

A Nordic perspective on governing land take

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Summary

Various supranational policy frameworks, such as the UN 2030 Agenda for Sustainable Development and the EU Green Deal, include calls to manage land and soil resources in a more sustainable manner and to reduce overall land consumption. Achieving these ambitions requires rethinking the governance of land use across government levels and policy domains.

This first memo in the research project *No Net Land Take and alternative nature-positive strategies*, funded by the Nordic Council of Ministers, reflects on the emerging "land sparing agenda" from a Nordic planning and land governance perspective.

The memo aims to:

- Clarify **key terminology** related to land take;
- Describe the **broader policy landscape** by summarising international and EU commitments and policies that emphasise a land sparing perspective;
- Present an **overview** of how the Nordic countries currently facilitate reductions in net land take through planning and land use policies by outlining their strategic orientations and organising governance mechanisms according to the land take mitigation hierarchy of avoiding, reusing, minimising and compensating for land take.

The memo serves as a foundation for subsequent activities in the project. Specifically, the insights from the memo will guide a more detailed investigation of multi-level governance responses to the land sparing agenda in the Nordic countries and examination of sustainable land management practices in urban fringes and rural areas in different Nordic contexts.

Sammanfattning

Policyramverk som FN:s Agenda 2030 för hållbar utveckling och EU:s gröna giv uppmanar till att förvalta mark- och jordresurser på ett mer hållbart sätt och att minska den totala markanvändningen. För att uppnå dessa ambitioner krävs ett nytänkande kring styrningen av markanvändningen över olika förvaltningsnivåer och politikområden.

Detta första memo inom forskningsprojektet *No Net Land Take and alternative nature-positive strategies*, finansierat av Nordiska ministerrådet, reflekterar kring den framväxande markhushållningsagendan ur ett nordiskt planerings- och markpolicyperspektiv.

Memot syftar till att:

- Klargöra **centrala begrepp** relaterade till ianspråktagande av mark;
- Beskriva det **bredare policylandskapet** genom att sammanfatta internationella åtaganden, EU-åtaganden och policyer som betonar hushållning med markresurser;
- Ge en **översikt** över hur de nordiska länderna i dag underlättar för minskat ianspråktagande av mark genom planerings- och markanvändningspolicy. Detta görs genom att beskriva deras strategiska inriktningar och sortera in olika styrningsmekanismer i i en hierarki för att begränsa ianspråktagande av mark med stegen undvika, återanvända, minimera och kompensera.

Memot fungerar som utgångspunkt för forskningsprojektets kommande aktiviteter. Insikterna kommer att vägleda en mer detaljerad undersökning av hur olika förvaltningsnivåer i de nordiska länderna styr mot målen om minskat ianspråktagande av mark. Därtill görs en granskning av hållbara markförvaltningspraktiker i urbana randzoner och landsbygdsområden i olika nordiska kontexter.

Tiivistelmä

Monet ylikansalliset politiikkakehykset kuten YK:n kestävän kehityksen agenda 2030 ja EU:n vihreän kehityksen ohjelma (Green Deal) sisältävät tavoitteita maan ja maaperän kestävämmästä hallinnasta sekä maankäyttöönoton (*land take*) merkittävästä vähentämisestä. Tämän kaltaisten tavoitteiden edistäminen edellyttää alueidenkäytön ohjauksen rakenteiden kriittistä tarkastelua sekä konkreettisia muutoksia alueidenkäytössä.

Tässä Pohjoismaiden ministerineuvoston rahoittaman tutkimushankkeen *No Net Land Take and alternative nature-positive strategies* ensimmäisessä muistiossa keskitytään tähän nousevaan 'maansäästämisen agendaan' pohjoismaisesta näkökulmasta.

Muistion tavoitteena on:

- selventää maankäyttöönottoon (*land take*) liittyvää **keskeistä käsitteistöä**;
- kuvata maankäyttöönoton **laajempi politiikkaympäristö** kokoamalla yhteen kansainväliset ja eurooppalaiset sitoumukset ja politiikkakehykset, jotka korostavat maansäästämisen näkökulmaa;
- esittää **yleiskuva** siitä, miten Pohjoismaat tällä hetkellä edistävät nettomaankäyttöönoton vähentämistä kaavoituksen ja maankäyttöpolitiikan keinoin. Muistio kokoaa yhteen olennaiset strategiset tavoitteet sekä jäsentää keskeiset alueidenkäytön ohjauksen mekanismit maankäyttöönoton nk. lieventämishierarkian mukaisesti. Lieventämishierarkiassa ensiksi vältetään maankäytön muutoksia, jotka heikentävät luonnontilaa, toiseksi hyödynnetään jo käyttöönotettua maata uudelleen, kolmanneksi minimoidaan maankäyttöönottoa ja viimeisenä kompensoidaan maankäytön muutoksista aiheutuvia vaikutuksia.

Muistio ja sen havainnot toimivat pohjana hankkeen seuraaville vaiheille. Niissä tullaan keskittymään esimerkitapauksiin kestävästä maankäytön muutosten toteuttamisesta kaupunkien reuna-alueilla sekä maaseutumaisilla alueilla.



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Introduction

Planning and land use policies play an important role in managing the expansion of human settlements in a sustainable and democratically legitimate manner. In recent decades, environmental land use targets have become more stringent, making it increasingly challenging to balance competing interests in land. One emerging environmental target related to land use is that of limiting land take and the resulting soil sealing. The rationale for this target is strong. Land and soil consumption are linked to a range of problems, including increased flooding risks, water scarcity, land instability, reduced biodiversity, carbon sinks and food security (IPBES 2018). These concerns are also relevant in areas of low population density, such as the Nordic Region: land use changes affect scarce agricultural soils, coastal zones, forest landscapes, carbon-rich wetlands, peri-urban green areas and habitats that are difficult to restore once they have been fragmented or their soils have been sealed. Indeed, international treaties and global sustainability frameworks, such as the UN Sustainable Development Goals (UN 2015), increasingly underline the need to pay proper attention to the management of land and soil resources. In Europe, various strategies and legislative proposals under the European Green Deal – an overarching initiative for a sustainable green transition within the European Union – include calls to halt land take and soil sealing. The most direct call for action is the No Net Land Take (NNLT) objective set out in the EU Soil Strategy for 2030, which aims to reduce net land take to zero by 2050 (European Commission 2021a).

While net land take can be quantified and monitored to track progress towards objectives such as NNLT, in practice, facilitating a “land sparing agenda” requires a reframing of policy goals across governance levels and sectors, alongside suitable and effective policy instruments, knowledge and expertise, and political commitment to such overarching ambitions. The agenda necessitates adoption of a holistic and integrated approach to land consumption, in which policies and actions of different land use sectors and policy domains (such as housing, infrastructure, energy and agriculture) help to advance it. This might involve making difficult choices about policy priorities but also calls for identifying land use solutions that maximise synergies between two or more policy domains. For

example, better integration of green infrastructure and compact city development strategies could advance (urban) development that harmonises carbon neutrality, biodiversity conservation and housing policies (Hautamäki et al., 2024).

This memo is the first publication in the research project *No Net Land Take and alternative nature-positive strategies*, which examines the NNLT objective and related policies and strategies in Denmark, Finland, Iceland, Norway and Sweden. While some European countries, such as Germany, France and Switzerland, have set domestic quantitative land take reduction targets (Lacoere et al., 2024), the Nordic countries have not adopted explicit goals or policies to limit land take and soil sealing. The Nordic case is a particularly interesting one, since the region is relatively sparsely populated with comparatively high land take per capita in several Nordic countries (Venter et al., 2026). Accordingly, there is a clear need to better understand how the Nordic countries approach land take as a policy challenge. The Danish approach, for example, has been described as “qualitatively oriented”, with the aim of balancing development needs with land take reduction ambitions (Sørensen and Christensen, 2020).

Despite the lack of direct commitments to reducing overall land consumption, many current policies and practices within the Nordic Region potentially contribute to net land take reduction. For example, densification and the compact city model have long been dominant ideas for urban governance in the Nordic countries (Røe et al., 2022). The Nordic countries have also been early developers of voluntary measures to compensate for ecological damage caused by land use changes (Morell et al., 2026). Denmark has been a pioneer of wetland restoration since the 1990s, and the current political ambitions expressed in the recent Tripartite Green Agreement are to rapidly expand wetlands by taking agricultural land out of production (Krabbe et al., 2026).

Against this background, the aim of the memo is to reflect on the emerging land sparing agenda from a Nordic planning and land governance perspective. The memo identifies important aspirations and actions that can be understood as related to land sparing in the Nordic context by outlining the strategic orientations and broader governance mechanisms that either support or constrain reductions in net land take. The subsequent memos will investigate differences in governance responses to the land sparing agenda across the Nordic countries in greater detail and provide examples of sustainable land management practices from different Nordic contexts.

The memo starts by presenting key terms related to land take (Box 1). It then explains the broader policy landscape by summarising international and EU commitments and policies that emphasise a land sparing perspective. This EU context is also important for the non-EU Nordic countries, since EU policy frameworks influence the wider European Economic Area and the Nordic policy environment, for example through policy learning, shared concepts and comparable monitoring practices. Next, a land take mitigation hierarchy of avoid, reuse, minimise and compensate is introduced, outlining how a range of policy instruments needs to be applied in sequence and/or in combination to achieve reductions in net land take. Finally, using the mitigation hierarchy as an organising structure, an overview is presented of how the Nordic countries currently facilitate land take reduction ambitions through their planning and land use policies. The overview is selective rather than exhaustive. The mechanisms, policies and examples were identified through a

targeted review of policy documents, planning legislation and research literature, with the objective of illustrating the mitigation hierarchy steps in the context of Nordic planning and land governance. The concluding remarks point to areas that are important for integrating the land sparing agenda into planning and land governance frameworks, both in the Nordic context and beyond.

Box 1. Key concepts

The terminology around land take is fragmented, with the use of terms varying across sources. This info box explains how the central terms are defined in this memo and highlights connections between them.

Land take, which is the key term in this document, refers to the conversion of natural, semi-natural or cropland into "artificial" land use forms, such as housing, industry, parks and infrastructure (EEA 2023). The term *land take* covers the expansion of urban areas at urban–rural fringes, the development of scattered settlements in rural areas, and the conversion of land within urban areas (European Commission 2012). Conversion within urban areas is understood to mean the transformation of non-artificial or unsealed land into artificial or sealed surfaces. Redevelopment of land that is already built-up does not in itself constitute new land take unless it involves additional sealing or conversion of remaining green or permeable land. *Land take* as a term has been promoted particularly by the EU, with the terms *land consumption* and *land artificialisation* often used as synonyms. Conversions to built-up areas, such as residential and commercial areas, are unanimously considered to constitute land take. However, many other land uses, such as horticulture, wind turbines, solar farms and intensive forestry and agriculture, remain "grey areas" from a land take perspective (Evers, 2024), and there is ongoing debate about the definition and scope of land take (Marquard et al., 2020).

Soil sealing refers to the loss of soil resources due to the permanent covering of soil by impervious materials such as concrete and asphalt (European Commission, Joint Research Centre, n.d.). The use of impervious materials is associated with urban development and infrastructure construction. Whether land take results in soil sealing therefore depends on the type of land use.

Land degradation refers to the (irreversible) loss of ecological functions of the soil, such as food and biomass production and hosting the biodiversity pool (IPBES 2018). Degradation is a sliding scale and can be caused by various natural processes (such as climate change and extreme weather events) and human activities (such as unsustainable land management practices). Land take is one of the recognised drivers of land degradation, while soil sealing is one of

the processes contributing to land degradation (Cowie et al., 2018). Certain land use changes degrade the ecological functions of an area and restrict future land use options more than others.

Land recycling refers to the reuse of land taken or sealed for development purposes, the ecological upgrading of land taken or sealed (such as green spaces within the urban structure) and the restoration of land by removing existing structures and/or de-sealing surfaces (EEA 2016).

Densification is defined as land use and property development within existing built-up structures that maximises the use of existing infrastructure instead of building on undeveloped land. This broad definition covers various forms of densifying development, from adding new (housing) units within buildings to infill development on vacant lots and the redevelopment of brownfields (Jehling et al., 2026). Accordingly, some densification processes contribute to land recycling, while others involve land take and soil sealing.

Net land take is the sum of changes in "new land take", i.e. non-artificial land converted into artificial land use forms, and in "reverse land take", i.e. land restored from artificial to non-artificial states (EEA 2025a). Net land take indicators therefore capture land take as a two-way process and record land recycling efforts in addition to losses of inartificial land.

Down-zoning refers to situations in which land previously planned for a certain purpose is reclassified and the new purpose entails a more restrictive land use. In some countries, compensation is paid when the market value of the property decreases due to the planning-related impairment of property rights (Lacoere et al. 2023).



Image: Jonathan Borba/Unsplash.com

The broader policy landscape: The emergence of land take and soil sealing on global policy agendas

Land and soil resources are under immense pressure across the globe. Their degradation has negative implications for many crucial ecological functions and ecosystem services, including food production, carbon storage, heat stress and habitat fragmentation. Indeed, the global sustainability discourse and, in particular, the United Nations' Sustainable Development Goal (SDG) framework call for halting land degradation and paying proper attention to the management of land and soil resources (UN 2015). In Europe, a large share of the total land area has already been transformed into land use forms characterised by artificial surfaces, while many current EU policy frameworks and strategies aim to improve the condition of European soils. Among other calls for action, the Soil Strategy for 2030 includes a highly ambitious target to halt land take within the Union and eventually reduce net land take to zero by 2050 (European Commission 2021a). The sections below provide a summary of international and European commitments related to limiting land take and soil sealing.

International commitments

Reports by international organisations such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Intergovernmental Panel on Climate Change (IPCC), and the Food and Agriculture Organization of the United Nations (FAO) have long underlined the pervasive and systemic nature of land degradation and the need to consider the interconnected challenges arising from the deteriorating state of

global land resources. The IPBES *Assessment Report on Land Degradation and Restoration* (2018) provided a critical analysis of the state of the knowledge regarding terrestrial ecosystems and identified governance mechanisms with the potential to reduce the negative environmental, social and economic impacts of land degradation and to rehabilitate and restore degraded land. The IPCC *Special Report on Climate Change and Land* (2019) scrutinised the complex interlinkages between desertification, land degradation, food security and greenhouse gas fluxes. The FAO report on food system trends and challenges (FAO 2019) highlighted how land use and land use changes are core issues for the future of food systems. The unsustainability of urban development patterns has been stressed in various reports (such as OECD 2018). Together, the reports of international organisations paint a clear picture: avoiding land degradation and restoring degraded land are essential for meeting the UN Sustainable Development Goals (SDG). Striving for sustainable land consumption practices is an important part of this agenda.

The SDG framework contains two non-binding targets related to land take: SDG 15.3 on land degradation neutrality and SDG 11.3 target on enhancing inclusive and sustainable urbanisation. SDG 15.3 has a broader scope, aiming to "combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods and strive to achieve a land degradation-neutral world by 2030" (UN 2015). It is measured by the indicator "Proportion of land that is degraded over total land area", which can be further disaggregated by land cover type (e.g. tree-covered areas, grassland, cropland), ecosystem type (e.g. temperate-boreal forests and woodlands, intensive land use systems) or agricultural area class (cropland, permanent meadows, pastures). Disaggregation based on ecosystem type has particular relevance from a land take and soil sealing perspective, as it helps to identify sensitive areas and mitigate biases that may arise when restoring certain ecosystem types at the expense of others.

SDG 11.3 promotes sustainable land consumption, particularly in urban areas, and is measured by indicator 11.3.1: "Ratio of land consumption rate to population growth rate". It is proposed to be disaggregated by land consumption type (e.g. forestry, built-up areas, land used for the maintenance and restoration of environmental functions) and by type of (urban) growth (infill, extension, leapfrogging). The disaggregation is intended to help monitor the impact of the expansion of human settlements compared to other land uses (UN Environment Programme). Marquard et al. (2020) concluded that, for SDG indicator 11.3.1, land consumption has a specific, narrower meaning as it only tracks land conversions related to urbanisation processes. It should not therefore be used as a single indicator for land take.

EU-level commitments and obligations

The EU has intensified its climate and biodiversity ambitions in recent years. These ambitions are reflected in the European Green Deal (EGD), an overarching growth and climate strategy consisting of various sub-strategies and legislative proposals. In many EU policy frameworks and strategies, the connection to land take and soil sealing is *implicit*. The EU Biodiversity Strategy for 2030, for example, stresses that unsustainable use of land is one of the key drivers of biodiversity loss (European Commission 2020a). A

key action under this strategy is the Nature Restoration Law (NRL), which sets binding targets for habitat recovery and sustainable land management in Member States. Many of the NRL measures will have implications for planning and land use development practices in high-green urban settings with large amounts of green space and ample ecosystem services, as represented by many Nordic cities (Kinnunen et al., 2025). In a case study from Helsinki, Finland, Kinnunen et al. (2025) anticipate that, with a growing population, achieving an increasing trend in tree canopy and green space cover would require drastically increasing land use efficiency and densifying the urban structure.

Several other EU strategies also highlight the importance of actions addressing land take and land and soil degradation, including the EU Circular Economy Action Plan (European Commission 2020b), the EU Zero Pollution Action Plan (European Commission 2021b), the EU Climate Law (2021/1119), the Farm to Fork Strategy (European Commission 2020c) and the EU Forest Strategy for 2030 (European Commission 2021c). The Forest Strategy, for example, calls for sustainable forest management to counterbalance increasing pressures on forests and maintain their potential to fulfil relevant ecological, economic and social functions. The Circular Economy Action Plan calls for actions that reduce pressure on natural resources, including land and soil resources, and thereby contribute to achieving the Union's climate neutrality and biodiversity targets.

The EU Soil Strategy for 2030 relates most directly to land take and soil sealing, as it contains an explicit target for halting land take within the Union, stating that the objective is to halve net land take by 2035 and reduce it to zero by 2050 (European Commission, 2021a). The same objective of "No Net Land Take" (NNLT) by 2050 was already set in 2011 in the EU's Roadmap to a Resource-Efficient Europe (European Commission 2011). While a formally stated objective, NNLT is non-binding and does not specify the responsibilities of national and regional authorities in advancing the objective. It is controversial, since the EU does not have land use planning mandates and the objective must be translated to national and sub-national levels of government to be implemented (Gradinaru et al., 2023).

NNLT has furthermore been widely criticised for its ambiguity, as land take is far from a clear-cut concept (see e.g. Decoville and Feltgen, 2023; Evers, 2024; Marquard et al., 2020). The conceptual debate has mainly concerned what should be considered "natural land", "semi-natural land" and "artificial land". The overall message is that binary and simplistic differentiation between artificial and non-artificial land can lead to misleading indicators that treat different local, regional and national settings unequally (Decoville and Feltgen, 2023). The recent Soil Monitoring Law (SML, 2025/2360) indicates a shift in the definition of land take, as it stresses that land take should be seen as an overarching concept with various processes linked to it and defines it in a qualitative manner as "a process which causes a modification of land and of the characteristics of soil" (SML, 2025/2360). This interpretation links land take more closely to soil policy and distances it from efforts to quantify land consumption in different land use categories (Evers, 2026).

SML is the first law within this domain, but the legislative process leading up to the law has been described as a watered-down process in which initial ambitions were significantly reduced, thereby defusing and delaying conflict over land take (Evers, 2026). Indeed, the directive introduces mandatory monitoring obligations for Member States but

does not oblige them to reduce their land consumption. The monitoring framework is intended to focus on more visible aspects of land take, namely soil sealing and soil removal. Member States are required to transpose the directive's provisions into national legislation and to establish a national monitoring framework by the end of 2028. The monitoring framework requirements are somewhat vague. Article 6 of SML declares that the framework should be established at an appropriate level to ensure regular, coherent and accurate monitoring of soil health, soil sealing and soil removal. The first reporting deadline is set for the end of 2031. Subsequently, the European Commission will carry out an evaluation on progress and might decide on further requirements (SML 2025/2360). For Iceland and Norway, the directive is relevant more indirectly. It may influence, for example, Nordic policy learning and the development of comparable monitoring practices.



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The land take mitigation hierarchy

The land take reduction initiatives presented in the previous section are supranational policies. As such, they do not specify which actors should implement them and how. Various approaches to the issue can be observed at the national level across Europe. Countries such as Belgium, Germany, France and Switzerland have set specific national-level targets to reduce land take, while in other countries, spatial planning goals are less closely aligned with land saving ambitions (ESPON 2024). The Nordic countries are among those that have not set national-level targets for reducing land take. The mere existence of domestic land take targets does not of course automatically lead to actions that reduce land take and protect soils; conversely, strategies, plans and practices at national and sub-national levels can reflect land sparing ambitions even when a country has not explicitly determined its reduction target (ESPON 2024). Eastern European countries, for example, have long traditions of protecting the quality of agricultural land, forest and water, and particularly of arable land protection, but have not set quantitative targets for net land take (Marquard et al., 2020).

Land sparing ambitions change the policy- and decision-making environment of land use governance: national, regional and especially local governments need to address social challenges such as housing affordability and accessibility, economic challenges such as regional economic restructuring, and environmental challenges such as urban biodiversity and renewable energy production with fewer land resources. Reducing land consumption ultimately requires prioritising some objectives over others, thereby intensifying conflicts between policy sectors. These conflicts may be explicit or more latent in their nature (Koelman et al., 2025; Slätmo, 2019). Local actors, in particular, must weigh competing demands and assess the trade-offs between alternative land uses (Krigsholm et al., 2025).

Achieving zero *net* land take requires a shift from a linear approach to land use that is largely dependent on greenfield development to a circular one that builds on efficient land use and the recycling and restoration of land. The importance of a circular approach to land use is underlined in both the EU Soil Strategy for 2030 (European Commission 2021a) and in the Soil Monitoring Law (2025/2360). The strategy introduces the "land take mitigation hierarchy" adopted from ecological sciences and environmental impact assessments, while the directive refers to the same hierarchical steps as "land take mitigation principles". Given that land use changes are administered within national borders, the intention of the hierarchy is to present a strong case for taking action to limit land take rather than providing a comprehensive toolbox of policy instruments for this purpose. Keeping this in mind, the mitigation hierarchy is detailed below, with examples of instruments and approaches provided for each step. The examples given in this section are not Nordic-specific.

The land take mitigation hierarchy consists of four steps designed to be considered sequentially and/or in combination in spatial planning (Table 1):

1. **Avoid** land take and soil sealing,
2. **Reuse** already taken or sealed land,
3. **Minimise** taking or sealing land in favourable condition and
4. **Compensate** land taken or sealed.

Policy instruments and approaches with the potential to reduce land take or increase land restoration can be assigned to the mitigation hierarchy steps. Policy instruments are defined here as techniques or mechanisms used by the governmental authority to translate policy goals into practice. In some cases, it is challenging to determine which category a particular instrument or approach falls into. Similar types of interventions (such as financial incentives, information and land use restrictions) can furthermore be employed at several steps of the hierarchy.

The first step calls for considering whether additional land take and soil sealing could be avoided. **Avoidance** in essence means preventing new greenfield developments through measures such as bans on planning deviations and exceptions outside urban areas (Lacoere and Leinfelder, 2023), urban growth boundaries (Gradinaru et al., 2023) and downzoning the supply of buildable land in existing land use plans (Lacoere et al., 2023). Avoidance instruments have a strong direct positive impact on soil resources and quality of nature locally but can be politically challenging to implement. Indeed, data show that cities continue to grow at their fringes and along transportation corridors (Hersperger et al., 2020). The causal chains of avoidance instruments are also complex and difficult to verify. They may inflate land prices and contribute to housing supply shortages (Korthals Altes, 2006). Without regional coordination, there is furthermore a risk that limiting the quantity of land consumption in one location shifts it to another (Hersperger et al., 2020).

The second step of the hierarchy considers that it is better to **reuse land** already taken or sealed than to allocate land use changes towards natural or semi-natural land. The ambiguity of the land take concept complicates determination of what should be considered reuse of land (see e.g. Decoville and Feltgen, 2023; Evers, 2024). Nevertheless,

there is substantial potential for reuse of land, for example through brownfield development, utilisation of vacant buildings and provision of green areas on previously built-up areas. Policy instruments such as discounts on land use fees and information targeted at private landowners can be used to encourage reuse of land. Since reuse cases may involve additional costs that need to be distributed across public and private actors (such as the costs of purifying contaminated land), it is important that the governance framework includes instruments that allow such issues to be addressed in an effective and transparent manner (Puustinen et al., 2022). Reuse can also mean de-sealing of land, i.e. removing asphalt and concrete and increasing the amount of permeable surface. The effects of de-sealing on soil functioning are not yet well understood. De-sealing initiatives are, however, increasingly being implemented to advance objectives such as heat island mitigation and flood risk management (Vieillard et al., 2024).

The third step requires **minimising land take and soil sealing of land in favourable condition**. This step of the hierarchy is also difficult to define due to the multifaceted and ambiguous criterion of "favourable condition". Generally, it can be understood to cover areas with high potential for ecosystem service provision, such as highly fertile arable land, forest land with high natural value, and green spaces within the existing urban footprint. Lacoere and Leinfelder (2023) view, in particular, supplementary restrictive regulations, such as restrictive building regulations for recreational and park zones, as instruments that minimise land take. Some authors interpret minimising more from the perspective of increasing (urban) land use intensity (Decoville and Feltgen, 2023). With this emphasis, incremental densification processes such as infill development and building extensions are important ways to reduce land take (Ehrhardt et al., 2025). Various economic and fiscal tools can be used to incentivise such processes. It is also possible to disincentivise land take and soil sealing, for example by charging fees for soil sealing or imposing higher taxes on converted farmland.

Finally, as a fourth step, **compensation measures** should be applied if, despite avoiding, reusing and minimising efforts, land use changes create a new artificial footprint. Decoville and Feltgen (2026) define compensation as the act of de-artificialising a surface area equivalent to new (urban) development. However, the problem is that soil sealing cannot be exactly compensated for by doing "something else, somewhere else", because soil functions are location-specific (European Commission 2012). Compensating should therefore be viewed as measures that are equivalent and related to the ecosystem functions lost. This means that compensation measures should be designed to restore or improve soil functions to avoid wider adverse impacts of soil sealing. For example, if land take leads to loss of water retention capacity, the compensation measures should aim to increase retention capacity in the catchment area. Compensation measures that enhance other soil functions than those lost should be seen as a last resort (European Commission 2012). Compensation for land take has been limited so far (Decoville and Feltgen, 2026). New compensation instruments are, however, increasingly being introduced into legislation in various countries. The new Nature Conservation Act in Finland, for example, introduces voluntary biodiversity offsetting as a conservation instrument (Seppälä et al., 2026).

Mitigation hierarchy step	Examples of policy instruments and approaches
Avoid	Urban growth boundaries; greenbelts; planning deviation bans; down-zoning
Reuse	Brownfield redevelopment; soil remediation; soil de-sealing; financial incentives, information to encourage reuse; identification of vacant land
Minimise	Densification and infill development; financial incentives, information to encourage minimising; green infrastructure; use of permeable materials and surfaces; restrictive land use regulations; tradable development rights; identification of vacant land and land in favourable condition
Compensate	Biodiversity offsetting; compensation systems; compensation for agricultural land

Table 1. The land take mitigation hierarchy adopted from the EU Soil Strategy for 2030
(European Commission 2021a).



Image: Marcus Michaelsen/Unsplash.com

How do the Nordic countries facilitate reductions in net land take?

In this section, attention is turned to the strategic orientations and broader mechanisms that reflect the net land take agenda in the Nordic context. First, land cover and land take characteristics, along with planning and land governance institutions, in the Nordic countries are described to build an understanding of the broader framework within which decisions related to land take are made. Next, an overview is presented of current Nordic policies, regulations and practices with a connection to land sparing ambitions. The intention is not to provide an exhaustive list of all measures related to land take and soil sealing but rather to describe the main mechanisms that support or constrain progress towards the zero net land take agenda.

Nordic land cover and land take characteristics

The land cover conditions of a specific country, region or municipality greatly influence its potential future land take trajectories. A summary is provided here of country-level land cover characteristics (Table 2), based on the European Environment Agency's (EEA) land cover country sheets, which are compiled using data from the Copernicus Land Monitoring Service CORINE Land cover dataset (2000–2018). The land cover characteristics vary substantially across the Nordic countries. In Denmark, the major land cover category is agricultural land. The share of built-up land is also high in Denmark (8.26 %) compared to other Nordic countries. Finland and Sweden are countries with high shares of forest cover and inland waters and wetlands. Iceland and Norway both have large areas of open space with little or no vegetation, as well as natural grassland, heathland or shrubland, dry

vegetation types and relatively low shares of agricultural land.

The assessment of land use changes and land take patterns has emerged as a prominent field of research in response to increasing concerns over the sustainable management of land and soil resources globally (e.g. Mir et al., 2025). The development of land take monitoring practices has been driven, in particular, by the need to track progress towards the NNLTL objective (Venter et al., 2026). Monitoring (net) land take involves making choices regarding the object of monitoring (how land take is defined) and the methods and data used for calculating conversions in land surfaces. The EEA, for example, has produced statistics on net land take in cities and commuting zones in Europe based on the Urban Atlas and CORINE Land cover datasets (most recent version, EEA 2025a). These statistics record annual net land take figures by land cover classes, measured in square kilometres, for functional urban areas in Europe. They do not therefore record all land cover changes within a country.

Table 2. Summary of land cover and land take characteristics in the Nordic countries.

Land cover figures are based on EEA land cover country fact sheets (EEA 2021) and the land take figures of Venter et al. (2026).

	Denmark	Finland	Iceland	Norway	Sweden
Built-up land (%)	8.26	1.41	0.39	0.92	1.53
Agricultural land (%)	72.49	8.30	2.55	5.32	8.83
Forests and shrubland (%)	11.93	71.82	0.89	35.38	65.60
Natural grassland, ... (%)	1.97	2.13	36.85	14.55	6.56
Open space with little or no vegetation (%)	–	–	49.61	32.86	2.50
Water bodies and wetlands (%)	5.36	15.76	9.69	10.97	14.97
Land take per capita (m² citizen⁻¹ yr⁻¹)	2.79	5.39	3.27	6.26	3.56

Using higher-resolution land cover maps than the CORINE Land cover dataset, in a recent study, Venter et al. (2026) provide estimates of land take in European countries. Their study shows that when land take is measured in relation to the number of inhabitants (land take per capita), land take figures in the Nordic countries are among the highest in Europe. Using 2023 population figures, they observe the highest rate in Norway ($6.26 \pm 0.94 \text{ m}^2 \text{ citizen}^{-1} \text{ yr}^{-1}$), followed by Finland, Sweden, Iceland and Denmark. Finland, Iceland, Norway and Sweden converted, in particular, natural and semi-natural land into artificial land use forms between 2018 and 2023, while in Denmark the land take regime is dominated by a reduction of cropland (Venter et al., 2026). These per-capita figures naturally do not reveal anything about the drivers of land take and their distribution across national territories. In some locations, land take is driven primarily by residential development, while elsewhere, land uses such as transport and logistics, industry and energy production, contribute more to the aggregate land conversion figures. Unfortunately, many available data sources are poorly suited to producing information about the drivers of land take (Venter et al., 2026).

The Nordic planning and land governance context

The Nordic countries are welfare states known for their progressive planning and land use policies. Land use and development are strongly regulated and the concept of delivering public goods through planning is deeply rooted in the Nordic planning culture. Public authorities at different levels of government control spatial development through a hierarchy of plans but also apply various other policy instruments and approaches, such as public land development, taxes and economic incentives, to steer land use outcomes (Caesar, 2016; Krigsholm et al., 2022).

The Nordic countries have a similar hierarchical structure of government. Within this structure, the central government and municipalities are the most important levels of government. Both the central government and the municipalities levy taxes and have statutory duties to provide various services for citizens. Corresponding to the general administrative structure, the central government and the municipalities are important actors within the spatial planning and land governance framework (Slätmo et al., 2021). The central government is responsible for preparing legislation that affects spatial development, i.e. planning legislation and legislation of other sectors with an indirect impact on spatial development (such as agriculture, forestry and nature conservation). Moreover, the central government prepares strategic planning documents that guide land use at sub-national levels. These documents may have a legally binding status or be non-binding by their nature. Central governments also negotiate agreements concerning land use, housing and transport initiatives with regional and local actors (such as Sverigeförhandlingen in Sweden, Byveksavtaler in Norway and MAL agreements in Finland). Such contracts between public authorities at different levels of government can be described as strategic planning instruments, with the negotiations often involving trading transport infrastructure funding in exchange for housing commitments.

The role of the regional level is weak in Nordic planning frameworks, with the distribution of powers favouring the local level (Lundgren et al., 2026). Municipalities independently draft and approve plans – mainly municipal and local detailed plans – that determine where and what type of land use changes take place within their jurisdiction. In some Nordic countries, the municipality is the only party with the right to initiate planning processes. This is called a “planning monopoly”. In Norway, however, the majority of detailed plans are developer-initiated (Stjernström et al., 2023).

The content of municipal and local plans must not contradict the content of higher-level planning documents (regional plans, national directives, policies and guidelines). Nevertheless, the Nordic countries differ in the extent to which higher-level authorities become involved in municipal-level planning. In Denmark, the national authority responsible for spatial planning can only object to municipal plans if there is a conflict with the national interests defined in the Overview of National Interests in Municipal Planning (Galland, 2022). In Finland, regional or national actors do not have the authority to control or disapprove of local plans that align with regional land use plans (Purkarthofer and Mattila, 2023). In Iceland, the national planning agency examines and approves all plans produced by local authorities (Theodórsdóttir, 2023). In Norway, regional and national actors, as well as the Sami Parliament and neighbouring municipalities, have the right to object to a municipal plan that is considered to negatively affect their interests (Birnbrich, 2023). In Sweden, the county administrative boards review all comprehensive municipal plans and detailed plans to ensure that national and inter-municipal interests are met (Schmitt, 2023).

Furthermore, many municipalities in the Nordic countries employ an active land policy strategy, i.e. they apply policy instruments beyond planning purposes to encourage plan implementation, implement land value capture and intentionally advance various policy goals (Krigsholm et al., 2022).

Current policies, regulations and practices

The Nordic countries have no binding commitments to pursue zero net land take or to achieve certain thresholds in net land take at the national level. There are, however, various policies, regulations and practices that reflect the objectives and mechanisms of net land take reduction. In this section, a general overview is presented of 1) strategic orientations that can be linked to land take reduction ambitions and 2) mechanisms supporting and challenging land take reduction in the Nordic planning and land governance context.

Related strategic orientations in the Nordic Region

A core principle of the Nordic planning and land governance frameworks is to advance sustainable development in a broad sense. This abstract goal is translated into land use practice through objectives set at different levels of government. Legislation and national steering documents outline nationally significant objectives for spatial development. In Finland, the National Land Use Objectives (Finnish Government 2017), enacted in 2018,

contain several qualitative objectives related to land take, including to support low-carbon and resource-efficient development that utilises the existing urban structure and to promote the preservation of areas valuable for biodiversity and ecological connections. Similarly, in Norway, the government's planning guidelines (Ministry of Local Government and Regional Development 2023) underline the importance of land use planning that protects nature for nature diversity and ecosystems, carbon capture and storage, surface water management, local climate, pollution, outdoor recreation, health and well-being, and various other ecosystem services. The planning guidelines furthermore state that densification and transformation of residential and commercial areas should be prioritised over greenfield development.

In Iceland, the strategic objectives set in the National Planning Policy 2024–2038 emphasise the balancing of land use changes with nature and the landscape. Planning for climate change and contributing to carbon neutrality is formulated as a cross-cutting objective (Icelandic National Planning Agency 2024). The Danish national planning process is organised around several identified priority areas and related directives announced by the responsible ministry (Plan- og Landdistriktsstyrelsen 2026). There is no national planning in Sweden, but the need for this has been identified and is currently being examined (Boverket 2026). The process is motivated by considerations related to environmental protection, the green transition and civil and military preparedness.

Nordic municipalities have formulated their own strategic objectives related to land take. The objectives mainly concern i) densification and making the existing city structure more compact and ii) conserving and creating urban green areas. These two objectives are often in conflict, although this tension remains unarticulated in policy documents (Hautamäki et al., 2024). In Denmark, densification is mentioned in the majority of municipal planning documents (Fertner et al., 2023), while green city initiatives and the incorporation of more urban green spaces are also gaining traction (Green Cities in Denmark, 2020). In Finland, most larger cities are pursuing densification as a strategic land use policy objective (Krigsholm, 2024) and increasingly define urban greening objectives in their municipal climate action plans (Hautamäki et al., 2024). Swedish municipalities are also pursuing densification of larger urban cores. Municipal measures to increase and improve green space in urban areas, with the aim of ensuring healthy, liveable and biodiverse urban landscapes, are widespread (Borges et al., 2025). In Iceland, the City of Reykjavik has an ambitious climate action plan that stresses the importance of densification and green city development policies (City of Reykjavik 2025).

The Norwegian concept of *arealnøytralitet* (which translates to "land neutrality" or "area neutrality") broadly corresponds to the NNLT objective. The term was coined by the environmental organisation Sabima in 2013 and follows the same logic as "net zero" frameworks in climate policy: the goal is to avoid net loss of nature in connection with land use change. In 2019, Flakstad Municipality became the first in Norway to adopt *arealnøytralitet* as an explicit goal in its plans, and in 2023, Nordre-Follo became the first municipality to embed the principle as a legally binding provision in the land use element of its municipal master plan (Hanssen et al., 2025). As of 2026, 87 Norwegian municipalities have reported that they are working towards *arealnøytralitet*/area neutrality, with some using the land take mitigation hierarchy in planning decisions (Sabima n.d.). While the rapid uptake reflects political will among a significant share of

Norwegian local governments to align their planning with biodiversity commitments, there is no national legal standard for *arealnøytralitet* and the goal itself remains a voluntary municipal commitment.

In Finland, the ten largest cities have recently announced that they are aiming for net nature-positive actions (City of Espoo 2025), meaning that their target is for municipal actions to create more positive than negative impacts on nature. While this is a broader target and is not purely related to land use (change), land use decisions play an important role in advancing and achieving it. The City of Lahti, for example, has published a nature positivity road map that lists actions across different domains (such as land use and natural environment, education, health and well-being) that contribute to the nature positivity target (City of Lahti 2026). Actions in the land use and natural environment domain make up almost half the total number of actions included in the road map. The first listed action for this domain is to assess future detailed planning processes through the lens of the mitigation hierarchy (City of Lahti 2026).

Nordic mechanisms supporting and challenging land take mitigation

Avoidance

Legislation and policies at a national level can ensure that areas of high natural and/or cultural value and fertile agricultural land are preserved from land use changes. The Nordic countries have varying proportions of terrestrial **nature conservation areas** (ranging from 13–16 percent in Denmark, Finland, Norway and Sweden to 20 percent in Iceland (EEA 2025b)). The degree of protection varies among different types of conservation areas, but, in general, conservation areas represent strong protective measures, as they prevent land consumption. Sensitive ecosystems and cultural landscapes can also be protected by land use regulations at the municipal level. The degree of protection (i.e. which actions are permissible, restricted or prohibited) depends on the ecological significance or vulnerability of the area. National legislation defines how ecosystem types are differentiated and what type of environmental impact and risk assessments must be included in planning processes. Landowners can also voluntarily commit to conserving their land. In Finland, for example, there is a voluntary forest conservation programme under which landowners protect their forests in exchange for financial compensation (METSO Programme, Metsonpolku n.d.).

In some Nordic countries, prime **farmland** is actively preserved. In Norway, the government has set a national farmland preservation target: the annual conversion of prime farmland is not to exceed 2,000 dekar (200 hectares) by 2030. This target has been progressively tightened over time (from 6,000 dekar in 2010 down to 2,000 by 2030). The goal was set during the Storting's deliberations on the updated national soil protection strategy in June 2023. In Sweden, farming is designated in the Environmental Code as being of national importance, with building on farmland essentially forbidden unless needed due to important public interests (Slätmo, 2017). However, the balancing of interests is undertaken by municipalities in their spatial planning. As a result, implementation differs across municipalities.

Since the Nordic planning frameworks grant municipalities substantial capacity to regulate land use and development within their jurisdictions, avoidance of land take is advanced particularly through municipal plans. Municipal plans determine most effectively *where* land use changes should be avoided. "The right to build" comes with an approved **(detailed) plan** and Nordic municipalities, in principle, can effectively avoid land take outside planned areas should they wish to do so. However, in Finland, for example, the planning culture has been fairly permissive towards building single family houses outside planned areas (Heinilä, 2017). The decentralised planning system in general does not incentivise municipalities to avoid excessive land take, and conservation efforts and provision of land for purposes that maintain the growth and development of cities and settlements are constantly at odds in municipal level-planning (Slätmo et al., 2021). Indeed, municipalities perceive the ability to provide land areas for industry and businesses, residential buildings, holiday homes etc. as an important advantage in competition with other municipalities (Tönnesen et al., 2023). They therefore sometimes see strict land use regulations as hindering their development prospects and instead actively strive for flexibility in the provision of land for development (Krigsholm et al., 2022).

Nonetheless, there are examples of municipalities limiting land consumption through urban growth boundaries in addition to avoiding land use changes in certain locations. The City of Oslo is a prominent example of this. The green belt of Oslo includes the Marka forest areas, which were protected by a national law in 2009, restricting the expansion of settlements in several municipalities surrounding Oslo (Tiitu et al., 2021). In Iceland, the Reykjavik Municipal Plan 2040 and the Regional Plan for the Capital Region similarly steer urban development within the established growth boundary for the city (City of Reykjavik 2022; SSH 2015).

Another way to avoid land take is to down-zone areas that were previously regarded as suitable for a certain degree of development and planned accordingly but have not yet been developed. **Down-zoning** entails property owners losing some of their rights of disposal over the land, as the municipality has reassessed the public interest. Although down-zoning does not necessarily mean avoiding land take or restoring land to nature, such measures could be used to achieve reductions in land take and soil sealing. Down-zoning may, for example, involve land use changes aimed at improving resilience against climate change while also contributing to nature restoration, or measures to limit sprawl by reducing areas planned for second homes. Down-zoning is often regarded by municipalities and property owners as an unwanted measure, as it interferes with property rights and might lead to compensation payments that strain public budgets. The Nordic countries vary in how the right to compensation due to down-zoning is defined. In Sweden for example, compensation is based on the economic damage and loss of market value of the property caused by the planning change. In addition, an extra 25 percent of the change in market value is added in order to reduce impacts on property owners. However, compensation is only paid during the implementation period of the local plan, which may be 5–15 years after the plan becomes legally binding (Sjödén et al., 2016).

Reuse and minimising

Densification and compact city policies have been actively promoted by Nordic municipalities over the last few decades (Røe et al., 2022). Strong municipal influence through planning is important in advancing densification as a policy objective, since it allows municipalities to determine where new building rights are issued. A distinct feature of the Nordic densification and compact strategies is the broad variety of operationalisation scales: municipalities of all sizes from small towns to capital cities implement such strategies (Tunström et al., 2018; Røe et al., 2022). Naturally, the means of implementing densification vary across settings. Larger cities, in particular, have allocated new development to **larger-scale brownfield redevelopment** project areas. Notable examples of such project areas include Nordhavn in Copenhagen, Denmark; Jätkäsaari and Kalasatama in Helsinki, Finland; Fjord City in Oslo, Norway; and Hammarby Sjöstad and Norra Djurgårdsstaden in Stockholm, Sweden.

In larger-scale densification projects, municipal involvement tends to be high (Puustinen et al., 2022). In extreme cases, this means a **comprehensive public land development model** in which the municipality assembles land, builds the needed infrastructure and allocates the developable plots to builders (Valtonen et al., 2017). The model, commonly applied particularly in Finland and Sweden, allows municipalities to steer densifying development to an even higher degree than through planning. For example, incentives to deliver on environmental goals can take the form of larger land allocations or priority in planning processes.

In many Nordic settings, densification and compact strategies are directed towards the outer city and near public transport hubs (e.g. Rosengren et al., 2024). This type of **transit-oriented development** aims to increase building densities near transport hubs or nodes and thereby ensure public transportation access for new residents. Such development might involve reuse and densification of already built-up areas or brownfield development but usually entails some degree of new land take. One such case is the Icelandic Borgarlína initiative in the regional plan for the capital region, which aims to develop the public transport network around Reykjavik and concentrate new, denser housing development around transit hubs (Lidmo et al. 2024). Such initiatives seek to balance a focus on growth with limits to land take.

Densities are also increased through **smaller-scale projects**, such as infill developments and extensions to existing buildings. Municipalities apply various policy instruments beyond planning purposes to advance such incremental forms of densification. In Finland, for example, it is common for municipalities to grant discounts on land use fees to make infill development a more financially attractive option for private landowners and developers (Krigsholm et al., 2025). Other types of instruments are also used, including strategic public land acquisitions and information-based instruments, such as contacting landowners with personalised letters about potential for densification (Krigsholm et al., 2022).

Nature restoration aims to assist the recovery of damaged ecosystems, thereby enhancing ecosystem health and biodiversity. Restoration of nature areas is undertaken based on the (potential) nature value of the area and/or other goals with similar effects,

such as climate risk mitigation and adaptation. The EU highlights the issue in its Nature Restoration Law. In the Nordic context, the Danish Green Tripartite initiative (Ministry of Green Transition, 2026) stands out as a particularly far-reaching restoration-oriented initiative. It aims to advance efforts in biodiversity, climate action and water quality by converting large amounts of lowland farmland into natural areas, such as wetlands and meadows, and by establishing new forest areas. An agreement between the government, business interests and civil society organisations is supported by a Green Land Fund and by local tripartite groups comprising municipalities, the central government and representatives of property owners, business interests and civil society organisations concerned with environmental protection (Ministry of Green Transition, 2026). The initiative should be understood in the context of the large share of agricultural land in Denmark, aiming to lower emissions from the agricultural industry.

In Iceland, the 2016 Climate Action Plan includes a programme for restoration of wetlands. In addition, efforts to restore forests are undertaken to reduce soil erosion and degradation, as well as improve recreational opportunities (Land and Forest Iceland, n.d.). Although restoration measures are being implemented, the extent and quality of wetlands continue to decline (Barry, 2025).

Compensating

In the Nordic countries, the ecological damage caused by land use changes affecting protected areas must be compensated for. However, land use changes associated with planning and development rarely affect protected areas. As a result, compensation measures are often implemented on a voluntary basis (Morell et al., 2026). Sweden has been a Nordic frontrunner in compensating for ecological damage caused by land use changes. Some Swedish municipalities have adopted compensation policies for cases where the use of land for urban development or for agricultural or forestry activities leads to biodiversity losses. Uppsala Municipality has a particularly progressive policy that goes beyond the legislation and policies found in most other municipalities (Uppsala, 2024). Compensation measures need to be taken on municipal land, and voluntary measures on private land are encouraged through incentives and financial compensation. The goal is to reach 10 percent greater coverage of natural land than before the impact occurred, with the effects lasting for at least 30 years.

In Finland and Norway too, voluntary conservation instruments have been included in legislation and the number of planning and development processes implementing compensation measures is growing. In Finland, the new Nature Conservation Act includes voluntary biodiversity offsetting as a conservation instrument and the no-net-loss principle is increasingly being integrated into (urban) planning processes (Lähde et al., 2025). Implementation cases are still limited but the City of Vantaa, for example, has announced, as part of its nature positivity commitment, that it intends to apply the instrument to all plans that result in losses of nature values. In Norway, compensation measures are usually negotiated as part of the land development process. Although rooted in conservation policy, these processes mainly operate within land markets and planning and infrastructure policy (Habermann and Bergheim, 2026).



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Concluding remarks

A range of supranational policy frameworks highlight the need to manage land and soil resources in a more sustainable manner, with the EU Soil Strategy for 2030 even setting a non-binding policy objective to reduce net land take and soil sealing to zero by 2050. However, approaches to and ambitions for net land take reduction vary across countries. The Nordic countries have not set explicit goals or policies to limit land take and soil sealing. Against this background, this memo clarifies how the Nordic countries currently facilitate reductions in net land take through planning and land governance. The focus has been on the strategic orientations and broader mechanisms that support or constrain net land take reductions in Denmark, Finland, Iceland, Norway and Sweden.

Land take is not yet widely established as a distinct policy issue or shared terminology in the Nordic countries, although many existing policies and initiatives address related concerns. The Nordic countries have long-standing policies on environmental conservation, as well as on densification and the compact city model. Prime agricultural lands are being preserved from development. In recent years – reflecting global and transnational governance developments and the emergence of policy actions such as the EU Nature Restoration Law – the Nordic countries, regions and municipalities have shown a growing commitment to biodiversity-related targets. This is evident, for example, in the nature positivity commitments of Finnish municipalities and in the Tripartite Green Agreement between the government, business interests and civil society organisations in Denmark. Advancing increasingly ambitious biodiversity targets, alongside other environmental targets such as climate resilience, carbon sinks and carbon storage, will require a careful assessment of current land consumption practices.

In the Nordic context, the highly decentralised planning systems present both opportunities and challenges for limiting overall land consumption: Municipalities have the autonomy and tools to implement ambitious land use policies. At the same time, it must be acknowledged that providing land for industrial, commercial, residential and holiday-home development, for example, is an important component of inter-municipal

competition and may lead to sub-optimal land use outcomes when viewed across higher spatial and administrative scales. This makes coordination and cooperation within and across government levels crucial in progressing towards zero net land take.

Indeed, land take is a cross-cutting issue related to various policy domains, although discussions around it are often limited to urban sprawl and housing development. Other drivers of land take include transport and logistics infrastructure, renewable energy production plants, (green) industries, data centres, recreational and tourist facilities, and forest and agricultural industries. Some sectoral policies, such as environmental conservation policies, align more naturally with the land sparing agenda. Others, including industry, energy and transport policies, are less directly connected to it and may generate tensions and land use conflicts that require explicit policy attention. Moving forward, it is important to advance a more integrated framing of sectoral objectives, in which land take is recognised as a broader, underlying policy problem, and to identify and manage both the trade-offs and synergies between different land use sectors and policy domains. Such an integrated framing requires acknowledgement that conversions from one land use form to another generate highly varying environmental and socio-economic impacts – which, in addition, are tied to the specific locations in which these conversions occur. Relying solely on narrow land take metrics that do not consider the qualities of land consumed, restored or spared can therefore be misleading.

The next steps in this research project will examine:

1. Nordic governance responses to land take reduction ambitions, and
2. implementation strategies at urban fringes and rural areas.

The first step will involve outlining the main drivers for developing and implementing policies aimed at reducing land take and how existing multi-level governance structures and land policy support or work against land take reduction strategies. The second step will study how municipalities use land policy to reduce land consumption and to promote nature-positive outcomes. Barriers that hinder the uptake of land take reduction policy and instruments that might redirect development towards forms with reduced land take will be discussed, alongside the key strengths and weaknesses of the various Nordic approaches.

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