



SpareBank 1 Østlandet's impact on nature

In this report, we examine our presumed largest footprints on nature. With new knowledge from the WWF's report "Reducing Norway's Footprint", we look at how production and consumption from our lending portfolio can break the planetary boundaries.



Introduction

Ever since SpareBank 1 Østlandet's humble beginnings more than 175 years ago, with the establishment of grain warehouses, good nature management has been an important issue for the Bank. The grain warehouses were basically savings banks based on grain rather than money. They were designed to ensure access to seed corn in spring, especially for the poor. The 'interest' due on every four bushels was half a bushel. This is our proud history, and it is based on the proper management of natural resources and measures designed to help when we humans face natural challenges, such as droughts in summer and floods in spring and autumn.

Nature can be a renewable resource if it is managed sustainably. SpareBank 1 Østlandet's main goal has been to be a driving force behind sustainable development in our market area. We primarily have an impact on nature indirectly via our customers. Therefore, we will work with our customers to achieve our goals. That is why our policies state that we also want our customers and business associates to consider whether their operations have a negative impact on the climate, environment and nature, and systematically work to mitigate their impact. They should also seek to reinforce the positive impact they can have on sustainable nature management. They should conduct risk assessments and have their own guidelines for high-risk areas relevant to their own business, suppliers and other partners. This should be included in contracts, tender specifications and elsewhere. We also want to contribute to sustainable agriculture and nature management internationally.¹

Nature's negative impact on the Bank, i.e. the Bank's *nature-related risk*, is surveyed in a different way and reported on in our annual report using the framework provided by the Taskforce on Nature-related Financial Disclosures (TNFD). This report does not deal with the Bank's nature-related risk due to physical changes in the natural world or transitional risk linked to greater nature conservation. This report deals with the Bank's negative impacts on nature.

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¹SpareBank 1 Østlandet's General ESG Guidelines (policy document) – nature, agriculture and environment

Negative impact on nature in Norway

In November 2022, the WWF launched its report Reducing Norway's footprint - bringing our production and consumption within planetary boundaries.² This describes Norway's negative impact on nature in the following manner:

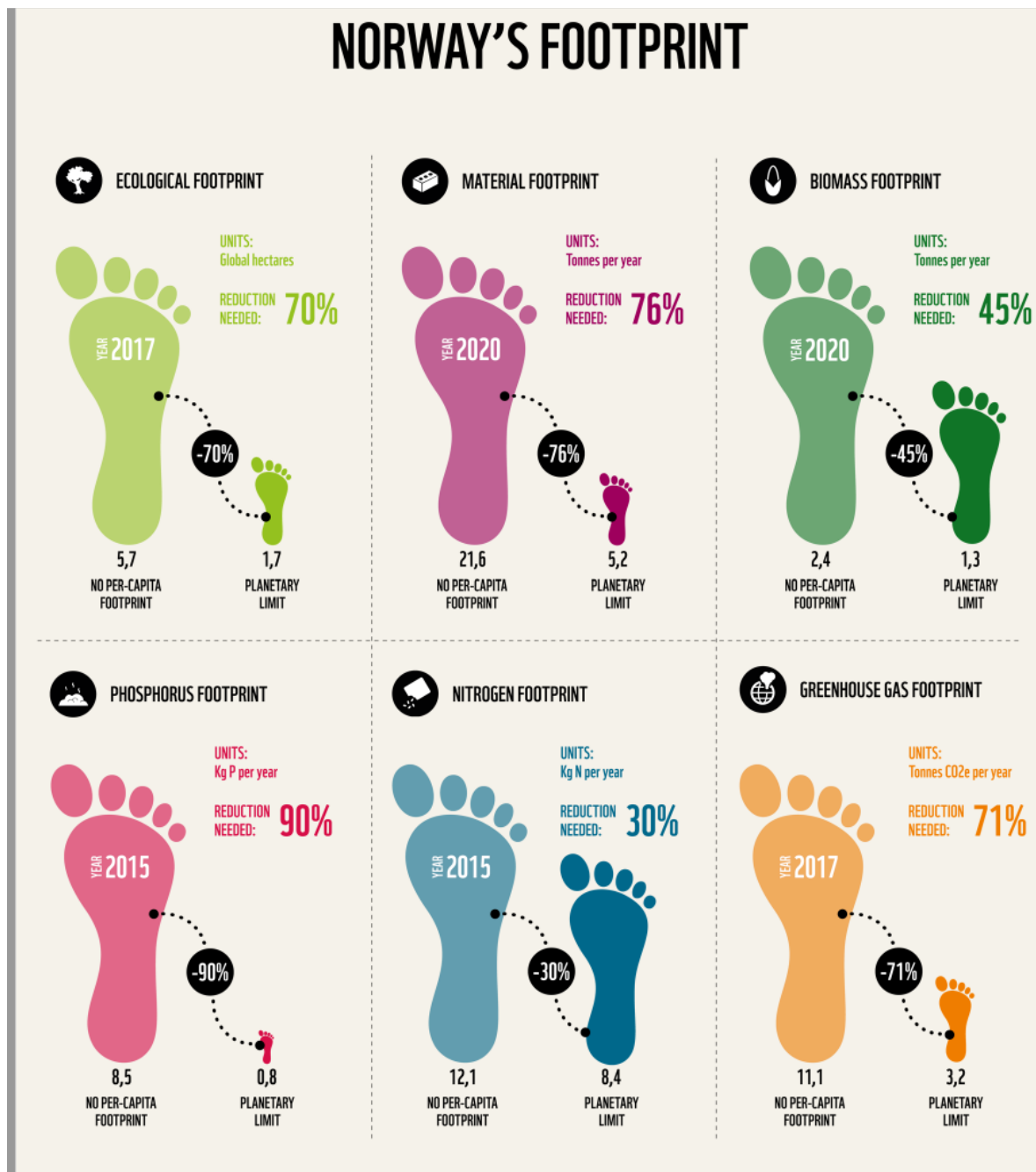


Illustration showing Norway's footprint per capita within six material topics: ecological, material, biomass, phosphorus, nitrogen and greenhouse gas footprints. It also shows the reductions required to return to being within the planetary boundaries.

² WWF (2022): Reducing Norway's footprint - bringing our production and consumption within planetary boundaries. Oslo, Norway.

The WWF used the research on planetary boundaries as a framework for its report. This is the same framework that SpareBank 1 Østlandet uses for much of our work on sustainability. The framework describes the planet's physical limits for how much pressure it can withstand. This research was presented for the first time in 2009 under the direction of Professor Johan Rockström at the Stockholm Resilience Centre. It identifies nine global processes related to changes in the environment that are all driven by human activity. These nine processes regulate interactions between soil, sea, the atmosphere and biodiversity while also having an impact on the stability and resilience of the planet's entire system. If these are kept within their boundaries, they will naturally be able to manage to maintain their capacity to withstand changes and deliver essential functions. These are the prerequisites for the earth continuing to be a safe home.³ The nine planetary boundaries are illustrated below:

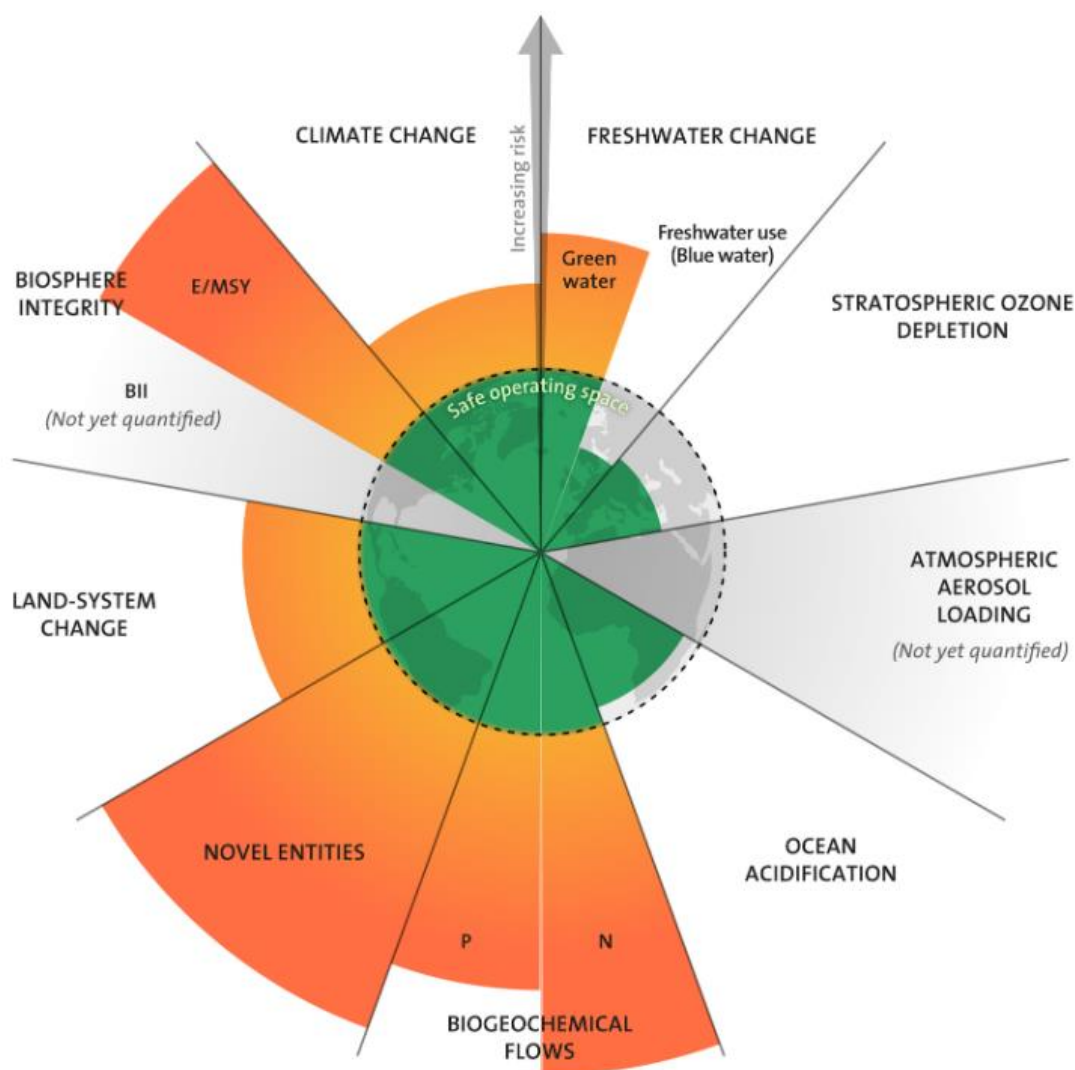


Illustration of the planetary boundaries with latest updates from 2022 from the Stockholm Resilience Centre⁴

³ University of Oslo, B.Sjåfjell and H. Ahlstrøm, SMART-prosjektet (2018) - FNs bærekraftsmål, planetens tålegrenser og det sosiale fundamentet.

⁴ Azote for Stockholm Resilience Centre, based on analysis in Persson et al 2022 and Steffen et al 2015: <https://www.stockholmresilience.org/research/planetary-boundaries.html>

Planetary boundaries	Explanation from the Stockholm Resilience Centre ⁵
Climate	We have surpassed 390ppmv of CO ₂ in the atmosphere, which indicates that we have already massively exceeded the planetary boundaries for global warming. For example, we have exceeded the point where the loss of all sea ice at the poles in the summer months is irreversible. This could lead to a number of self-reinforcing factors that increase global warming and sea levels.
Biodiversity loss	Changes to ecosystems due to human activities have taken place at a faster pace in the last 50 years than ever before in human history. The main drivers are the demand for food, water and natural resources, which causes severe losses of biodiversity and changes to ecosystem services.
Ozone layer depletion in the stratosphere	The stratospheric ozone layer in the atmosphere filters out ultraviolet (UV) light from the sun. If this layer is depleted, increasing amounts of UV radiation will reach ground level.
Ocean acidification	Around one quarter of the CO ₂ humanity releases into the atmosphere eventually dissolves in the oceans. When a threshold value is exceeded, the resulting increasing acidity makes it difficult for essential organisms in marine ecosystems to survive.
Biogeochemical flows (nitrogen and phosphorus emissions)	The biogeochemical cycles of nitrogen and phosphorus have been radically changed by humanity due to a series of industrial and agricultural processes. Both nitrogen and phosphorus are essential mineral elements for plant growth, so the production and use of fertilisers is one of the main drivers. A large proportion of fertiliser is not absorbed by fields and therefore runs off into freshwater and the sea, which degrades ecosystems.
Changed land use	Land has been transformed for human use across the planet. Forests, grasslands, wetlands and other vegetation types have primarily been transformed into agricultural land. This change in land use is a driver behind severe reductions in biodiversity, and also has an impact on water flows and the carbon cycle, nitrogen cycle, phosphorus cycle, etc.
Exploitation of freshwater resources	Water is becoming increasingly scarce. By the end of 2050, about half a billion people will probably be vulnerable to water stress, which will increase pressure to change water systems.
Aerosols in the atmosphere	Emissions to air and pollution: humanity is changing the aerosol load by emitting more polluting gasses that condense into droplets and particles, as well as through changes to land use that increase the release of dust and smoke into the air. An estimated 800,000 people die from polluted air each year.
New chemical substances	Emissions of toxic and non-degradable substances such as synthetic organic pollution, heavy metal compounds and radioactive materials. These compounds can potentially have irreversible effects on living organisms and the physical environment, which include reduced fertility and genetic disorders.

The table shows the nine planetary boundaries. The six with orange backgrounds are defined as planetary boundaries that have been crossed, while those with a green background are still within a safe limit.

Using the planetary boundaries as its starting point, the WWF thus tries to map Norway's contributions to, and responsibility for, some of the largest footprints we leave in nature. the WWF writes in its report that: "In order to reverse nature and biodiversity loss and achieve a world within planetary boundaries, we need to both protect existing, relatively unharmed nature, and restore a significant area of our planet's lands and oceans

⁵ <https://www.stockholmresilience.org/research/planetary-boundaries/the-nine-planetary-boundaries.html>

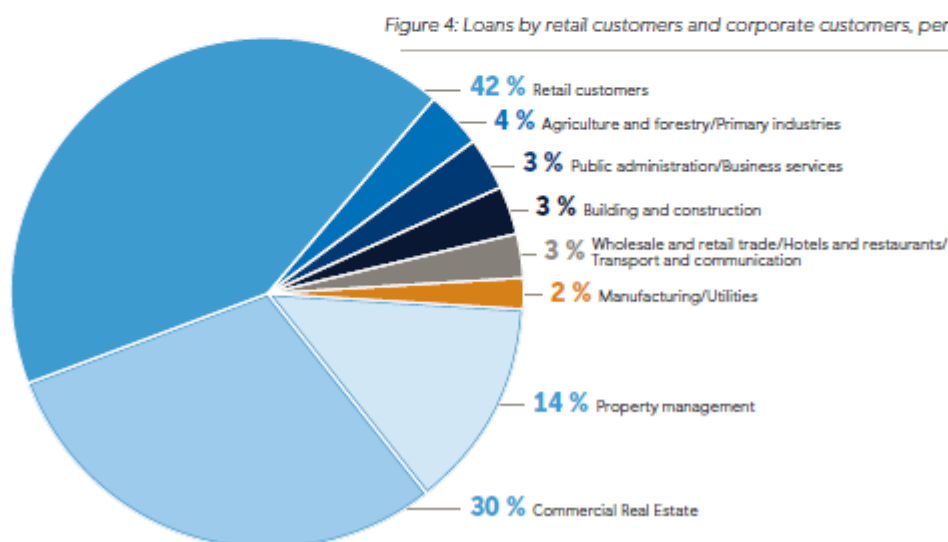
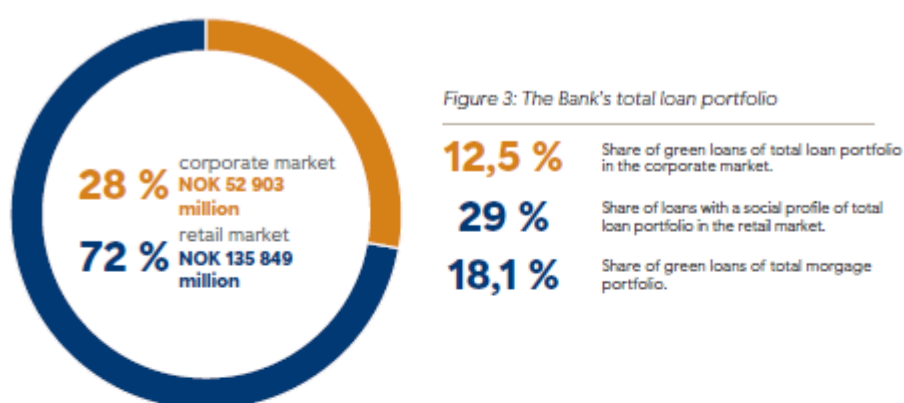
that have already been degraded as a result of human activities.”⁶ Furthermore, protection and restoration alone will not be sufficient, we must also tackle the underlying cause of both nature loss and climate change: our production and consumption.

It points out that research by the International Resource Panel has identified that the extraction and processing of natural resources, with biomass at the forefront, is the leading driver behind approximately 90 per cent of biodiversity loss and more than 50 per cent of greenhouse gas emissions.

“The problem is not only how much we produce and consume, but also what, how, and where.”⁷

The negative impact on nature from SpareBank 1 Østlandet’s loan portfolio

SpareBank 1 Østlandet’s analyses show that the Bank’s own activities do not have much of a negative impact. Our negative impact on nature is mainly attributable to our lending activities. Our lending to different segments is distributed as follows:



As the above illustration shows, residential mortgage lending is our largest business area. This includes housing mortgages transferred to the covered bond company, Boligkreditt. After mortgages come property

⁶ WWF (2022): *Reducing Norway’s footprint - bringing our production and consumption within planetary boundaries*. Oslo, Norway.

⁷ WWF report, page 10

management at 14 per cent and agriculture and forestry at 4 per cent. These are, therefore, key industries to take a closer look at in relation to nature-related impacts.

The negative impact from housing and commercial property customers

Both homes and commercial properties have a negative impact on nature due to the waste they generate, the materials consumed, water consumption and reductions in biodiversity. It is estimated that buildings, property and construction account for 40 per cent of global raw material extraction, and they are, therefore, a significant contributor to the degradation of nature. The table below shows the specific areas that are negatively impacted:⁸

Negative impact from:	Building and construction, property development, new builds and renovation. 3 per cent of the Bank's loan portfolio.	Property management/existing homes. 14 per cent of the Bank's loan portfolio.
Waste	Construction and demolition waste	Total quantity of waste, especially non-source separated.
Materials	Environmentally harmful chemicals and emissions of gases from materials	-
	Total material use (non-circular materials)	–
Water consumption	-	Total water consumption
Biodiversity	Land use	Pollution, noise and light pollution
	Impact on threatened species	Impact on specific species, reduction and destruction of habitats for flora and fauna

The negative impact from the loan portfolio linked to buildings and property management.

The Green Building Alliance proposes a number of key performance indicators (KPIs) that property actors can use to measure negative impact. So far we have not required this of all of our customers, although in order to map the nature-related risk in our portfolio we have since 2019 asked the following in all loan applications for more than NOK 1 million:

- Have you surveyed the project's impact on vulnerable ecosystems? For example, construction on wetlands/marshlands or in protected areas?
- Does the organisation use certified construction materials, e.g. wood products?

We also ask the following questions in relation to the climate, which also have an impact on nature:

- Has the building/construction project been environmentally certified? (BREEAM/Swan ecolabel).
- Have you implemented measures to cut greenhouse gas emissions and/or reduce energy consumption?
- What is the building's energy class? (Read more about energy classes)⁹
- Have you mapped the project's impact on vulnerable ecosystems (e.g. construction on wetlands/marshlands, or in protected areas)? (development projects only)
- Are you familiar with the measures behind the property sector's roadmap for the period up to 2050?

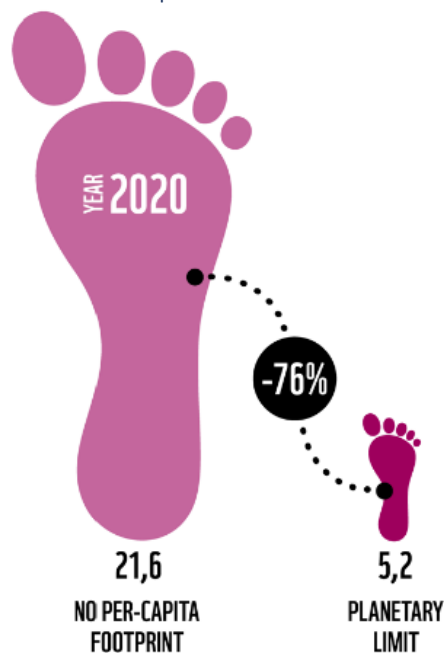
⁸ Green Building Alliance (2022): Miljørapportering for Eiendomssektoren 2022.

⁹ <https://www.energimerking.no/no/energimerking-bygg/energimerking-av-bygg/om-energiattesten/karakterene-i-energiattesten/>

- Has the project/property been adapted for future climate change? (Link to overview of climate change in your municipality.)¹⁰

For buildings and properties, it was found that it is the material footprint that is the main indicator that must be analysed further. The industry extracts vast resources from nature to build and maintain buildings, which means using materials in more circular and efficient ways will be an important measure in addressing this impact. We look at this more closely later in the report.

Material footprint



In its report, the WWF writes that the “material footprint refers to the total amount of raw materials we extract for producing goods and services consumed in Norway.” This consists of four main categories of resources: 1) non-metallic minerals, stone and other construction materials; 2) metal ores; 3) biomass (food, forestry and other plant or animal based products); and 4) fossil fuels. Norway needs to reduce its footprint by 76 per cent in order to be within the planetary boundaries for this area.

The WWF’s study is based on the material flow analysis published by Statistics Norway (SSB). Statistics Norway’s data includes all extracted, imported and exported raw materials. However, the data accounts only consist of primary raw materials and therefore do not include the materials built into imported goods (i.e. metals and minerals in a car or mobile phone). The WWF also writes that “For a complete account of our material footprint, an augmented material flow analysis would have to be made, where material equivalent factors for all import and export categories are calculated. Still, the material footprint depicted provides an

approximation of our total resource consumption and is a powerful tool for understanding our consumption of natural resources in Norway and its consequences.”

SpareBank 1 Østlandet’s material footprint

In the section “Sustainable and circular building materials”, the WWF writes that “non-metallic minerals account for 32 per cent of Norway’s total material footprint when biomass is excluded, the majority of which is used in construction. This contributes to a large part of the material footprint along the value chain of different materials, from extraction and production to waste.”

Some 3,329,000 tonnes of building materials from the construction sector currently end up as waste. This represents 29 per cent of Norway’s total waste. About 50 per cent of this is recycled, according to the government’s national strategy for a green, circular economy from 2021.¹¹ This is below the current target of 60 per cent of the requirement in the Norwegian Technical Building Works Regulations (TEK 17). The rest is usually sent to landfill sites, often due to contamination with other materials.

The WWF also writes that it “is important to note that this includes building materials from biomass, such as wood, which is primarily sent to energy recovery (i.e., burnt).”

As mentioned earlier in the report, SpareBank 1 Østlandet’s lending for the property management of existing homes accounts for 12 per cent of the total loan portfolio and loans for building and construction, property

¹⁰ <https://klimarisiko.kbn.com/>

¹¹ <https://www.regjeringen.no/no/dokumenter/nasjonal-strategi-for-ein-gron-sirkular-okonomi/id2861253/>

development, new builds and renovation account for 3 per cent of the loan portfolio. Therefore, as one of those who finances the industry's production, development and waste management, we have a responsibility to help the industry reduce its material footprint and strive for a more circular construction industry.

Our measures for reducing our material footprint

The WWF report points out that there is great potential when it comes to reducing the consumption of virgin materials by utilising the available resources in smarter ways and by increasing recycling and reuse. This also means that we should reduce demand: less building demolition, reuse materials more and design better to ensure longer building service lives and easier material recycling.

In our General ESG Guidelines (policy document)

– nature, agriculture and environment guidelines, we write the following “[...] we want our agricultural customers and other business associates to particularly focus on ensuring that they: manage and treat waste from their production and operations responsibly, with adequate tracking. ensure compliance with the Regulations for the proper management of waste and ensure that waste does not go astray and harm nature, people or society.”¹²

Since 2019, we have also conducted sustainability assessments for all loans applications for more than NOK 1 million, as mentioned earlier in the report. This due diligence is designed to identify risk in the loan process, as well as to map the customer's focus on, and knowledge of, sustainability so that we can advise the customer on the sustainable transition. Risk may be linked to breaches of the law, regulations or generally accepted norms, and/or the Bank's General ESG Guidelines. These assessments cover the climate, the environment/nature, as well as social conditions and governance, including supply chains. They are followed up by guidance intended to ensure that relevant topics are assessed in the credit process, and that the assessments are documented. If the risk related to more than five points in the overall assessment is elevated, the application is regarded as potentially deviating from the policy and the assessment must be discussed with the line manager in order to clarify whether or not this is financing that the Bank wishes to approve. This also applies if the adviser feels that there may be other reasons why the risk should be considered elevated. The Sustainability Department can be asked to carry out a technical assessment or advise the customer adviser and manager on whether the application should be approved from the point of view of sustainability.

The assessment must be conducted at least every 1.5 years. If a sustainability analysis is available that was carried out less than 1.5 years ago and the lending does not result in material changes to the sustainability risk, the existing assessment can be used. If no previous assessment exists, the last assessment was carried out more than 1.5 years ago or there have been (or will be if the loan application is approved) material changes to operations, then a new sustainability assessment must be carried out. The procedure and tool will undergo further development in 2023.

In the current strategy, sustainability has been elevated to one of the four overarching goals of the entire Bank. Our goal is to be a clear driving force behind the sustainable transition. We have established five different strategic initiatives in order to deliver on this goal; one within residential properties in the Retail Division and one within property in the Corporate Division. The Corporate Division's goals for property by the end of 2025 are that:

Commercial properties (property rental):

- At least 40 per cent of the loans for commercial properties for rent (limited to commitments in excess of NOK 10 million) must be green, in line with our green bond framework.

¹² SpareBank 1 Østlandet's General ESG Guidelines (policy document) agriculture, nature and environment <https://www.sparebank1.no/nb/ostlandet/om-oss/samfunnsansvar/retningslinjer-og-rammeverk.html?icid=baerekraft;;om-oss;;meny;;retningslinjer;;lenke>

- At least 10 per cent of our loans for commercial properties for rent (limited to commitments in excess of NOK 10 million) must be for existing commercial properties (built before TEK 17) that meet the requirements of our green bond framework for green upgraded buildings.

Construction projects (residential or commercial properties):

- By no later than the beginning of 2025, a greenhouse gas report must be published for loans financed by the Corporate Division for emissions from materials (produced in accordance with recognised regulations) for all construction projects (where the law stipulates that such accounts must be produced).
- By no later than the beginning of 2025, we must require a 20 per cent reduction in greenhouse gas emissions (in relation to the average building in 2021) from materials in construction projects that we finance.

The current requirements in our green bond framework mainly relate to the climate and energy consumption. However, the Bank tries to update the framework regularly, including to align it as close as practicably possible to the EU Taxonomy. The Taxonomy has set criteria for the EU's first two environmental goals and will eventually set criteria for the remaining four, including the goal of a circular economy. When it does, it will be natural for the Bank to also set goals for these areas.

As with so many things, reducing Norway's material footprint is a goal that requires numerous actors in society to work together. Not least, it will require the help of the authorities. The WWF writes in its report that "To increase recycling and reuse of materials, new policy is needed to strengthen and facilitate the demand for secondary products. This means setting up regulations and easier testing that can allow for safe re-use of secondary materials, as well as making databases that collect information on available building materials. In addition, economic incentives must be considered – a fee on virgin materials or a target requirement for use of secondary building materials, financial support for new technology or facilitation of storing and collecting new material streams, and active use of public and private procurement." Here they are referring to SINTEF's report from 2020: Study of the potential for reduced greenhouse gas emissions and the transition to a low-emission society through circular economy strategies.¹³

The negative impact of agricultural customers

Agriculture is SpareBank 1 Østlandet's second largest sector and accounts for a large share of our corporate market lending. We are therefore an important partner for agriculture in our market area. Agriculture includes forestry and agriculture, which in turn includes animal husbandry.¹⁴

The table maps the most important planetary boundaries that have been crossed. Agriculture is one of the main drivers behind the negative impact. The insights come from a report the WWF has specifically written on nature and nature-related risk in the global food system: 'Bringing It Down To Earth: Nature Risk & Agriculture':¹⁵

Agriculture's significant impact on the planetary boundaries that have been crossed	Further information
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¹³ The WWF report, page 31.

¹⁴ SpareBank 1 Østlandet's General ESG Guidelines (policy document) – nature, agriculture and environment

¹⁵ WWF, 2021: 'Bringing It Down To Earth: Nature Risk & Agriculture'
https://wwf.panda.org/wwf_news/?2660466/nature-finance-risk-and-agriculture

Climate	Agriculture is the largest source of emissions in which both methane and nitrous oxide are the primary air pollutants. Methane emissions primarily originate from the digestion systems of ruminants, while the rest comes from manure storage.
Land use	Today, agriculture uses around 50 per cent of the earth's habitable land, and most of this land is used to grow animal feed. This is the main cause of deforestation and habitat loss, and a major cause of the overuse and pollution of freshwater.
Nitrogen and phosphorus	Today, agriculture is responsible for the largest occurrences of surplus nitrogen and phosphorus that seep into nature and threaten the stability of ecosystems.
Biodiversity	Globally, agriculture is the biggest driver behind the extinction of the world's species and biodiversity in the natural world, as well as the deforestation of pristine nature. This is despite the fact that the agricultural sector is the sector that will be hardest hit by the loss of biodiversity.

As far as the planetary boundaries are concerned, the food system is one of the major drivers behind the crossing of most of the planetary boundaries. Four of the planetary boundaries: greenhouse gas emissions, land use, phosphorus and nitrogen emissions and biodiversity have already been crossed, and the food system is having a major impact in all four of these. This means that the earth's systems are being depleted and displaced, rather than absorbing the impact and regenerating themselves. This loss of nature cannot be reversed without major changes being made in the food sector.¹⁶

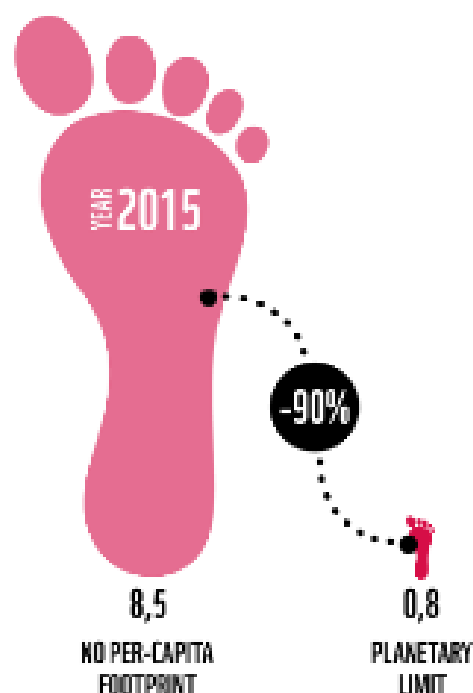
The Bank wants to start measuring the negative impact, but we lack data from each customer. Pending the availability of this data, we have conducted an impact assessment based on the methodology used in the WWF's 2022 report: Reducing Norway's Footprint. Based on the framework and composition of our loan portfolio within agriculture in Eastern Norway, we have chosen to analyse our nitrogen and phosphorus footprints as well.

¹⁶ Ibid.

Phosphorus footprint

As far as phosphorus is concerned, the WWF believes that Norway needs to reduce its consumption by 90 per cent by the end of 2030. Based on consumption data, the phosphorus footprint measures how much phosphorus fertiliser is spread across cultivated land. Phosphorus is one of the critical inputs for producing synthetic fertilisers and is a key nutrient in organic fertilisers. A large proportion of fertilisers originate from phosphate rock resources, with about 80 per cent mined in either China, Morocco, Western Sahara, the US or Russia. The WWF writes that this exposes fertiliser use to international geopolitical and market risks. There is also a risk associated with the fact that this is not a renewable resource, the sources of extracted phosphate rock are finite and may be depleted over time.

The WWF report further states that Norway's phosphorus footprint is 8.5 kg per capita per year. This is well above the planetary boundary of 0.8 kg per capita per year. Phosphorus consumption per capita was 6.4 kg in Sweden and in Denmark it was 4.9 kg. France, a major agricultural nation, has a phosphorus footprint of 8 kg per capita. In the EU and Norway, almost all of the mineral fertilisers used in agriculture and industry are imported, and according to Eurostat, Norway used 8,996 thousand tonnes of phosphorus-containing mineral fertilisers in agriculture in 2020. Meanwhile, Norway also imports phosphates which are used to produce fertiliser and then exported. Only 10 per cent of the mineral fertiliser produced in Norway is used nationally. Exports are not included in Norway's footprint. Therefore, our crossing of the planetary boundary is due to the import and domestic use of phosphorus, i.e. its overuse in agriculture, says the WWF. A report from Statistics Norway estimates that 15,600 tonnes of phosphorus were spread across agricultural land in Norway in 2018.¹⁷



In the report, '**Bedre utnyttelse av fosfor**', the Norwegian Environment Agency writes that phosphorus is a finite resource that has been put on the EU's list of critical raw materials. Reuse and utilising phosphorus from secondary sources is important to achieve better resource efficiency. While a large proportion of phosphorus-containing waste and manure is used as a resource in crop production, the current use of phosphorus is not optimal. Half of all phosphorus is not absorbed by plants, it either remains in the soil or ends up in drainage systems.¹⁸

SpareBank 1 Østlandet's phosphorus footprint

In 2021, the Bank wrote an internal report called 'Utfordringer for et bærekraftig landbruk', ['Challenges for sustainable agriculture'], which provided the basis for preparing goals for agriculture. It highlights phosphorus as one of the biggest challenges agriculture faces in relation to a sustainable transition.

¹⁷ Statistics Norway (2018). *Bruk av gjødselressurser i jordbruket 2018*. https://www.ssb.no/jord-skog-jakt-og-fiskeri/artikler-og-publikasjoner/_attachment/414178?_ts=170a0861638

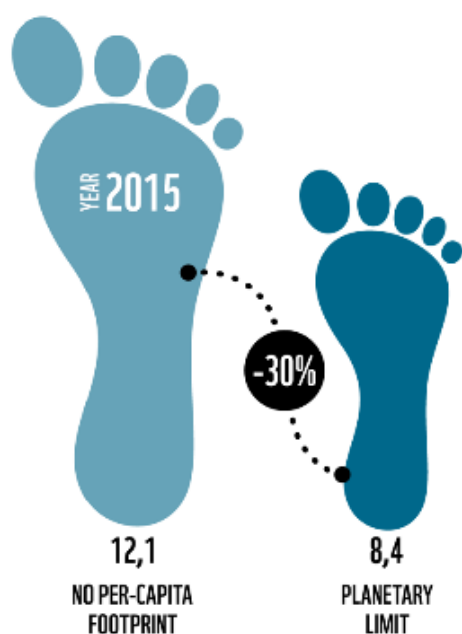
¹⁸ Norwegian Environment Agency (2017) - *Bedre utnyttelse av fosfor*

In addition, the Norwegian Farmers' Union writes in a consultation response to 'Climate Cure 2030' that "In order to ensure the best possible climate benefit from biogas production, more funds should be invested to ensure the good, innovative use of biofertiliser. It is unacceptable for biofertiliser to be released into nature or the sea without being used, and for the nutrients in the biofertiliser to thus become an environmental problem. Overall, manure from Norwegian livestock contains enough phosphorus to meet Norwegian agriculture's annual phosphorus requirement for fertiliser. Given that bio residue and manure contain other types of biomass such as food waste, sewage sludge, fish sludge, etc., this results in a high phosphorus content in the bio residue. Agriculture neither needs nor has the capacity to accept all bio residues from Norwegian biogas plants. For this reason, any future strategy for increased biogas production in Norway cannot exclusively be based on biofertiliser being spread across farmers' fields. Therefore, efforts must be made to develop fertiliser products that can be used in horticulture, parks and market gardening. Strict pre-treatment requirements for the raw materials used in biogas production are crucial for successful biofertiliser product development. The Norwegian Farmers' Union believes that a labelling scheme, as indicated in 'Climate Cure 2030', could be a good tool for creating a larger market for bio residues."

The Norwegian Farmers' Union also highlights cutting phosphorus emissions to water as one of the positive side effects of the fertiliser measures in 'Climate Cure 2030', which includes storage and spreading methods, as well as better timing and area distribution for spreading manure that will result in lower greenhouse gas emissions.

See the Bank's measures for reducing phosphorus consumption in the section below.

Nitrogen footprint



The WWF also includes the footprint from the use of nitrogen, which needs to be reduced by 30 per cent in Norway. Nitrogen is an essential nutrient for all life on earth. However, even though it is a natural part of the nutrient cycle, excessive levels of nitrogen disrupt ecosystems. This is especially true in aquatic environments where algae blooms can suffocate the water's oxygen supply (eutrophication) and drastically reduce fish stocks.

The WWF reports that agriculture, deforestation, wastewater and fossil fuel use are all factors that result in higher levels of nitrogen. The production and use of synthetic mineral fertilisers is also an important causal factor. "While the production of phosphorous and potassium comes from the physical mining of potash and phosphate rocks, nitrogen is extracted from the air and, to be used as fertiliser, needs to be converted into

reactive forms such as ammonia or nitrous oxide. This process is energy-intensive and dependent on fossil fuels, in particular natural gas, thus generating large quantities of greenhouse gases and accounting for up to 50 per cent of the energy use of the agricultural sectors. Agriculture also accounts for 80 per cent of total nitrous oxide (N₂O) emissions, a greenhouse gas 264 times more powerful than CO₂, mainly from synthetic nitrogen and manure application."¹⁹

¹⁹ WWF, 2021: 'Bringing It Down To Earth: Nature Risk & Agriculture', chapter on nitrogen.

“Globally, around 20 per cent of all nitrogen fertilisers applied ends up accumulating in soils and biomass, whereas 35 per cent enters the oceans.” This is consistent with three studies in Norway where average nitrogen use efficiency (calculated as nitrogen removed from harvested grain divided by the amount of nitrogen supplied) ranged from 61 per cent to 71 per cent for barley and from 67 per cent to 82 per cent for oats. In other words, 18-39 per cent of nitrogen is lost. As rainfall causes fertiliser to leach into groundwater or run off into waterways, it makes nitrogen a significant driver of biodiversity loss through impacts such as acidification and eutrophication.²⁰

Nitrogen is a major problem in our market area, including in the Oslo Fjord. The WWF report has its case story about it. It states that “[...] the level of nitrogen in the Oslo Fjord is exceeding threshold values. Amongst others the high nitrogen levels are resulting in types of algae that are negatively affecting ecosystems and in very low oxygen levels in parts of the fjord. The report found that the nitrogen is coming mainly from agriculture and wastewater that is flowing into the fjord.”²¹

SpareBank 1 Østlandet’s nitrogen footprint

Nitrogen is directly linked to one of the nine identified indicators of the planetary boundaries, and the limit per capita is suggested as 8.4 kg of nitrogen per capita per year according to the WWF. Norway has a nitrogen footprint of 12.1 kg per capita per year, which means that a 30 per cent reduction will be required to return to being within a safe limit. The high consumption of fertiliser has a major impact on Norwegian nature. Data from the Norwegian Environment Agency shows that a quarter of Norwegian land already receives more nitrogen from long-distance transport and the deposition of acidic nitrogen compounds than the vegetation can tolerate.²²

As with phosphorus, nitrogen therefore has an important negative impact, which we finance primarily through our agricultural portfolio. As a responsible bank with the goal of being a driving force behind the green transition, we are therefore initiating various measures to address the mapped impacts.

Our measures for reducing our phosphorus and nitrogen footprints

The Bank has produced both an internal report on the sustainability challenges within agriculture and a feasibility study that examines where the Bank can reduce its indirect negative impact and reinforce its indirect positive impact via lending to agricultural customers. The study concluded the Bank should support agriculture’s own goals for its work in relation to the environment and climate. Agriculture’s climate plan for 2021-2030 involves rolling out a climate calculator as its first means. The goal is for “all farms to start using the climate calculator and be offered climate advice by the end of 2025.”²³

Over the course of 10 years and 10 seasons, agriculture aims to both cut its combined greenhouse gas emissions and increase carbon sequestration in soil by the equivalent of 5 million tonnes of CO₂ equivalents (tCO₂e). The goal is to achieve the most climate-friendly and sustainable agriculture possible. The climate agreement makes agriculture responsible for proposing climate solutions the industry can implement in order to fulfil the agreement. Agriculture’s climate plan sets out a roadmap for how a unified industry should deliver on its mission. With this plan, it is demonstrating that it is possible to achieve agriculture’s climate

²⁰ WWF, 2021: ‘Bringing It Down To Earth: Nature Risk & Agriculture’, chapter on nitrogen, page 42.

²¹ WWF, 2021: ‘Bringing It Down To Earth: Nature Risk & Agriculture’, case story on the Oslo Fjord.

²² The WWF report refers to *State of the Environment (2022)*. Environmental Indicator 4.1.8.

<https://miljostatus.miljodirektoratet.no/miljomal/forurensning/miljomal-4.1/miljoindikator-4.1.8/>

²³ Agriculture’s climate plan.

<https://www.statsforvalteren.no/contentassets/c55716dd4c014eb0b02be1076ad18a70/landbrukets-klimaplan-2021-2030-1.pdf>

commitments without reducing the use of Norwegian topsoil, weakening settlement in rural areas or reducing the number of grazing cows, sheep and goats in Norway. Agriculture's climate plan identifies eight priority areas for cutting emissions in agriculture that together will help to achieve the climate agreement in the period up to 2030. The priority areas illustrate the measures that must be implemented, barriers, the necessary framework conditions and key stakeholders within agriculture.

The rolling out of a climate calculator and greater focus on climate advice is the first priority area in the climate plan and will be a common climate tool for agriculture as a whole. The climate calculator will be relevant as a decision-making support tool with respect to measures at a farm level. It could, for example, be used in connection with the strategy for feeding and spreading fertiliser, choosing the energy solution for heating, the environmental footprint of purchased raw materials such as concentrates and mineral fertilisers, or using soil for carbon sequestration. To ensure that the insights provided by the climate calculator are used as effectively as possible, the industry has improved its climate advice capacity and expertise for farmers. This will enable Norwegian farmers to reduce the biggest negative impacts from their activities, as well as to maximise the positive impact of effective measures.

Two of these negative impacts are precisely phosphorus and nitrogen emissions to nature. As far as farmers are concerned, these are often caused by the use of fertiliser, and this is reflected in agriculture's climate plan via priority area 5: Improved use of fertiliser and good agronomy. The implementation of a climate calculator and provision of advice will thus be able to provide farmers with an overview of opportunities associated with, for example, precision fertiliser spreading and better storage capacity that allows them to optimise fertiliser spreading. Improving the timing of spreading and using eco-friendly spreading methods will also reduce the need for mineral fertilisers and the associated nitrous oxide emissions. Smarter technology that can 'read' the crops' nitrogen needs is also a good example of what can come out of an action plan and will contribute to better resource utilisation on the farm with less emissions.

With our green agricultural loans, we offer favourable interest rates on loans used to finance specific measures mapped by the climate calculator. If a farmer uses the climate calculator, receives climate advice from the industry's own advisers and draws up an associated climate action plan, the idea is that they will obtain a good overview of green and resource-smart measures for their specific farm. If these measures require financing, we at SpareBank 1 Østlandet believe that the best way for us to contribute is to provide financing on favourable terms in order to help farmers and agriculture in Eastern Norway move in a greener direction. This is how we will start the job of protecting nature and our fragile biodiversity while reducing expensive factor inputs such as fertilisers, pesticides and energy: a smarter solution for the farmer, a smarter solution for the environment.

In addition to facilitating good incentives to make nature-smart choices, we are also setting requirements for all of the customers to whom we lend money. In our General ESG Guidelines (policy document) – nature, agriculture and environment guidelines, the Bank writes that "[...] we want our agricultural customers and other business associates to pay particular attention that they do **not**:

- start operations in areas with water shortages without conducting impact assessments of the operations' water consumption and/or carry out irresponsible water management that has major negative consequences for people and nature, and where the activities will compete with society's needs and the local population's access to clean water.
- have measures designed to accommodate the need for water in communities or ecosystems in areas where environmental impact assessments show that these will probably have a significant impact on the water resources.
- cause severe water pollution and fail to carry out environmental analyses to avoid water pollution.
- fail to carry out an environmental impact assessment in large-scale projects that could have a detrimental effect on biodiversity." In relation to this, the GRI 304: Biodiversity 2016 standard can, for example, be used.
- using fertilisers and chemicals irresponsibly, not monitoring national developments and regulations regarding the utilisation of organic fertiliser products.

- irresponsible forestry management and violating what are considered good industry standards, including via the Forest Stewardship Council (FSC). Where there is a risk of harmful impact, production forests and timber plantations should be FSC certified. This also applies to high-risk supply chains with pulp, paper, plywood, furniture or wood.
- use chemicals irresponsibly and pollute the soil, water or air via paper and pulp production.

For more detailed information, see the full [policy document on our website](#).

We also carry out our own due diligence for agricultural loan applications. This follows the same procedure as the one described above. The factors we map as part of this include:

- Agriculture has signed an agreement to cut greenhouse gas emissions by 5 million tCO₂e in the period up to 2030. Have you assessed/implemented measures to cut greenhouse gas emissions and/or reduce energy consumption? Please comment on any planned/implemented measures.
- Going forward, there will be stricter requirements regarding the impacts industries have on nature and ecosystems. Have you assessed/implemented measures to reduce the initiative's impact on nature and vulnerable ecosystems have been considered?
- To what extent has your business adapted to meet the coming physical climate changes? [See information about climate change in your municipality](#).
- The transition to a sustainable society will entail new technological solutions, changed demand for various products, and changed framework conditions or Regulations. Have you assessed/implemented measures to meet these changes?

As mentioned earlier in the report, being a driving force behind the green transition forms a key part of the Bank's strategy. Several strategic initiatives have been developed to address the most significant impacts we have via our banking activities. Greener agriculture is one of these five strategic initiatives, and we are setting goals that are designed to help the industry reduce greenhouse gas emissions and make smarter use of resources in the best possible ways. By the end of 2025 we want to ensure that:

- 80 per cent of our agriculture customers with commitments of more than NOK 2 million have started using the climate calculator.
- 80 per cent of our agriculture customers with exposures of more than NOK 2 million have received climate advice and established a climate action plan for their farm.
- 25 per cent of our agriculture customers who have established a climate action plan have implemented measures in line with the action plan that was drawn up.
- By the end of 2025, the Bank should have granted and paid out green agriculture loans to at least 100 customers.

By achieving these goals together with our customers, we believe that we can achieve significant improvements by addressing some of the most negative impacts agriculture has on nature. By mapping each farm's challenges and measures using ever more sophisticated tools, such as the climate calculator, our customers will be in a stronger position to manage their phosphorus and nitrogen footprints. By combining this with favourable green financing, we at SpareBank 1 Østlandet are helping to create the right incentives to accelerate the process.

Conclusion and the way forward

With the help of frameworks such as the planetary boundaries and the new knowledge from the WWF's report that uses the planetary boundaries in a Norwegian context, we have been able to start the journey by mapping the kind of negative impacts our loan portfolio has on nature. However, as the analysis clearly shows, we still lack good figures from our own loan portfolio. Reducing their footprint on nature will become increasingly important for financial institutions and this will make great demands with respect to data collection in the future. In this analysis, we have looked at what we believe are our most significant negative impacts:

- The property portfolio's material footprint
- The agricultural portfolio's phosphorus footprint
- The agricultural portfolio's nitrogen footprint

Based on good due diligence assessments that incorporates strong guidelines on nature, as well as strategic initiatives within property and agriculture that are working to finance the path to climate-neutral and resource-efficient industries, we are working to address these impacts. In collaboration with industries and customers, the data collection and analysis can be made even more advanced and accurate, and together we will be able to forge a path towards an economy that is within the planetary boundaries.