Official Norwegian Reports NOU 2024: 2

In interaction with nature

– Nature risk for industries, sectors and society at large in Norway

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To the Ministry of Climate and Environment

The Nature Risk Commission was appointed by Royal Decree on 22 June 2022 to describe the concept of nature risk, assess how Norwegian industries and sectors are and may become affected by the loss of nature and biodiversity, and examine how affected actors in Norway can best analyse and manage nature risk. The Commission hereby submits its report. One Commission Member has special remarks regarding four of the Commission's recommendations. The Recommendation is otherwise unanimous. Translations of the abstract are available digitally in English and Northern Sámi.

Oslo 12 February 2024

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Assignment and output from the expert commission

The Nature Risk Commission was appointed by the Norwegian Government on 22 June 2022. In this report, the Commission accounts for its work on nature risk for industries, sectors and communities in Norway. This report offers insight that will contribute to a better understanding and assessment of nature risk – and an improved management of nature risk at all levels.

The Commission's mandate comprised the following main tasks:

- describe nature risk based on the approach and terminology used in the report by the Expert Commission on Climate Risk,[1] but with necessary modifications due to differences in the two challenges.
- assess how Norwegian industries and sectors are affected by physical nature risk, i.e., national and global nature loss and biodiversity, with a primary emphasis on physical changes that may constitute the most significant risk factors.
- assess how Norwegian industries and sectors will be affected by expected and potential tightening of framework conditions via changes in global, European and national policies on biodiversity, with a primary emphasis on changes that may constitute the greatest risk factors.
- assess how to most appropriately analyse and present nature risk at the national level.
- review how affected parties in Norway (private and public sector enterprises and organisations, including financial institutions) analyse and manage nature risk today, identify possible areas of improvement and assess and recommend methodologies that enable such parties to analyse and manage nature risk in the best possible manner.

Nature underpins economic activity and human well-being and thereby the society we live in. We subsist on, use and interact with nature in many different ways. We subsist *on nature's contributions* to, among other things, food, animal feed, medicines, energy, materials, genetic materials and beneficial organisms. We live *together with nature* and depend on its life-giving, harm-regulating and waste-absorbing processes. We live *in nature* and shape it by way of business operations, culture and recreation and we live *as nature* and are shaped by nature, as we are part of nature. However, human activity also affects nature in countless ways, many of which are harmful.

Nature risk is about how the risk of loss and degradation of nature affects enterprises that depend on and impact on nature, and about the importance of society working to counteract this loss. The first form of risk is referred to as *physical risk* and the second as *transition risk*. These forms will be specified, elaborated and reviewed in the report. Both are also important at the societal level.

The Commission has aimed to produce an overview of both what nature risk is and entails for actors and communities in Norway and how nature risk is addressed, both internationally and in Norway. In addition, we have particularly discussed how actors and enterprises ought to relate to nature risk. There are extensive international efforts in the form of government-driven cooperation such as the Organization for Economic Co-operation and Development (OECD) and the EU, and in business-driven cooperation such as the Taskforce on Nature-related Financial Disclosures (TNFD). Our work must be based on their insight and thus that the work on nature risk in Norway is in line with international efforts. The Commission has held comprehensive consultation rounds with many committed actors in both the public and private sectors, and many are becoming increasingly aware of nature risk. Nevertheless, there is still a long way to go before general knowledge, understanding and practice ensures that all actors assess and manage nature risk satisfactorily. This applies to both the private and public sector.

[1] NOU 2018: 17.

The Commission makes specific recommendations at the national level and in relation to public and private sectors. A key recommendation is that actors and enterprises should observe the following five main methodological stages in their assessment and management of nature risk:

- *identify* where and how the enterprise impacts nature, including in its supply chains
- *analyse* where and how the enterprise depends on and affects nature
- *assess* how the enterprise is exposed to nature risk
- use the analyses and assessments as a basis for internal and external *reporting*
- apply this knowledge as a basis for *specific decisions and actions*

The Commission has also proposed some overarching approaches that should form the basis of all work pertaining to nature risk.

The Commission is grateful for the opportunity to work on this vital assignment.

Chapter 1
Summary

1.1 The loss and degradation of nature poses a risk to economic activity and human well-being

Nature loss threatens society and well-being

The natural resources and other goods and services we receive from nature are the basis for economic activity, society and human well-being in a broad sense.[2] The use of resources is increasing and other human activities are becoming more extensive, which impacts nature in countless and often harmful ways. This means that nature around the world is deteriorating faster than ever before in human history, despite efforts being made to preserve it. Nature loss, climate change and pollution reinforce one another and produce effects that have serious consequences for nature and society. Although production in agriculture, fisheries, aquaculture and forestry continues to increase, 14 out of 18 categories of nature's contributions to people are in decline, globally. It is mainly regulating and non-material contributions that have declined. As an international community, we are both exceeding and weakening the planet's resource-providing, life-sustaining and waste-absorbing capacity on which we are completely dependent. Nature loss affects everyone. However, the poor and vulnerable are hit hardest and this could have serious consequences for today's young people and future generations. The development of nature loss results in societal risks, including for financial decisions in the public and private sectors.

The Kunming-Montreal Global Biodiversity Framework provides direction for a green transition in society

A growing number of people are becoming aware of the seriousness and extent of nature loss and the consequences it has for society. This growing awareness has been the driving force for a number of important international and national initiatives with the aim of halting and reversing the loss and degradation of nature and biodiversity. In 2022, 196 of the world's countries agreed to the Kunming-Montreal Global Biodiversity Framework under the Convention on Biological Diversity, hereinafter referred to as the Global Biodiversity Framework. The Global Biodiversity Framework is a response to IPBES's[3] Global Assessment and other scientific reports, which, among other things, show that nature can be preserved, restored and used sustainably at the same time as achieving other global societal goals, through an immediate and concerted effort to achieve sweeping societal changes. The Global Biodiversity Framework sets the course for a global green transition across societal sectors through 23 targets that entail technological, economic, regulatory and social changes, including changes in rules, norms and governance systems. Norway was a driving force for an ambitious agreement. In order to follow up the Global Biodiversity Framework, the Norwegian Government has announced that it will present a report to the Storting with a new national action plan for nature.

The economy is key to the green transition, which is characterised by several sources of uncertainty

The economy is key to the transition, among other things as part of the Global Biodiversity Framework's targets to reduce nature-related risk,

[2] In line with the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Commission uses the main term *nature's contributions to people*, but also uses the terms *natural assets* and *ecosystem services*, where relevant.

[3] The Intergovernmental Panel on Biodiversity and Ecosystem Services, https://www.ipbes.net/.

achieve sustainable consumption, remove environmentally harmful subsidies and implement a policy that takes into account and preserves nature. This will require a significant effort to channel sufficient private and public investment away from activities that are harmful to nature and in the direction of activities that contribute to the green transition. The financial system and its actors play an important role in this process. Restructuring energy and food systems is important to reduce society's environmental impact. However, well-functioning energy and food systems are also crucial for achieving other sustainability goals. The follow-up to the Global Biodiversity Framework can lead to framework conditions that alter the possibilities to utilise natural resources for consumption, production and services in the future. At the same time, new national and international framework conditions will provide new opportunities to actors who support and act in accordance with the environmental targets.

Both the loss and degradation of nature and altered framework conditions can affect the conditions for economic activity. The outcomes will vary among different actors and enterprises according to the manner in which they depend on and impact nature. Moreover, outcomes will depend on future development trends and decisions. It is uncertain how the physical consequences of and framework conditions for halting nature loss will develop. It is also uncertain what effects may arise and the extent thereof. Much will also depend on the timeframe applied in the assessments.

A risk approach is useful for analysing and managing uncertainty

Uncertainty makes it difficult to make good assessments of possible future effects of nature loss or possible future changes to framework conditions. These consequences can affect various industries, sectors, or economic indicators at the national level. In the absence of certain projections, a risk approach can be a useful tool for drawing more attention to and understanding how different factors can affect different actors and their activities and goal attainment. Risk analyses aimed at identifying the specific risk factors resulting from nature loss and related changes in framework conditions will better enable actors to analyse, assess and manage nature-related risk. Such a risk-based perspective is the starting point for this Commission, which has been tasked with examining how nature risk will affect Norwegian industries and sectors, as well as Norway at the national level.

Nature risk affects not only sectors and industries, but also society as a whole

To assess the nature risk for Norwegian industries and sectors, the starting point for the Commission is the risk concepts discussed above, with the associated frameworks that have been developed internationally. The Commission has based its work on actors in Norway, but has in its assessments examined developments in nature and framework conditions in Norway and globally. This is in line with the Commission's mandate and it is also essential to include both national and global conditions in the analysis of actors in Norway's overall nature risk. For some, the greatest nature risk will lie in nature loss or changes in framework conditions in countries from which they import input factors, to which they export, or in which they are established. The international situation could also be of decisive importance for enterprises that are exposed to the global financial markets. This applies to, e.g., the Norwegian Government Pension Fund Global, which exclusively invests outside Norway.

The mandate states that the Commission shall assess nature risk at the national level. The Commission has assumed that this includes the Norwegian State's areas of responsibility and exposure in the broadest sense, including financial stability and effects on the population's well-being beyond what is captured by main economic indicators.

Risk analyses can provide new insight to support individual actors' decision-making processes and the authorities' exercise of the precautionary principle

We are faced with complex processes and changes in nature and society, and it is uncertain how physical changes in nature, vulnerability and consequences for people, will develop over time. Risk analyses require the use of knowledge, and different analysis methods that shed light on the spectrum of possible future outcomes, with particular emphasis on the most dangerous and irreversible alternatives. Better knowledge and management of nature risk will benefit each individual actor. In addition, awareness of nature risk can help to redirect capital flows in a more nature-friendly direction, as is set out in the Global Biodiversity Framework.

For nature risk, as for all other risk assessments, risk tolerance or risk appetite may vary

Box 1.1 Nature risk includes physical nature risk and nature-related transition risk

Nature risk is the risk of adverse impacts on actors and society due to the loss and degradation of nature and biodiversity. This is a relatively new concept and has been developed for the purpose of analysing and managing the assumed effects of nature loss in financial and economic contexts. The background for developing the concept was that traditional risk analysis in economics and finance fails to adequately capture the unique features of nature-related risk. The nature risk concept is based on the fundamental principles that have already been developed to analyse *climate risk,* as described by the Expert Commission on Climate Risk in NOU 2018: 17. The nature risk concept consists of two main categories: physical nature risk and transition risk.

Physical nature risk means risk linked to the consequences for the actors and society as a result of the loss and degradation of nature and biodiversity per se. Many enterprises depend on nature's many contributions to people, including natural resources and both land and sea areas as an input factor in or to support their activities. Loss and degradation of nature and reduced access to nature's contributions can have an adverse impact on enterprises and society.

Nature-related transition risk means risk for the actors and society that arises as a result of changes in regulations and framework conditions triggered by political decisions to reduce nature loss, or as a result of changes in e.g., technology or consumer preferences. Actors who have business models and production methods that affect nature and fail to take into account such changes are exposed to the risk of loss. Actors with more sustainable business models may find new opportunities.

A special subcategory of transition risk is litigation risk. *Litigation risk* includes the risk of being sued or held liable for damages and losses caused by one's own adverse impact on nature, but may also include other forms of legal risk e.g., in the form of fines and administrative penalties or orders to amend existing activities.

On an aggregated level, nature risk can occur on such a scale that it can lead to *systemic risk*, where the risk is linked to the failure and collapse of an entire system and not just the failure of individual parts. This can apply to the real economy, the financial system and natural systems.

according to role and exposure. For instance, asymmetric incentive structures can lead to pressure aimed at the overexploitation of natural resources if the return is received within a short timeframe and accrues to the owners, while the risk materialises over a longer period of time and is borne by the community.

The *precautionary principle* aims to protect society against significant harm to nature and the environment by requiring the authorities to take uncertainty and particularly harmful outcomes into account in their decisions. The principle is also intended to prevent inadequate or uncertain knowledge being used as a justification for failing to take the necessary measures. The risk approach has been developed precisely to identify uncertainty as a result of a lack of knowledge about adverse impacts. This approach therefore contributes to the ability of authorities and the business sector to make good decisions in line with the precautionary principle.

1.2 Accelerating human impact is causing a global nature loss that weakens nature's contributions to people and threatens well-being

Over the past decades, human activities have reshaped nature, and this impact continues to increase

Over the last 50 years, the world population has doubled, the extraction of natural resources such as food and energy has tripled, the global economy has almost quintupled and global trade has increased tenfold. IPBES's 2019 Global Assessment shows how the resource-intensive growth in the global economy is driving the loss and degradation of nature through five direct drivers: changes in land and sea use, direct exploitation of organisms, climate change, pollution, and invasion of alien species. The overall effect is alarming. The IPBES estimates that three-quarters of land sur-

face is significantly affected by humans, while two-thirds of ocean area is increasingly affected by our activities. While changes in land use are the main cause of nature loss, overexploitation is the most important cause at sea. However, all five direct drivers contribute, are interrelated and reinforce one another. For example, land use changes contribute to a quarter of global warming. At the same time, the IPBES and the Intergovernmental Panel on Climate Change (IPCC) note that climate change is expected to become an increasingly important driver of loss and degradation of species and ecosystem functions, both on land and at sea, in the future. This nature loss will exacerbate global warming and the consequences of climate change, among other things because it will weaken nature's capacity to absorb CO_2 and regulate climate and its robustness in the face of climate change.

Nature loss is accelerating and will continue to intensify unless we take action

The IPBES's Global Assessment shows that one million of the globe's estimated eight million animal and plant species face extinction unless we take measures to reduce the causes of biodiversity loss.[4] Many of them will become extinct in the coming decades. Around 25 per cent of assessed groups of species, such as plants, vertebrates and well-known groups of insects are endangered, while the estimates are somewhat lower – but also more uncertain – for lesser-known groups. Because land-use changes are among the most important reasons why species are endangered, the IPBES has estimated that half a million threatened terrestrial species will become extinct unless their habitats are restored. Without such and other measures, we will see a continued accelerating global loss of species. This loss is already at least ten to a hundred times greater than the average for the last ten million years.

In the last 50 years, populations of wild vertebrates and many wild insects have also been greatly reduced. Moreover, genetic diversity is lost, ecological functions are weakened and local varieties of crops and livestock breeds have become extinct. Ecosystems are being harmed and transformed. For example, 85 per cent of wetlands have been degraded or lost. This weakens the ability of ecosystems to store carbon and water and serve as a buffer against extreme weather such as floods and droughts.

Box 1.2 Loss and degradation of nature is a broad concept

The Commission uses the short form *nature loss* to describe the loss and degradation of nature, which applies to the scope of nature, the ecological state, all forms of biodiversity, and ecosystem functions. Thus, nature loss comprises all the features of nature that underpin nature's material, non-material and regulating contributions to people.

It can take many years from the time human influence commences a process of change in nature until the consequences become visible. During this period, the changes in nature can change direction and speed and can reach a point where they become irreversible, an example of which is the extinction of species. It can take a long time before we become aware of what is unfolding and comprehend the causal relationships. Such failure to detect and comprehend can limit our opportunities to halt or reverse nature loss. The changes we cause today will therefore have consequences for the future of today's young people and for generations to come. The potential for serious consequences is great, as human influence on nature continues to increase.[5] In particular, it is important to be aware that the overall burden can cause large-scale changes and the risk of important ecosystems collapsing. The IPCC and IPBES refer to the risk of such large-scale changes in forests, coral reefs and the Arctic.

Loss and degradation of nature increases the risk that nature's contributions to people will be weakened or lost

We depend on nature and are therefore vulnerable to its accelerating degradation and destruction. The IPBES's report on values shows how we subsist on, use and interact with nature in many different ways.[6] We subsist on *nature's contributions* to, among other things, food, animal feed, medici-

4 IPBES (2019).

5 This is the background for the Commission's mandate. The mandate is provided in Chapter 2.1 and is available at https://naturrisikoutvalget.no/mandat/.

6 IPBES (2022a).

nes, energy, materials, genetic material and beneficial organisms. These directly harvestable natural assets are often referred to as nature's material contributions to people, or provisioning ecosystem services. In addition to agriculture, aquaculture and forestry, billions of people worldwide harvest more than 50,000 wild plants, animals and fungi for use as food, energy, medicine, materials and other purposes.[7] The UN Food and Agriculture Organization notes that environmental degradation is now reducing these contributions and that this is one of the reasons the number of malnourished people is again on the rise.[8] We also live *together with nature* and depend on its life-giving, harm-regulating and waste-absorbing processes, also referred to as nature's regulating contributions to people, or regulating and supporting ecosystem services. The disappearance of nature's contributions to people is only noticed once access to resources fails, when waste materials accumulate or when natural perils occur. The IPCC has found that an average global warming of 2°C may pose a high risk to food security, while a warming of 4°C would be catastrophic.[9] When nature's provisioning and regulating capacity is weakened while needs increase, so too is our ability to feed the global population, which is an estimated nine billion people by 2050. We live *in nature* and shape it through business activities, culture and recreation, and we live *as nature* and are shaped by nature as we are part of nature. These natural assets are often referred to as nature's non-material contributions to people or cultural ecosystem services.

Nature loss undermines the achievement of the UN Sustainable Development Goals

Nature loss results in a risk of reduction in nature's contributions to people and of increased disadvantages, such as diseases, harmful organisms and other natural perils. In conjunction with climate change and other environmental destruction, nature loss therefore contributes to undermining a number of the UN Sustainable Development Goals. This hits vulnerable and poor countries and groups the hardest. Thus, environmental destruction threatens social stability and increases the risk of conflicts and migration, which in turn become part of the risk situation of nature loss.

Norwegian nature is also under pressure

Norway is a vast country, far to the north, with a considerable biodiversity and low population density. Nevertheless, we see that people influence nature and its contributions to people here as well. The Norwegian Nature Index, based on 260 indicators for biodiversity across all ecosystems, has an overall value of just under 0.5 on a scale from 0 (absence of natural value) to 1 (reference state without human influence on natural ecosystems, nature in good condition for semi-natural sites). It is particularly forests and open lowlands that bring down the score. The Norwegian Nature Index from the year 2000 onwards shows a slightly positive development for forests and fresh water, while the development is slightly negative for mountains. For open lowland there is a clear decline. The other ecosystems have remained fairly stable.[10] Half of the nature types and 21 per cent of species in Norway are red-listed.[11] Here, too, forests (48 per cent of the red-listed species) and open lowland (especially the semi-natural sites, 29 per cent of the red-listed species) bring down the score. The endangered species make up 12 per cent of all assessed species, with the largest proportion of endangered species found among birds, mammals and vascular plants. Moorland, palsa bog and river delta are examples of endangered nature types. The number of endangered species is highest in the south-eastern parts of Norway and it is also here that we find the greatest diversity of rare habitats and the greatest pressure on nature. The knowledge base behind the Norwegian Red List for Species has been strengthened in recent years and the number of species considered for red listing and the number of endangered species is growing.

In step with global trends, land-use changes in the form of land degradation, fragmentation, intensive use and regrowth are the most important impacts putting nature types and species at risk of disappearing in Norway. To illustrate this development: while half of the Norwegian mainland was characterised as wilderness at the start of the 20th century, only 11.5 per cent remains today. At the same time, there have been major changes in the use of and impact on landscapes. For example, extensive harvesting and use of the landscape in the form of grazing, felling and fire,

7 IPBES (2022b).
8 FAO et al. (2023).
9 IPCC (2023).
10 Jakobsson and Pedersen (2020).
11 See the Norwegian red list for species in Artsdatabanken (2021) and the Norwegian red list for nature types in Artsdatabanken (2018).

which is an important prerequisite for many semi-natural nature types and associated biodiversity, has been greatly reduced.

Pollution, overexploitation and the introduction of invasive alien species also pose threats to Norwegian nature, while climate change is having an increasingly adverse impact on nature at sea, along the coast and in the mountains. In some areas and nature types, the overall burden is considerable. This applies, among other things, to wetlands and cultural landscapes (especially semi-natural nature types), fjords such as the Oslofjord and the southern sea areas. Measures in environmental management in recent decades have reduced some adverse impacts, while others are expected to have an increasing effect in the future. This is partly because the impacts continue to increase and partly because it takes time for the consequences of changes that have already taken place to become apparent. In an assessment of Norway's environmental efforts, the OECD concludes that efforts to preserve nature and biodiversity are insufficient to achieve the goal of halting or reversing the adverse trends in nature.[12]

Through trade, the influence of Norwegian society extends into a world characterised by major differences in access to resources and resource use.

1.3 Better assessment and management of nature risk will lead to better decisions for society and nature

The nature risk approach originates from the financial sector but can be applied to various contexts, including at a societal level

The new nature risk concepts originate from initiatives in the financial sector, where the collaborative project on nature-related financial reporting, Taskforce on Nature-related Financial Disclosures (TNFD), has played an important role.[13] The TNFD framework for how nature risk should be assessed and managed is primarily geared towards instruments that are relevant to financial decision-makers. This means, among other things, that it places considerable emphasis on corporate reporting that investors can use in their investment decisions. According to the framework, companies must first identify their dependence and impact on nature and natural assets. Next, they must assess how dependence and influence expose the company to nature risk and how they must relate to this at a strategic level. Nature risk must be reported in connection with other financial reporting. Here, the TNFD framework closely follows the framework from the Task Force on Climate-Related Financial Disclosures (TCFD) for climate risk.[14]

The TNFD framework includes the principle of *double materiality*. This means that it is not only the actor's dependence on nature that must be assessed but also the impact on nature. Both frameworks use scenarios as tools in connection with risk assessments. Scenarios are particularly useful for analysing future developments that are associated with considerable uncertainty, because they provide the opportunity to expand the range of outcomes both in terms of developments in nature and society. Physical nature risk and transition risk do not necessarily follow the same development over time, which can also be illustrated using scenarios.

The term nature risk is also used in other contexts. International economic organisations have further developed the methodology so that it can be used by decision-makers with other goals. This includes, for example, the Organization for Economic Co-operation and Development (OECD), and the Network for Greening the Financial System (NGFS), which is a network of central banks and financial supervisors working to improve the management of environmental risk in the financial sector. In these circumstances, the frameworks are adapted to the organisations' areas of responsibility, including the safeguarding of financial stability. Target 15 of the Global Biodiversity Framework stipulates that states are to take measures to encourage and enable business, and in particular to ensure that large and transnational companies and financial institutions regularly monitor, assess, and transparently disclose their risks, dependencies and impacts on biodiversity.

Risk concerns adverse consequences but there are also opportunities in transition

Opportunities arise in all situations, including when nature is lost or framework conditions are tightened. Actors can actively seek opportunities in new markets, new products and services, more efficient processes and use of resources, changed

[12] See e.g., Chapter 2 of OECD (2022b).

[13] See more on TNFD's website https://tnfd.global/.

[14] More information about TCFD can be found at https://www.fsb-tcfd.org/.

access to capital and financing and improved reputation. For some, there are opportunities even in situations that may be harmful to society. An example is the harvesting of alien species, such as king crab and pink salmon.

Opportunities can also be directly linked to measures for a better environment, e.g., through a more circular economy and the conservation and restoration of nature.

A risk perspective on nature loss, as proposed by the Commission, provides the opportunity to better understand and take into account both positive and negative effects of nature loss and changes in framework conditions for an actor's business. This is not only useful for individuals, but can also make a positive contribution at the societal level, because the actors' overall adaptation can contribute to the green transition.

Analyses of nature risk will have different frameworks and perspectives. The starting point for nature risk analysis will be the perspective of the actor who assesses their risk. By actors, we mean anyone who makes decisions related to nature, whether they are in the private or public sector, from national authorities at the top down to decision-makers in individual municipalities or enterprises. There is a connection between physical nature risk and transition risk in that the transition risk is triggered by society's attempts to reduce the impact on nature. However, the transition risk also depends on many other factors – not least on whether changes in framework conditions are predictable, have a democratic basis, are effective and occur in a way that societal actors have confidence in.

In accordance with its mandate, the terms are described based on the Expert Commission on Climate Risk's approach and use of terms[15] and in line with the understanding and use of key international references, including TNFD, OECD and NGFS.[16] The Commission's analysis also examines how the State and municipalities work on risk analyses and emergency preparedness in general and the IPCC's definition of risk, which describes the risk of adverse consequences for both human and ecological systems.[17]

Although risk assessments are useful and can make a positive contribution to individuals and society, there are important questions that cannot be answered with the use of economic or risk management tools. This applies, among other things, to questions concerning distributional effects between countries and over generations and consideration of nature's intrinsic value, which are fundamental philosophical and ethical questions. Furthermore, many decisions and trade-offs related to the use and conservation of nature raise key legal questions. For Norway, rights and obligations under international law relating to the practice of Sámi industries and the preservation of Sámi culture, are particularly important. The Commission emphasises that work on nature risk must reflect and adapt to such frameworks and limitations.

More systematic assessment and management of nature risk will contribute to decisions that support the transformation we need

The Commission believes that better assessment and management of nature risk will contribute to highlighting important matters:

- Dependency: Actors' and society's physical dependence on nature and vulnerability to future nature loss and impairments in nature's vital contributions to people, thereby increasing understanding of what nature loss can cause in terms of costs and reduced well-being.
- Impact: Actors' physical impact on nature and how this impact can increase their own and others' vulnerability, including the risk of legal action, and thereby increase an understanding of the importance of reducing the impact.
- Uncertainty: The uncertainty actors and society face, including vulnerability to especially dangerous outcomes which will thereby produce a more comprehensive basis for decisions.
- Shared understanding: Shared understanding of nature risk and open, accessible knowledge about the risk will motivate actors to take action that reduces their own and others' risk and increase the likelihood of positive outcomes in the face of social change.

The Commission recommends five main stages in the work on nature risk

The Commission recommends five general main methodological stages that should be observed in work on nature risk, irrespective of actor and level, and in both the public and private sectors. These steps are presented in figure 1.1.

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15 See NOU 2018: 17.

16 See TNFD (2023a and b), OECD (2023b) and NGFS (2023a).

17 Reisinger et al. (2020) and IPCC (2021).

Figure 1.1 Methodological main steps in the work on nature risk

Illustration: Konsis
Source: The Nature Risk Commission

1.4 Industries and sectors in Norway both depend on and impact nature

Several industries and sectors in Norway are directly *dependent* on material contributions from nature. This applies in particular to the primary industries of the economy but also to sectors such as tourism and energy production and some particularly land-intensive sectors. Many industries, sectors and societal interests also depend on the regulating contributions of nature such as water and flood regulation, as well as the absorption and conversion of CO_2 and nutrients. In addition, the population and households depend on a wide range of contributions from nature to fulfil many of their needs, activities and interests.

All the industries (including households) that the Commission has examined *impact on* nature, albeit to varying degrees and in different ways. All the main ecosystems in Norway – sea, coast, rivers and lakes, wetlands, forests, cultural landscapes and open lowland areas, mountains and cultivated land – are impacted by society's activities. However, both the degree of impact and the relative significance of different influencing factors vary among main ecosystems and regions.

1.5 Industries and sectors in Norway are exposed to nature risk

Society's impact on nature due to land changes, harvesting, climate change, pollution and the spread of alien species weakens nature's contributions to people which, in various ways, exposes industries, sectors and society as a whole to physical nature risk. Industries' and sectors' exposure to physical nature risk is especially linked to their dependence on nature. A majority of the industries and sectors the Commission examines are exposed to nature risk related to the weakening of nature's regulatory contribution, e.g., through increased likelihood and consequences of natural perils such as floods, landslides, drought and erosion. This exposes industries, sectors and households to the risk of a number of harmful effects, where damage to infrastructure, in particular, could affect society at large.

Loss of material contributions from nature affects the main sectors of the economy in particular (see below) but also entails risks for households' ability to engage in outdoor recreation and harvesting of natural resources, while industry and trade are primarily affected through the supply chains. Loss of material contributions also poses a risk to the households' ability to engage in activities such as outdoor recreation and harvesting of natural resources. Loss of non-material contributions from nature has a more general impact, e.g., through reduced contributions to physical and mental health and loss of opportunities for cultural exercise, including Sámi cultural exercise.

Land-use changes are a major cause of nature loss and a key underlying factor for nature risk

Land is a scarce resource – both on land and in coastal and marine areas – and land-use changes are the most important cause of loss and deterioration of nature, both in Norway and globally. The Commission finds that land-use changes are also an important factor behind physical nature risk affecting Norwegian industries and sectors. Land-use changes are a main cause of loss of regulating contributions such as carbon storage and water regulation and of loss of non-material contributions such as cultural values and impacts on health, which concerns many actors in society. For some industries, land-use changes cause a loss of material contributions, such as arable land and grazing areas. The reduction of such contributions is a source of physical nature risk.

At the same time, the growing attention to land and land use in society can provide tighter framework conditions for access to land for commercial activities. In turn, this can be a source of transition risk for industries and sectors with a high dependence on using or harvesting areas, or with a considerable impact on areas, such as building and construction, power generation, new green industries, agriculture, fisheries, the petroleum sector, offshore wind, aquaculture and mineral extraction.

The primary industries of the economy are particularly exposed to physical nature risk

The primary industries of agriculture, forestry, fishing, aquaculture and reindeer husbandry are, along with tourism, the sectors that, due to their dependence on both regulating and material contributions from nature, are most exposed to risks related to loss and deterioration of nature in Norway. This is, among other things, due to the fact that adverse impacts in the form of land-use changes, climate change and invasive alien species can weaken nature's provisioning, regulating and cultural contributions. Physical nature risk affects the primary industries of the economy through, among other things, an increased risk of disease outbreaks and pests, reduced productivity and an increased risk of damage to crops and infrastructure, as well as reduced available land which limits the sectors' adaptability.

Industries, sectors and households in Norway are affected by nature risk through their supply chains

Industries, sectors and households in Norway are dependent on raw materials and resources from other parts of the world, and may be exposed to nature risk via countries and regions with which they trade. Loss and deterioration of nature in countries with which we trade or globally can therefore expose Norwegian industries to physical nature risk. Specific examples include risks related to importing food, animal feed resources for agriculture and the aquaculture industry, or other industries that depend on imported goods, including commodities such as food and textiles. Imports of finished goods and services are especially important for households.

Transition risk depends on how comprehensive, rapid, efficient and predictable the transition is

Framework conditions that affect how we use nature are subject to change and the opportunity space is broad in terms of future use of instruments. Uncertainty regarding future framework conditions and the significance thereof creates transition risk. The authorities should facilitate the reduction of physical nature risk through comprehensive, long-term, knowledge-based and predictable policies, implemented in a manner that produces the lowest possible transition risk for actors and business. The authorities' understanding of and dialogue with business and the parties in working life is key to reducing transition risk when introducing new policies.

Many individual actors can reduce their nature risk by reducing their own dependence or impact on nature. Policies, framework conditions, consumer preferences and technological developments play a key role in relation to physical nature risk caused by the impact of others on nature and transition risk.

Instruments and tools, which can roughly be grouped as regulations, incentives and information, must be developed and used so that different goals and interests can be balanced against each other in a manner that effectively safeguards society's common and long-term interests. The Commission believes that the Global Biodiversity Framework provides a more predictable direction in the management of nature. Temporal and numerical targets should be set for the phasing in of measures. The upcoming report to the Storting on the follow-up of the Global Biodiversity Framework will be a key to these efforts. Policy and measures must take into account Norwegian influence on nature in other countries, including through the importation of food and other products and services.

Legitimacy and long-term policies reduce transition risk

In order to ensure that policies are predictable and long-term and will be continued through government changes and safeguard common societal interests, including the interest of future generations in avoiding catastrophic outcomes, they must have legitimacy both among the population and broadly in the political landscape. This also requires identifying how policy measures affect various social groups, including through distributional effects. Among other things, this entails taking into account the country's geography and business structure. Policy changes must consider the risk that activities may be moved out of the country, without the overall environmental impact being reduced.

Land-use changes and climate change are important adverse impacts on nature, both globally and in Norway. Therefore, the Commission anticipates that possible sector-wide government measures to reduce adverse impacts from land-use changes and greenhouse gas emissions will increase the transition risk for certain actors and sectors. Sectors such as power production and distribution, building and construction, agriculture, forestry, fishing and aquaculture industry, fossil fuel and other industries that depend on land and/or involve considerable greenhouse gas emissions will be particularly exposed to such transition risk. Measures to regulate pollution, overexploitation and invasive alien species will also contribute to transition risk in certain areas. Here, too, the transition risk will be linked to how long-term and predictable policies are.

Considerable work remains to develop a strong and agreed-upon methodology for assessing and managing nature risk at the national level. The OECD and others have laid a good foundation for analyses and further work, especially for economic conditions and the financial sector. International standards and agreed-upon methodologies contribute to more rapid implementation, and it is important that Norway observes the same standards and contributes to further developing and embedding them.

1.6 Changes in Norwegian and international policies on nature expose actors in Norway to transition risk

As more people become aware of the global scale of the loss and deterioration of nature and the consequences for society, more people are recognising the need for a transition to a society where we make greater allowances for nature. The follow-up of the Global Biodiversity Framework and the European Green Deal[18], which was put forward by the European Commission in 2019, requires us to transition from a society based on reshaping nature to a society which reshapes itself in order to be able to meet the needs of the population within the nature's tolerance limits.

[18] See e.g., https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en.

Follow-up of the Global Biodiversity Framework and Paris Agreement will entail a transition

The Commission assumes that the Global Biodiversity Framework will serve as a framework for future Norwegian and international policies and social development.[19] The Commission also assumes that Norway's follow-up to the Paris Agreement and work to achieve the goal of net-zero global carbon emissions in 2050 will shape the societal transition, in conjunction with the follow-up of a number of other international agreements. Through the Global Biodiversity Framework, the world's countries have agreed to take measures to halt human induced extinction of species and the loss of nature areas (targets 1 and 4). This is to be achieved, among other things, through effective conservation and management by way of ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures for 30 per cent of terrestrial and inland water areas and of marine and coastal areas (Target 3), by restoring 30 per cent of degraded nature (Target 2) and making greater allowances for nature in all spatial planning (Target 1). The countries have agreed that nature-based industries shall be sustainable (Target 10), and that all use, harvesting and trade of wild species shall occur in a sustainable, safe and legal manner (targets 5, 9 and 13). Indigenous peoples and local communities shall be ensured involvement, co-determination and access to both material and non-material natural assets (targets 11, 12 and 19-23). Consumption, pollution, the spread of alien species, waste and food waste shall be reduced, environmentally harmful subsidies eliminated, and private actors shall be mobilised and held accountable (targets 6, 7, 8 and 15-18). To achieve these targets, knowledge and transparency are important, as well as that considerations for nature are not addressed separately, but are integrated into relevant policies and management (targets 14, 15 and 17).

The nature targets, in conjunction with the target of reducing net global carbon emissions to zero by 2050, will have far-reaching consequences for society, including agriculture, fisheries, forestry, the energy sector, industry, transport and the construction sector. In addition, there are consequences for households since we also consume goods and services that do not derive from Norwegian industries and sectors.

The European Green Deal and developments in the EU also indicate major changes for Norway

The EU's 8th Environmental Action Programme (2021–2030) elaborates on how nature and environmental considerations will have to be connected with the economic and financial system and with the transition to a more circular economy.[20]

The EU's policies will affect Norwegian industries and sectors, within the public and private sectors, through regulations incorporated into Norwegian legislation via the EEA Agreement. Regulations that affect Norwegian interests or Norwegian activities in the EU countries will also be influential, in addition to other influences on Norwegian policies and the development of our regulations, framework conditions and markets.

The financial sector is key to the green transition

A new EU regulation sets clearer requirements for financial institutions to reduce adverse impacts and contribute to positive developments in nature. These requirements shall contribute to a shift towards more sustainable investments and solutions and reduce the risk of locking in resources and bad investments that neither are, nor will become, sustainable.

A key task for the financial sector is to assess, price and redistribute risk in the economy. Nature risk can lead to traditional financial risk for financial institutions, e.g., credit risk, liquidity risk, strategic or operational risk. This applies to the various industries in the financial sector, banks, non-life insurance companies and life insurance and pension providers, as well as other investors. The financial sector and financial institutions should therefore be key drivers for better assessment and management of nature risk, both in the sector itself and in other industries that they serve.[21] The Commission notes that many Norwegian financial institutions are already well underway with these efforts.

[19] More information about the Global Biodiversity Framework, including a Norwegian translation, can be found at https://www.regjeringen.no/no/tema/klima-og-miljo/naturmangfold/innsiktsartikler-naturmangfold/det-globale-kunming-montreal-rammeverket-for-naturmangfold-naturavtalen/id2987476/.

[20] See https://environment.ec.europa.eu/strategy/environment-action-programme-2030_en.

[21] See Deloitte (2022b) on nature risk in the Norwegian financial sector and TNFD (2023i) on guidance to the financial sector.

1.7 Use of risk methodologies can support national decisions and decision-making processes

Norway is exposed to nature risk of national significance

Nature risk for Norway arises as a result of development trends in nature and society's response thereto, both internationally and in Norway. The assessment of the state of nature by the IPBES and the assessments by international actors such as the OECD, NGFS and the Coalition of Finance Ministers for Climate Action provide a clear basis for stating that we can expect significant adverse consequences to the economy and well-being as a result of nature loss. As a small and open economy, we are also affected by increasing risk in supply chains with a considerable impact and dependence on nature. This interacts with the loss of ecosystem services and altered framework conditions in Norway, which affects domestic industries and sectors. The Global Biodiversity Framework and EU rules directly affect Norwegian framework conditions when these are implemented nationally. In short, this contributes to nature risk at the national level. The national risk also depends on the interaction between these risks and other risks society faces.

Relevant authorities should assess the relationship between nature risk and financial stability

There are clear indications, including from the OECD, the European Central Bank (ECB) and NGFS, that nature risk can and will have an impact on financial stability, in that the activities of the financial sector are to a significant extent exposed to nature risk. With its open and commodity-exporting economy and considerable foreign investments via the Norwegian Government Pension Fund Global, Norway is exposed to global nature risk. The relevant authorities should therefore prioritise work on assessing nature risk and financial stability.

Reduced nature loss will reduce nature risk in the future

There are positive interactions between nature policy and the management of nature risk. Pursuing an ambitious and effective nature policy is not only important for mitigating the risk of serious nature loss; if done correctly, it can also reduce the transition risk during a green transition. Failure or inadequate management of physical nature risk now may result in greater adverse consequences and become more costly later.

The physical nature risk will be reduced by conserving and restoring nature and by reducing the adverse impact on nature in Norway and in other countries. This can be implemented by applying an action hierarchy as the basis for decisions that impact nature. This entails first planning to avoid adverse impacts on nature where it is possible. In cases where harm cannot be avoided, measures must be taken to limit the harm or repair or restore nature. A last option is to compensate for harm to nature.

1.8 The public sector must take a more proactive approach to nature risk

The Commission regards it as highly relevant for nature risk to also be put on the agenda in the public sector. The public sector is dependent on nature (including nature's contribution to mitigating landslides and floods) and makes a number of decisions that directly and indirectly impact nature. The sector is exposed to both physical nature risk and transition risk. This applies to the State and municipalities in their roles as regulatory authority, public authority, owner and purchaser.

The Commission's review shows that there are a number of requirements that entail having various public actors, in their different roles, analyse and manage nature risk where relevant. However, this is inadequately practiced in many places.

The knowledge base must be improved

In order to make good assessments of nature risk in relevant processes and decisions, a relevant, scientifically credible and broadly politically legitimate knowledge base is necessary. This has been highlighted in many comments to the Commission, including from enterprises, trade organisations, the financial sector, municipalities and government agencies. Here, both the State and the municipal sector have a responsibility – by developing a good data and assessment basis and by fulfilling individual reporting requirements, respectively. It is also important that the data and information are easily accessible and comprehensible to those who will be using them.

The Commission emphasises that accurate analyses of nature risk rely on knowing where the activities take place and what they affect. To be useful, data must therefore contain precise and localised information about nature and the activities in question. This is significantly different compared to the data requirements for climate risk assessments.

Nature assessments and location-based information on how activities depend on and impact on nature are necessary to analyse and manage nature risk. The knowledge base that is available for planning and management is largely geared towards safeguarding special types of nature or linked to individual decisions and measures. More knowledge is needed about ecological relationships, ecological processes and nature's contributions to humans.

Capacity and competence must be enhanced

Knowledge-based work on nature risk sets clear requirements for capacity and competence in municipalities, companies and enterprises, government agencies and the specialist environments used for investigation and analysis work. There is a need for research and education on nature risk-related topics that support the development of competence and a knowledge base in several specialist fields. Knowledge of nature risk should also be strengthened in working life and society, in general.

Furthermore, the Commission highlights that transitions in working life, resulting from climate and nature policies, pose a transition risk and will entail changes to business structures, occupational composition and job descriptions. The Commission supports the Norwegian Commission on Skill Needs' assertion that education and skills are crucial for success in the green transition, in the short and long term.[22] A skills shortage can slow down the transitions necessary to achieve the climate and nature targets. A rapid and comprehensive transition can push more people out of working life and contribute to increased social inequality.

Nature risk must be included in relevant decision-making processes

In the Commission's opinion, increased emphasis on the nature risk perspective can contribute to better decisions, as it sheds light on, among other things, dependence, impact and transition risk in connection with the authorities' decisions. The public sector must analyse and manage nature risk when considering a variety of matters – in a manner that is both effective and inspires confidence. It is important that all decision-making processes, including political processes, are knowledge-based, transparent and reliable. The Commission assumes that municipalities will continue to have the main responsibility for land-use management. In the continued work to ensure better assessment and management of nature risk, there is still a need to more closely examine the relationship between State guidelines and how local government can better manage the responsibility of safeguarding important national and regional interests in nature.

The legislation governing public case and decision-making processes provides little indication of how various considerations are to be emphasised. An important reason for this is that the balancing of different considerations in a specific case is, and should be, of a political nature. This means that changing the emphasis between nature considerations/nature risk and other objectives can largely be carried out within the existing processes. It should to a greater extent be documented and highlighted how different considerations are weighed against one another when making political decisions that affect nature risk.

The authorities must follow up the applicable requirements for assessment and reporting

The current legislation, including the Planning and Building Act, the Nature Diversity Act and the instructions for official studies and reports contain requirements and provisions which, in principle, entail that nature risk shall be assessed, where relevant. The authorities must strengthen the follow-up to ensure that requirements for assessing and managing nature risk are fulfilled in practice, and that decisions contribute to ensuring that Norway achieves its targets with respect to nature. Such follow-up will have to include government agencies, municipalities and publicly owned companies. With regard to land-use management, it is necessary that the sum of individual municipal decisions is registered at the regional and national level, by setting clear expectations in advance and collecting relevant information afterwards.

[22] Kompetansebehovsutvalget (Norwegian Commission on Skill Needs) (2023).

The State and the municipalities must follow up the work on nature risk in the companies they own

The State aims to be an active and responsible owner with a long-term approach. The 2022 report on state ownership introduced, among other things, new expectations that the companies owned by the State set targets and implement measures to reduce the adverse impacts on biodiversity and ecosystems, and that they report on their own target attainment.[23] The new expectations are a way of getting the companies to strengthen their work on reducing their own adverse impacts on nature. Going forward, it is important to follow up that expectations are met, examine whether changes contribute to reducing nature risk, and increase expectations for companies to stress test their activities to examine how they measure up to the targets in the Global Biodiversity Framework.

The Commission's review shows that municipalities are responsible for enterprises and activities that may have a considerable impact on nature risk. Several tasks that were previously organised within the municipality as a legal entity have now been separated into municipally owned companies. In the same way that the State communicates expectations to the companies it owns, municipalities should focus their attention on activities in municipally owned companies that may have an impact on nature risk.

The State should specify the work on nature risk in its fund management and its funding schemes

The Norwegian Government Pension Fund, which will contribute to funding the welfare state over generations, consists of the Norwegian Government Pension Fund Global and the Government Pension Fund Norway. Both of these funds are major actors in their respective markets and contribute capital to companies as a shareholder and creditor. Funds can thereby influence and communicate the expectations of the companies they are investing in. In addition, the funds' nature risk exposure is a result of the extent to which the companies they invest in are exposed to nature risk. Therefore, the Commission believes that the State should assess how the work on nature risk can be specified to a greater extent in the funds' investment assessments and followed up more closely in the companies in which they are invested.

As one of the world's largest funds, the Norwegian Government Pension Fund Global can communicate expectations that contribute to major improvements and greater predictability in how companies around the world analyse and manage nature risk. The Fund has established a Climate Advisory Board. and it should be considered whether the board should have an extended mandate that includes nature risk. Through its data and experience, the fund can to a greater extent contribute to relevant research on how investors can effectively contribute to sustainable development in businesses.

The State contributes to the funding of companies and municipalities through various funding schemes, e.g., through Innovation Norway, Eksfin (Export Finance Norway) and the Norwegian Agency for Local Governments (The Norwegian State's local government funding agency). Such schemes can contribute to a green transition by setting environmental requirements and/or offering better conditions if good environmental performance can be demonstrated. By setting requirements for the assessment and possible management of nature risk, the State can also contribute to reducing its own exposure to nature risk through such schemes.

1.9 The private sector must strengthen its work on assessment and management of nature risk and reporting

Some enterprises have made a good start with their work on nature risk and are encouraged to continue working on professional development and decisions

Nature risk has become an established concept in parts of the Norwegian business and financial sectors and some companies and organisations have come relatively far in becoming more aware of the topic, working on methodology and developing the necessary supporting data for conducting nature risk assessments. The financial sector stands out in that nature risk has been on its agenda for quite some time. The Commission recognises the important contributions of enterprises that already actively work on nature risk. Private enterprises should address nature risk strategically, and they should use and contribute to the further development of methodologies and tools for assessing and managing nature risk. In

[23] Report to the Storting No. 6 (2022–2023).

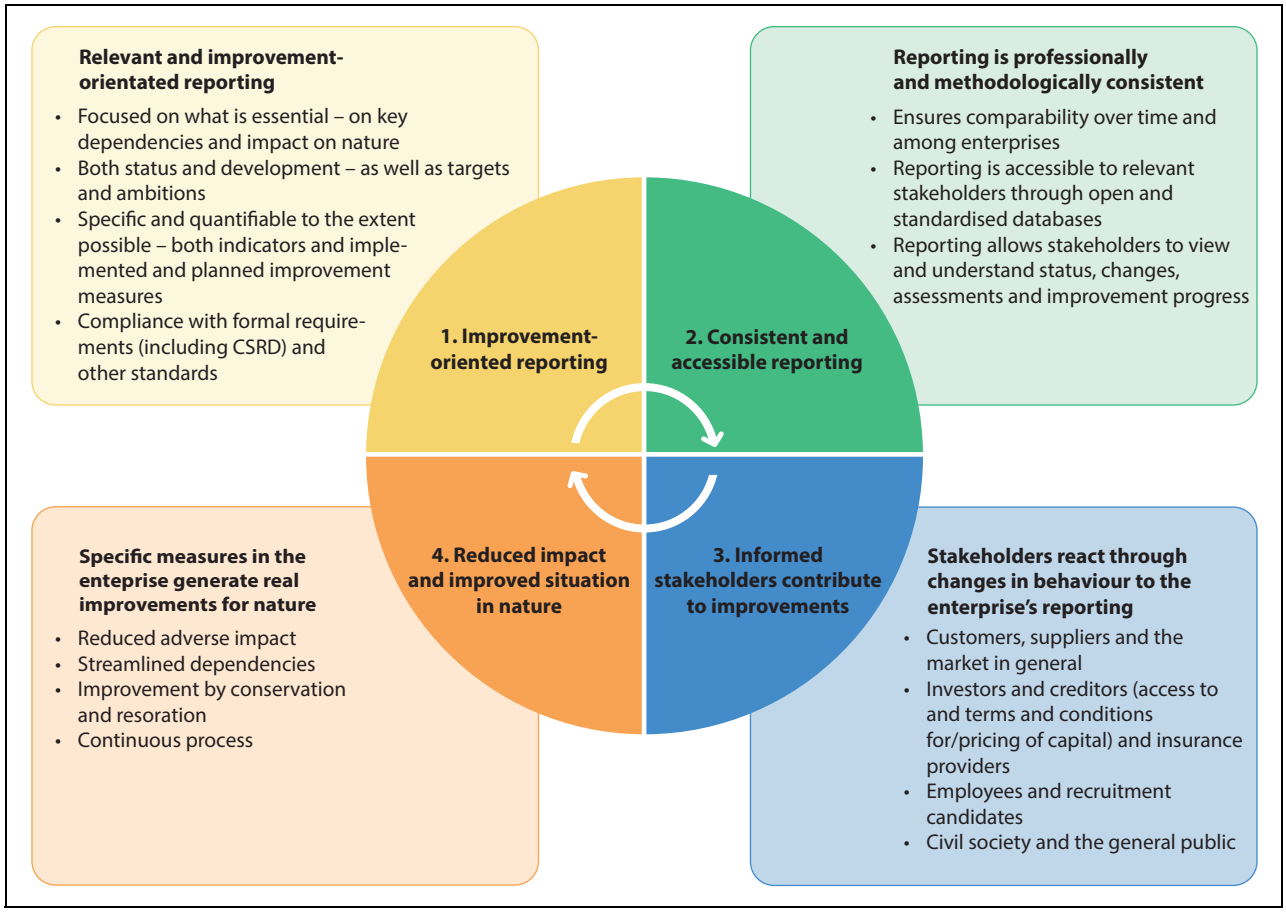

Figure 1.2 More improvement-oriented reporting can have a greater impact on the ground

Illustration: Konsis
Source: The Nature Risk Commission

particular, this relates to advice and tools published by TNFD.

New requirements for reporting require good assessments of nature risk and should be used as a basis for real improvements

In the coming years, many private actors will be subject to stricter requirements for reporting sustainability information as a result of the new requirements in the EU Corporate Sustainability Reporting Directive (CSRD) and the EU Sustainable Finance Disclosures Regulation (SFDR) for portfolio managers and financial advisers. Smaller actors who are not subject to direct reporting obligations may be required to report by banks and insurance companies, which in turn are required to report on the sustainability of their portfolios. Such reporting obligations can provide a basis for better assessing and reporting on nature risk.

Figure 1.2 hows how reporting can help limit nature risk and achieve actual improvements for nature, in that the reporting emphasises improvement, that the reporting is consistent and accessible to affected stakeholders and that stakeholders react to the enterprise's reporting, goals and conduct.

The Commission has not proposed extended reporting for the private sector but wants current and expected reporting requirements to contribute to good management of nature risk and real behavioural changes in the individual enterprise. Furthermore, there will be such a large variation in the nature risk assessments of the individual actors that the Commission primarily recommends a general methodology, inspired by TNFD. Using this methodology in the individual enterprise will be of great importance to the private sector's assessment and management of nature risk.

Double materiality is key to the new EU reporting requirements and standards. The companies' materiality analysis forms the basis for identifying the content of the reporting. Uniform require-

ments and standards will contribute to ensuring that the information reported is more consistent and comparable across companies and sectors.

1.10 The Commission's recommendations

The recommendations below are geared towards authorities at the national level, the public sector in general, as well as the private sector. There will be some overlap between the various groups and the recommendations must be viewed in context. This is particularly true since the public sector largely determines the conditions for the private sector's management of nature risk in Norway. The Commission emphasises that the level of detail and scope of the specific recommendations must be adapted to the needs of the individual actor and that, among other things, due regard must be given to available capacity in small municipalities and small and medium-sized enterprises.

The mandate states that the Commission is not to propose specific measures and changes to instruments that affect nature loss. The Commission assumes that better assessment and management of nature risk will, in itself, contribute to better management of nature. The Commission also believes that greater awareness of *nature risk* related to the risk of adverse consequences caused by nature loss will enhance the ability to implement a green transition in the private and public sectors.

Recommendations on methodology and approaches geared towards all actors	
The Commission is of the opinion that …	… and therefore proposes that:
… greater awareness of nature risk will improve the knowledge base for decisions and enhance the ability to undertake a green transition in the public and private sector	– public and private sector actors use and contribute to the further development of analysis tools for nature risk to determine their degree of exposure and adapt to reduce their own risk
… some general approaches should form the basis for all work on nature risk	– assessments examine both how activities and actors are dependent on nature and how they impact on nature (double materiality) – assessments are geared toward and focus on what is essential for the enterprise, as well as also for nature and society – actors and enterprises use up-to-date supporting data and knowledge and draw upon available and relevant methodologies and guidance – assessments of nature risk are integrated into established processes for overall risk management – activities are assessed in relation to possible future sample spaces, including the possibility of particularly dangerous outcomes – assessments must be adapted to the actors' role and exposure
… some main methodological steps should be observed for all work on nature risk	– all work on assessment and management of nature risk should follow five main methodological stages, cf. figure 1.1: – Identify where and how the actor and enterprise impact on nature, including in their supply chains – Analyse where and how the actor and the enterprise are dependent on and influence nature – Consider how the actor and the enterprise are exposed to nature risk – Use the analyses and assessments as a basis for internal and external reporting – Use this knowledge as a basis for specific decisions and actions

Recommendations geared towards authorities at the national level	
The Commission is of the opinion that …	… and therefore proposes that:
… Norway is exposed to nature risk, which can be reduced by way of a predictable policy and international cooperation that halts nature loss	– consequences of nature risk must be assessed in all relevant decisions at the national level – The report to the Storting on the follow-up of the Global Biodiversity Framework contains specific targets and measures that live up to the ambitions and intentions of the Global Biodiversity Framework and contribute to reducing physical nature risk in Norway – The report to the Storting clarifies what the targets and measures entail in practice, both aggregated and individually for various actors in light of their role in implementation, such that the report contributes to predictable framework conditions and reduced transition risk for public and private actors – in connection with the consideration of the report to the Storting, efforts are being made for a nature agreement comparable to the parliamentary climate agreement, to ensure a clear direction, long-term approach and predictability in the face of nature risk
… assessment of nature risk at the national level can contribute to identifying and clarifying important conflicting objectives in society	– nature risk assessments at the national level must take into account the diversity of assets we receive from nature, including non-priced effects and long-term assets for society as a whole and future generations. – assessments of physical nature risk take into account the consequences of nature loss and destruction of nature's contributions to people in Norway and the rest of the world – assessments of transition risk are broad and take into account conflicting objectives that may arise due to possible changes in framework conditions both nationally and internationally, including the risk that activities may be moved out of the country, without reducing the overall environmental impact – the tripartite cooperation between the parties in working life and the State is used as an important arena for highlighting and managing nature risk
… Norwegian authorities must escalate and systematise the work of assessing and managing nature risk at the national level	– Norges Bank (Central Bank of Norway) and the Financial Supervisory Authority of Norway integrate nature risk in their work on the assessment of financial stability. – key national planning documents for Norway, e.g., national and government budget, the report on the long-term perspectives on the Norwegian economy, the long-term defence plan, the national transport plan and the integrated management plans for the Norwegian marine areas, assess, highlight and propose measures to reduce nature risk for Norway from a long-term perspective – arrangements are made for the Norwegian authorities and specialist environments to participate in and contribute nationally and internationally to developing knowledge and methods for working on nature risk – the authorities evaluate the work on nature risk within five years, including effects on nature and well-being

Recommendations geared towards the public sector (the State and municipalities)	
The Commission is of the opinion that …	… and therefore proposes that:
… nature assessments and location-based information about nature are necessary to analyse and manage society's dependence and impact on nature and thereby its exposure to nature risk	– methods and data are developed that provide better knowledge to identify Norwegian nature's contributions to people (ecosystem services) in sectors, industries and society in general, and about the values of such contributions, including those contributions that are not priced. – more knowledge is developed about the status and trends of Norwegian nature's contribution to human well-being (ecosystem services), including through the work on natural capital accounting – further efforts are made to develop comprehensive nature maps and new environmental data – new data and methods are developed, among other things, based on remote sensing, models, analyses and artificial intelligence that provide better knowledge of ecological relationships and processes in nature – the work on the establishment and development of natural capital accounting for Norway is used to better assess nature risk, including strengthening the basis for overall assessments and considerations in policy
… environmental information must to a greater extent be systematised, digitised and made available	– environmental information and data must be made available in a single location and in a manner that facilitates use in analyses, models and forecasts across societal sectors – all non-sensitive data collected and generated via the public administration, research and various decision-making processes are made openly available to the public, public administration, companies and research in a form that allows linking to other data sources and facilitates further analysis of data, and which is in line with the FAIR principles[1]
… capacity and competence related to nature risk must be enhanced in the public administration, in working life and society in general	– the municipalities' environmental and nature expertise is enhanced, including through inter-municipal cooperation and cooperation between municipalities, the county authority and the county governor. – it must be ensured that impact assessments are carried out with relevant and sufficient competence and capacity on the part of the client, the investigator and the decision-making authority – investment in research and education is increased to strengthen knowledge and competence on dependence and impact on nature in society and the consequences thereof – efforts are being made to increase general insight into and understanding of nature risk as a basis for a more active and purposeful climate and nature policy that is effective and sustainable over time – the authorities make use of institutionalised arenas for dialogue in Norwegian working life (the tripartite cooperation) in the effort to achieve a better understanding of nature risk and the implementation of necessary improvements, including through the Norwegian Council for a Just Transition in Working Life – the authorities, in consultation with the parties in working life, strengthen measures for further education and retraining as key instruments for a good transition and reduction of nature risk

Recommendations geared towards the public sector (the State and municipalities)	
The Commission is of the opinion that …	… and therefore proposes that:
… clearer frameworks surrounding the assessments of nature risk will ensure better management, including within land-use management, as land is a scarce resource – both on land and in coastal and marine areas *	– State, regional and municipal authorities use nature risk assessments to make decisions that are in line with the precautionary principle and that can contribute to a better understanding of the overall burden and the risk of potentially catastrophic outcomes – a public commission is appointed to assess the revision of the Planning and Building Act and other relevant legislation with a view to ensuring that consideration of nature risk is safeguarded, where relevant issues should include:* – clarification of the legal framework for exemptions – requirements for objectivity, quality and transparency and handling questions of independence when conducting impact assessments in accordance with the Planning and Building Act – the interrelated provisions in the Planning and Building Act and the sectoral legislation – an assessment of the consequences of possible legislative amendments on physical nature risk and transition risk
… there is a need for clearer guidelines, and support and guidance from government authorities to reduce physical nature risk at the same time as predictable processes reduce transition risk**	– national expectations and State planning guidelines provide clearer instructions for the consideration of natural assets to be emphasised in municipal, regional and State land-use planning, including for marine areas in the coastal zone** – State planning guidelines are updated to ensure that they clarify which trade-offs and priorities *must* or *should* be made, and that nature risk shall be included and taken into account in the State's objection practice and in the State's own measures** – State authorities provide guidance on how consideration of nature risk should be weighed against other societal considerations and better integrated into the various parts of a comprehensive decision-making basis for public measures, including according to the instructions for official studies and reports and legislation governing socioeconomic analyses, coordinated with associated guidance on climate risk and other environment-related risk and uncertainty
… decision-making processes that involve managing nature risk must be knowledge-based and transparent	– specific trade-offs between natural assets and other considerations are stated and justified in decisions that have an impact on nature risk at all levels of the public administration – municipality, county authority and State, including when the State considers objections and exemptions – stricter requirements are set for the highlighting of nature risk and clarification of the knowledge base regarding the consequences of measures in planning matters and decision-making bases
… Norwegian authorities should take special responsibility for assessing and managing nature risk	– the government ministries put nature risk management on the agenda in their administrative dialogue with government agencies – relevant authorities actively safeguard national and significant regional environmental interests, including when considering objections in municipal decision-making processes** – relevant sectoral authorities make assessments of nature risk and of the consequences this may have for the achievements of policy goals and changes to legislation and other framework conditions – relevant sectoral authorities should stimulate innovation that contributes to reduced nature risk

Recommendations geared towards the public sector (the State and municipalities)	
The Commission is of the opinion that …	… and therefore proposes that:
… there is a need for systematic assessment and management of nature risk at the municipal and regional level	– all municipalities prepare a biodiversity plan, independently or by way of inter-municipal cooperation, as a basis for the land-use component of the municipal master plan. Alternatively, biodiversity planning may be integrated into the work on the municipal master plan – county authorities assess how consideration of nature risk can be ensured in their regional planning, in order to manage cross-municipal effects and dependence on nature – guidance and standards are prepared for how municipal land-use and natural capital accounting can be used as a knowledge base in land-use planning, including uncovering nature risk linked to the land-use component of the municipal master plan – natural capital and land-use accounting that documents nature risk linked to the land-use component of the municipal master plan are collected and compiled at the county authority level, so that the municipalities' land-use accounting can be viewed in a regional context
… the authorities should contribute to nature-related information and reporting becoming available and standardised	– relevant authorities make arrangements for nature risk-related information and reporting to be made available and searchable in a consistent and standardised manner, cf. the European Single Access Point (ESAP)[2] – when new requirements for sustainability reporting have been in effect for a few years, the authorities evaluate whether nature risk should be assessed and reported in the relevant contexts and integrated into the companies' risk management
… the authorities must strengthen the control that requirements are met and the desired effect is achieved in publicly owned enterprises	– the authorities actively monitor how companies that the State or municipalities own or invest in (equity and/or loans) meet expectations for the assessment and management of nature risk – all municipalities that have ownership interests in companies prepare an ownership notice, which also communicates requirements and expectations for managing nature risk. – the Climate Advisory Board to the Norwegian Government Pension Fund Global is given an extended mandate to also cover nature risk

Recommendations geared towards the private sector (enterprises)	
The Commission is of the opinion that …	… and therefore proposes that:
… Norwegian enterprises must take nature risk seriously	– enterprises use the five-stage model presented by the Commission and identify where and how the enterprise affects nature, analyse where and how the enterprise depends on and impacts nature and assess how the enterprise is exposed to nature risk – Norwegian enterprises make use of available guidance and best practices, including from the Taskforce on Nature-related Financial Disclosures (TNFD) and relevant Norwegian initiatives – enterprises should, to the greatest extent possible, assess and manage nature risk in connection with and when using the companies' existing systems for risk management – enterprises contribute to making reporting information available to relevant stakeholders
… industry-driven initiatives and meeting places are important for enhancing competence, learning from one another and cooperating on work regarding nature risk	– the business sector utilises, further develops and, if necessary, establishes cooperation arenas that can contribute to enhancing competence and awareness of nature risk in enterprises and trade organisations – business organisations develop general and industry-specific guides and tools for working on nature risk according to the five-stage model, where guidance and tools are adapted to regional conditions and take particular account of the needs and opportunities of small and medium-sized enterprises – business contributes to the development of uniform requirements for information requested in the supply chain and for sharing of experience, also to ensure that the requirements set are in proportion to the company's size and exposure to nature risk – working life utilises institutionalised cooperation arenas in Norwegian working life (the tripartite cooperation) in the effort to achieve a better understanding of nature risk and the implementation of necessary improvements
… the financial sector will play a particularly important role in attention to and follow-up of nature risk	– the financial sector contributes to obtaining nature risk information, including from enterprises that are not subject to formal reporting requirements and ensuring that this is done in an efficient and improvement-oriented manner that does not inhibit competition – the financial sector contributes to increased awareness of nature risk in its dialogue with clients
… consideration should be given to possible future sample spaces in all work pertaining to nature risk	– enterprises assess their activities in relation to possible future sample spaces where relevant, including the possibility of particularly dangerous outcomes – enterprises should assess their strategies and business models in relation to relevant national and international nature target

[1] See inter alia https://www.openscience.no/apen-forskning/forskningsdata/fair.

[2] Proposal for a new regulation for the introduction of the European Single Access Point (ESAP) where all information, documents and reports that are made public by market participants pursuant to EU legislation are submitted to a single European collection authority and made publicly available to everyone.

* Special comment by Commission Member Hanne K. Sjølie

Commission Member Hanne K. Sjølie does not support the Commission's recommendation that "a public commission is appointed to assess the revision of the Planning and Building Act and other relevant legislation with a view to ensuring that consideration of nature risk is safeguarded, where relevant issues may include:

- clarification of the legal framework for exemptions
- the interrelated provisions in the Planning and Building Act and the sectoral legislation"

Her background and justification for not supporting the recommendation are as follows:

In its review, the Commission has substantiated that loss and destruction of nature is a risk factor for the activities of some enterprises. The enterprises can largely manage the physical risk factors themselves. In the event of significant risk related to loss and destruction of nature caused by other actors, legislation will ensure better management. However, the Commission has not demonstrated that loss and destruction of nature caused by other actors is a general significant risk factor for Norwegian industries or nationally.

The Planning and Building Act's key role in land-use planning is reviewed in detail in the report, while the review of sectoral legislation is far less thorough. Limiting the Planning and Building Act will have societal consequences and could diminish local autonomy. The Commission has not documented that the current legislation is insufficient to reduce any nature risk.

The Commission Member therefore believes there is no basis for making this recommendation.

** Special comment by Commission Member Hanne K. Sjølie

Commission Member Hanne K. Sjølie does not support the Commission's position and recommendation that there is a need for clearer guidelines from government authorities to reduce physical nature risk, nor the recommendations relating to objection practice in municipal decision-making processes.

Her background and justification for not supporting the recommendations are as follows:

The Commission Member does not believe that more government management will result in lower nature risk for industries or at the national level. This follows from the previous special comment that the Commission has not demonstrated that loss and destruction of nature in Norway caused by other actors is a general significant risk factor for Norwegian industries or nationally.

The Commission Member also does not believe that more government management will result in better management of nature and land use. Nature and land-use management entails major societal effects, especially in the parts of the country where natural resources are important for value creation. Major differences in nature and communities domestically mean that decisions involving nature and land-use considerations must be adapted to local conditions. The Commission Member believes that local residents' interests in and knowledge of nature and land use make a significant contribution to good decisions. More knowledge and transparency in processes will help engage residents and hold decision-makers accountable. Overall, this means that decisions based on local conditions largely provide good opportunities to consider different objectives. Local decisions with a good democratic basis strengthen the legitimacy of nature and land-use management, increase trust in policies and reduce conflicts. This better equips society to make good decisions that stand the test of time and contribute to the desired development for society.

1.11 Thank you for all comments and specialist contributions

The Commission notes that there is considerable interest in the work on nature risk, and it hopes and believes this energy will generate significant progress in the years to come. The Commission expresses its gratitude for all good, specialist contributions and comments during its work. All the comments have been used in the Commission's work, even if they are not necessarily cited or reproduced in the report.

1.12 Economic and administrative consequences

The Commission makes recommendations that can contribute to better decisions at the actor, business and community levels in both the public and private sector. Better decisions have a clear beneficial effect. At the same time, strengthening the decision-making basis and introducing better methodologies will involve resource use and costs.

The benefit of better management of nature risk will vary among industries and businesses according to their nature-risk exposure. Nature risk entails economic consequences for actors and society and it is uncertain what the consequences will be and when they will occur. A knowledge-based assessment and management of this risk using the recommended overarching five-stage model will, on a general basis, increase costs in the short term but result in reduced costs and potentially greater gains in the longer term.

Following up on the Commission's recommendations will result in increased expenditure for the State and municipalities, including through the design of a better basis for decisions, visibility and follow-up. However, a lot of work is already being done to improve existing and future data, methods and knowledge bases and there are many reasons to further strengthen efforts in these areas.

The follow-up of the Commission's recommendations to the private sector will also have economic implications. In the short term, there will be costs related to competence building, development of management systems and the use of leadership capacity, among other things. There is reason to believe that a significant part of these costs is linked to the initial stages of this work and that ongoing assessments and reporting can over time be integrated into ordinary risk management and reporting at smaller costs.

Good nature risk management will limit the adverse consequences of future nature risk. In addition, it will support the development of more competitive business models and strategies that are less vulnerable to nature risk. Greater expectations for reporting, transparency and availability will be an important contribution, among other things, to channelling investments from activities that adversely impact nature for purposes that contribute to the Green Shift. The Commission has not proposed extended reporting for the private sector but wants current and expected reporting requirements to contribute to good management of nature risk and real behavioural changes in the individual enterprise.

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Below is a list of the references used in this chapter. The full list of references in available in Appendix 1 in the full report in Norwegian.

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