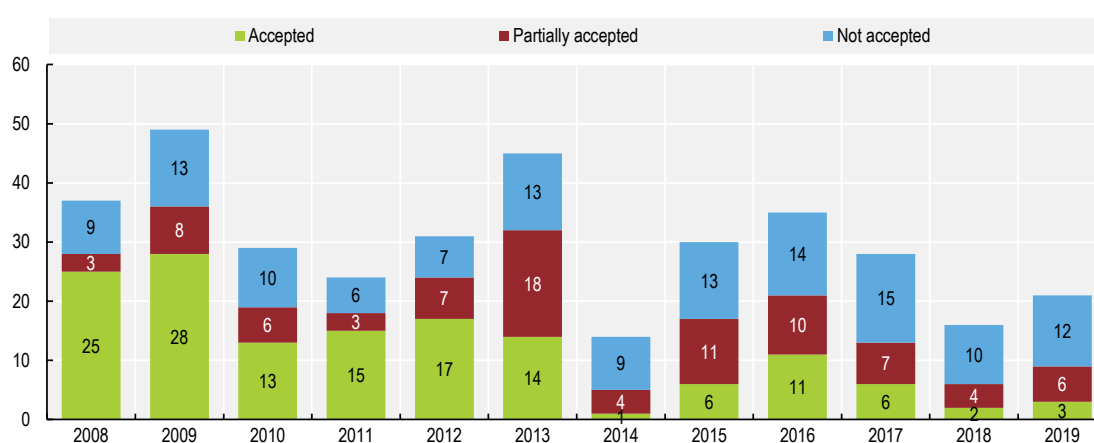
- The most valuable species, habitats and ecosystems should be safeguarded in connection with decisions on land conversion and land-use change.
- If a development or activity entails a risk of loss or of damage to valuable biodiversity, it should ideally be moved elsewhere.

With respect to area neutrality mentioned above, these principles should be seen as higher priority.

After 2013, the national government made efforts to reduce the number of objections raised by national agencies (NORUT, 2016<sup>[46]</sup>; Strand and Næss, 2017<sup>[45]</sup>). The number of objections sent to KMD between 2014 and 2019 dropped by one-third. The ministry (then the Ministry of the Environment) accepted about 50% of objections before 2014 but only 20% after 2014 (Figure 2.23).

**Figure 2.23. Objections have declined significantly since 2014**

Decisions by the ministry regarding objections, 2008-19



Note: Most objections are resolved without having to go to the ministry for final decision. Responsibility was moved from the Ministry of the Environment to the Ministry of Local Government and Modernisation in 2013.

Source: Country submission.

It is unclear what is behind the reduced number of objections arriving at the ministry for decision. As noted earlier, the government signalled a preference for fewer objections, which could make county governors and national agencies more reluctant to produce them. During the same period, county governors and agencies also produced objections in a different way. They established a process that led to better dialogue between the county governors' offices and the state authorities, clearer and more predictable participation by government agencies, qualitatively better objections and fewer objections (NORUT, 2016<sup>[46]</sup>). Even though objections are deemed to be of higher quality, the ministry's rejection rate remains higher than in previous years.

Municipalities tend to view the objection process as needless bureaucracy that springs from a lack of trust in their capacity. From the perspective of county governors, this view reflects municipalities' lack of appreciation of their actual room to manoeuvre in the PBA. Governors note that between one-third and one-half of the objections are due to formal errors and not a challenge of local decision making (Ministry of Local Government and Modernisation, 2014<sup>[43]</sup>).

### *Local autonomy versus national priorities*

Norway's land-use planning process is not exceptionally decentralised when compared to its neighbours (Fredricsson and Smas, 2013<sup>[47]</sup>) or to the OECD as a whole (OECD, 2016<sup>[48]</sup>). However, decision making is concentrated at the municipal level, which can lead to different outcomes in different municipalities. Most larger urban centres have ambitious environmental programmes, particularly with respect to climate change and the SDGs. Smaller communities with stable or declining populations struggle with ageing populations and feel pressure to provide economic opportunities to sustain their communities. Consequently, they may place a lower priority on environmental objectives (Kommunal- og moderniseringsdepartementet, 2021<sup>[13]</sup>).

Outside of major urban centres, there are four broad community types in Norway (Frisvoll, 2018<sup>[49]</sup>). Declining communities are those facing prolonged population decline, reduced employment opportunities and a limited economic base with a large share of public sector employment. Industry-dependent communities rely on resource-based businesses such as forestry, mining or energy. Recreation communities are attractive areas for outdoor activities, will have large numbers of leisure homes (secondary residences) and are close enough to population centres to make visiting practical. Bedroom communities are within commuting distance of larger labour markets and offer a good quality of life with a balance of rural and urban amenities. Each of these community types will have a different relationship between their economic and social basis and the surrounding environment. For some, ecosystem services in the form of local use and amenities will be paramount. For others, ecosystem services will play a minor role in the economic prospects of the community.

Not only are incentives different for each community, the municipality's competence and capacity will determine its ability to plan in a holistic and co-ordinated fashion. It is not a given that municipal planners will approach challenges in the same way as planners with professional competence. Local biodiversity action plans are one tool to raise local awareness of the value of ecosystem services to the community, and guidance by county governors has grown in importance. Building local competence and capacity is a necessary but insufficient condition to ensure local planning is coherent with local needs and national objectives.

Local opposition by landowners and municipalities has complicated the national objective to increase protected areas that are representative of all parts of Norway. On the one hand, this is reasonable, as local acceptability is important to the legitimacy and success of protected areas. On the other, more effort should be made to build local support for national objectives for biodiversity and landscape protection. Local acceptability should not imply a local veto when national interests are significant.

### *Use of exemptions*

In 2019, more than 100 municipalities still lacked recently updated area plans (Rørholt and Steinnes, 2020<sup>[35]</sup>). Where area plans are out of date, developers may use the exemption or dispensation process to gain approval for development plans. The large majority of applications are approved through this exemption process each year (Table 2.4). However, this approach risks reduced transparency and making development activities inconsistent with overall objectives. For example, most applications for housing in the sensitive coastal zone area where special rules apply are made through the exemption process.

**Table 2.4. Applications for new buildings along the coastal zone outside urban areas**

	Total number of applications processed	Applications consistent with plans approved	Applications approved through exemption of regulation
2016	1 403	391	790
2017	1 384	446	720
2018	1 319	473	751
2019	973	278	606

Note: The Norwegian coastal zone, also known as the 100-metre belt, includes islands with mainland connection by bridge or ferry. In addition, the statistics include the 100-metre belt around the main rivers and lakes.

Source: Statistics Norway (2021), "Construction in the coastal zone", *StatBank* (database).

The exemption and dispensation practice is frequently used because the area part of the municipal plan is outdated. Ideally, the municipal plan is a strategic document that should inform development proposals and ensure harmony with municipal plans. Area plans cannot serve this function unless they are actively maintained. There need to be stronger incentives to update and modernise municipalities' plans.

### *The coastal zone has special protections*

The coastal zone is a desirable area for development of holiday homes and other activities, and development pressure has reduced ecosystem quality in the coastal area. Coastal activities like dredging, and development of piers, marinas or artificial beaches can take place without any comprehensive plan and without any overall knowledge about cumulative consequences (Stokke et al., 2009<sup>[50]</sup>). Such measures can have negative consequences for marine biological diversity in the coastal zone. This is true for both spawning and rearing areas for important fish species and for fishing itself. The cumulative effects of such activity over time is of greatest concern.

To address this, development within the 100-metre belt along the sea has been banned (Kommunal- og moderniseringsdepartementet, 2021<sup>[51]</sup>). In this zone, it is not permitted to implement construction, demolition, alteration, changed use and other measures related to buildings, structures and facilities, terrain encroachment, or creation and alteration of property. The building ban applies to other activities and changes in land use in conflict with land purposes, planning regulations and consideration zones, or to older plans without a set building limit.

The building plan does not apply if the municipality has opened up a coastal area for development and set a building boundary in the municipal plan's area part or zoning plan. According to state planning guidelines, new measures can be approved to a greater extent in areas with little development pressure and a lot of accessible beach zone than in areas with the opposite conditions.

### *Avenues for action to improve outcomes of the planning process*

Outside of the objection process, the national government mainly uses soft tools to influence the local planning process to achieve its objectives, such as for the SDGs. That is, it relies on guidance, advice,



support and information to help shape local plans. These tools can be effective but may not be enough to ensure that national objectives are met. Sector regulations are stronger tools but are not always well co-ordinated. Most importantly, Norway needs to base measurable and time-bound national objectives on good scientific understanding of the state of land use, biodiversity and ecosystem services. In addition, it needs to measure and predict the cumulative effect of decisions on these ecosystem services. Such objectives and mechanisms would “close the loop” between planning and its cumulative outcomes.

### **Establishing frameworks for better horizontal and vertical co-ordination**

Norway has used different approaches for planning and decision making in different contexts. These provide many examples of good practices that could help achieve more holistic land-use planning. For example, marine planning requires a long-term perspective and sectoral co-ordination to be successful, and Norway is generally seen as a role model in this area. River basin management is influenced by Norway’s implementation of the WFD, which presupposes a certain national role. While this is not exactly a planning system like the PBA, it faces and solves many of the same problems as land-use planning. In particular, the WFD addresses the need for local acceptance and anchoring of projects in local communities, while balancing this local autonomy with national objectives. It also provides for better co-ordination of sector action and responsibility. Local land-use planning has not always been successful in this regard (Ministry of Climate and Environment, 2015<sup>[4]</sup>).

### **Better data and analysis connecting local decisions to national outcomes**

The government has worked to reduce use of the objection process in the PBA. However, objections themselves do not appear to be causing serious problems. The motivation behind their use seems to be a desire to reduce conflicts by tipping the planning process in favour of local autonomy. Much of the population lives in peri-urban zones comprised mainly of forest and cultural landscapes with high biodiversity values. Consequently, conflicts between land use and conservation are inevitable and structural; eliminating conflict should not be an objective. The challenge is to develop institutions and practices that can handle conflict constructively. These should optimise development activity subject to environmental constraints as defined by the national government. Such constraints are broadly outlined in the Biodiversity Action Plan, and expressing them more concretely is an important next step.

Local decisions will add up to a certain overall impact, and this cumulative effect needs to be understood and kept within safe limits. The PBA does not systematically capture the accumulated consequences of land policy. Furthermore, local planning processes are not linked to national objectives and outcomes in a systematic and measurable way (Kommunal- og moderniseringsdepartementet, 2021<sup>[13]</sup>). This prevents an objective evaluation of the overall costs and benefits of proposed developments. Regional bodies, the county governor in particular, form the link between national objectives and local planning. They are the main providers of feedback to municipal planning and the source of most objections to submitted plans. Circular T-2/16 provides detailed guidance regarding issues of national significance (Klima- og miljødepartementet, 2021<sup>[52]</sup>). It sets out many important themes, but without clear indicators, it leaves much to the judgement of the county governor.

Having clearer metrics for evaluation can make this process more objective. While substantial work is already being done in this regard, several different tools are available to improve the situation. The Biodiversity Action Plan sets the stage for clear and measurable objectives that can serve as a benchmark to assess overall outcomes of the planning process. The NiN indicators provide a good overview of ecosystem condition and risk factors. These indicators could be combined with quality norms to quantify national objectives in more detail. The national planning database already contains details on planned development (Berglund and Kvitte, 2015<sup>[53]</sup>; Rørholt and Steinnes, 2020<sup>[35]</sup>; Steinnes, 2018<sup>[25]</sup>). This system could be connected to the EIA process for local plans and projects.

Ideally, improved information on the intersection of land planning, the value of ecosystem services and national objectives will help county governors do their jobs better. In addition, it will also provide municipal planners better tools to follow national guidelines, as well as a better overview of their own needs and options for housing planning. Municipalities can use the statistics and analyses in the municipal planning processes to both identify needs and solve challenges. At the same time, they can be used to evaluate how well private developers process submitted zoning plans (Berglund and Kvitte, 2015<sup>[53]</sup>).

Such a system of accounting for land-use change relies on accurate and timely data that are fit for purpose, a means to use that data to estimate the cumulative effect of planned changes and a way to feed this information back into the process so planners can make use of it. As both cumulative and local effects of planning decisions are important, a mechanism should ideally allow for optimal allocation of development opportunities within the overall constraints of the system. In this regard, municipalities should have a way to discuss and co-ordinate. Land-use changes outside this system must be limited if it is to function well. This means that use of exemptions or dispensations must be reduced to the extent possible. Improved and up-to-date municipal planning is the best way to achieve this reduction.

### **More specific guidance to local governments**

National goals should be specific and actionable so local governments can evaluate their plans against them and measure progress. This requires information support and feedback at all stages of the process. Once again, the Biodiversity Action Plan can serve as a foundation for those national objectives within its domain. KLD is better placed to co-ordinate local planning with respect to national environmental objectives and is already responsible for most related tasks. On the other hand, KMD has greater expertise in the processes themselves. Sharing responsibility between the ministries can lead to more effective engagement with local planning. The governance of RBMPs is a useful model with the Norwegian Environmental Agency playing a co-ordinating role and communities undertaking most of the activity.

### **More targeted incentives**

Providing proper incentives to municipalities to consider national interests is one way to align the incentives of local governments with national priorities. If the national government gives a mandate to local governments to achieve national objectives such as for climate change or biodiversity, local governments should not have to bear the full financial burden on their own. At the same time, the polluter-pays principle should be respected.

Financial support for biodiversity plans has been useful, but more can be done to incentivise action. For example, urban growth agreements for transport to achieve the zero growth objective for traffic are a successful example of cost sharing among governments. RBMPs provide incentives through clear national targets with more rigid requirements for implementation. *Ex post* assessment of actual versus expected results on a regular cycle can provide accountability that municipal plans are effective.

### **Better public consultation**

The ideal of local participation and participation is strong among both politicians and planners. However, in practice, such participation is often limited to the minimum requirements for formal consultations. Community involvement depends in part on municipalities' willingness to involve part-time residents in the formulation of local policy (Ellingsen, Hanssen and Saglie, 2010<sup>[54]</sup>). There is great variation in political and popular involvement, competence and capacity in the municipalities, regardless of municipality size. This variation weakens the purpose and ambitions of the PBA (Hanssen and Aarsæther, 2018<sup>[55]</sup>).

The PBA has statutory requirements for public involvement. The municipal planning strategy must be made public 30 days prior to political consideration. There are also requirements for public consultation and scrutiny of the proposed plan. Municipalities are required to explain how they have considered comments

received. However, the requirements are only to inform and consult. Local actors are not otherwise given a presence in the planning process. Moreover, municipalities are not required to provide a forum for dialogue or otherwise involve the public (Figure 2.24).

**Figure 2.24. Requirements for public involvement in the Planning and Building Act**



Note: The figure applies Arnstein's typology of citizen participation, which is presented as a metaphorical "ladder" representing increasing levels of public involvement.

Source: Ringholm, T, Nyseth T and Hanssen G (2018). *Participation according to the law?: The research-based knowledge on citizen participation in Norwegian municipal planning*, EJSD, vol. 67.

A national nature and environmental appeals board, following the Danish or Swedish model, can help ensure civil society has an effective means to engage in the planning process (Box 2.7). This extra venue to challenge decision making at all levels can help ensure the environment is given more "standing" in government processes. Norway already operates similar types of boards such as for real estate services and consumer complaints. Currently, civil society has little opportunity to do more than comment on planning proposals, except for the expensive and risky step of legal action. Such legal actions are more likely for "not in my backyard" issues like siting of waste management facilities or wind power generation than they are for environmental protection.

### Box 2.7. Danish Appeal Boards give a stronger voice to citizens

Complaint boards are dedicated entities of ministries that process complaints of citizens relating to decisions of the administration. Members are usually appointed by the government or a municipal council. These boards are independent from local councils or ministers in processing cases, making their decisions, and launching or terminating an investigation.

Appeals boards enjoy independence from the rest of the public administration. No minister may give orders to an appeals board with regard to the outcome of decisions in order to commence or terminate an investigation. Nor can it interfere with the processing of an individual case. Decisions of appeals boards cannot be appealed to other administrative authorities unless granted by statute.

Most appeals boards are supervised by the parliamentary ombudsperson. This means the ombudsperson may, as a result of a complaint or on their own initiative, investigate decisions of an appeals board and assess whether the case processing or the decision is legal.

The Nature Protection and Environmental Board of Appeal is part of the Ministry of the Environment. Decisions by the boards may be brought before the courts and the boards are also supervised by the parliamentary ombudsperson.

Source: OECD (2010), *Better Regulation in Europe: Denmark 2010*.

### Building capacity at the municipal level

The Norwegian commitment to local democracy is a strength of the system. It provides local anchoring that increases the legitimacy of decisions, and draws on local knowledge and experience. However, competence and capacity in small municipalities can be a significant problem in Norwegian planning (Hanssen and Aarsæther, 2018<sup>[55]</sup>). The government has taken steps to build local capacity for the planning system to work as intended. Consolidation of municipalities is a means to increase the scale of local government and the resources available to it. Promoting local biodiversity plans raises awareness of the value of ecosystem services to the local economy and the tools available to consider these benefits in local decision making. County governors increasingly serve a supportive role in the planning process and provide guidance at all stages.

More training for members of municipal governments can be helpful, especially for those newly elected. Ensuring that municipalities maintain permanent professional staff with responsibility for SDG implementation and other environmental issues of a national character (climate change, biodiversity) can also improve the quality of local decision making. In addition, it could be helpful to build support networks such as through professional development conferences where experiences and good practices may be shared.

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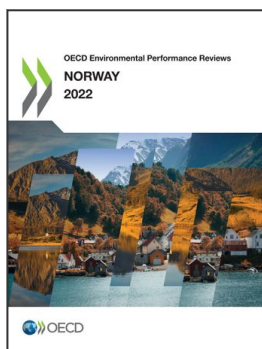
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