Roadmap for Sustainable, Low-Emission and Climate-Adapted Health and Care Services

Helsedirektoratet

Contents

1. Roadmap for Sustainable, Low-Emission and Climate-Adapted Health and Care Services

In our sector, healthcare must always come first and carry the greatest weight. To achieve good health and good lives for the population in general, society invests heavily in health and care services. This entails financial expenses and considerable efforts by healthcare professionals but also imposes actual costs on our climate and environment.

It is estimated that the healthcare sector accounts for 4-5 per cent of global greenhouse gas emissions through the purchase and use of pharmaceuticals and equipment, construction and operation of buildings, transport and travel activities, information technology and other elements needed to provide healthcare services. In 2023, the Norwegian Directorate of Health estimated that emissions from the Norwegian municipal health and care services and the specialist health service amounted to 2.6 million tonnes of CO_2 equivalents (CO_2e) annually but new data indicates that these emissions are even higher. The greenhouse gas accounts for the specialist health service in 2023 alone show annual CO_2 emissions of 2,077,244 tonnes. The figures do not include emissions from construction projects.[1]

An ageing population and increased service needs indicate that emissions from health and care provision will increase in the years ahead unless measures are taken.

At the 2021 UN Climate Change Conference of the Parties (COP26) in Glasgow, the UK and the World Health Organization (WHO) established a health programme in which Norway is participating together with over 80 other countries. This participation is a clear signal that our sector must also take responsibility for reducing greenhouse gas emissions. Norway is committed to creating a national roadmap that sets the course towards a sustainable, low-emission and climate-adapted health and care sector.

The roadmap will propose specific, appropriate measures, and serve as inspiration for leaders and personnel in the specialist health service and in the municipal health and care services. The roadmap proposes more than one hundred measures to reduce emissions from the health service. The roadmap does not set new tasks, but refers to existing guidelines and available resources, and provides examples of measures that are all in use in the Norwegian health and care services.

Some measures solely consist of replacing a pharmaceutical with a preparation that has a smaller carbon footprint while providing equally effective treatment for the patient. Other measures concern providing services in a new way, such as via digital solutions, which can save time, costs and travel-based emissions.

In addition to climate benefits, the measures could improve the health and quality of life of the population in general, give financial savings in health and care services and/or reduce the burden on healthcare personnel. For many of the measures, more knowledge is needed to support sound assessments of benefits and costs. The benefits and costs of implementing a measure will also vary, depending on the context in which a measure might be introduced.

The measures also include the tools or actions needed to succeed with the actual transition. Management and expertise are key aspects, together with financial support schemes and

[1] Microsoft Power BI.

appropriate regulations. The roadmap does not introduce new economic or regulatory measures, as these must be prepared on a separate basis.

Municipalities and hospitals are continuously implementing new measures in their climate action initiatives. Internationally, there is also rapid development of new knowledge in this field. It may therefore be necessary to update the roadmap relatively quickly.

Process

This document has been prepared on behalf of the Norwegian Ministry of Health and Care Services, as part of Norway's obligations under the COP26 Health Programme. During this work, there was close cooperation with representatives from the specialist health service, the municipal health and care services, the Norwegian Institute of Public Health, and other relevant sectors. There was also dialogue with the Norwegian Ministry of Health and Care Services. A draft document was subject to external consultation from 19 April to 16 May 2024. The document was made publicly available on the Directorate of Health's website, besides direct submission to 95 external consultation bodies. The Directorate of Health received input from 22 different bodies. All input was assessed. This good input led to clarifications and minor adjustments to the delivered document.

How to use the roadmap

The roadmap for sustainable, low-emission and climate-adapted health and care services proposes a number of measures that can be implemented immediately. The measures are relevant for all levels of health and care services, from senior managers responsible for the trusts, to personnel working in a specific field of expertise. Several of the measures proposed are also relevant for private health and care services, and we encourage everyone working in the healthcare sector to follow up on the roadmap in their activities.

Leaders and personnel of hospitals and municipal health and care services are the roadmap's main target group, but they would not be able to succeed with the necessary transition alone. Society and our sector can only succeed with the transition on the basis of collaboration between public, private and volunteer stakeholders.

The roadmap is intended to serve as inspiration for the health and care services. The roadmap is extensive and it can be difficult to know where to start. We have therefore prepared a step-by-step process, with a proposal for how to get started:

1. Management anchoring and awareness (Chapter 5.2 Leadership, governance and collaboration, and Chapter 5.3 Knowledge and awareness)
2. Designate a person responsible for monitoring the roadmap and emission reduction (Chapter 5.2 Leadership, governance and collaboration).
3. Get an overview of your greenhouse gas emissions (Chapter 5.1 Greenhouse gas accounts and greenhouse gas budget).
4. Find one or more areas of the roadmap that are relevant to your activities (Chapter 6 Measures to reduce greenhouse gas emissions and Chapter 7 Climate adaptation in the health and care services).
5. Map barriers and actions needed to reduce emissions (Chapter 5 Tools to succeed in the transition).

6. Set emission reduction targets (Chapter 5.1 Greenhouse gas accounts and greenhouse gas budget).
7. Evaluate and make any adjustments.

The measures in the roadmap are not intended to set standards, except for some measures that refer to regulations, national guides, etc. that are already in force. It is up to each institution and trust to determine which measures they want to prioritise and implement in their activities.

The Directorate of Health hopes that the roadmap will both inspire and set the direction in the important work going forward!

2. Summary

Framework for climate adaptation in the health and care services

Several of the key elements of the government's health and care policy describe how climate change affects the population's general state of health. This applies to the *Folkehelsemeldingen* (Public Health Report),[2] *Helseberedskapsmeldingen* (A Resilient Health Emergency Preparedness),[3] *Eldrereformen* (Reform of Elderly Care)[4] and *Nasjonal helse- og samhandlingsplan* (National Health and Coordination Plan).[5] WHO has pointed to climate change as the greatest health threat of this century.[6]

This document is one of three deliveries to fulfil Norway's obligations under the COP26 Health Programme.[7] Since COP26, Norway has signed several international initiatives on climate and health, such as the Budapest Declaration on Climate Change, Pollution and Biological Diversity Loss (2023)[8] and the Declaration on Climate and Health at the COP28 UN Climate Change Conference in Dubai in 2023.[9]

The specialist health service is committed under the White Paper on Ownership Policy (Report to the Storting on state ownership) and has adopted its own climate goals.[10] The municipalities' climate adaptation activities are rooted in, among other things, the government planning guidelines for climate and energy planning and climate adaptation.[11] The national e-health strategy points to how digital services can help meet climate targets, but also to a need for sustainable digital behaviour.[12]

Tools to succeed in the transition

To succeed in implementing measures to reduce greenhouse gas emissions, more tools will be needed. These tools could include governance measures, strengthening the data basis, legislative changes, developing new knowledge and enhancing the competences of leaders and personnel in the health and care services. Funding changes and solutions is a general challenge in the work on emission reduction and climate adaptation.

Systematic environmental management is a key aspect of implementing climate and environmental considerations in day-to-day operations. Further development of existing greenhouse gas accounts and preparation of greenhouse gas budgets will provide a more detailed overview and better facilitate governance towards the reduction of emissions, in line with established goals. There is a need for both innovation and the adoption of known climate-friendly solutions, including

[2] White Paper 15 (2022-2023) – regjeringen.no
[3] White Paper 5 (2023-2024) – regjeringen.no
[4] White Paper 24 (2022-2023) – regjeringen.no
[5] White Paper 9 (2023-2024) – regjeringen.no
[6] WHO calls for urgent action to protect health from climate change – Sign the call
[7] *Norge lanserer klimaforpliktelser på helsefeltet* (Norway launches climate commitments in the field of health) – regjeringen.no
[8] Countries of the WHO European Region adopt the Budapest Declaration, pushing action to enhance environment and health
[9] COP28 UAE Declaration on Climate and Health
[10] The Specialist Health Service Social Responsibility Report for 2023
[11] *Statlige planretningslinjer for klima- og energiplanlegging og klimatilpasning* (Government planning guidelines for climate and energy planning and climate adaptation) – regjeringen.no
[12] *FNs bærekraftsmål og Nasjonal e-helsestrategi* (UN Sustainable Development Goals and National e-Health Strategy) – ehelse

investments in available technology, as well as support for developing new, climate-friendly practices and products in health and care services. The 'Avoid, Shift, Improve' (ASI) framework can be a good tool to apply to the transition to low-emission health and care services.[13] Cooperation across stakeholders and sectors is vital, in particular for municipalities.

Measures to reduce greenhouse gas emissions

This roadmap outlines six action areas to reduce emissions in health and care services. The areas are selected on the basis of their emission reduction potential, and each area features different targets and measures.

The action areas are:

1. **Healthcare and prevention** among other things concern reducing emissions from pharmaceuticals, which constitute a substantial proportion of health service emissions. Moreover, by reducing the number of patient injuries, and the incidence of overdiagnosis and overtreatment, we can avoid unnecessary patient suffering, conserve resources and reduce the environmental impact of health and care services. Enhancing health promotion and prevention, with particular emphasis on increasing the general population's health literacy, and on mastering health challenges and functional impairment, are key aspects. This can help reduce social inequality in healthcare, provide a more sustainable health service, benefit the economy and ensure better health and quality of life for the individual.

2. **Procurement of goods and services** is the area with the greatest emission reduction potential in health and care services. By setting new climate and environmental requirements for all public procurement, the authorities want to use their purchasing power to reduce the overall environmental impact of goods and services. Much of the procurement by health and care services has a direct impact on the quality of patient care. Products or services must therefore be chosen for their adherence to strict standards, which must be balanced against climate and environmental considerations.

3. **Transport and travel** is a key action area in which emissions can be reduced by avoiding unnecessary travel, using more environmentally friendly transport options and developing efficient transport solutions. Measures such as digital solutions and point-of-care provision are also relevant. Cutting transport and travel will also help reduce local air pollution.

4. **Circular economy and waste** concerns reducing waste and increasing the efficiency of resource consumption by reusing more raw materials. The goals include reduced use of disposables and plastics, as well as minimising food waste, for example.

5. **Construction and energy** are areas for which the goal includes reducing energy consumption through energy efficiency measures and preventing leaks of climate-adverse gases from cooling and refrigeration systems. Application of the 'Standard for Climate and Environment in Hospital Projects' is central to this work.

[13] NOU 2023: 25 (The transition to low emissions— Climate policy choices towards 2050) – regjeringen.no

6. **Digitalisation and use of information technology** contribute to emissions, including through data storage and other ICT-related activities. This technology is an increasingly important aspect of the sector, with growing opportunities for emission reduction.

Climate adaptation in the health and care services

Why it is important to have health and care services that are adapted to climate change is described in the roadmap's final chapter. Measures to adapt the health and care sector to climate change are described here.

Text in box: Example of action area, goals and measures to reduce emissions

The *Healthcare and prevention* action area is aimed at healthcare professionals. One goal in this area is *to Reduce pharmaceutical emissions.* One measure is to *Consider peroral instead of intravenous administration*. The reason for the measure is that intravenous administration produces higher emissions than other administration – in addition to increasing consumption of equipment, packaging and personnel resources, and being a gateway to infection. By giving paracetamol perorally instead of intravenously during surgery, Scotland's health service will reduce emissions by 38 tonnes of CO_2e while saving GBP 53,000 per year.[14]

Delimitations

This roadmap is based on dialogue with stakeholders in hospitals and municipalities, the Norwegian Directorate of Health's report on greenhouse gas emissions from the health and care sector, and corresponding roadmaps in other countries. The measures affect day-to-day operations, as well as the service's long-term planning. Most of the measures can be implemented by the service unilaterally, while some measures more naturally require collaboration with other parties.

The roadmap does not provide an exhaustive overview of measures, but gives examples that may be assessed for implementation. The roadmap refers to legislation, guidelines, action plans, methods and measures that are already in use. Some measures are particularly relevant for hospitals, and others for municipalities. The roadmap does not set new tasks, but is based on existing legislation and guidelines.

The roadmap primarily refers to measures aimed at *reducing greenhouse gas emissions* and *adapting health and care services to a changing climate*. Pollution and loss of biodiversity are other major challenges with consequences for health and society that are not addressed by this work.

[14] Green Theatre Actions | The National Centre for Sustainable Delivery (nhscfsd.co.uk)

3. Overview of goals and measures in the roadmap

This chapter provides a full overview of all the goals with associated measures in the roadmap. Goals and measures are allocated to the chapter to which they belong: Chapter 5 – Tools to succeed in the transition (Table 1), Chapter 6 – Measures to reduce greenhouse gas emissions (Table 2) and Chapter 7 – Climate adaptation (Table 3). The chapter title is highlighted in green and refers to the chapter in the main document.

Some of the measures are directed specifically at either the specialist health service or the municipal health service. The target group for a measure appears in the far-right-hand column. Where the measure has the entire health and care service as its target group, the target group field is empty.

Table 1 Tools to succeed in the transition – Goals and measures

Goal	Measure	Target group
Chapter 5.1 Greenhouse gas accounts and greenhouse gas budget		
Increase insight into own greenhouse gas emissions and greenhouse gas accounting methods.	Prepare greenhouse gas budgets in health trusts	Specialist
	Estimate emission paths	
	Follow up on government planning guidelines for climate and energy planning and climate adaptation.	Municipality
	Adopt the guide for greenhouse gas budgets in municipalities.	Municipality
	Highlight goals and measures in the health and care sector in the municipality's greenhouse gas budget.	Municipality
	Consider adopting a systematic method to measure the impact of measures.	
Chapter 5.2 Leadership, governance and collaboration		
Integrate efforts to reduce greenhouse gas emissions as part of the governance of the trust.	Consider using the 'Avoid, Shift, Improve' (ASI) framework as a strategic decision-making tool.	
	Assess climate perspectives and environmental sustainability initiatives in the systematic work on patient and user safety and quality improvement.	
	Incorporate environmental impact work into the environment, health and safety system.	
	Introduce environmental management in municipal health and care services.	Municipality
	Designate a climate and environmental officer for the health and care services in the municipalities and establish a cross-sector climate council.	Municipality
	Contact the environmental adviser in the municipality.	Municipality
	Consider appointing a person responsible for the work of following up on the roadmap measures.	
Promote the use of relevant grant schemes and other instruments.	Seek support from grant schemes.	
	Apply for green loans.	

Promote the use of innovation and new technology in health and care services.	Develop an innovation culture and expertise aimed at reducing the climate footprint of health and care services.	
Chapter 5.3 Knowledge and awareness		
Familiarise personnel with measures for low-emission health and care services.	Inform about the roadmap via established communication channels.	
	Create customised information materials.	
Create a climate-aware organisational culture.	Give management support and a mandate to personnel who take the initiative to adopt climate-friendly practices.	
	Empower personnel to learn why and how they can contribute.	
	Facilitate union representatives' opportunities to disseminate good practices in the emission reduction area.	
Familiarise patients, users and relatives with climate change initiatives and provide training where appropriate.	Communicate climate work and emission-reducing measures to patients, users and relatives.	

Table 2 Goals and measures to reduce greenhouse gas emissions in six action areas

Goal	Measure	Target group
Chapter 6.1 Healthcare and prevention		
Reduce pharmaceutical emissions.	Avoid prescribing aerosol spray inhalers, if possible.	
	Prescribe reusable inhalers with refilling, if possible.	
	Minimise the use of desflurane for anaesthesia in line with the new EU regulation.	Specialist
	Monitor knowledge development concerning the use of nitrous oxide.	Specialist
	Avoid nitrous oxide leaks.	Specialist
	Reduce the climate footprint of eye surgery.	Specialist
	Consider peroral instead of intravenous administration.	
	Consider ordering smaller packs and smaller stocks of pharmaceuticals that have a short shelf life or are little used.	
	Consider ordering larger packs of high-use pharmaceuticals with a longer shelf life.	
	Encourage patients to return surplus medication to the pharmacy.	
Reduce greenhouse gas emissions by avoiding	Follow the advice of the 'Make Wise Choices' campaign.	

overdiagnosis and overtreatment.	Review different care pathways within various specialisations.	Specialist
	Assess measures in different clinical disciplines in collaboration with external environments.	
	Develop patient information about the benefits of various tests and examinations.	
	Strengthen the health literacy of the general population, patients and relatives.	
	Follow the Norwegian Directorate of Health's guidelines on patients with limited life expectancy.	
Reduce greenhouse gas emissions through increased focus on avoiding patient injuries, outliers and readmissions.	Follow up the goals in the new patient and user safety framework.	
	Follow up the action plan for better infection control.	
	Apply the checklist for safe surgery.	Specialist
	Ensure proper medication use by following the drug review guide.	
	Consider non-medication treatment options.	
Reduce greenhouse gas emissions by strengthening health prevention and promotion.	Offer meals in line with the new national dietary advice from the Norwegian Directorate of Health.	
	Follow up on the national action plan for a better diet (2017-2023).	
	Follow up on the report on the food and meals offered in the specialist health service.	Specialist
	Follow up the mapping of healthy, sustainable and climate-friendly diets in counties and municipalities.	Municipality
	Strengthen the patients' own resources and ability to manage for themselves.	
	Follow up on the Norwegian Directorate of Health's recommendations for a healthy lifestyle.	
	Facilitate cross-sector public health work.	Municipality
	Adopt the guide to systematic public health work in the municipality.	Municipality
	Follow the national advice in 'Local public health measures – a guide for the municipality'.	Municipality
	Establish healthy life, learning and coping services.	Municipality
Chapter 6.2 Procurement of goods and services		
Integrate climate and environmental considerations into all procurement.	Review procurement responsibilities and roles.	
	Collaborate on procurement with other municipalities.	Municipality
	Implement the Guide to the use of labelling schemes in public procurement.	
	Involve the infection control officer in the assessment of procurement of new products to be used in treatment, and/or personal protective equipment.	
	Make the Norwegian Agency for Public and Financial Management's (DFØ) procurement	

	resources known to all personnel who undertake procurement.	
	Assess the need for certification in sustainable procurement.	
Adhere to climate and environmental requirements in public procurement for NOK 100,000 or more.	Consider implementing DFØ's guide to new regulations on public procurement.	
	Consider implementing the DFØ Criteria Wizard.	
	Consider implementing DFØ's thematic procurement sites relevant to this roadmap.	
	Consider implementing the Norwegian Directorate of Health's guide for nutritional considerations in public procurement of food and beverage products.	
	Consider creating a standard for procurement of goods and services over NOK 100,000.	
	Contribute to the development of national and international procurement standards.	
Focus on climate and environmental issues in procurement below NOK 100,000.	Consider creating a policy for procurement below NOK 100,000.	
Chapter 6.3 Transport and travel		
Ensure follow-up of national plans and a common framework for transport and travel.	Follow up on the national transport plan	
	Consider implementing the ASI framework to cut transport emissions.	
Reduce physical travel.	Consider implementing digital consultation methods where appropriate.	
	Consider implementing welfare technology solutions in the municipal health and care services where appropriate.	Municipality
	Review personnel's travel activity and reduce any unnecessary travel.	
Implement more climate-friendly travel options.	Facilitate walking and cycling for personnel where possible.	
	Promote public transport where possible.	
	Facilitate pooled driving and route planning.	
Chapter 6.4 Circular economy and waste		
Ensure follow-up of national strategies and common circular economy guidelines.	Follow up on the national action plan for the circular economy.	
	Follow up on the national strategy for a green, circular economy.	
	Follow up measures in the Norwegian Association of Local and Regional Authorities' guide to the circular economy.	Municipality
	Monitor the possible introduction of a new act on sustainable products and value chains.	
Reduce emissions from single-use equipment.	Switch from single-use to reusable equipment.	
	Switch from single-use to reusable tableware.	
Reduce plastic consumption and increase plastic recycling.	Implement the measures described in the 'Plastic-Smart Hospital' report.	

Increase the proportion of reuse of fixtures/furniture, equipment, textiles and building materials.	Increase the reuse, sorting at source and material recycling of textiles.	
	Increase the reuse, sorting at source and recycling of furniture and movables.	
	Increase the reuse, sorting at source and recycling of building materials.	
Reduce food waste.	Consider implementing DFØ's guide to preventing and reducing food waste.	
	Conduct food waste due diligence assessments.	
	Individual adjustment to special dietary considerations.	
	Plan menus and meals.	
	Hire food hosts.	
	Map the use of medicinal nutritional products.	
Reduce waste volumes and increase sorting rates.	Follow up on the waste management plan.	
	Facilitate sorting at source.	
	Review procedures for infectious waste.	
	Follow up on the electrical and electronic waste requirements.	
	Follow up on the action plan for building and construction waste.	
Chapter 6.5 Construction and energy		
Reduce greenhouse gas emissions from construction projects (new and old buildings).	Apply the 'Standard for Climate and Environment in Hospital Projects' to all major construction processes.	
	Consider supplementing the 'Standard for Climate and Environment in Hospital Projects' with guidance on universal building design.	
	Follow up the universal design action plan.	
	Consider developing environmental requirements related to the technical operation of existing buildings and infrastructure.	
	Focus on climate-friendly solutions in smaller rehabilitation and remodelling projects.	
Reduce energy consumption and implement energy efficiency measures in buildings.	Follow up on the energy efficiency action plan.	
	Consider introducing a digital energy follow-up system.	
Prevent leaks of HFCs from cooling and refrigeration systems.	Inspect air conditioning systems for HFC leaks.	
Chapter 6.6 Digitalisation and the use of information technology		
Introduce digital changes and systems that minimise the climate and environmental impact of digital platforms.	Follow up the work on the sustainability goals in the National e-Health Strategy.	
Reduce energy use and emissions from the storage of data.	Save to the cloud rather than save to a server.	
	Avoid unnecessary storage on servers or in cloud storage solutions.	
	Use computers and devices energy-efficiently.	

	Implement new technology and innovative solutions with a sustainable approach.	

Table 3 Climate adaptation goals and measures

Goal	Measure	Target group
Chapter 7 Climate adaptation in health and care services		
Make health and care services more robust in the face of climate change.	Plan climate adaptation by applying basic data and climate projections.	
	Integrate public health profiles into municipal planning and investigation.	Municipality
	Conduct local risk, vulnerability and emergency response analyses in hospitals and municipalities.	
	Ensure that the physical and digital infrastructure of health and care services is sufficiently robust to withstand extreme weather conditions and other climate-related events.	
	Consider supplementing the Standard for Climate and Environment in Hospital Projects with guidance on climate adaptation of existing buildings, property and infrastructure.	
	Consider including climate adaptation in the specialist health service's due diligence assessment.	Specialist
	Consider the implementation of training and drills.	
Increase the knowledge base for the changed disease burden as a consequence of climate change.	Assess how the burden of disease in Norway will be affected by climate change and develop health and care services in line with the population's needs.	

4. Frameworks for climate work in health and care services

In 2050, Norway will be a low-emission society. This means that by 2050 greenhouse gas emissions must be reduced by 90-95 per cent compared to the level of emissions in 1990. This is enshrined in Section 4 of the Norwegian Climate Goal Act.[15]

The work on emission reductions and climate adaptation is a cross-sector issue. Climate, nature and environment are highlighted in the National expectations of regional and municipal planning.[16] Comprehensive economic and land-use planning will contribute to viewing climate and environment measures in context and across sectors, as part of the transition to a low-emission society.

The government's climate status and plan states:

> 'The work to achieve Norway's statutory goal to be a low-emission society by 2050 is already underway. The instruments we can use today are contributing to reducing emissions towards 2050, but are not sufficient. It was important to take measures across sectors that can contribute to the transition and to reducing emissions.'[17]

The health and care services must contribute to this planning because both public health and healthcare systems will be affected by the changes.

The goal of a carbon-neutral value chain, in line with national goals, also sets the premises for climate work in health and care services. A carbon-neutral value chain means that all activities, from the production and distribution of a product or service, result in zero net greenhouse gas emissions. This will be achieved by reducing emissions and compensating for the remaining emissions.[18,19]

Text in box:

1. **UN Sustainable Development Goals:** The UN Sustainable Development Goals are the world's action plan for sustainable development, with 17 goals aimed at eradicating poverty, fighting inequality and stopping climate change by 2030. The Sustainable Development Goals 'Affordable and Clean Energy', 'Sustainable Cities and Communities', 'Climate Action' and 'Good Health and Well-Being' are highly relevant in the work on reducing the health service's emissions. It is a declared policy that the health and care sector must contribute to sustainable development and support the UN Sustainable Development Goals.[20]
2. **Paris Agreement (2015):** The Paris Agreement was adopted at the 2015 climate summit and aims to limit global warming to a maximum of 2°C. As of 7 July 2023, 194 countries, in addition to the EU, have signed the agreement. Through the Paris Agreement, Norway is legally obliged to cut greenhouse gas emissions.[21]

[15] Lov om klimamål (Climate Goal Act) – Lovdata
[16] *Nasjonale forventninger til regional og kommunal planlegging 2023-2027* (National expectations of regional and municipal planning 2023-2027)| regjeringen.no
[17] *Regjeringas klimastatus og -plan* (Government climate status and plan)| regjeringen.no
[18] *Sirkulære anskaffelser* (Circular procurement)| Anskaffelser.no
[19] *Policy for samfunnsansvar i Sykehusinnkjøp* (Corporate social responsibility policy in hospital procurement)| Anskaffelser.no
[20] *Mål med mening – Norges handlingsplan for å nå bærekraftsmålene innen 2030* (Goals with meaning – Norway's action plan to achieve the SDGs by 2030) (White Paper 40 (2020-2021)) | regjeringen.no
[21] The Paris Agreement | fn.no

Statistics Norway's global indicators for the UN's Sustainable Development Goals show that the goals Norway is furthest from achieving include SDG 12 'Responsible Consumption and Production', SDG 13 'Climate Action' and SDG 15 'Life on Land'. This is because Norway prioritises using natural resources, rather than preserving ecosystems and nature's diversity (SDG 15). In addition, oil and gas are exported (SDG 13) and a lot of electronic equipment is disposed of (SDG 12).[22]

Climate change affects health and the healthcare sector

Folkehelsemeldingen (Public Health Report),[23] *Helseberedskapsmeldingen* (A Resilient Health Emergency Preparedness),[24] *Eldrereformen* (Reform of Elderly Care)[25] and *Nasjonal helse- og samhandlingsplan* (National Health and Coordination Plan)[26] are key elements of the government's health and care policy. These describe how climate change affects health and the healthcare sector.

Folkehelsemeldingen (Folkehelsemeldinga – Nasjonal strategi for utjamning av sosiale helseforskjellar) (The Public Health Report (Public Health Report — National strategy for the elimination of social health disparities) (White Paper 15 (2022-2023) points to climate change as one of three perspectives that will be of great significance for public health initiatives going forward, together with demographic changes and international cooperation. Heavier precipitation, heatwaves and droughts can threaten food security and access to clean drinking water, leading to migration and humanitarian disasters in vulnerable areas. Climate change also affects our physical and mental health. Globally, different societies and population groups are affected differently. Children and people with the lowest socioeconomic status are most vulnerable. According to the World Health Organization, climate change is the greatest threat to public health.[23]

Helseberedskapsmeldingen (En motstandsdyktig helseberedskap – Fra pandemi til krig i Europa) (Health Emergency Response Report (A Resilient Health Emergency Preparedness – From Pandemic to War in Europe)) (White Paper 5 (2023–2024)) emphasises that climate change sets the framework for the health emergency response. Globally, climate change will cause more extreme weather conditions. This in turn will affect global food production and thereby lead to food shortages and affect water access, conflict levels, migration flows and the prevalence of infectious diseases. Norway must be prepared to deal with crises as a consequence of climate change. Norway is particularly vulnerable to climate changes in the northern regions.[24]

Eldrereformen (Fellesskap og meistring – Bu trygt heime reformen) (Reform of Elderly Care (Community and mastering – the stay safe at home reform)) (White Paper 24 (2022-2023)) refers to how more municipalities must take account of the consequences of climate change in the form of more frequent floods and landslides, as well as forest fires – consequences that in themselves can be a danger to life and health, and which can also limit opportunities to provide the health and care services for which the municipalities are responsible.[25]

[22] *Globale indikatorer for bærekraftsmålene* (Global SDG indicators) | Statistics Norway
[23] *Folkehelsemeldinga — Nasjonal strategi for utjamning av sosiale helseforskjellar* (Public Health Report — National strategy for the elimination of social health disparities) (White Paper 15 (2022–2023)) | regjeringen.no
[24] *En motstandsdyktig helseberedskap — Fra pandemi til krig i Europa* (A Resilient Health Emergency Preparedness – From Pandemic to War in Europe) (White Paper 5 (2023-2024)) | regjeringen.no
[25] *Fellesskap og meistring — Bu trygt heime* (Community and mastering — Stay safe at home) (White Paper 24 (2022-2023)) | regjeringen.no)
[26] White Paper 9 (2023-2024) – regjeringen.no

Nasjonal helse- og samhandlingsplan (Nasjonal samhandlingsplan 2024-2027) – Vår felles helsetjeneste) (National Health and Coordination Plan (National Coordination Plan 2024-2027) – Our Joint Health Service) (White Paper 9 (2023-2024)) points to how climate change will require a great deal of attention and a substantial proportion of resources going forward. Improved collaboration can reduce the use of services, facilitate more preventive measures for a healthier population, increase the use of digital solutions, and introduce new service performance methods. This is relevant to reducing the climate footprint of health and care services.26

The responsibility of health and care services for emission reduction

Health and care services contribute an estimated 4.4 per cent of the world's total greenhouse gas emissions.[27]

The Norwegian Directorate of Health's review of greenhouse gas emissions (report published in 2023) in the Norwegian health and care sector, on which this roadmap is based, found that the municipal health and care services and specialist health service each accounted for approximately 1.3 million tonnes of CO_2 equivalents (CO_2e) annually.

Emissions related to dental services, private health services, 'over the counter' medications, commercial and industrial activities related to pharmaceuticals and technical equipment, operation of patient and user associations or professional organisations, alternative treatment and well-being, etc. were not included.[28]

For the specialist health service, the Norwegian Directorate of Health estimated that the majority of the emissions (between 64 per cent and 91 per cent) were related to indirect emissions from goods and services. Besides supply chains, the largest share of emissions from the healthcare sector concerns other sources related to patient care, such as emissions related to buildings, travel, services and gases.[29]

Since climate change can adversely affect health and the healthcare system directly and indirectly in a number of ways, the healthcare sector can be deemed to have a special responsibility to reduce its own emissions.

By taking the climate and environment into account in the health and care services, it is possible to prevent illness, strengthen public health and reduce the sector's climate impact.

4.1 International climate and healthcare initiatives

International cooperation is vital to resolve climate and environmental challenges.[30] Under the climate agreement with the EU, Norway is already committed to cooperating on reducing emissions. By complying with the requirements of the EU's climate regulations, Norway will also be able to achieve our 2030 climate targets under the Paris Agreement.[31]

[27] HealthCaresClimateFootprint_092319.pdf (noharm-global.org)
[28] *Klimagassutslipp fra helse- og omsorgssektoren* (Greenhouse gas emissions from the health and care sector) | Norwegian Directorate of Health
[29] Accelerating the delivery of net zero health systems | Sustainable Markets Initiative
[30] *Internasjonalt klima- og miljøsamarbeid* (International climate and environmental cooperation) | regjeringen.no
[31] *Regjeringens klimastatus- og plan* (Government Climate Status and Plan) | regjeringen.no

Text for box: In 2019, Norway and the EU entered into a climate agreement to reduce emissions by 40 per cent before 2030. The agreement is based on Norway implementing the EU's climate regulations from 2021 to 2030.[32]

At the 2021 UN Climate Change Conference of the Parties (COP26) in Glasgow, a health programme was established in which Norway participates together with over 90 other countries. The Ministry of Health and Care Services has therefore asked the Norwegian Directorate of Health to provide content for a roadmap towards sustainable, low-emission and climate-adapted health and care services.[33]

In 2023, Norway endorsed the *Budapest Declaration: Accelerating action for healthier people, a thriving planet, a sustainable future*[34]. This reinforced Norway's commitments in the climate and healthcare areas. The declaration builds on the 2017 Ostrava Declaration.[35]

Furthermore, Norway endorsed the *COP28 Declaration on Climate and Health* at the 2023 UN Climate Change Conference in Dubai, a declaration signed by 149 countries.[36]

The World Health Organization (WHO) has been central to driving this work. A key initiative is the Alliance for Transformative Action on Climate and Health (ATACH),[37] which is a WHO-backed programme to develop resilient and sustainable health systems. By participating in the programme, Norway can exchange viewpoints, information and experience, and promote professional and political cooperation. In this way, Norway can both benefit from and contribute to international measures in the healthcare sectors' encounter with climate change.

4.2 The specialist health service

The specialist health service has four primary areas of responsibility: patient care, research, education of healthcare professionals, and training.[38] The specialist health service is large, with a lot of activity and consumption. In 2022, it had 134,800 FTEs, 18,400 beds, 5.4 million hospitalisation days, 12.6 million outpatient consultations, operating costs of NOK 180 billion, and a property portfolio of 5 million m^2.[39] This entails extensive greenhouse gas emissions, and considerable opportunities to optimise operations based on climate and environmental considerations, as well as other considerations.[40]

In 2021, the specialist health service adopted new overall climate and environmental goals. The goals require greenhouse gas emissions to be reduced by 40 per cent before 2030, and climate neutrality by 2045. In conjunction with the overall goals, eight action areas with targets were

[32] EUs klimapakke Klar for 55 (Fit for 55) | regjeringen.no
[33] *Norge lanserer klimaforpliktelser på helsefeltet* (Norway launches climate commitments in the healthcare field) | regjeringen.no
[34] Countries of the WHO European Region adopt the Budapest Declaration, pushing action to enhance environment and health | WHO
[35] Declaration of the Sixth Ministerial Conference on Environment and Health: Annex 1 | WHO
[36] UAE declaration on climate and health | COP28
[37] Alliance for Transformative Action on Climate and Health (ATACH) | WHO
[38] *Sykehusenes hovedoppgaver* (The main tasks of hospitals) | regjeringen.no
[39] The specialist health service | SSB
[40] *Klimagassutslipp fra helse- og omsorgssektoren* (Greenhouse gas emissions from the health and care sector) | Norwegian Directorate of Health

established, which in turn are linked to the UN Sustainable Development Goals.[41] The goals set by the specialist health service are in line with the guidelines in White Paper 6 (2022-2023). Greener and more active state ownership — The State's direct ownership of companies (the White Paper on Ownership Policy), whereby the state sets expectations for state enterprises, such as the specialist health service, to lead the work of being a responsible business. It is expected that direct and indirect greenhouse gas emissions will be reported, and that this work will be open and accessible. The use of recognised standards in reporting on risk, opportunities, goals, greenhouse gas emissions and achievement of goals is a prerequisite.[42]

4.3 Health and care services in the municipalities

The municipalities must ensure that everyone who resides in the municipality is offered the necessary health and care services. This includes preventing, treating and facilitating the provision of services to all patient groups. The municipal health and care services employed around 232,000 people in 2022, which exceeds the total in the specialist health service. Doctors and physiotherapists amount to a further 11,500 FTEs. In proportion to total gross operating expenditure, health and care services account for around 33.5 per cent of municipal services; 28 per cent of care services and 5.5 per cent of health services.[43] This includes GP services, emergency medical services, home care services, nursing homes, habilitation, rehabilitation, healthcare centres, maternity care, and more.[44] Municipalities' opportunities to provide adequate and sound health and care services depend on conditions such as the location, size and demographics of the municipalities.

The municipalities' climate work is rooted in, among other things, the Government planning guidelines for climate and energy planning and climate adaptation (SPR). The guidelines will ensure that 'the municipalities and county municipalities prioritise efforts to reduce greenhouse gas emissions, and help ensure that climate adaptation is taken into account in planning in accordance with the Planning and Building Act' (section 1a). The guidelines recommend that the plans should include 'information on greenhouse gas emissions in the municipality, broken down by sources and sectors. All sources that entail direct emissions of greenhouse gases within the municipality's borders should be included' (section 3.1a).[45]

Several municipalities have set their own goals for emissions reductions and climate adaptation. These are often overall goals that do not apply specifically to the healthcare sector. As the examples in this roadmap show, a number of municipalities have implemented measures in health and care services that contribute to reducing emissions.

[41] *Rammeverk for miljø og bærekraft i spesialisthelsetjenesten* (Framework for environment and sustainability in the specialist health service) | Southern and Eastern Norway Regional Health Authority
[42] White Paper on Ownership Policy (White Paper 6 (2022-2023)) | regjeringen.no
[43] Key figures for different service sectors, municipality, by function and type | Statistics Norway
[44] Municipal health and care services | helseinnovasjonssenteret.no
[45] *Statlige planretningslinjer for klima- og energiplanlegging og klimatilpasning* (Government planning guidelines for climate and energy planning and climate adaptation) | Lovdata

5. Tools to succeed in the transition

This chapter concerns tools and instruments that facilitate the work on emission reduction. Such tools may include governance measures, strengthening the data basis, developing new knowledge, or strengthening the competences of managers and employees in the health and care services.

Funding changes and innovative solutions is a general challenge in the emission reduction and climate adaptation work. Laws and regulations are also key means of promoting this work. This roadmap refers to existing grant schemes and applicable acts and regulations. The roadmap does not introduce new regulations or new financial instruments; these must be developed by other means.

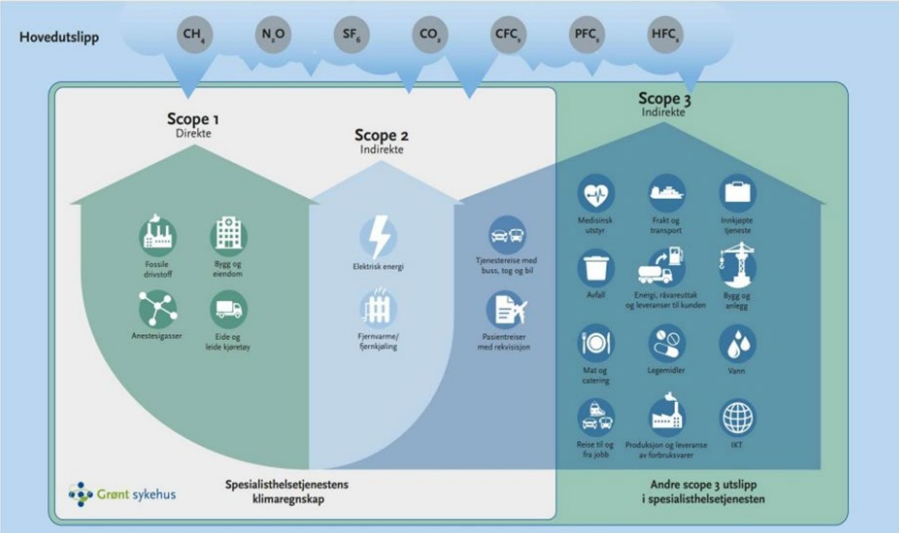
The tools below are based on work undertaken nationally, with some examples from other countries.

5.1 Greenhouse gas accounts and greenhouse gas budget

A good overview of greenhouse gas emissions is a prerequisite for targeted reduction of emissions. By monitoring data development over time, managers and personnel can assess whether the development is consistent with the business and service objectives. Good achievement of the goals may indicate that there are learning points or practices that can be shared with others, while low goal achievement may indicate a need for measures. Accounts with detailed emission categories can better highlight potential action areas, thereby making it easier to assess and prioritise which measures are relevant.[46]

Text for box: Emissions are divided into three scopes. Scope 1 is direct emissions from own activities, scope 2 is direct emissions from energy consumption, and scope 3 is indirect emissions from the purchase and sale of goods and services.[47]

Indirect emissions are calculated on the basis of financial accounting data, which is converted into CO_2 emissions using conversion factors. Direct emissions such as consumption of anaesthetic gases, energy consumption, travel and so on are calculated on the basis of actual activity.[48]



[46] *Innsatsområder framover* (Action areas going forward) | Norwegian Directorate of Health
[47] *Begreper* (Terms) – Norwegian Directorate of Health
[48] Microsoft Power BI.

Figure 1: the image illustrates the different scopes related to emissions in the specialist health service[49]

Specialist health service

Since 2018, the specialist health service has had national greenhouse gas accounts, based on annual reporting from the health trusts in a common template. The greenhouse gas accounts include Helse Nord (Northern Norway Regional Health Authority), Helse Midt-Norge (Central Norway Regional Health Authority), Helse Sør-Øst (Southern and Eastern Norway Regional Health Authority) and Helse Vest (Western Norway Regional Health Authority), as well as the jointly owned health trusts Sykehusinnkjøp HF, Patientreiser HF, Luftambulansetjenesten HF, Helsetjenestens driftsorganisasjon for nødnett and Sykehusbygg HF. The regional health trusts are responsible for checking the reporting in the greenhouse gas accounts. Sykehusbygg HF conducts quality control of data from the health trusts.

The greenhouse gas accounts are published in annual social responsibility reports. The development in the trusts' emissions can also be seen in an interactive, online dashboard.[50] The use of the dashboard as a management tool was described in a case study published in connection with the UN Climate Change Conference in Dubai.[51]

Figure 2: The specialist health service's dashboard with main goals and associated targets[50]

As from 2023, the greenhouse gas accounts per health trust also include indirect emissions (scope 3). The greenhouse gas accounts for the specialist health service are presented in the dashboard for common climate and environmental goals.[50]

[49] Microsoft Word – 30.09.22 Rammeverk – oppdatert med endringslogg (Framework – updated with change log) (helse-midt.no)
[50] Microsoft Power BI.
[51] *Helse Sør-Øst fikk oppmerksomhet i Dubai* (Southern and Eastern Norway Regional Health Authority drew attention in Dubai) | Southern and Eastern Norway Regional Health Authority

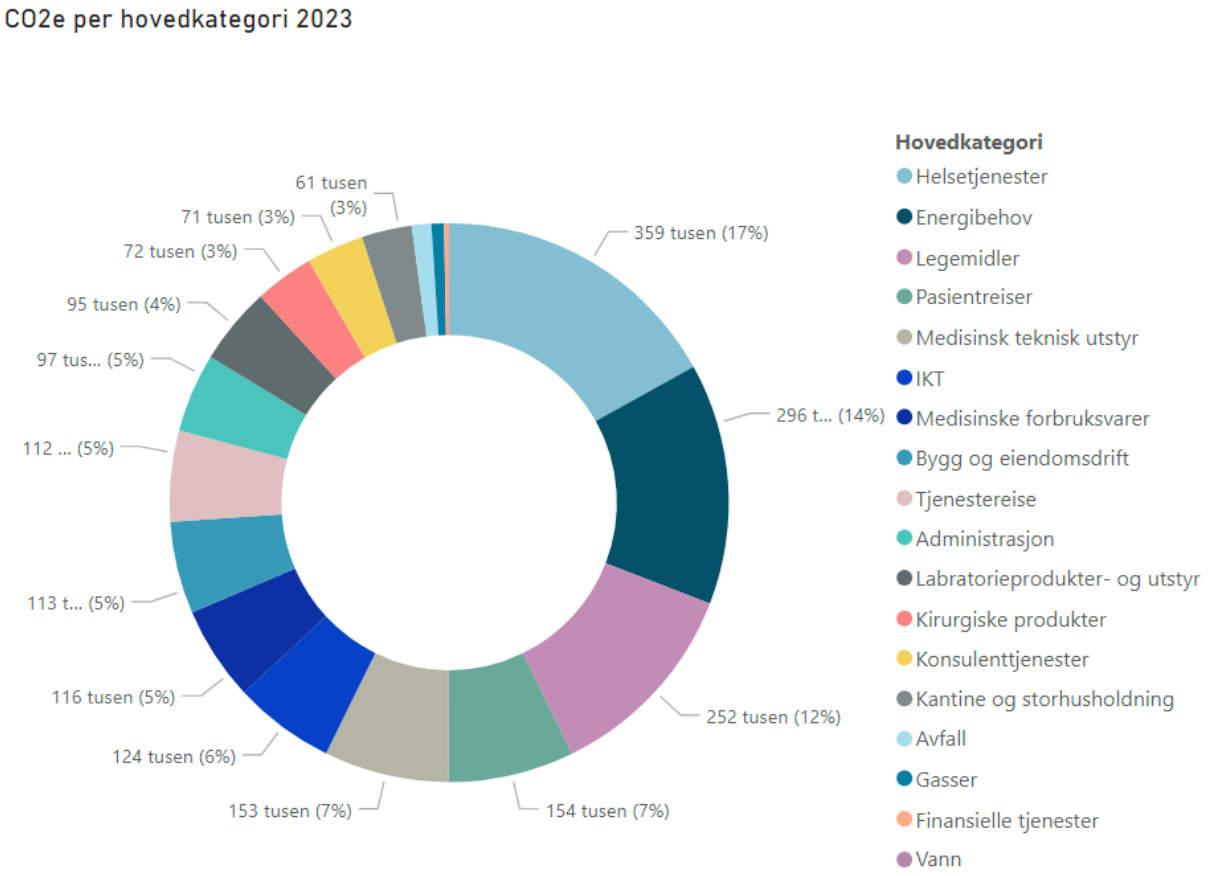


Figure 10. The specialist health service's dashboard was recently updated with detailed emissions from 2023.[52]

Goal: Increase insight into own greenhouse gas emissions and greenhouse gas accounting methods

There is a general need to apply existing knowledge, and to gain more knowledge about greenhouse gas emissions related to various activities. This is to prioritise between measures and also to motivate action.

Text for box: Sykehusinnkjøp HF (the hospital procurement trust) has been tasked with helping health trusts achieve the goal of a carbon-neutral value chain by 2045. To achieve the emission reduction goal, Sykehusinnkjøp HF must also calculate indirect greenhouse gas emissions (scope 3) and work actively on climate mitigation measures in prioritised procurement procedures. A new tool has therefore been introduced to analyse purchases and expenses by reviewing all invoices from the health trusts related to specific procurement procedures. It can then be considered how, through procurement requirements, the climate footprint can be reduced. So far, these are rough accounts. Initially, the work will be based on how much is spent (spend-based numbers), but eventually, it is planned to use more detailed information for some of the most important product groups. The report will then be more accurate and give a better picture of the actual greenhouse gas emissions.[53]

Measure: Prepare greenhouse gas budgets in health trusts

A greenhouse gas budget is designed to link environmental goals with the economic plans. It shows how much greenhouse gas emissions can be reduced in relation to measures. The aim is to make it

[52] Microsoft Power BI.
[53] Sykehusinnkjøp HF (email)

easier to understand how climate and environmental measures are related to economic conditions. The budget refers to the objective of cutting emissions and the economic consequences of each measure, whether that means saving or spending money.[54]

Text for box: Helse Bergen is the first health trust to develop its own greenhouse gas budget. This greenhouse gas budget presents historical data, and the health trust's short-term and long-term goals. As the figure below shows, the largest share of emission reductions is expected to come from changes in personnel's travel activities and from energy consumption. The greenhouse gas budget does not currently have scope 3 data (indirect emissions). Helse Bergen has assumed a linear reduction in emissions, which means that the same reductions are achieved each year.[54]

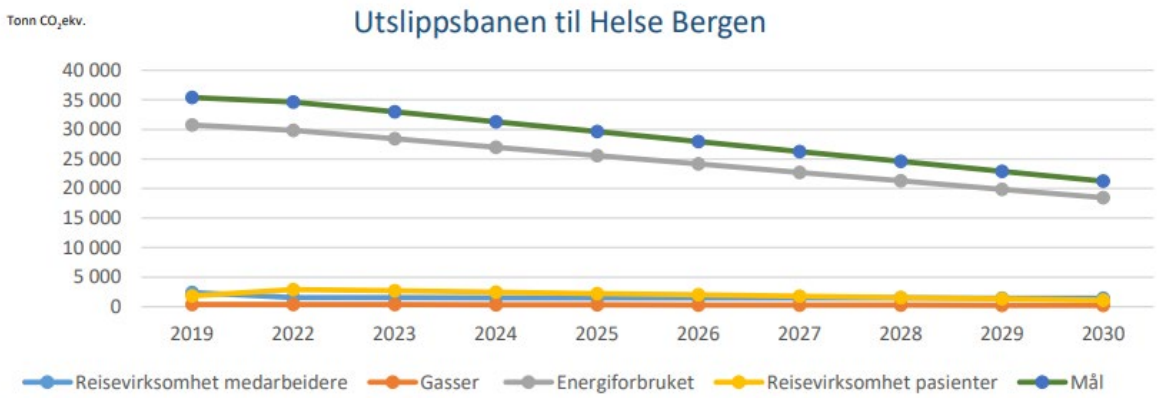


Figure 4. The graph shows actual emission figures for 2019 (base year) and 2022, and the emission path towards the goal of a 40 per cent reduction in 2030.[54]

Measure: Estimate emission paths

The specialist health service has set ambitious emission reduction targets, but there is a need to highlight how different measures will contribute to achieving the goals. At the trust meeting on 16 January 2024, the regional health trusts were asked to prepare an overview of emission paths showing how different measures will affect future overall CO_2 emissions for the specialist health service.[55] This will show the assumed effect of various measures, and allow for more informed and explicit assessments of how the specialist health service can achieve its overall emission reduction target. Figure 5 below shows a way to illustrate this.

Text for box: Oslo Economics recently published a report on reducing the climate and environmental footprints of government enterprises. It states that *'the most important barrier for the local parties to identify and implement good climate measures is a lack of information about the enterprise's environmental footprint'.*[56]

[54] Board Case 94 – 23 Greenhouse Gas Budget 2024-2030 | Helse Bergen
[55] RHF | regjeringen.no
[56] *Statlige virksomheters kompetanse og arbeid med å redusere sitt miljøavtrykk* (Government enterprises' expertise and work on reducing their environmental footprint) (osloeconomics.no)

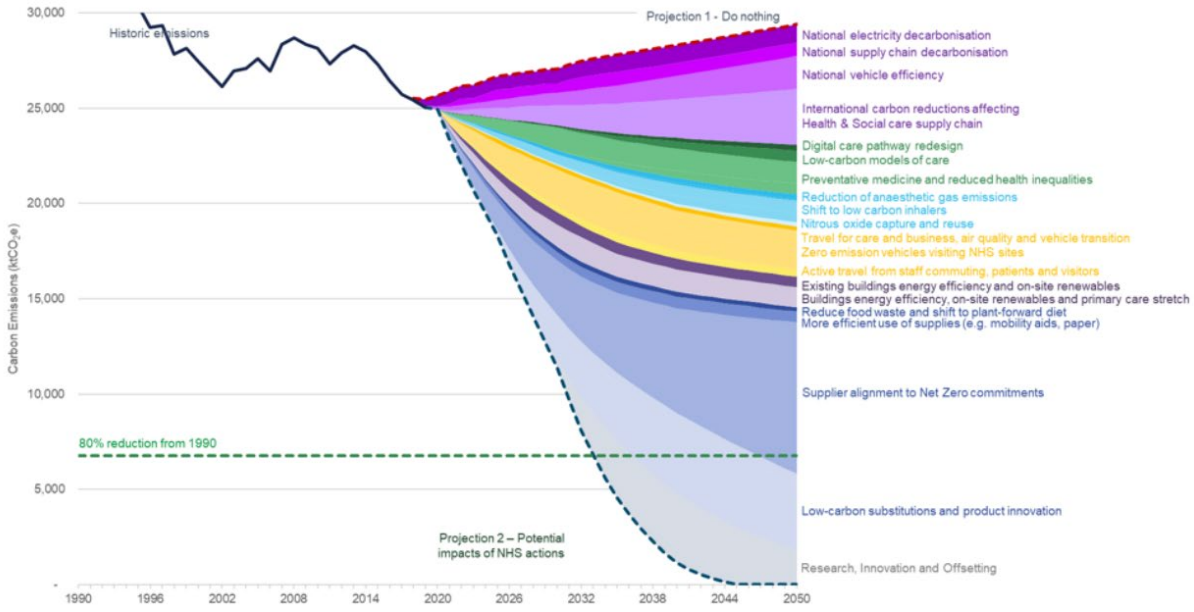


Figure 5: Historical emissions up to 2019 (solid black line), projected emissions if measures are not implemented (dotted red line, Projection 1), and projected emissions if all measures are implemented and work as planned (dotted black line, Projection 2). Emission reductions are fastest at the start and are slower in the years up to 2045. The figure is taken from the Delivering a 'net zero' National Health Service report.[57]

Greenhouse gas accounts and greenhouse gas budget in the municipalities' health and care services:

There is no comprehensive overview of emissions from the municipalities' health and care services in the same way as for the specialist health service but an increasing number of municipalities have their own greenhouse gas budget and greenhouse gas accounts, also in the field of healthcare.[58]

Greenhouse gas accounts are the sectors' calculation of emissions and form the basis for a municipality's greenhouse gas budget.[59] A greenhouse gas budget should be anchored in all sectors and linked to the municipality's financial plan and budget. The greenhouse gas budget should set specific goals and measures, and establish procedures for reporting achievement of the goals. Not all municipalities have their own greenhouse gas budget, but report on their climate work in the municipality's economic plan. The drawback of this solution is that the economic plan is revised every four years, and that the measures set out in the plan are not necessarily subject to annual reporting and assessment. Status and measures in the health and care sector should be made visible in the municipality's greenhouse gas accounts and greenhouse gas budget.

Measure: Follow up on government planning guidelines for climate and energy planning and climate adaptation

Government planning guidelines for climate and energy planning and climate adaptation must ensure that 'the municipalities and county municipalities prioritise the work of reducing greenhouse gas emissions, and help ensure that climate adaptation is taken into account in planning in

[57] Delivering a net zero NHS

[58] *Klimagassutslipp fra helse- og omsorgssektoren* (Greenhouse gas emissions from the health and care sector) | Norwegian Directorate of Health

[59] *Klimabudsjettarbeid på 1-2-3-4* (Greenhouse gas budget work in four stages) | Norwegian Association of Local and Regional Authorities (KS)

accordance with the Planning and Building Act' (section 1a). The guidelines also recommend that municipalities obtain 'information about greenhouse gas emissions in the municipality, distributed on sources and sectors. All sources that entail direct emissions of greenhouse gases within the municipality's borders should be included' (section 3.1a).[60]

Text for box: The revised climate and energy planning guideline has been subject to consultation (deadline 12 June 2024).[61]

Text for box: The Norwegian Environment Agency has developed a set of tools for calculating direct emissions, for example from transport. If the effect of emission-reducing measures cannot be calculated, for example, a better overview of the health and care services' consumption can be achieved, and the spotlight can be turned on this. A lack of available data should not be a barrier to taking measures that are highly likely to reduce emissions.[62]

Measure: Adopt the greenhouse gas budget guide in municipalities

Oslo, Hamar and Trondheim have created a greenhouse gas budget guide for municipalities. The guide is published on the website of the Norwegian Association of Local and Regional Authorities (KS). The aim is for the guide to be used by all municipalities – regardless of size, capacity and competence.[63]

Measure: Spotlight goals and measures in the health and care sector in the municipality's greenhouse gas budget

To include the healthcare sector's climate footprint in municipal climate plans, greenhouse gas accounts and greenhouse gas budgets, the municipality should have an overview of the sector's contribution to the municipality's overall emissions. It can be difficult to calculate the emission effect of some measures in health and care services. A starting point might be to consider the emission figures for the field of healthcare that exist or can easily be obtained, for example via the Norwegian Environment Agency's overview of greenhouse gas emissions in municipalities.[64]

Text for box: Oslo Municipality has made all sectors responsible for the design of the municipality's greenhouse gas budget, which is a topic at all budget conferences in the municipality. The greenhouse gas budget is anchored in the City Council's finance department. Specific goals and measures have been established that all sectors must report on. For example, all agencies, districts and trusts must report annual energy consumption in municipal buildings, energy consumption for the municipality's own vehicles, and other energy processes.[65]

[60] *Statlige planretningslinjer for klima- og energiplanlegging og klimatilpasning* (Government planning guidelines for climate and energy planning and climate adaptation) | Lovdata

[61] *Høring av forslag til reviderte statlige planretningslinjer for klima og energi* (Consultation on proposals for revised government planning guidelines for climate and energy) – the Norwegian Environment Agency (miljodirektoratet.no)

[62] Calculate the effect of various climate measures | Norwegian Environment Agency

[63] *Veileder for klimabudsjett som styringsverktøy* (Greenhouse gas budget guide as a governance tool) | Norwegian Association of Local and Regional Authorities (KS)

[64] *Utslipp av klimagasser i kommuner og fylker (*Emissions of greenhouse gases in municipalities and counties) | Norwegian Environment Agency

[65] Greenhouse gas budget 2024 for Oslo

Measure: Consider adopting a systematic method to measure the impact of measures.
Quantifiable targets, such as reduced energy consumption, less food waste or more reuse, can facilitate objective evaluation of the measures and document improvements. A structured measurement programme can promote transparency and accountability, and help strengthen confidence in the management. Systematic measurement makes it possible to identify areas for improvement, adjust strategies and continuously improve the process, which is essential for long-term sustainability.[66]

Text for box: Improvement work in health and care services can take place in accordance with Deming's circle. This describes how improvement work requires 1) preparation, 2) planning, 3) execution, 4) evaluation and 5) follow-up.[67] It will thus require the identification of different areas with improvement potential, and a plan for making changes in this area and thereafter identifying areas and measures in the roadmap that can be used for this purpose. After some time, there should be evaluation and any necessary adjustments should be made.

Figure 6: Deming's circle [67]

Text for box: The Greenhouse Gas Protocol (GHG Protocol)[68], ISO14001[69] and the Carbon Trust Standard[70] are examples of systematic methods for measurement, administration and reduction of greenhouse gas emissions and other environmental impacts. The methods are structured frameworks that help set measurable environmental targets, and monitor and document improvements. The frameworks promote transparency and accountability.

[66] PowerPoint presentation (statsforvalteren.no)
[67] *Modell for kvalitetsforbedring – utvikling og bruk av modellen i praktisk forbedringsarbeid* (Quality improvement model – development and use of the model in practical improvement work) – NIPH
[68] GHG Protocol (europa.eu)
[69] ISO 14001:2015 – Environmental management systems — Requirements with guidance for use
[70] Route to Net Zero Standard | The Carbon Trust

5.2 Leadership, governance and collaboration

Good leadership is deemed to be one of the most important criteria for a successful transition to a low-emission society. Leaders play a vital role in supporting change initiatives and shaping a common understanding and vision, and play a crucial role in change processes. They are often the key drivers of new initiatives in an organisation.[71] Leaders play a key role in establishing a culture of accountability and sustainability within their organisation. Leaders must assume responsibility for identifying, implementing and monitoring measures to reduce the health service's climate footprint.

Leadership anchoring is important for the health services to achieve their climate and environmental goals. The challenges faced by health and care services as a consequence of climate change do not have clear or simple solutions. This can make the leadership role challenging. To implement emission-reducing measures, investments are sometimes required, which can be difficult for health and care services that are already under pressure. Some measures might give rapid financial savings, while other investments must be viewed from a more long-term perspective. It is also important to remember that the socioeconomic costs of greenhouse gas emissions exceed the business economic costs.[72,73]

Environmental management in the specialist health service

The specialist health service undertakes environmental management by adhering to the systematics of the ISO 14001 standard in its ordinary business management (assess whether a third-party audit is needed). This entails a commitment to continuous improvement and responsible environmental management at all levels of the organisation, thereby ensuring adequate resources and budgets for local environmental and sustainability measures. At the regional level, climate and the environment are an annual topic between the management of health trusts and regional health trusts. Emphasis is placed on following up on common goals, internal audits, resource allocation, key projects and challenges.[74]

The interregional 'Green Hospital' collaboration committee promotes cross-regional cooperation, prepares annual reports, organises conferences and forums related to the environment and climate, and coordinates joint initiatives and policies.[75]

Text for box: All four regional health trusts (RHTs) in Norway are represented by a dedicated adviser for the environment and climate in the 'Green hospital' collaboration committee. Since 2008, this collaboration committee has maintained national focus and cooperation on the climate and environment in the regional health authorities. In 2021, a framework for environment and sustainability was developed to further structure and coordinate the work. The purpose is to strengthen local, regional and national measures through common goals, activities and anchoring paths.75

[71] *Ledelse av bærekraft i organisasjoner* (Leadership of sustainability in organisations) | Master's thesis NTNU
[72] *Rapport fra ekspertutvalget for klimavennlige investeringer* (Report from the expert committee on climate-friendly investments) | regjeringen.no
[73] *Investeringer i klimatiltak er billigere enn å reparere* (Investments in climate measures are cheaper than repairs) | SINTEF
[74] *Rammeverk for miljø og bærekraft i spesialisthelsetjenesten* (Framework for environment and sustainability in the specialist health service) | Southern and Eastern Norway Regional Health Authority
[75] *Grønt sykehus* (Green hospital) | Central Norway Regional Health Authority

Text for box: The Specialist Health Service Social Responsibility Report for 2023 is the sixth in the series. Social responsibility concerns how the specialist health service undertakes its social activities in collaboration with others, and how the activities influence people, the environment and society. This report includes an overview of the specialist health service's greenhouse gas accounts and reduction of emissions.[76]

Goal: Integrate efforts to reduce greenhouse gas emissions as an element of corporate governance

Finding synergies between existing practices and climate action to create more sustainable and environmentally friendly operation can make it easier to introduce measures. This can include everything from energy efficiency and waste management to transport and procurement.

Text for box: The EU action plan on financing sustainable growth is part of the EU's green deal. One important building block is the EU Taxonomy, a classification system that will help determine when an investment can be deemed sustainable. A lot of private capital is needed if the EU is to achieve its environmental goals. The taxonomy makes it easier for banks and investors to find sustainable green projects.[77]

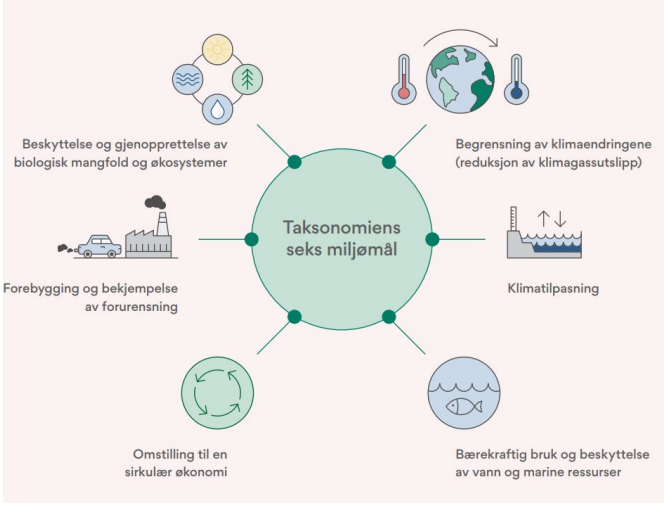


Figure 7. The EU Taxonomy's six environmental objectives.[77] All of these environmental objectives have interfaces with health and care services.

Measure: Consider using the 'Avoid, Shift, Improve' framework as a strategic decision-making tool

The 'Avoid, Shift, Improve' (ASI) framework is a strategic, structured tool designed to reduce greenhouse gas emissions.[78] This generic tool can be used as an overarching strategy for all healthcare measures and should guide decision-making processes at all levels. The ASI framework can be used as a framework for the areas in Chapter 6 of this roadmap.

Text for box:

Avoid: The 'Avoid' strategy focuses on reducing unnecessary energy use and resource consumption. For example, healthcare services can reduce transport-related emissions by increasing the use of digital healthcare platforms rather than physical travel. This can help minimise the overall carbon

[76] The Specialist Health Service Social Responsibility Report for 2023
[77] EU green deal | Klimastiftelsen
[78] *Atferd og forbruk* (Behaviour and consumption) – Norwegian Environment Agency (miljodirektoratet.no)

footprint of the health and care services. Avoiding unnecessary use of equipment and consumables is important in this context.

Shift: In the 'Shift' section of the framework, there is a shift to more environmentally friendly solutions where possible. A concrete example is switching from aerosol spray asthma inhalers to dry-powder inhalers, which have a lower environmental impact. This shift supports a transition to more sustainable healthcare sector practices.

Improve: The 'Improve' aspect focuses on technological improvements and reviewing various processes to reduce environmental impact. This may include implementing greener digital services and improving waste management systems. By continuously seeking innovative solutions and technological advances to reduce emissions, the health service can reduce its environmental impact and increase efficiency.

Even when it is necessary to implement all types of measures, the framework sets clear priorities and a direction for the design of both overall policies and individual measures. This strategic tool should therefore be used as an integral element in all health service decisions, to ensure sustainable development and reduced climate impact.[79]

[79] Climate committee 2050 | regjeringen.no

Measure: Assess climate perspectives and the work on environmental sustainability in the systematic work on patient and user safety, and quality improvement

Systematic quality improvement work is key to the development of the health and care services.[80] Quality improvement is a continuous process to identify failures or areas for improvement, test measures and adjust until the result is as required and there is a sustainable improvement. Quality improvement concerns everything from adjusting the little things in everyday life, to testing more innovative and novel ideas and services.[81]

Quality improvement can be an effective method to reduce greenhouse gas emissions because it systematically identifies and optimises processes, which can lead to more energy-efficient operations and reduced resource use. By integrating environmental goals into quality improvement initiatives, sustainability can become a natural part of daily practice, while emphasising innovation[82] and cost efficiency[83]. Internationally, there are several examples of how working with quality and patient and user safety is viewed in the context of health and care services' sustainability measures, including emission reduction.

Text for box: In Denmark, 'Grøn Praksis' (Green Practice) has put climate sustainability on the agenda. Grøn Praksis is an interest group under the Danish College of General Practitioners that disseminates knowledge about measures and tools to reduce climate footprint in general practice, with a focus on patient and user safety.[84] The green transition was discussed at the Danish Patient Safety Conference in 2024.[85] The link between climate change, sustainability and quality of service is also mentioned by the Agency of Healthcare Research and Quality in the USA,[86] the Royal College of Physicians,[87] and the Centre for Sustainable Healthcare foundation.[88]

Text for box:In England, an e-learning course called Environmentally Sustainable Healthcare (ESH) has been developed to offer healthcare professionals the knowledge and skills to deliver economically, socially and environmentally sustainable healthcare services.[89] The Centre for Sustainable Healthcare foundation in Oxford, which developed the course, also offers courses for various healthcare disciplines, such as lung diseases, kidney diseases, pediatric health, mental health, public health, dental health and primary health services.[90]

[80] SFK_ogbedreskaldetbli_v9.indd (helsedirektoratet.no)
[81] Purpose and scope – Norwegian Directorate of Health
[82] Quality improvement – Helsebiblioteket
[83] Kom_i_gang.pdf (legeforeningen.no)
[84] *Bæredygtighed i almen praksis* (Sustainability in general practice) – Patientsikkerhed
[85] *Grøn omstilling i sundhedsvæsenet har meget tilfælles med patientsikkerhed* (The green transition in the healthcare service has a lot in common with patient safety) – Patientsikkerhed
[86] Reducing Healthcare Carbon Emissions: A Primer on Measures and Actions for Healthcare Organizations to Mitigate Climate Change | Agency for Healthcare Research and Quality (ahrq.gov)
[87] Defining the RCP's approach to quality | RCP London
[88] Sustainability in Quality Improvement (SusQI) | Centre for Sustainable Healthcare
[89] Environmentally Sustainable Healthcare – elearning for healthcare | NHS.
[90] Courses | Centre for Sustainable Healthcare.

Measure: Incorporate environmental impact work into the environmental, health and safety system

Health, environment and safety work should not only highlight health and safety, but also take the environmental aspect into account. This includes both the internal environment of the organisation and the organisation's impact on the external environment.

By paying closer attention to the physical environment, the health and care services can make use of already-established systems. Existing HSE frameworks, such as risk assessments, training programmes, regulatory procedures and reporting systems, can be adjusted and expanded to also include environmental considerations. This provides for a holistic approach to sustainable practices, while also ensuring that already-established systems and processes that work well are used.

Text for box: Sunnaas Hospital has an HSE policy that integrates the work on climate and environmental responsibility.[91]

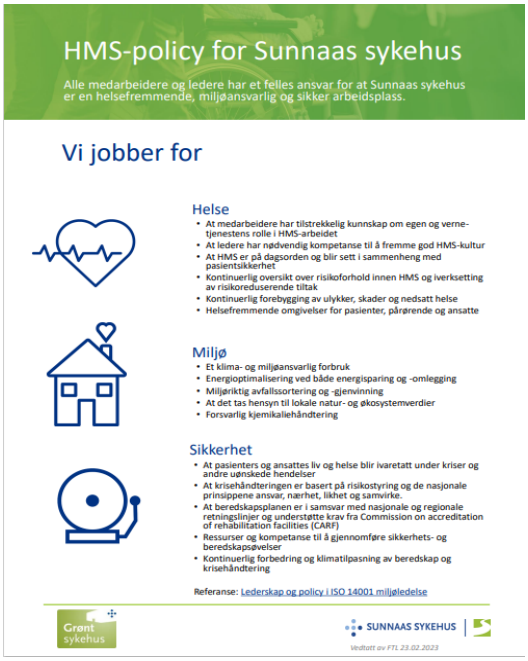


Figure 8: The picture is taken from Sunnaas Hospital's HSE work.[91]

Environmental management in municipal health and care services

There is no easily accessible overview of which municipalities have introduced environmental management or are environmentally certified. It is recommended that Norwegian municipalities implement environmental management systems, as this can ensure that the municipality fulfils statutory requirements, reduces operating costs through more efficient use of resources, and improves their public reputation in the development towards a low-emission society in 2050.[92]

[91] Sunnaas Hospital HSE Policy.
[92] Climate partners Viken.

Measure: Introduce environmental management in municipal health and care services

There are various different environmental management systems and methods. When the specialist health service introduced environmental management, they used a standardised method (ISO 14001), which requires the undertaking to create its own environmental policy and draw up environmental goals that help manage activities, products and services.[93]

Measure: Designate a climate and environmental officer for the health and care services in the municipalities, and establish a cross-sector climate council

To boost climate work in the health and care services, the service can establish a function that is given special responsibility for monitoring the emission reduction and adaptation work. To strengthen the cross-sectoral climate work, a separate forum for climate and the environment can be established. Several municipalities have already established this type of network, such as the Network for Physical Climate Risk in Bergen Municipality.[94]

Text for box: The specialist health service may also consider appointing environmental officers within each health trust and clinic if they do not already have this position.

Measure: Contact the environmental adviser in the municipality

Many municipalities have environmental or climate advisers. These have expertise in greenhouse gas emissions and can provide advice and guidance to other municipal services that want to reduce their own climate footprint.

Measure: Consider appointing a person responsible for the work of following up the measures in the roadmap

Appointing several dedicated employees or a project manager who, with the support of management, have the training and expertise, as well as resources to become familiar with the roadmap, can lead to increased goal achievement. A clear definition of responsibility and a mandate to coordinate and communicate follow-up on the roadmap's goals and measures will increase clarity and structure. This can also ensure that the measures are carried out by people with the right skills.[95]

Goal: Promote the use of relevant grant schemes and other instruments

Different grant schemes can contribute to service development and expertise. Among the examples and measures for emission reduction in the municipalities provided in this roadmap, several have received support from the 'Klimasat' scheme, which is managed by the Norwegian Environment Agency.

Measure: Seek support from grant schemes

There are several grant schemes for which health and care services can apply.

Text for box: The government wants public buildings, especially municipal buildings, to lead the way in energy efficiency. Measures such as supplementary insulation of exterior walls, replacement of

[93] Environmental management – ISO 14001

[94] *Klimarisiko – forebygging og beredskap* (Climate risk – prevention and emergency preparedness) | Bergen Municipality

[95] How to succeed with good implementation? - Implementere.no

windows and investments in ground source heat pumps have been supported. It is proposed to increase the grant framework to NOK 300 million in 2024, to improve the condition of the municipal housing stock and ensure that low-income households also gain more energy-efficient housing.[96]

Text for box: Examples of grant schemes that may be applied for to initiate projects aimed at reducing emissions from health and care services.

Enova has a number of grant schemes for energy and climate measures in businesses.[97]

Husbanken has a grant scheme for municipalities' energy measures in rental properties, residential care homes and nursing homes.[98]

Klimasats is a grant scheme for municipalities. The aim is to contribute to the transition and to support municipalities and county municipalities that want to cut greenhouse gas emissions.[99] The Norwegian Environment Agency also holds annual webinars on the grant scheme, and has an overview of the scheme's projects from which lessons can be learned.[100]

The Norwegian Environment Agency has its own grant scheme for climate adaptation measures, with the aim of better equipping the municipalities to tackle climate change.[101]

The **Norwegian Directorate of Health** makes financial grants to municipalities wishing to establish healthy life centres. They provide support for adopting a healthier lifestyle and coping with health challenges, and contribute courses and professional guidance to the service.[102]

Text for box: The health technology scheme is a key e-health initiative. It supports the introduction of new technologies such as medical record solutions and welfare technology in municipalities. The health technology scheme will also contribute to stable framework conditions for suppliers, and increase investments in the market. The deadline for one of the scheme's grant award rounds expired on 15 January 2024, and they received a total of 179 applications, for a total amount of NOK 338 million.[103]

Text for box: In 2011, the Southern and Eastern Norway Regional Health Authority established a scheme whereby health trusts can borrow funds for energy-saving measures from a regional energy and environmental fund. The incentive scheme has a loan tranche of NOK 50 million. Most health trusts in the Southern and Eastern Norway Regional Health Authority have used the scheme. The total loan tranche is distributed according to defined criteria (profitability, repayment period, environment and so on) set for the incentive scheme. Over time, a reasonable distribution between health trusts is required. In total, loans have been granted for 67 measures, with an average

[96] *Handlingsplan for energieffektivisering i alle deler av norsk økonomi* (Action plan for energy efficiency in all parts of the Norwegian economy) | regjeringen.no
[97] *Støtte til energi- og klimatiltak i virksomheter* (Support for energy and climate action in businesses) | Enova.
[98] *Hva det kan gis tilskudd til* (What grants can be awarded for) | Husbanken.
[99] *Klimasats – støtte til klimasatsing i kommuner og fylkeskommuner* (Klimasats – support for climate initiatives in municipalities and county municipalities) | Norwegian Environment Agency.
[100] *Søk støtte til lokale klimatiltak* (Seek support for local climate action) | Norwegian Environment Agency.
[101] Grants for climate adaptation measures | Norwegian Environment Agency.
[102] *Etablering og utvikling av kommunale frisklivs-, lærings- og mestringstilbud* (Establishment and development of municipal healthy life, learning and coping services) | Norwegian Directorate of Health
[103] *179 søknader til helseteknologiordningen* (179 applications to the health technology scheme) | Norwegian Directorate of Health.

repayment period of 4.6 years. For the loans granted, savings amounting to 171 GWh in the 2012-2030 period are expected. If the energy price is assumed to be NOK 1/kWh during this period, this corresponds to NOK 171 million.[104]

Measure: Apply for green loans

In recent years, an increasing number of banks have begun to offer green loans for more environmentally friendly solutions. These loans are very beneficial compared to other loans, with good loan terms.[105]

Text for box: Kommunalbanken has extended green loans of NOK 50 billion to the municipal sector, of which one of the larger loans was granted to Alta Care Centre.[106]

Text for box: Innovation Norway as a lender. Green growth loans will enable Norwegian businesses to adapt in a more climate-friendly direction, while benefiting from the commercial opportunities in the transition to a low-emission society. The loans are granted on favourable terms and will help channel private capital into climate-friendly investments.[107]

Goal: Promote the use of innovation and new technology in health and care services

Innovation can contribute to long-term, sustainable efficiency. The public sector must work smarter, and more purposefully and systematically with innovation. White Paper 30 (2019-2020) *An innovative public sector — Culture, leadership and competence* emphasises that leaders must develop an innovation culture and competences, whereby they dare to think differently and learn from mistakes and successes.[108]

Good innovation can make systems more efficient, reduce costs and increase quality of life. Not only products or technological solutions are considered innovations, but also better processes, services and solutions. New working methods, new forms of collaboration, new technologies and new solutions can give us some answers about how together we can create more sustainable solutions.[109]

Text for box: The welfare technology programme is an example of how to highlight the use of new technology in health and care services as part of the solution to the sustainability challenges, including the carbon footprint, faced by health and care services. The use of assistive technology and digitalisation can make it possible to live safely at home longer, reduce the need for travel and municipal residential care buildings, and also streamline resource consumption and strengthen sustainable management of health and care services.[110] This is in line with the national strategy for a green, circular economy.[111]

Text for box: According to Statistics Norway, the demand for FTEs in municipal health and care services will increase by more than 50 per cent from 2019 to 2040, with the increase exceeding

---

[104] *Helse Sør-Øsst låneordning sparer energi og gir miljøgevinst* (Southern and Eastern Norway Regional Health Authority's loan scheme saves energy and provides environmental benefits) – Southern and Eastern Norway Regional Health Authority (helse-sorost.no)
[105] Green loans | The Norwegian Energy Agency
[106] NOK 50 billion for climate-friendly projects | KBN.
[107] Green growth loans | Innovation Norway
[108] White Paper 30 (2019-2020) – regjeringen.no
[109] Innovation and technology | Knowledge of health and care services (ressursportal.no)
[110] *Framtidens bærekraftsutfordringer og teknologi som del av løsningen* (Future sustainability challenges and technology as part of the solution) – Norwegian Directorate of Health
[111] *Nasjonal strategi for ein grøn, sirkulær økonomi* (National Strategy for a Green Circular Economy (regjeringen.no)

100,000 FTEs (the intermediate option). This workforce probably does not exist. Innovation in the health and care sector not only concerns the healthcare profession, but also how we can best utilise society's resources, including at the local level. Organisation, coordination and the overall perspective are the keywords.[112]

Measure: Develop a culture and competences for innovation aimed at reducing the climate footprint in health and care services

Leaders must foster a culture of curiosity and openness to new ideas, and the courage to learn from mistakes and successes. Knowledge and lifelong learning are the key to a better and more efficient public sector, and will strengthen the interaction between the university and college sectors and professional life. Digital competence, assessment competence, design competence and competence in the use of various types of work and techniques can help to promote innovation.[113]

Text for box: Intelligent and targeted use of AI in healthcare can lead to efficiency improvements and resource savings that can help to reduce emissions.[114] AI is developing rapidly and healthcare is one of the areas with the greatest potential to leverage this technology. Many products for the healthcare service will emerge in the years ahead.[115]The Norwegian Directorate of Health has thematic AI sites to gather resources to help and guide the health and care services and research and innovation environments in the public and private sectors, so that they can successfully develop and implement AI on a secure basis.[116] It is also important to be aware that greater use of AI can increase greenhouse gas emissions, due to energy use and hardware. [114]

5.3 Knowledge and awareness

Increased knowledge, awareness and facilitation of efforts among personnel in the health and care services are essential for the transition to a low-emission health service. To achieve various goals in the effort to reduce emissions, personnel should also be engaged and committed. This requires training and dissemination of information on climate and environmental issues.

Goal: Familiarise personnel with measures for low-emission health and care services.

This roadmap is one of three commitments arising from Norway's participation in the COP26 Health Programme. The roadmap highlights ambitions and possible measures that can be used in health and care services. The measures must be made known and put to use in order to harvest the roadmap's potential and achieve the emission goals.

The undertaking's goals and measures that are to be implemented should be made clear to managers and personnel, with specific advice on how they can contribute to the work. It may generally be useful to communicate why the measures are recommended and to inform about benefits such as freeing up time for patients and personnel, financial savings, improving quality of patient care or anything else in addition to emission reduction.

[112] Variation, innovation and better health and care services.
[113] White Paper 30 (2019-2020) – regjeringen.no
[114] *Kunstig intelligens, vann og klima* (Artificial Intelligence, water and climate) | Energi og Klima.
[115] *Utredning om bruk av kunstig intelligens i helsesektoren* (Investigation of the use of AI in the healthcare sector) | eHelse
[116] *Kunstig intelligens* (Artificial intelligence) – Norwegian Directorate of Health.

Measure: Inform about the roadmap in established communication channels

The various health and care services' communication channels such as intranets, newsletters, email, social media and various meeting venues can be used to present the roadmap and relevant content. The established communication channels can also be used to disseminate good initiatives and success stories.

It must be ensured that personnel are made well aware of the measures to be implemented, with associated goals and deadlines. In this context, it is also important to communicate why the measures should be implemented and to inform about their benefits.

The specialist health service has many communication channels. The collaboration committee publishes reports on social responsibility for the specialist health service and organises environmental and climate conferences that attract more and more participants. In addition, regular environment and climate forums are held. If needed, the committee offers joint training and courses.

Municipalities can use their channels to communicate about the roadmap. This might be websites, newsletters, meetings and other relevant venues. The county governor is an important link between the central government administration and the municipalities.

Measure: Create customised information materials

Different parts of the undertaking will have different preconditions for contributing in different areas. It may therefore be appropriate to develop more customised information material, adapted to different professional areas, with specific measures that help reduce the environmental and climate impact. Patient safety must be safeguarded, and professional environments must be drivers of changing practices.

Text for box: An example is the information poster for GPs, which was created by medical students.

Figure 9: Three medical students created this poster for GP offices in connection with courses on climate change and health at the University of Oslo. [117,118]

Goal: Create a climate-conscious organisational culture.

In the work of improving health and care services, it is important that personnel at all levels contribute and can be involved.[119] Management must drive personnel's acquisition of knowledge, training and a mandate to implement the necessary changes. Management can demonstrate decisiveness and make it clear that preventing climate change is important through decisions and communication, and by contributing to the inclusion of climate change in the organisation's vision and strategy. A culture in which management and personnel seek knowledge of climate change and want to be part of the solution can inspire action and help each individual take responsibility for reducing emissions.

Measure: Provide personnel who take the initiative to adopt climate-friendly practices with support and a mandate from management

Providing support and a mandate to personnel who take climate-friendly change initiatives can be of value in promoting innovation and engagement. This can strengthen the organisation's reputation, help achieve sustainability goals, and create a positive culture with the motivation for sustainable practices. It can also help to promote the organisation as an attractive workplace.

---

[117] Course on climate change for medical students | Journal of the Norwegian Medical Association (tidsskriftet.no).

[118] Climate Action for General Practitioners – COPY (legeforeningen.no).

[119] Helse- og omsorgstjenesten (Health and care services) | I trygge hender.

Measure: Empower personnel to learn why and how they can contribute

Offer regular training, courses and workshops to increase personnel's understanding of climate change, its impact on health, and how day-to-day activities can contribute to reducing emissions. This may include information on how climate-friendly practices not only contribute to a better environment, but can also improve patient care.

There can be variation in the extent to which different service areas in the municipalities (including health and care services) see themselves as relevant climate action stakeholders. This may include knowledge of tools and opportunities. The municipalities can consider preparing a standard proposal for how the municipal health and care services can increase their expertise, and use the roadmap based on their own municipality. This proposal can be prepared in cooperation between the municipalities and the health authorities.

Text for box: The specialist health service holds an annual professional course on its own environment and social responsibility. In 2024, the theme was: Climate and health – how are hospital operations affected by climate change?[120]

Measure: Facilitate that union representatives encourage good work to reduce emissions

Many unions have put the climate issue on the agenda and address this topic together with their members. The Norwegian Medical Association's 'Make Wise Choices' campaign, which aims to reduce overtreatment, has been ongoing for a few years.[121] The Norwegian Nurses Organisation has decided to set up its own climate and sustainability committee.[122] Union representatives will therefore be able to play a key role in disseminating knowledge and insight about the relationship between climate and health, and how healthcare professionals can contribute to the transition to low-emission health and care services. Knowledge of climate and health issues can be included in the training of elected representatives.

Goal: Familiarise patients, users and relatives with climate change initiatives and provide training where appropriate.

Patient instruction is one of the hospitals' four statutory key tasks, cf. Section 3-8 of the Norwegian Specialist Health Service Act.[123,124]

Measure: Communicate climate work and emission-reducing measures to patients, users and relatives.

Instruction of patients and relatives is one of the hospitals' four statutory key tasks, on a par with treatment, research and training of healthcare personnel. Patients and relatives have the right to receive information and instruction matched to their circumstances, while healthcare professionals have a duty to provide information in line with patients' and relatives' rights, so that patients can be part of the process and the decisions taken.[125]

---

[120] Specialist health service environment and social responsibility conference 2024 – Southern and Eastern Norway Regional Health Authority (helse-sorost.no)

[121] Make Wise Choices | The Norwegian Medical Association.

[122] National Conference Cases 2023 | Norwegian Nurses Organisation.

[123] Patient training – regjeringen.no

[124] Act on the specialist health service, etc. (Specialist Health Service Act) – Part 3. Special duties and tasks – Lovdata

[125] *Pasient- og pårørendeopplæring- en forutsetning for en bærekraftig helsetjeneste* (Training of patients and relatives – a precondition for a sustainable health service) – Oslo University Hospital Trust (oslo-universitetssykehus.no)

Emission reduction measures should be communicated to patients so that they are confident that the measures do not impair the quality of the treatment they receive.

Patients can also play an active role by promoting proposed measures and providing feedback on initiated measures.

6. Measures to reduce greenhouse gas emissions

This chapter sets out the goals and measures that the specialist health service and the municipal health and care services can consider in their efforts to reduce greenhouse gas emissions. The services may consider setting their own goals and deadlines for the work, based on the goals and measures in the roadmap.

The measures are listed under six different action areas: Healthcare and prevention, Procurement, Transport and travel, Circular economy and waste, Building and energy, and Digitalisation.

6.1 Healthcare and prevention

Healthcare refers to any action for the purpose of prevention, diagnosis, treatment, maintaining good health, rehabilitation, or nursing and care, and which is performed by a healthcare professional. Prevention refers to measures aimed at preventing the occurrence of disease, injury, disorder or functional impairment.[126]

A number of measures can help reduce emissions from the point of care. Measures related to, for example, pharmaceuticals, food and meal services and prevention are discussed here. The main target group for the measures in Chapter 6.1 are personnel with direct patient contact, such as nurses, physicians, healthcare personnel and care personnel. To successfully implement the measures, support from leadership and a strong management anchoring are also important.

Goal: Reduce pharmaceutical emissions.

The pharmaceutical field is a central area in efforts to reduce emissions. Figures from the Norwegian Pharmacy Association show that the value of prescription medication amounted to NOK 35.2 billion in 2023. This was an increase of almost 4 per cent from 2022, and is associated with such factors as an increasingly older population.[127] Some medicines, such as some types of asthma inhalers and anaesthetic gases, make relatively large contributions to the health service's climate footprint.[128]

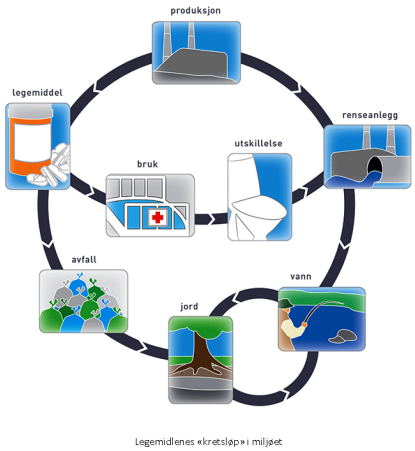


Figure 10 shows the environmental cycle of pharmaceuticals, starting from their production[129]

[126] Section 1-3 Definitions – Norwegian Directorate of Health.
[127] *Hver nordmann brukte 1,7 legemiddeldoser hver eneste dag i 2023* (Each Norwegian took 1.7 doses of medication every day in 2023) | Dagsavisen.
[128] Greenhouse gas emissions | Norwegian Directorate of Health.
[129] *Legemidler og miljø – Felleskatalogen* (Pharmaceuticals and the environment – Norwegian Pharmaceutical Product Compendium)

Text for box: Recommendation in Norsk legemiddelhåndbok (the Norwegian pharmacopoeia): The environmental aspect of the use of pharmaceutical products should be further clarified, both for the population in general and among prescribers and in the pharmaceutical industry. Measures to reduce the environmental impact of pharmaceuticals must be based on knowledge of their long-term effects. More knowledge of the potential environmental impact of different pharmaceuticals could also contribute to a more environmentally friendly prescribing practice. One measure that is very easy to implement is that unused pharmaceuticals must be returned to a pharmacy for destruction. Pharmaceuticals must never be disposed of in the toilet or as refuse, as they then end up in the environment without being used. The pharmacies accept surplus pharmaceuticals and deliver them for destruction (incineration at a high temperature so that they decompose).[130]

Measure: Avoid prescribing aerosol spray inhalers, if possible

Aerosol spray asthma inhalers (aerosol inhalers) contain hydrofluorocarbon gas, in contrast to dry-powder variants and soft-mist inhalers. In England, it is estimated that aerosol spray asthma inhalers account for as much as 3 per cent of the sector's total climate footprint.[131] Emission reductions would be significant if those patients who could were to use dry-powder or soft-mist inhalers. For most patients, there is no significant difference in clinical efficacy between the different administration methods, provided that the correct technique is used. The advantage of aerosol spray asthma inhalers is that they can be connected to an inhalation chamber, which is a great advantage for patients, such as young children, who cannot be instructed in inhalation techniques. A change of administration method should take place in consultation with the patient. The UK's National Institute for Health and Care Excellence has created a decision aid for the physician and patient to use when asthma inhalers are prescribed.[132]

The Norwegian Directorate of Health's national guide to the diagnosis and treatment of COPD recommends dry-powder inhalers or mechanically operated inhalers that are less detrimental to the environment than inhalers that contain greenhouse gases, unless this might constitute a poorer treatment option.[133]

According to a debate article in the Journal of the Norwegian Medical Association, aerosol inhalers account for 56 per cent of the market in Norway, compared to 24 per cent in Sweden. This is probably due to different prescribing cultures, as health inequalities between Norway and Sweden are unlikely to cause this difference.[134]

Text for box: There are currently no return schemes for used asthma inhalers at pharmacies in Norway. These are handled as hazardous waste and incinerated.

Text for box: Public hospitals in Norway will cut all use of greenhouse-gas based asthma inhalers. Under the health trusts, today these asthma inhalers account for annual emissions of 216 tonnes of CO_2. The four regional health trusts recently decided that as from 1 February 2025, these inhalers

[130] *G23 Miljøpåvirkning av legemidler* (G23 Environmental impact of pharmaceuticals) | Legemiddelhåndboka (legemiddelhandboka.no)
[131] Improving health outcomes for respiratory patients while reducing carbon emissions | NHS
[132] Patient decision aid on asthma inhaled and climate change (nice.org.uk)
[133] *Kols – diagnostisering og behandling* (COPD – diagnosis and treatment) | Norwegian Directorate of Health
[134] *Å velge pulverinhalator gir vesentlig miljøgevinst* (Choosing a dry-powder inhaler provides significant environmental benefits) | Journal of the Norwegian Medical Association (tidsskriftet.no)

would not be included in agreements. Instead, alternatives without greenhouse gases, mainly nebulisers, should be used.[135]

Measure: Prescribe reusable inhalers with refilling, where possible

Currently, there are not many of these on the Norwegian market. Multi-use inhalers would cut emissions through reduced material consumption and reduced waste volumes.[136]

Measure: Minimise the use of desflurane for anaesthesia in line with new EU regulation

The anaesthetic gas desflurane has a particularly high carbon footprint, with a CO_2 equivalent of 2500.[137] There has been an increasing focus on this issue in professional environments in Norway and internationally. Choosing another anaesthetic gas (preferably sevoflurane), total intravenous anaesthesia, or possibly regional anaesthesia, where possible, is preferable from a climate perspective. Exhaled gas collection systems can also help reduce emissions.[138]

On 7 February 2024, the European Parliament and the Council adopted a new Regulation on fluorinated greenhouse gases. The regulation is expected to be valid for Norway under the EEA Agreement. According to the regulation, the use of desflurane as an inhalation anaesthetic shall be prohibited as from 1 January 2026, except where such use is strictly required and no other anaesthetic can be used on medical grounds. The healthcare institution shall keep evidence of the medical justification, and provide it, upon request, to the competent authority of the Member State concerned or to the Commission. In addition, the regulation states that exhaled desflurane should be captured in cases where the gas is used.[139]

Text for box: The emergency clinic at OUS is working actively to reduce the use of desflurane. Using low flow, transitioning to total intravenous anaesthesia (TIVA), and testing the CONTRAfluran™ anaesthetic gas capture system, they have already achieved an 89 per cent reduction from 2019 to 2023.[140]

Measure: Monitor the development of knowledge regarding the use of nitrous oxide

Nitrous oxide is considered one of the most important greenhouse gases and is used for several clinical indications. In Norwegian professional environments, there are opportunities to reduce the carbon footprint from the clinical use of nitrous oxide. Approaches may include using a direct canister connection to the anaesthesia device, or ready oxygen/nitrous oxide mixtures connected directly to the inhalation equipment. In addition, used gas can be captured and destroyed.[141]

[135] *Stanser bruk av klimafiendtlige astmainhalatorer* (Stop use of climate-adverse asthma inhalers) | Sykehusinnkjøp
[136] Reducing carbon footprint by switching to reusable soft-mist inhalers | PMC
[137] Putting anaesthetic emissions to bed: commitment on desflurane | NHS
[138] Delivering a net zero NHS
[139] Regulation on fluorinated greenhouse gases (amendment proposal 2022) | Europalov
[140] Microsoft Power BI.
[141] E.J. Skraastad svarer | Journal of the Norwegian Medical Association.

Measure: Avoid nitrous oxide leaks

Some hospitals use pipe systems for nitrous oxide distribution. Leakage of nitrous oxide from pipes can result in significant greenhouse gas emissions.[142] An alternative to piping systems, to avoid this problem, is the use of mobile nitrous oxide canisters. This is recommended in Scotland.[143]

Measure: Reduce the climate footprint of eye surgery

In retinal detachment and macular hole surgeries, gas tamponade is used in the eye to keep the retina in place post-operatively. The most commonly used gas is the fluorine gas sulphur hexafluoride (SF6). SF6 is among the most powerful greenhouse gases, with 1 kg of SF6 equivalent to emissions of 24.3 tonnes of CO_2.[144] Adjustments made at the surgical department of Oslo University Hospital eliminate emissions equivalent to at least 300 kg of CO_2 per retinal operation. This result was achieved by the professional community after they became familiar with the climate footprint associated with SF6.[145] As in the field of anaesthesia, there are alternative gases that can be considered, so that in future eye surgeries, there may be a gradual switch to using gases with a smaller footprint, or air.[146]

A new tax on SF6 was introduced in Norway on 1 January 2023.[147] The tax rate matches the level of the CO_2 tax. Since SF6 is such a potent greenhouse gas, the import tax per kilogram is very high – in 2024, the tax is NOK 27,636 per kg of gas. Limiting the amount of SF6 used therefore also provides a financial saving.

Ophthalmology is an example of an area in which professional communities assess the knowledge base for various strategies and measures that may be relevant for reducing greenhouse gas emissions from their own activities.[148]

Text for box: The Department of Ophthalmology at Oslo University Hospital has introduced measures to reduce emissions from the fluorinated gas sulphur hexafluoride (SF6). Personnel have been trained in awareness of the environmental effects of the gas. Hygiene practices have been improved, and no more than is needed to fill the eye is used, which reduces total consumption. Savings now amount to around half of the previous emissions. In a more long-term perspective, a replacement gas without a climate footprint should be found.[149]

[142] Discrepancy between procurement and clinical use of nitrous oxide: waste not, want not | British Journal of Anaesthesia
[143] Green Theatre Actions | The national Centre for Sustainable Delivery.
[144] Regulation on fluorinated greenhouse gases (amendment proposal 2022) | Europalov
[145] Personal communication, Thomas Pedersen Bærland, Senior Physician, Department of Ophthalmology, Oslo University Hospital, Ullevål.
[146] Reducing the use of fluorinated gases in vitreoretinal surgery | Eye (nature.com)
[147] Tax on sulphur hexafluorides (SF6) | the Norwegian Tax Administration.
[148] How Ophthalmologists Can Decarbonize Eye Care: A Review of Existing Sustainability Strategies and Steps Ophthalmologists Can Take | ScienceDirect
[149] Personal communication, Thomas Pedersen Bærland, Senior Physician, Department of Ophthalmology, Oslo University Hospital, Ullevål.

Measure: Consider peroral instead of intravenous administration

Administering medication intravenously is associated with higher emissions than other forms of administration.[150] It also entails increased use of equipment, packaging and personnel resources, and is a gateway to infection.[151]

Text for box: The Centre for Sustainable Delivery in Scotland has estimated that by giving paracetamol perorally instead of intravenously in connection with surgery, on a national basis the health service will achieve annual financial savings of GBP 53,000 while reducing emissions by 38 tonnes of CO_2e.[152]

Measure: Consider ordering smaller packs and lower quantities of pharmaceuticals that have a short shelf life or are little used

To avoid having to dispose of pharmaceuticals that are out of date, smaller packs and lower stocks of pharmaceuticals with a short shelf life or low consumption volume should be considered.[150] Physicians should also avoid prescribing larger packs than the patient is expected to use.[153]

Removing pharmaceuticals that are rarely used from the range available, and instead borrowing from other departments as needed, can help reduce waste volumes, cut emissions from the transport of pharmaceuticals and avoid disposal of medicines that are out of date.[150]

Measure: Consider ordering larger packs of high-use pharmaceuticals with a long shelf life

Ordering larger packs of pharmaceuticals that are used extensively or have a long shelf life can reduce unnecessary packaging and package inserts. In addition, this can also reduce transport emissions.150

Text for box: Most pharmaceuticals on the market have a standard shelf life of 1-2 years. However, there is little data on the efficacy of pharmaceuticals after the expiry date. Many pharmaceuticals can probably be used safely long after the expiry date, while a few may lose their efficacy or have potentially adverse effects. There is a lot to indicate that more research is needed in this area, and this might help reduce medicines being discarded unnecessarily.[154]

Measure: Encourage patients to return surplus pharmaceuticals to the pharmacy

Pharmaceuticals that end up in normal household waste can be harmful to the environment.[155] Excess antibiotics and expired medications, including liquid drugs, creams/ointments and used medication patches, must therefore be handed in to pharmacies.[156]

---

[150] Bæredygtighedskataloget (Sustainability Catalogue)| rm.dk

[151] Sustainable practice: Prescribing oral over intravenous medications | The BMJ

[152] Green Theatre Actions | The national Centre for Sustainable Delivery.

[153] *Klimat och hållbarhet i det kliniska arbetet – tips & inspiration för dig som är läkar* (Climate and sustainability in clinical practice – tips & inspiration for physicians) | Swedish Society of Medicine.

[154] *Hva skjer egentlig med medisiner som har gått ut på dato?* (What happens to medicine that has expired?) *Og kan du bruke dem?* (And can it be used?)(forskning.no)

[155] *Retur og destruksjon av legemidler* (Return and destruction of pharmaceuticals) | Apotek 1.

[156] *Klimat och hållbarhet i det kliniska arbetet – tips & inspiration för dig som är läkare* (Climate and sustainability in clinical practice – tips & inspiration for physicians).

Goal: Reduce greenhouse gas emissions by avoiding overdiagnosis and overtreatment

Overdiagnosis and overtreatment cause discomfort for patients and, in many cases, may also result in patient injury. In addition, unnecessary activity entails increased use of consumables, services/personnel and pharmaceuticals, as well as increased travel activity. Avoiding unnecessary activity in the service is beneficial for patients, can give financial savings, and can also contribute to reducing emissions.

Text for box: Norway is one of the countries where the most MRI images are taken per capita.[157] According to the OECD, imaging diagnostics for lower back pain and headaches are common sources of overdiagnosis and overtreatment.[158] Overdiagnosis can be due to healthcare professionals' wish not to overlook serious illness, as well as patients' expectations of diagnostic examinations in the healthcare system.

Municipal health services play a key role as a gatekeeper function for the specialist health service. This includes avoiding examinations that will have no consequences for further treatment.

Text for box: Sustainability in the doctor's office is a campaign aimed at reducing medical overactivity. This will be achieved by strengthening the population's awareness of the role of the GP and primary healthcare as a gatekeeper function, and informing about the possible harmful effects of overdiagnosis and overtreatment.[159]

Measure: Follow the advice of the 'Make Wise Choices' campaign

'Make Wise Choices' is a campaign aimed at reducing unnecessary procedures and treatment. It includes advice and recommendations for healthcare professionals from a number of different professional associations, such as the Norwegian Dental Association, the Norwegian Midwives Association and the Norwegian Medical Association.[160]

Measure: Review of different care pathways within different specialisations

Climate and environmental considerations can be made regardless of which professional environment you belong to. Each professional environment can review the pathways for its patients, identify unnecessary emissions and reduce emissions. Care pathways for different patient groups or disciplines can be reviewed to find new, less resource-intensive, ways of performing tasks or processes (leaning). In this review, unnecessary consultations, unnecessary use of equipment, excess steps or other use of resources that do not add value to the outcome can be found. A more streamlined way of working can improve the quality of work and also provide savings in terms of time, costs and greenhouse gas emissions.[161]

Measure: Assess measures in different clinical disciplines in collaboration with external environments

In the efforts to reduce emissions, many measures apply across disciplines, while other measures are more specific to the various disciplines. The Centre for Sustainable Healthcare in Oxford develops resources to support health services' efforts to reduce emissions, and has among other things worked with clinical disciplines related to mental health, anaesthesia, dental health, kidney disease,

[157] Health care use – Magnetic resonance imaging (MRI) exams | OECD
[158] Tackling wasteful spending on health | OECD
[159] *Bærekraft på legekontoret* (Sustainability at the doctor's office) | The Norwegian Medical Association
[160] *Gjør kloke valg* (Make Wise Choices) | The Norwegian Medical Association.
[161] *Driftsoptimalisering av pasientforløp i sykehus ved bruk av lean tankesett* (Operational optimisation of care pathways at hospitals using a lean mindset) | Master's thesis unit.no

occupational medicine, surgery and pulmonary medicine. In Scotland, a separate national programme for green operating theatres has been developed.[162]

Knowledge of these and other disciplines can be summarised, assessed and used in the health service. This work may be assessed to take place in collaboration with one or more stakeholders, such as universities and colleges, professional associations, patients and users. Here, for example, there may be specific issues that master's students can shed light on.

Text for box: The Centre for Sustainable Healthcare has prepared a report on the climate footprint of dental practices. This included work to increase knowledge and awareness among dentists. A 'how-to-guide' and a sustainability course have also been developed for dentists who want to reduce the climate footprint of their practice.[163]

Measure: Develop patient information about the benefits of various tests and investigations

Patients who use the health service often expect examination or treatment of their ailments. Good, accessible patient information can help promote appropriate medical activity.[164] This may increase the population's general health literacy and help reduce medical overactivity.

Measure: Strengthen the health literacy of the general population, patients and relatives

There is a national goal to create the patient's health service, which means that patients have the opportunity to be active participants in their own healthcare and treatment. It means being listened to, being able to make choices in consultation with the practitioner about actions to be taken, setting your own goals and using your own resources to cope with everyday life.[165]

Text for box: Work under the National e-Health Strategy includes better facilitation of the involvement of the general population in the prevention, treatment and follow-up of their own and their loved ones' health and coping. Measures include making simple and easy-to-use tools, self-service solutions and simpler, secure access to health information available, to increase the population's health literacy and lower user thresholds, thereby reducing digital alienation.[166] Increased self-reliance and better reconciliation of demand for health and care services will provide climate gains in the health and care sector and embrace several of the goals named in the roadmap.

In the health service of the future, it is predicted that 20-30 per cent of the treatment currently provided in hospitals will take place in the home. This will lead to more efficient use of resources in the health and care services. In addition, treatment at home has been shown to result in fewer complications, faster recovery and improved quality of life.[167] A prerequisite is that patients also

[162] National Green Theatres Programme | NHS Scotland
[163] Sustainable Dentistry | Centre for Sustainable Healthcare
[164] *Bærekraft på legekontoret* (Sustainability at the doctor's office) | The Norwegian Medical Association
[165] *Helsekompetanse – kunnskap og tiltak* (Health literacy – knowledge and measures) – Norwegian Directorate of Health
[166] Goal 1: *Aktiv medvirkning i egen og næres helse* (Active engagement in your own and loved ones' health) – ehelse
[167] *Pasient- og pårørendeopplæring- en forutsetning for en bærekraftig helsetjeneste* (Education of patients and relatives – a precondition for a sustainable health service) – Oslo University Hospital Trust (oslo-universitetssykehus.no).

receive help to use their own resources without focusing on challenges.[168] Another prerequisite is that patients and relatives receive adequate instruction.[167]

Text for box: Arthritis school,[169] diabetes school[170] and cardio training groups are examples of programmed[171] to promote health literacy. These programmes can promote patients' sense of coping and autonomy, reduce the risk of further progression of disease, and reduce the need for more comprehensive medical or surgical treatment.

Text for box: The healthcare centre and school health service is a universal service for children aged 0-20 and their families. The service offers regular consultations according to the child's age, as well as group programmes and instruction. One of the primary goals is to increase the target group's health literacy, and the service is particularly adapted to detect irregular development and capture vulnerable children and families who may need additional follow-up.[172]

Measure: Follow the Norwegian Directorate of Health's guidelines on patients with limited life expectancy

The Norwegian Directorate of Health has two advisers who advise healthcare professionals on the planning of treatment levels for patients who are elderly and/or have a serious underlying illness. They are professional advisers whose aim is to, among other things, limit the overtreatment of patients with a short life expectancy. This includes assessments to ascertain the appropriate level of treatment, and whether the patient should undergo cardiopulmonary resuscitation in the event of cardiac arrest.[173,174]

Goal: Reduce greenhouse gas emissions through increased focus on avoiding patient injuries, outliers and readmissions

In 2022, patient injuries occurred during 12.6 per cent of somatic hospital stays in Norway.[175] Patient injuries have consequences for the patient, relatives and the healthcare professionals involved. Healthcare-associated infections, surgical complications and medication errors are the most frequent causes of patient injury. The Norwegian System of Patient Injury Compensation paid out NOK 1.4 billion in compensation to patients in 2023.[176]

The goal of reducing the proportion of patient injuries is primarily important to ensure good and safe treatment of patients, but it is also relevant from a climate perspective, as patient injury can increase the number of days spent in hospital and also increase consumption of medical equipment and

[168] *Formål og overordnede prinsipper for habilitering og rehabilitering, individuell plan og koordinator* (Purpose and overall principles for habilitation and rehabilitation, individual plan and coordinator) – Norwegian Directorate of Health.
[169] Arthritis school | St. Olav's Hospital.
[170] Diabetes type 2 | St. Olav's Hospital HF.
[171] Cardio training group | St. Olav's Hospital Trust.
[172] *Helsestasjons- og skolehelsetjenesten* (Healthcare centre and school health service) – regjeringen.no
[173] *Beslutningsprosesser ved begrensning av livsforlengende behandling* (Decision-making processes for limiting life-prolonging treatment) | Norwegian Directorate of Health
[174] *Forhåndssamtaler og planlegging ved begrenset forventet levetid* (Advance interviews and planning in the case of limited life expectancy) | Norwegian Directorate of Health
[175] *Pasientskader i Norge 2022* (Patient injuries in Norway 2022) | Norwegian Directorate of Health
[176] *Rekordmange erstatningskrav behandlet* (Record number of compensation claims processed) | Norwegian System of Patient Injury Compensation.

pharmaceuticals, This will lead to increased CO_2 emissions.[177][178] Effective patient and user safety measures can also check the spread of infections, reducing the need for antibiotics and disinfectants, and contributing to more sustainable use of resources. Reducing healthcare-associated infections is one of the specialist health service's national climate and environmental goals.

When patients stay in hospital longer than necessary, also called outliers, there are both economic and environmental aspects to consider. Economically, outliers lead to increased costs for hospitals, as resources such as beds, medical equipment and personnel are used ineffectively. This may result in longer waiting times for other patients who require urgent care, negatively affecting hospital capacity and effectiveness. From a climate perspective, outliers can contribute to increased energy consumption and waste management in hospitals, since more resources are used over a longer period of time.[179]

In the National Health and Coordination Plan, the government has set a goal that 'fewer patients experience readmission after hospital stays' (section 10.1).[180] Some readmissions are absolutely necessary, but a high proportion of readmissions are generally adverse for both patients and hospitals.[181] Reduction of readmissions can result in sound environmental benefits in several of the target areas mentioned in the roadmap.

Text for box: The Management and Quality Improvement Regulation states that the health and care services are obliged to keep track of areas of activity where there is a risk of failure or lack of compliance with regulatory requirements, and areas where there is a need for significant improvement in the quality of the service and patient and user safety.[182]Transitions between the specialist health service and the municipal health service may be vulnerable for patients in patient safety terms.[183]

Measure: Follow up the goals in the new patient and user safety framework

The national action plan for quality and patient safety[184] was concluded in 2023 and was replaced by a new patient and user safety framework. The framework is described in the National Health and Coordination Plan 2024-2027.[185] The framework continues key action areas from the action plan, including a focus on healthcare-associated infections.

[177] The Specialist Health Service Social Responsibility Report for 2021.
[178] *Nedgang i pasientskadar ved norske sjukehus* (Decrease in patient injuries at Norwegian hospitals) | I trygge hender.
[179] DigiPAS: *Digitale tavleløsninger for økt kvalitet, bedrepasientsikkerhet og effektiv ressursbruk i kommunehelsetjenesten* (Digital whiteboard solutions for increased quality, better patient safety and efficient resource use in the municipal health service).
[180] White Paper 9 (2023-2024) – regjeringen.no
[181] Readmissions – Norwegian Directorate of Health
[182] Section 6d. *Oversikt over områder med risiko for svikt* (Overview of areas at risk of failure) – Norwegian Directorate of Health
[183] Hdir_Rapportmal 15.11.18 (helsedirektoratet.no)
[184] National action plan for quality and patient safety
[185] White Paper 9 (2023-2024) (regjeringen.no)

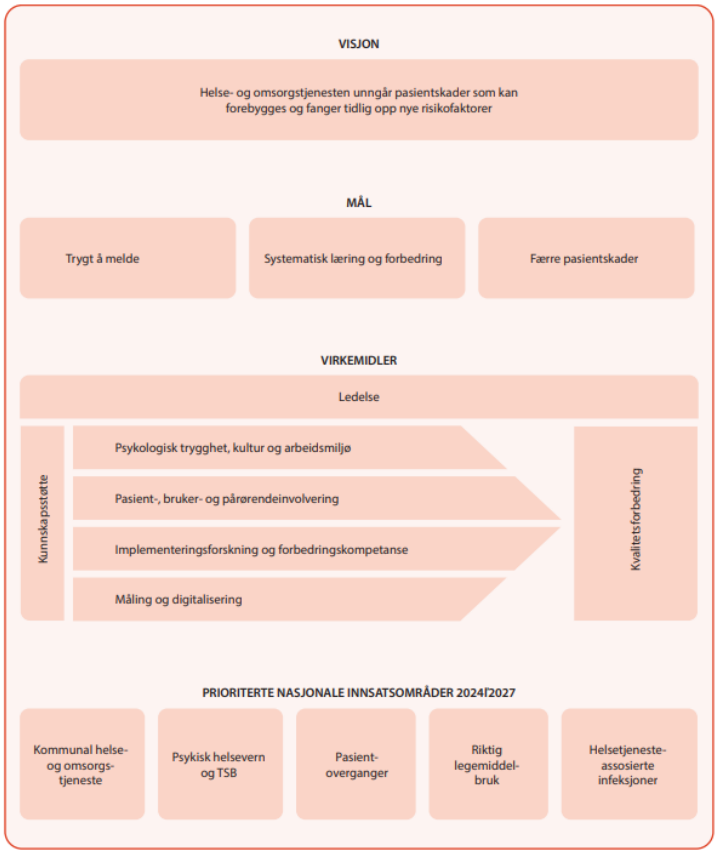


Figure 12. National professional framework for better patient and user safety[186]

Text for box: The patient and user safety framework contains three objectives for patient and user safety work. The three objectives are:

1. Fewer patient injury cases

2. Systematic learning and improvement – the health and care services have good systems for monitoring and learning from adverse events and good practice

3. Safe to report – it is experienced as safe for health and care personnel to report both adverse events and improvement points.[186]

Measure: Follow up action plan for better infection control

The action plan for better infection control is complementary to the Action plan for patient safety and quality improvement, with similar objectives in the infection control area, and with measures that can be implemented where relevant.[187]

In addition to measures in hospitals and municipal health and care services, good general infection control of the population could also prevent unnecessary use of health services.[188]

[186] White Paper 9 (2023-2024) (regjeringen.no)
[187] *Handlingsplan for et bedre smittevern* (Action plan for better infection control) | regjeringen.no
[188] *Smittevern* (Infection control) | regjeringen.no

The action plan for better infection control has been evaluated, and some suggestions have been made for further work.[189]

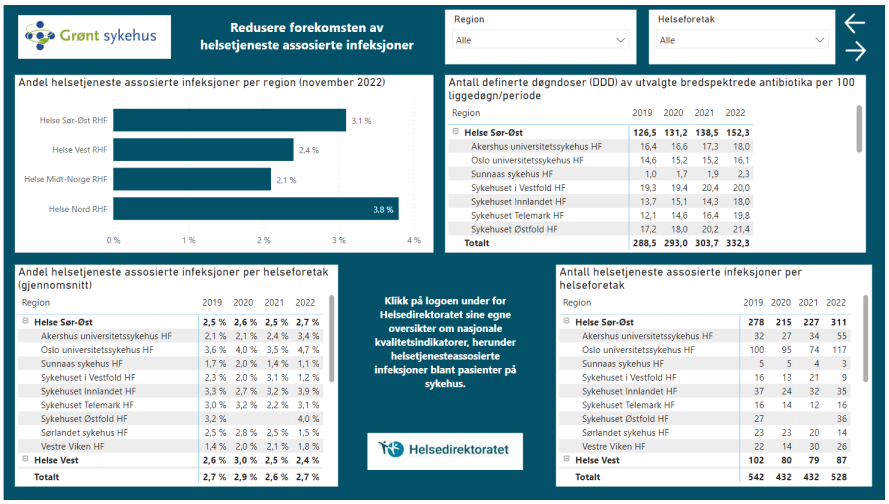


Figure 13. The image from the specialist health service's dashboard shows statistics for the incidence of healthcare-associated infections in the specialist health service.[190]

Measure: Apply checklist for safe surgery

Surgical complications are among the most frequent patient injuries in somatic hospitals. A systematic approach to risk assessment, communication and management can contribute to safe surgery.[191]

Measure: Ensure proper medication use by following the guide to medication review

It is important to avoid overuse of medications, as this can have adverse side effects and interactions for the individual patient. Systematic medication reviews can better ensure proper and safe treatment of patients. This could also help reduce emissions from pharmaceuticals.

Both the Norwegian Directorate of Health and the Norwegian Medical Products Agency have medication review guidelines.[192,193] These describe systematic procedures for conducting medication reviews, and apply to all health professions, regardless of the level of care. The guidelines provide recommendations for how the work on medication reviews can be conducted. The most common change in medication reviews, especially for the elderly, is that medications are no longer considered necessary and are discontinued.[194]

Text for box: Many of the larger municipalities – such as Trondheim – have their own municipal pharmacist who will contribute to the correct use of pharmaceuticals in the municipality.[195]

---

[189] *Norsk helsevesen på rett vei mot smittevernmålene* (Norwegian healthcare system on the right path towards infection control targets) – Norwegian Directorate of Health

[190] Microsoft Power BI.

[191] *Kirurgiske komplikasjoner* (Surgical complications) | I trygge hender

[192] *Sjekkliste for legemiddelsamstemming og legemiddelgjennomgang* (Checklist for medication reconciliation and medication review) | Norwegian Medical Products Agency

[193] *Legemiddelsamstemming og legemiddelgjennomgang* (Medication reconciliation and medication review) – Norwegian Directorate of Health

[194] *Veileder legemiddelgjennomgang* (Guide to medication review) | legeforeningen.no

[195] Pharmaceuticals committee in Trondheim Municipality.

Measure: *Assess non-medicinal treatment options*

For many conditions, non-medicinal measures could help reduce the need for medication. Examples of such measures may be guidance on diet and exercise, and cognitive behaviour therapy.[196] What was previously called green prescription, tariff 101, is now called lifestyle intervention, tariff 101. The tariff can be used in addition to medicinal treatment or as an alternative to this.[197]

Textbox:In 2019, Ringsaker Municipality entered into a collaboration with the Senter for Kvalitet i legetjenesten (Centre for Quality in the Medical Service). The general practitioners in the municipality took a medication review course to ensure correct use of medication and prevent interactions, as well as over- and undertreatment. After the course, doctors experienced increased knowledge of drug treatment, and stated that patients were taking less regular medication than before.[198]

Goal: Reduce greenhouse gas emissions by enhancing preventive work and health promotion

Preventing disease and reducing social inequality in health will be among the most important measures in a sustainable health service – for the individual's health and quality of life, and for the economy in general. These are called demand-oriented measures. They are measures that can help reduce the need for healthcare, and are therefore also important measures from a climate perspective.[199]

Text for box: Measures to reduce greenhouse gas emissions often have what are called 'co-benefits'. This means that they not only reduce emissions, but have positive ripple effects in other areas, such as public health, air quality, biodiversity and the national economy.[200]

By emphasising preventive measures, health and care services can reduce the need for resource-intensive treatments often associated with higher energy consumption and use of materials. This can include everything from vaccination programmes to public health initiatives that promote a healthy lifestyle. Reduced demand for treatment leads to less use of medical equipment, fewer journeys to and from healthcare facilities and generally lower energy consumption in healthcare facilities, which contributes to lower greenhouse gas emissions.

Public health work in the municipality is governed by law.[201] The municipality must have an overview of the health of the general population and what affects health, and use this overview in the work on health promotion measures and reducing social-class related health differences. Many municipalities work well and systematically to promote the good health of the general population.

The specialist health service to a lesser extent has primary prevention and health promotion tasks, but makes important contributions through measures aimed at personnel and as healthy lifestyle advice to patients. The specialist health service plays an important secondary and tertiary prevention

[196] *Läkemedel och miljö* (Pharmaceuticals and the environment)
[197] *Frå grøn resept til taksten Livsstilsintervensjon* (From green prescription to the lifestyle intervention tariff) | Norwegian Directorate of Health
[198] *Fikk ned legemiddelbruk etter kvalitetskurs* (Reduced medication use after quality course) | Dagens Medisin.
[199] *Atferd og forbruk* (Behaviour and consumption) | Norwegian Environment Agency (miljodirektoratet.no).
[200] CDP_Co-benefits_analysis.pdf
[201] The Norwegian Public Health Act | Lovdata

role for individuals, and has a statutory duty of guidance within the teaching and counselling of healthcare professionals in the municipalities.[202]

Measure: Offer food in line with the new national dietary advice from the Norwegian Directorate of Health

The Nordic nutrition recommendations, NNR 2023, are the knowledge base for dietary advice in Norway.[203] The dietary advice is based solely on the relationship between diet and health. NNR 2023 also concerns the relationship between food-based dietary advice and the climate and environmental impact of this advice. A diet in line with the dietary advice will be largely climate and environmentally friendly.[204]

The dietary advice will contribute to good health and reduce the risk of dietary-related diseases in the general population. The fact that it can also contribute to reducing greenhouse gas emissions is a further argument for following the dietary advice, also where this is possible within the health and care sector.

Text for box: The Norwegian Environment Agency has previously calculated that national consumption in line with the national dietary advice has a reduction potential of 4.5 million tonnes of CO_2 equivalents in the 2021-2030 period. This corresponds to more than the annual emissions of greenhouse gases from the specialist health service and the municipal health and care services combined, including indirect emissions from the purchase of goods and services. The health and care services can contribute to achieving this potential through good dietary guidance and a diet adapted to patient needs and national recommendations.

[202] The Norwegian Act on the Specialist Health Service, etc. - Part 6. *Taushetsplikt, opplysningsplikt og veiledningsplikt* (Duty of confidentiality, duty of disclosure and duty of guidance) | Lovdata

[203] *Dette bør du spise – nye nasjonale kostråd fra Helsedirektoratet (*What to eat – new national dietary advice from the Norwegian Directorate of Health) – Norwegian Directorate of Health

[204] *Gode valg for klima og miljø innen kostrådene* (Good choices for the climate and environment under the dietary advice) – Norwegian Directorate of Health

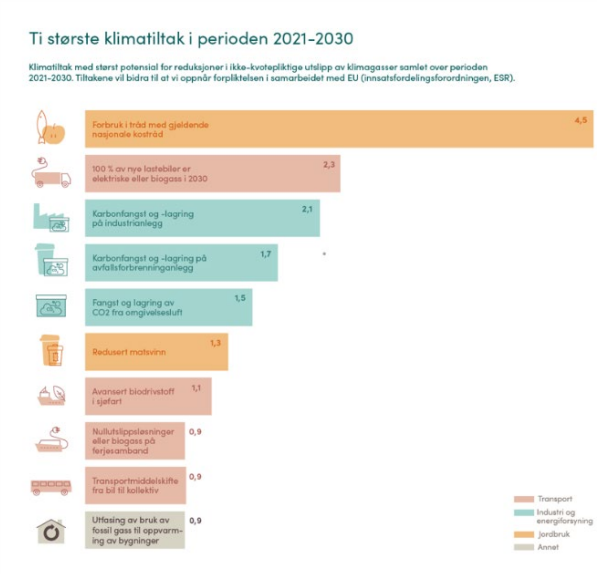


Figure 11: Climate action with the greatest potential for reducing non-quota greenhouse gas emissions during the 2021-2030 period. **Feil! Bokmerke er ikke definert.**

'Good nutrition practices at hospitals require management support with quality assurance of the nutrition work and expertise at all stages, clear division of responsibility and tasks, good interaction and a service offering that meets the needs of patients. At the same time, patient involvement and good information flows internally and between the care levels are important elements to promote good nutrition practices.'[205]

Patients have a unique need for a special diet adapted to their health condition, diagnosis, lifestyle and outlook on life. National professional advice on nutrition, diet and meals in the health and care services should be followed, to meet individual nutritional needs.[206] Food offered in the health and care services must primarily address the individual's nutritional needs and health status. Patients with a good nutritional status should in principle be offered a diet in line with the dietary advice. Patients at risk of malnutrition are offered an energy- and nutrient-intense diet. If the diet is sufficiently adapted to the patient's needs and preferences, this can help to reduce food waste.

The specialist health service prepares and serves millions of meals. In Southern and Eastern Norway Regional Health Authority alone, hospitalised patients are served 11 million meals annually. Over 30 per cent of these must be specially adapted to meet various dietary needs, allergies, intolerances and special requests.[207] In addition, food and beverages are served in hospitals' public cafeterias and kiosks.

Food offered in hospitals' public cafeterias and corner shops is part of the catering environment for not only patients, but also relatives, students and healthcare professionals. When the food offered at

[205] *Leve hele livet – en kvalitetsreform for eldre* (Living your life to the full – a quality reform for the elderly) (White Paper 15 (2017-2018)) | regjeringen.no

[206] *Ernæring, kosthold og måltider i helse- og omsorgstjenesten* (Nutrition, diet and meals in the health and care services) | Norwegian Directorate of Health.

[207] *Regionalt kostdatasystem* (Regional dietary data system)| Southern and Eastern Norway Regional Health Authority.

such venues is in line with the national dietary advice and consists of food of high nutritional quality, this may contribute to increased compliance with the dietary advice.

Text for box: Facilitating a diet in line with national dietary advice can help reduce environmental impacts and prevent health problems, which in turn can reduce emissions from the health service.[208]

Text for box: The dietary manual provides national guidelines for food services offered in the health and care services. For most hospital patients with good nutritional status, the provision of food and meals that are based on the national dietary advice is recommended – as a diet in line with the key advice.[209] This diet corresponds to the description of a diet with low CO_2 emissions.[210]

The dietary manual[211] must be revised and continued in a new form. The aim is to develop new guidelines for food and nutritional follow-up based on experience from e.g. national surveys, new national dietary advice and new national guidelines for preventing and treating malnutrition.[212]

Text for box: In 2017, Fredrikstad Municipality obtained assistance to calculate the climate impact associated with the municipality's food procurement. They found that food procurement accounted for around 2,400 tonnes of CO_2 equivalents, and a greater climate impact than the municipality's machinery park and vehicle fleet. The greatest climate impact was related to the weekly production of approximately 9,000 meals for nursing homes and elderly people living in their own homes.[213]

Measure: Follow up on the national action plan for a better diet (2017-2023)

The action plan for a better diet describes the relationship between diet, climate and the environment, and is based on the Norwegian Directorate of Health's dietary advice, among other things.[214] The report '*Samfunnsgevinster av å følge Helsedirektoratets kostråd*' (Economic benefits of following the Norwegian Directorate of Health's dietary advice)[215] points out that the benefits from the general population following the dietary advice can be as much as NOK 154 billion per year. This includes an annual reduction of healthcare costs of around NOK 12 billion per year.

The action plan mentions several points of contact between the health service and the population at which dietary advice can be given, or where food is served, including the GP, healthcare centre, school health service and home care service. The health service can therefore be an important player in following up the action plan, especially when it comes to offering dietary guidelines for secondary and tertiary disease prevention.

Text for box: The Food and Agriculture Organization of the United Nations (FAO) refers to a sustainable diet as follows: 'Sustainable diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy lives for present and future generations.

---

[208] *Levevaner* (A healthy lifestyle) | Norwegian Directorate of Health

[209] *Kosthåndboken – Veileder i ernæringsarbeid i helse- og omsorgstjenesten* (The dietary manual – a guide to nutritional interventions in the health and care services) | Norwegian Directorate of Health.

[210] Plates, pyramids, planet – Developments in national healthy and sustainable dietary guidelines: a state of play assessment.

[211] The Norwegian Directorate of Health's dietary advice | Helsenorge.

[212] *Mat og måltider i sykehjem* (Food and meals in nursing homes) | unit.no

[213] *Strategi for mat og miljø* (Strategy for food and the environment) | Fredrikstad Municipality

[214] *Nasjonal handlingsplan for bedre kosthold (2017-2021) Sunt kosthold, måltidsglede og god helse for alle!* (National action plan for better diet (2017-2021) Healthy diet, enjoyment of meals and good health for everyone!) (regjeringen.no).

[215] Samfunnsgevinster av å følge Helsedirektoratets kostråd.pdf

Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources.'[216]

Measure: Follow up the report on the food and meals offered in the specialist health service

A national survey of food and meals offered in the specialist health service has recently been carried out for patients over 18 years of age, for the Norwegian Directorate of Health. Among other things, the survey considers whether there are procedures and routines for the food and meals offered (in accordance with the dietary manual), including sustainable food provision. The report is published on the Norwegian Directorate of Health's website.[217]

Measure: Follow-up mapping of healthy, sustainable and climate-friendly diets in counties and municipalities

A multidisciplinary team from the Centre for Sustainable Diet at the Norwegian Institute of Public Health, commissioned by the Norwegian Directorate of Health, has mapped what is done to promote a healthy, sustainable and climate-friendly diet in Norwegian counties and municipalities. Opportunities and barriers to such work were also investigated.[218]

Measure: Strengthen patients' own resources and ability to manage for themselves

For patients with functional impairments who need habilitation or rehabilitation, it is important to systematically assess and use their own resources to enhance their ability to manage for themselves. This measure ensures that each patient is subject to an individual approach that promotes independence and quality of life.[219]

Rehabilitation and habilitation promote independence and community involvement, which can reduce the need for care and treatment, as well as the transport needs this entails. Furthermore, rehabilitation supports social inclusion and economic sustainability by helping people return to their everyday activities, education and working lives.[219]

[216] Sustainable diets and biodiversity (fao.org)
[217] *Underernæring* (Malnutrition) – Norwegian Directorate of Health
[218] *Kartlegging av hvordan fylker og kommuner arbeider for å fremme et sunt, bærekraftig og klimavennlig kosthold* (Mapping how counties and municipalities work to promote a healthy, sustainable and climate-friendly diet) | NIPH.
[219] *Formål og overordnede prinsipper for habilitering og rehabilitering, individuell plan og koordinator* (Purpose and overall principles for habilitation and rehabilitation, individual plan and coordinator) – Norwegian Directorate of Health.

Measure: Follow up the Norwegian Directorate of Health's recommendations for a healthy lifestyle

The key common underlying risk factors for NCDs are the use of tobacco, a less healthy diet, physical inactivity and harmful use of alcohol. Those who receive support to adopt a healthier lifestyle are more likely to succeed than those who try on their own.[220,221,222,223] The costs for counselling are relatively low compared to the costs for other treatment.[224] The general public has a high level of trust in healthcare professionals when it comes to information and advice on a healthier lifestyle.[225]

A healthy diet and physical activity are important for good health and help reduce the risk of several diseases requiring follow-up by the health service. These include cardiovascular disease, type 2 diabetes, high blood pressure and some cancers. The Activity Manual provides recommendations for the use of physical activity in prevention and treatment. The Activity Manual will be available in a new digital edition, and the updated edition will be based, among other things, on new national recommendations for physical activity and resting time. The primary target group for the recommendations are people who work with questions related to diet and physical activity in the healthcare sector, for example, and the recommendations apply to people in general.[226]

Text for box: Thematic pages for several areas on the Norwegian Directorate of Health's website aim to prevent the development of disease and contribute to a better quality of life. This includes recommendations concerning tobacco,[227] alcohol, [228] sleep[229] and local mental health and substance abuse programmes.[230] In addition to recommendations on diet, nutrition and physical activity, these recommendations will be important from a sustainability perspective.

Measure: Facilitate cross-sector public health work

Like public health work, climate work will also be cross-sectoral. The Norwegian Public Health Act defines the cross-sector responsibility for promoting good health and quality of life while recognising the importance of good upbringing conditions, living environments and working lives for health and quality of life. Measures to reduce greenhouse gas emissions will often also provide health benefits. By facilitating active means of transport and a healthy diet, for example, the same measures can

[220] *Effekter av organisert oppfølging på atferd som øker risiko for sykdom hos voksne* (Effects of organised follow-up on behaviour that increases the risk of disease in adults) – NIPH.
[221] Physician advice for smoking cessation – PubMed (nih.gov).
[222] Ivarsson BH. Sjukdomsförebyggande metoder: samtal om levnadsvanor i vården (Disease prevention methods: talk about healthier lifestyle in care). Stockholm: Natur Kultur Akademisk.
[223] Sustained reduction in the incidence of type 2 diabetes by lifestyle intervention: follow-up of the Finnish Diabetes Prevention Study – PubMed (nih.gov).
[224] Metoder för rökavvänjning: sammanfattning och slutsatser (Methods to stop smoking: summary and conclusion). Stockholm: Swedish Agency for Health Technology Assessment and Assessment of Social Services; 2003.
[225] *Fysisk inaktive voksne i Norge – hvem er inaktive og hva motiverer til økt fysisk aktivitet.pdf* (Physically inactive adults in Norway – who is inactive and what motivates increased physical activity) (helsedirektoratet.no).
[226] *Anbefalinger om kosthold ernæring og fysisk aktivitet.pdf* (Norwegian Directorate of Health recommendations concerning diet, nutrition and physical activity) (helsedirektoratet.no).
[227] Tobacco, smoking and snuff – Norwegian Directorate of Health.
[228] Alcohol – Norwegian Directorate of Health
[229] Sleep – Norwegian Directorate of Health
[230] Local mental health and substance abuse programmes – Norwegian Directorate of Health

provide benefits for both climate and public health.[231]

Measure: Adopt the guide to systematic public health work in the municipality

A society that facilitates healthy choices and active lifestyles can reduce the need for medical attention. According to the Norwegian Public Health Act, it is the municipality's responsibility to have an overview of local public health challenges with associated influencing factors.[232]Good and regular health monitoring can help set up the right measures at population level. A population that has knowledge about its own health and makes good choices for it can lead to lower resource use from diagnostics, treatment, follow-up of diseases and patient travel,[233] which in turn leads to lower emissions from health and care services.

Text for box: 'Health monitoring is the regular and systematic collection of information, descriptions, analysis and interpretation of the health status of the population and the factors that influence it. Health monitoring captures changes over time, geographical area, gender, age and other factors.'[234]

[231] *Folkehelsearbeidet er kunnskapsbasert og tverrsektorielt* (Public health work is knowledge-based and cross-sectoral) | Norwegian Directorate of Health

[232] *Hva er veivisere i lokale folkehelsetiltak?* (What are guidelines in local public health initiatives?) Norwegian Directorate of Health.

[233] *Systematisk folkehelsearbeid* (Systematic public health work) | Norwegian Directorate of Health

[234] Helseovervåking | Store medisinske leksikon.

Measure: Follow the national advice in 'Local public health measures – guidelines for the municipality'
The guidelines are an evidence-based professional platform, and should be an aid to municipalities' evidence-based and systematic public health work.[235] There are guidelines for physical activity, nutrition, mental health and quality of life, among other things.

Measure: Establish healthy lifestyle, learning and coping services
The health promotion and preventive individual or group-oriented healthcare work in the municipality often takes place at a healthy life centre. The healthy life centre is a municipal health promotion and preventive health service that helps in changing lifestyle habits and overcoming health challenges. The basic programme includes support for physical activity, diet and quitting the use of 'snus' and tobacco products. The healthy life centre can also provide guidance and programmes for challenges related to mental stresses and sleep, as well as adverse alcohol use. The healthy life centre will be a collaborative partner in the municipality's public health work and also provide courses and professional guidance to personnel in other municipal services. The target group for the healthy life centre is people at increased risk of, or who have already developed a disease.[236] 86 per cent of the population live in municipalities where residents have access to such health services.[237] Studies have shown that the healthy life centre programmes can impact participants' health-related quality of life by changing to a more healthy lifestyle, such as increased physical activity.[238,239,240]

Text for box: The 'green prescription' scheme means that the patient is referred to a municipal programme where they can get help with changing to a healthier lifestyle. In most municipalities, this will be a healthy life centre. Most of the healthy life centres work with GPs and it is the GPs who refer most people to the healthy life centres. To strengthen GPs' health promotion and preventive work, a new tariff for lifestyle intervention was introduced in 2022, by merging tariff 101 (green prescription) and tariff 102 (smoking tariff).[241]

The county municipality manages grants for the establishment of municipal healthy life centres, and learning and coping services, on behalf of the Norwegian Directorate of Health.[242] Municipalities can also participate in regional networks and receive guidance from and assist at a development centre.[243]

[235] *Lokale folkehelsetiltak – veiviser for kommunen* (Local public health measures – guidelines for municipalities) | Norwegian Directorate of Health
[236] *Veileder for kommunale frisklivssentraler* (Guide to municipal healthy life centres) (helsedirektoratet.no).
[237] White Paper 9 (2023-2024) – regjeringen.no
[238] Health-related quality of life and physical activity level after a behaviour change program at Norwegian healthy life centres: a 15-month follow-up
[239] Health-related quality of life and intensity-specific physical activity in high-risk adults attending a behaviour change service within primary care.
[240] Healthy Life Centres: a 3-month behaviour change programme's impact on participants' physical activity levels, aerobic fitness and obesity: an observational study.
[241] White Paper 4 (2023-2024) – regjeringen.no
[242] *Etablering og utvikling av kommunale frisklivs-, lærings- og mestringstilbud* (Establishment and development of municipal healthy life centres, learning and coping services) | Norwegian Directorate of Health
[243] *Veileder for kommunale frisklivssentraler* (Guide for municipal healthy life centres) (helsedirektoratet.no)

Text for box: The healthy life centre in the Stovner district offers a wide range of services to a diverse population, and is for everyone over the age of 16. They offer individual and group-oriented follow-up on sleep, diet, quitting the use of 'snus' and tobacco products, and mental health. They work actively to meet participants on their own terms, and courses and guidance are adapted to the participants' backgrounds. For example, Pakistani or Afghan music is played during training sessions, and in nutrition courses meals with which participants are familiar are prepared.

'We focus on lifestyle change for our participants. The goal is not only a temporary change of habits, but to give participants the tools they need to maintain and further develop these habits and changes on their own, even after they have completed the programme with us.'[244]

Stovner Healthy Life Centre is also one of 18 development centres that contribute to the exchange of experience, networking and competence building, quality and further development of municipal healthy life centres, and learning and coping services, regionally and nationally.[245]

[244] *En av Oslos beste frisklivssentraler* (One of Oslo's best healthy life centres) | Journalen (oslomet.no)
[245] *Etablering og organisering av frisklivssentraler* (Establishment and organisation of healthy life centres) – Norwegian Directorate of Health

6.2 Procurement of goods and services

In calculations made by the Norwegian Directorate of Health in connection with the report on 'Greenhouse gas emissions from the health and care services',[246] it was estimated that indirect emissions related to the procurement of goods and services accounted for 64 to 91 per cent of the specialist health service's climate footprint. This may indicate that the majority of greenhouse gas emissions from the health and care services are related to indirect emissions from the procurement of goods and services.

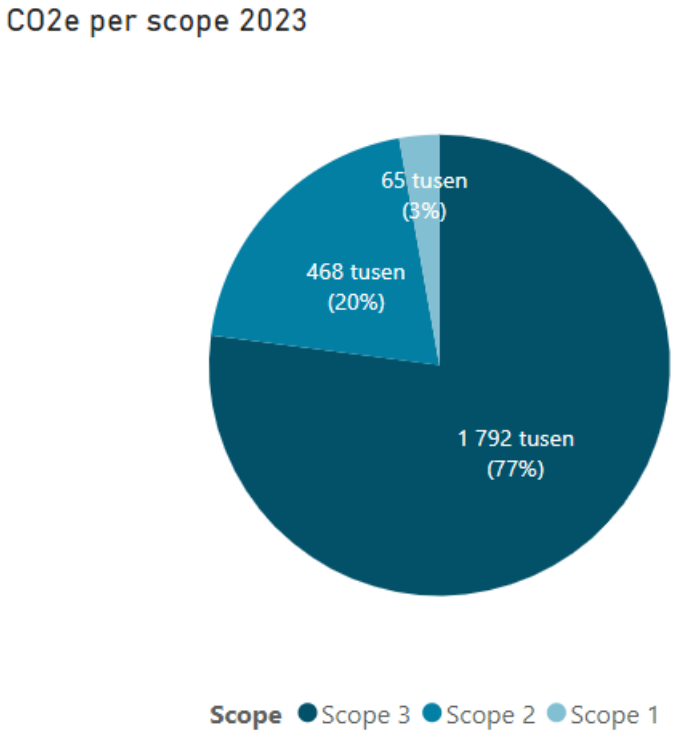


Figure 14: The figure shows emissions as scope 1 (direct emissions) scope 2 (direct emissions from energy use) and scope 3 (emissions from procurement).[247]

Procurement-related emissions are calculated as indirect emissions in the health and care services and have not previously been included in the greenhouse gas accounts. As described in Chapter 5 on 'Tools to succeed in the transition', the specialist health service has now adopted the procurement of two different tools to calculate emissions from procurement.

In this action area, the terms procurement and purchase are used interchangeably. The terms have the same meaning.

Text for box: In a benefit analysis conducted by Oslo Economics in 2017, ten environmentally friendly procurements were analysed. The analysis concluded that greenhouse gas emissions over a lifecycle (for the categories included in the analysis, including emissions both in Norway and internationally) were reduced by between 35 and 90 per cent, when taking climate and environmental factors into account.[248] The analysis points to significant potential for overall benefits from equivalent procurement in such sectors as construction, transport, biodiesel and waste bins. The analysis also

[246] *Klimagassutslipp fra helse- og omsorgssektoren* (Greenhouse gas emissions from the health and care sector) | Norwegian Directorate of Health

[247] Microsoft Power BI.

[248] *Gevinstanalyser av grønne anskaffelser* (Benefit analyses of green procurement).

found that if the identified benefits are representative, the public sector could potentially reduce its annual climate footprint by 4-11 million tonnes of CO_2 equivalents through green procurement.[249]

Text for box: Organisation of procurement in the specialist health service:

The Norwegian Directorate of Health has estimated that the procurement of goods and services accounts for between 64 and 91 per cent of the climate footprint of the specialist health service.[250] Most of the hospitals' greenhouse gas emissions are thus related to indirect emissions from goods and services.

In the specialist health service, many environments purchase goods and services. Sykehusinnkjøp HF undertakes procurement for a value of NOK 28 billion annually, which gives significant purchasing power, and cooperates with the health trusts and suppliers to achieve a sustainable and patient-safe specialist health service.[251]

A distinction is made between procurement exceeding NOK 100,000 and procurement for lower amounts. Purchases below certain thresholds can be made without a call for tenders and involving Sykehusinnkjøp HF, in line with the procurement regulations. The health trusts can then make purchases themselves. The health trusts are encouraged to set requirements in line with Sykehusinnkjøp's Corporate Social Responsibility Policy, where relevant. Such purchases are often made from suppliers that have agreements elsewhere that are followed up by Sykehusinnkjøp HF in accordance with risk assessments.

Text for box: Organisation of procurement in the municipalities:

The responsibility for the purchase of goods and services in the municipalities is divided between different entities. The purchases are usually made by a professional entity/agency (requester) with budget responsibility. In addition, a procurement entity is usually involved to ensure compliance with the procurement regulations. For larger procurement procedures, an employee from the procurement entity may be responsible for the competitive tendering process.

In many municipalities, the health and care services are themselves responsible for procurement, with limited involvement of the procurement entity. An exception to this typical division of responsibility may be small municipalities without access to a separate procurement entity (in their own organisation or formalised cooperation), where responsible entities are left to themselves and possibly other internal assistance.[252]

Goal:Integrate climate and environmental considerations into all procurement.

In overall terms, the public health and care services are a very large buyer. Purchases range from ambulance helicopters to cotton balls. This includes medical equipment, pharmaceuticals, office supplies and services. Many purchases have a direct impact on the quality of patient care. Products and services must therefore often comply with strict standards, and it can be challenging to choose alternatives that safeguard both climate and the environment. By augmenting 'green procurement'

[249] *Klimakur 2030:* (Climate action 2030:) *Tiltak og virkemidler mot 2030* (Measures and actions towards 2030) | Norwegian Environment Agency

[250] *Klimagassutslipp fra helse- og omsorgssektoren* (Greenhouse gas emissions from the health and care sector) | Norwegian Directorate of Health

[251] *Om oss* (About us) | Sykehusinnkjøp HF.

[252] *Innkjøpssamarbeid i kommunesektoren* (Procurement cooperation in the municipal sector) | regjeringen.no

expertise, making conscious choices and working with suppliers that prioritise climate and the environment, the health service can play a key role in reducing emissions and contributing to a more sustainable economy.

To successfully integrate climate and environmental considerations into all procurement, international collaboration is vital. Many initiatives would be more effective if more countries were to set the same priorities and make the same decisions. Harmonisation of procurement requirements is the most important example of international cooperation to help reduce greenhouse gas emissions.[253,254]

Text for box: Medicinal products, medical consumables (MC) and surgical products (SP) are areas that specifically require long-term strategies, and for these areas, greater coordination is particularly important. There is a strong interest from other countries around the world in introducing and further developing environmental requirements in the pharmaceutical area. Sykehusinnkjøp (the hospital procurement authority) participates actively in dialogue with suppliers and shares experiences with other countries and stakeholders, especially within Nordic cooperation. By participating in the dialogue and sharing experience internationally, we can also influence the work on environmental requirements.

For example, the British Standards Institution (BSI) is working to create standards for lifecycle analyses within the pharmaceutical area.[255] For such analyses to have a useful value, this must be taken into account in the assessment of which medicine to choose.

Measure: Review procurement roles and responsibilities

When major purchases are to be made in the health and care services, a review of responsibilities and roles, criteria to be observed in a procurement process, and the required form of cooperation, may have a major impact on climate and environmental work.[256]

Text in box: In the specialist health service, it is mainly Sykehusinnkjøp HF that conducts procurement procedures (over NOK 100,000) on behalf of the regional health authorities. In addition, many other environments undertake procurement. For example, HEMIT, Sykehuspartner, Western Norway Regional Health Authority ICT, Sykehusapotekene and Sykehusbygg HF.

Measure: Procurement collaboration with other municipalities

In White Paper 22 (2018-2019), the government has identified procurement collaboration as one of six key measures to achieve the goal of more efficient and professional procurement processes in the public sector. The white paper shows that working together on procurement can be beneficial in several ways. Through coordinated procurement, buyers can achieve more efficient task organisation and allocation, ensure greater capacity and expertise, and reinforce their negotiating position. This

[253] *Norge jobber for felles internasjonale miljøkrav i anskaffelse av legemidler* (Norway works for common international environmental requirements in the procurement of pharmaceuticals) – Sykehusinnkjøp HF (sykehusinnkjop.no).
[254] *Norge inngår samarbeid med Storbritannia og USA om klimakrav i anskaffelse* (Norway enters into cooperation with the UK and the USA on climate requirements in procurement procedures) – Sykehusinnkjøp HF (sykehusinnkjop.no).
[255] The Design and Assessment of Sustainable Medicines | BSI (bsigroup.com)
[256] Input from Helse Bergen (11.12.23).

can result in lower transaction costs, better prices, higher quality and better terms for goods and services, as well as improved opportunities to support sustainable procurement.[257]

Text for box: Around 90 per cent of the ICT equipment purchased and used in the Municipality of Sør-Varanger is pre-used. This was achieved in connection with a major economic restructuring. One of the measures taken was that everyone should seek to use PC equipment they already had, or repaired or pre-used equipment. This resulted in annual savings of around NOK 680,000 and a 75 per cent emission reduction.[258]

Measure: Adopt the Guide to the use of labelling schemes in public procurement

By minimising the use of hazardous and harmful chemicals in products and production processes, we can reduce air, water and soil pollution. This can provide safer products for patients.[259]

The Guide to the use of labelling schemes in public procurement was prepared by the Nordic Swan Ecolabel, in collaboration with Debio, Fairtrade and Eco-Lighthouse. It aims to guide public-sector purchasers in the use of sustainability labels and environmental management systems as tools to promote environmental considerations and social and ethical standards in public procurement.[260]

Text for box: One of the specialist health service's own goals is that 75 per cent of all products under agreements are free of hazardous and harmful substances by 2030.

The goal is supported, among other things, by a commitment to increase the proportion of eco-labelled goods and services on an annual basis through Sykehusinnkjøp HF's membership of the Network for eco-labelled procurement.[261]

Text for box: Sykehusinnkjøp HF actively participates in international networks. In collaboration with Health Care Without Harm Europe, they are actively working to get more regions and countries to demand that products must not or should not contain substances on European healthcare's phase-out list for chemicals of concern.[262] Sykehusinnkjøp HF also participates in a Nordic initiative for the ecolabelling of medical supplies.[263]

Text for box: The healthcare system has significant purchasing power, which provides a unique opportunity to influence the market in a more sustainable direction. The fact that the health and care services focus on sustainable business models influences the market in a positive direction. For example, many medical equipment manufacturers have begun conducting lifecycle analyses of their products. These analyses assess the product's environmental impact from raw material extraction, through production and use, to disposal.[264]

In addition, environmental product declarations (EPDs) are becoming increasingly common. This is particularly relevant in the EU, where tender requirements increasingly include environmental

[257] White Paper 22 (2018-2019) – regjeringen.no
[258] *Innkjøp av brukt PC-utstyr i Sør-Varanger (2020)* (Purchase of pre-used PC equipment in Sør-Varanger (2020)) | Anskaffelser.no
[259] *Miljøforhold* (Environmental conditions) | Western Norway Regional Health Authority.
[260] *Veileder til bruk av merkeordninger i offentlige innkjøp* (Guide to use of labelling schemes in public procurement) | Nordic Swan Ecolabel
[261] *Nettverk for miljømerket innkjøp* (Network for eco-labelled procurement) | Nordic Swan Ecolabel
[262] *Europeisk utfasingsliste* (European healthcare's phase-out list) | Sykehusinnkjøp HF
[263] Nordic Initiative for Environmental Labelling of medical Supplies (NIELS) | Innovative anskaffelser.
[264] *Forstå hva bærekraft er* (Understand what sustainability is) | Mölnlycke.

certification requirements. An EPD is an independently verified and registered document that provides transparent and comparable information about a product's environmental impact throughout its lifecycle. Since it is recognised and reliable, this type of documentation helps healthcare buyers make informed decisions based on environmental concerns.[264]

By integrating these sustainable practices, healthcare can not only reduce its own environmental impact, but also set a standard that other sectors can follow. This can lead to a broader change towards more environmentally friendly production and consumption patterns. It is therefore crucial that the healthcare system continues to promote and implement sustainable initiatives, both through its own practices and by setting requirements for its suppliers.

Measure: Involve the infection control officer in the assessment of the purchase of new products to be used in treatment and/or personal protective equipment.

Before purchasing new products to be used in treatment, or personal infection control equipment, the infection control officer/adviser must be consulted. This applies particularly to major procurement procedures, and if necessary, also to smaller purchases. This is to ensure that equipment does not have to be disposed of because it cannot be disinfected or otherwise does not satisfy infection control considerations.[265]

Measure: Make the Norwegian Agency for Public and Financial Management (DFØ)'s procurement resources known to all personnel who make purchases

DFØ's websites and e-learning courses aim to reduce harmful environmental impacts and to promote the green transition, competitiveness, technology development, more sustainable supply chains and green jobs. The guide provides an introduction to what green procurement is, what a contracting authority is obliged to do, and how to set good climate and environmental requirements.[266]

Measure: Assess the need for certification in sustainable procurement

The 'SOA Bærekraft' certification scheme addresses the topics of climate and the environment, workplace crime, social responsibility and other societal considerations.[267]

Goal: Comply with climate and environmental requirements in public procurement for NOK 100,000 or more

Tighter new environmental requirements in public procurement regulations are an important measure to reduce emissions. As from 1 January 2024, all public procurement must weigh climate and environmental considerations at a minimum of 30 per cent. If further conditions are met, exceptions may be made.[268] The new rules entail changes for all procurement procedures with an estimated value equivalent to or exceeding NOK 100,000 excluding VAT.[269]

[265] Section manager, department for infection control and emergency response, Norwegian Institute of Public Health (email).
[266] *Kom i gang med grønne anskaffelser* (Get started with green procurement) | Anskaffelser.no
[267] SOA Bærekraft | Anskaffelser.no.
[268] *Veileder til regler om klima- og miljøhensyn i offentlige anskaffelser* (Guide to rules on climate and environmental considerations in public procurement) | Anskaffelser.no
[269] *Anskaffelsesforskriften – reglene som gjelder* (Procurement Regulations – the rules that apply) | Anskaffelser.no

Text for box: Section 7-9. Climate and environmental considerations in public procurement[270]

1. The requirements and criteria under this provision aim to reduce the overall carbon footprint or environmental impact of the procurement.

2. The contracting authority will weigh climate and environmental considerations at a minimum of 30 per cent.

3. Where the contracting authority specifies the award criteria in order of priority, climate and environmental considerations should be among the three highest priorities.

4. Award criteria according to the second and third paragraphs may be replaced by climate and environmental requirements in the specification of requirements, if it is clear that this results in a better climate and environmental impact and this is justified in the procurement documents. If the contracting authority does not prioritise in accordance with the third paragraph, climate and environmental requirements must be set in the specification of requirements, and this must be justified in the procurement documents.

5. The obligation to set requirements or criteria under this provision will not apply if, by its nature, the procurement has a climate footprint and an environmental impact that is immaterial and this is justified in the procurement documents.

Text for box: Lillestrøm Municipality shows no significant concern regarding the new regulation that requires climate and environmental considerations to be weighed at 30 per cent in all procurement procedures. According to an article published at innovativeanskaffelser.no, the municipality already has a practice whereby climate and environment are weighed at 20 per cent. Furthermore, Lillestrøm Municipality has streamlined its approach to climate and environmental issues by formalising the processes in standardised templates, supported by a solid green procurement strategy. This initiative simplifies the workflow for procurement officers and ensures increased predictability for suppliers.[271]

Measure: Consider implementing DFØ's guide to new public procurement regulations

The Norwegian Agency for Public and Financial Management (DFØ) has developed a guide to the new rules on climate and environmental considerations in public procurement. The guide includes general regulatory guidance, a guide to prioritised procurement categories, examples and other useful tools.[272]

Measure: Consider implementing the DFØ Criteria Wizard

DFØ has developed a Criteria Wizard to help ensure that procurement is sustainable. The Criteria Wizard is divided into procurement categories. For each category, there is a set of requirements and useful tips. The procurement categories into which the Criteria Wizard is divided are facilities, waste collection, buildings, IT equipment, food and meal services, furniture and transport.[273]

[270] Regulation to amend regulation on public procurement (Procurement Regulation), Regulation on procurement rules in the supply sectors (Supply Regulation) and Regulation on licensing contracts (k... | Lovdata

[271] *Her råder ingen bekymring for bruk av kravet om 30% klima- og miljøvekting* (No concern about using the 30 per cent climate and environmental weighting requirement)| Anbud365

[272] *Veileder til regler om klima- og miljøhensyn i offentlige anskaffelser* (Guide to rules on climate and environmental considerations in public procurement) | Anskaffelser.no

[273] Criteria Wizard | Anskaffelser.no

Measure: Consider implementing DFØ's thematic procurement sites relevant to this roadmap

DFØ has developed thematic sites and courses related to public procurement, which can be useful to get to know. The thematic sites include transport and travel, buildings, facilities and property, IT, textiles, packaging and plastics, food and meal services, furniture, and health and social services.[274]

Text for box: In 2022, a regulation was adopted that addresses emission requirements for vehicles subject to public procurement for road transport. The purpose of the regulation is to promote and stimulate the market for zero-emission solutions in road transport. It applies to all public contracts for vehicle procurement, and it introduces zero-emission vehicle requirements concerning passenger cars, light vans and city buses in stages between 2022 and 2025. This will contribute to a greener public sector and reduce greenhouse gas emissions from the transport sector.[275]

Text for box: DFØ's fleet data tool is a management tool designed for public enterprises. It provides a detailed overview of the fleet, including emission figures and the proportion of vehicles that meet the requirements of the regulation on emission requirements for vehicles subject to public procurement. The tool is updated annually, with monthly updates available via a beta version. This tool helps public-sector procurement officers plan and monitor the transition to zero-emission vehicles, ensuring compliance with environmental requirements.[276]

Measure: Consider using the Norwegian Directorate of Health's guide for nutritional considerations in public procurement of food and beverage products

The Norwegian Directorate of Health has created a guide for nutritional considerations in the public procurement of food and beverage products and meals. Nutritional considerations in line with dietary advice are in line with both healthcare and sustainability.[277]

Measure: Consider creating a standard for procurement of goods and services over NOK 100,000

The aim of developing a standard for procurement of goods and services over NOK 100,000 is to reduce the climate and environmental impact of procurement. How procurement is to take place can be prepared on the basis of a common standard, which is considered a recipe for how to proceed.[278] In this context, a standard should set clear criteria based on DFØ's Criteria Wizard and be adapted to the procurement categories. Contracting authorities will assess the climate and environmental impact of the procurement and set out relevant considerations in the tender documents. In this way, a standard will ensure predictability for suppliers and uniform interpretation of the rules, which will enable fair evaluation of bids.

MeasuresContribute to the development of national and international procurement standards

As part of a larger international health sector, the Norwegian health service can influence global practice by helping to promote standards that take climate and the environment into account. This

[274] *Hva skal du kjøpe?* (What are you going to buy?) | Anskaffelser.no
[275] *Fra nyttår blir det krav om nullutslipp for tunge varebiler i offentlige anskaffelser* (As from the New Year, there will be a zero-emission requirement for heavy vans subject to public procurement) – regjeringen.no
[276] Bilparkdata (Car fleet data) | Anskaffelser.no
[277] *Ernæringshensyn i offentlige anskaffelser av mat- og drikkeprodukter og måltider (utenom heldøgns forpleining)* (Nutritional considerations in the public procurement of food and beverage products and meals (other than 24-hour provision)) – Norwegian Directorate of Health
[278] What is a standard?

can help inspire other countries and healthcare organisations, and promote predictability for suppliers.

Text for box: Sykehusinnkjøp HF participates in an international supply chain working group, under the Alliance for Transformative Action on Climate and Health (ATACH) network.[279] This is in line with the request by the Norwegian Ministry of Health and Care Services for the regional health trusts to facilitate that Sykehusinnkjøp HF contributes to international cooperation on procurement, aimed at countries working for climate-neutral operations, and for initiatives to reduce indirect emissions by selecting suppliers working towards validated and scientific climate goals.[280]

Goal: Focus on climate and environment in procurement procedures below NOK 100,000

The new procurement rules that require public procurement procedures to weigh climate and environment considerations at 30 per cent apply to procurement procedures equivalent to or above NOK 100,000. Procurement procedures with an estimated value below NOK 100,000 excluding VAT are exempt from the procurement rules, cf. Section 2 of the Norwegian Public Procurement Act.[281] It is important, however, that there is also a focus on the environment and climate in procurement procedures below this amount.

Measure: Consider creating a policy for procurement below NOK 100,000

For procurement below NOK 100,000, there are other guidelines for how procurement can take place and the requirements are not as strict as for procurement equivalent to or above NOK 100,000. For this procurement, it is nevertheless important that the contracting authority acts responsibly, to maintain confidence that public procurement takes place on an appropriate basis. The contracting authority should have good internal procedures to ensure this.[282]

Text for box: Sykehusinnkjøp HF proposes the following criteria and requirements for procurement below NOK 100,000:[283]

- Focus on recognised eco-labels, where available.
- Request that suppliers have certified environmental management systems, mainly within service procurement.
- Clear goals to phase out hazardous and harmful substances and follow up on this with supplier requirements.
- Use effective packaging criteria.

Text for box: Procurement of pharmaceuticals accounts for a substantial proportion of the health sector's emissions. According to calculations from the Southern and Eastern Norway Regional Health Authority, pharmaceuticals account for 31 per cent of the emissions from purchased goods.[284] Sykehusinnkjøp HF has summarised the environmental criteria applied to the procurement of pharmaceuticals until now, as well as experience from the work of setting environmental

[279] Alliance for Transformative Action on Climate and Health (ATACH) | WHO
[280] RHF | regjeringen.no
[281] Public Procurement Act (Procurement Act) | Lovdata.
[282] *Veileder til reglene om offentlige anskaffelser – master* (Guide to public procurement rules – master) | regjeringen.no
[283] Sykehusinnkjøp HF (email)
[284] *Klimagassutslipp* (Greenhouse gas emissions) | Norwegian Directorate of Health.

requirements in the procurement of pharmaceuticals. There is a strong interest from other countries around the world in introducing and further developing such requirements. Sykehusinnkjøp HF participates actively in the dialogue with suppliers and shares experiences with other countries. The industry is keen for this to be harmonised across national borders, as special Norwegian requirements are deemed impossible to achieve.[285]

Text for box: Norway is leading the way in establishing international environmental requirements for the procurement of pharmaceuticals, documented in the report prepared by Sykehusinnkjøp HF: 'Environmental requirements in the procurement of pharmaceuticals 2022-2023'. The work shows that strict environmental requirements can be implemented with no extra cost or work, with a particular focus on antibiotics, to ensure sustainability. The goal is to achieve global support for these environmental requirements.[286]

[285] *Erfaringsrapport miljø* (Experience report on environment) | Sykehusinnkjøp HF.
[286] *Norge jobber for felles internasjonale miljøkrav i anskaffelse av legemidler* (Norway works for common international environmental requirements in the procurement of pharmaceuticals) – Sykehusinnkjøp HF (sykehusinnkjop.no).

6.3 Transport and travel

Transport of goods and services and travel by personnel and patients constitute a significant element of the health service's greenhouse gas emissions. Travel and transport activities are vital for the health service to function effectively, but also have an impact on climate and the environment.

Text for box: Data from the specialist health service shows a decrease in employees' business travel by air and road during the coronavirus pandemic. A doubling of flights for business travel purposes from 2021 to 2022 was recorded, resulting in an increase of 6,900 tonnes of CO_2 emissions.

From 2019 to 2022, there was a decrease of around 10,000 tonnes of CO_2 in emissions related to patient transport, excluding ambulance services. This applies particularly to patient journeys by car, plane and health bus. The reduction can be attributed to growth in online consultations, some accumulation of patient care, and changes in travel habits as a consequence of the pandemic.[287]

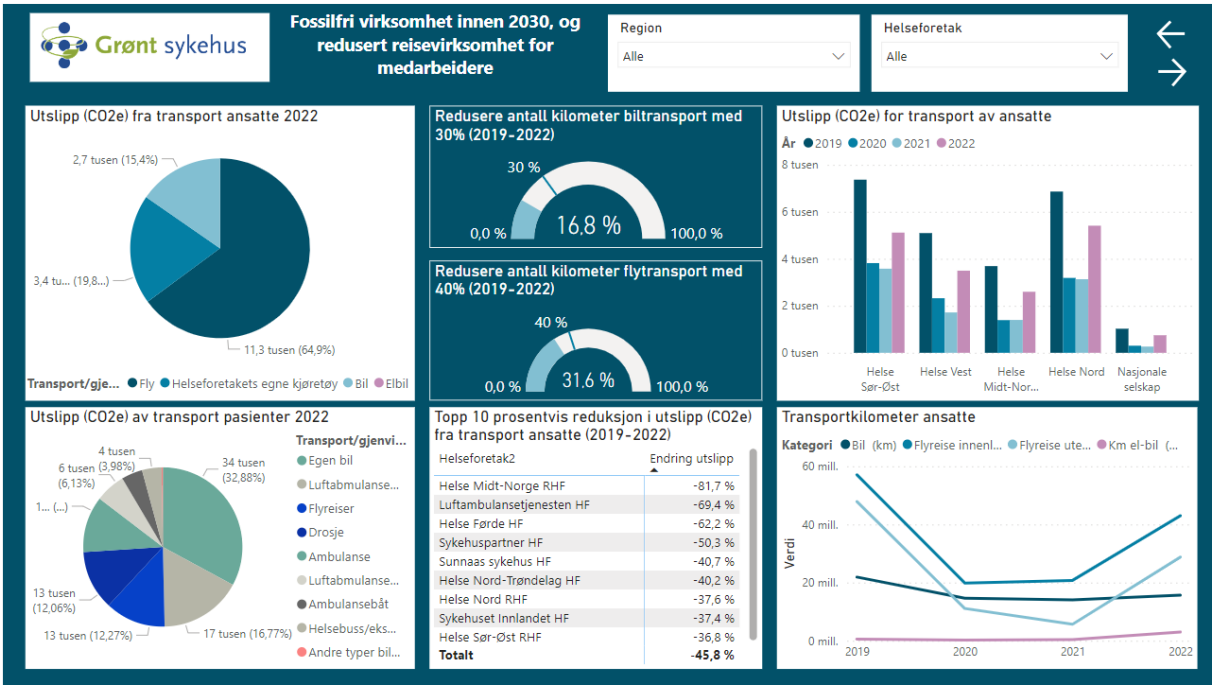


Figure 15: Emissions from transport can be monitored in the specialist health service dashboard.[288]

Text for box: In 2016, Hamar Municipality prepared greenhouse gas accounts broken down by service areas in the municipality. Transport accounted for around 15 per cent of the emissions from the health and care services. These figures give an indication of emissions from transport in the municipal health service, but are not representative of all the country's municipalities.[289]

Measures to reduce emissions from transport and travel will not only reduce the health and care services' greenhouse gas emissions. Other positive effects can be cost savings and patients not having to leave home. In addition, health benefits such as improved air quality and increased physical

[287] The Specialist Health Service Social Responsibility Report for 2022
[288] Microsoft Power BI.
[289] *Status for klimaarbeidet i kommunen* (Status of climate work in the municipality) | Norwegian Directorate of Health

activity can be achieved. Reducing travel must not compromise the quality of health and care services, however.

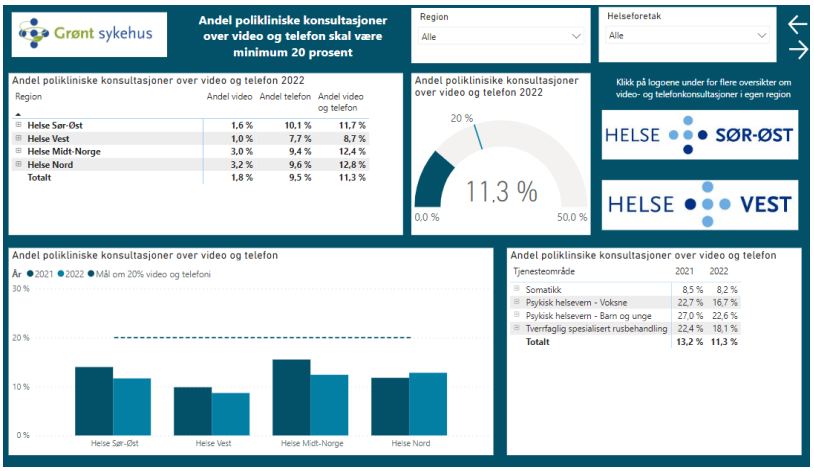


Figure 16: The dashboard shows that from 2019 to 2022 there was an increase of 11.3 per cent in outpatient consultations by video and phone.[290]

Goal: Ensure follow-up of national plans and a common framework for transport and travel.

There are national transport strategies and frameworks that will help reduce emissions associated with transport and travel in the health and care services.

Measure: Follow-up on the National Transport Plan

The National Transport Plan 2022-2033 outlines a 12-year plan for an efficient, environmentally friendly and safe transport system by 2050. In the spring of 2024, a new national transport plan will be presented that will apply to the 2025-2036 period.[291]

Measures: Consider adopting the ASI framework to cut transport emissions

The 'Avoid, Shift, Improve' (ASI) framework can be used as an instrument to achieve emission reductions in the health service. Measures under 'Avoid' concern reducing the transport volume (e.g. fewer journeys), 'Shift' can be replacing flights with rail and bus, or car use with public transport, and 'Improve' can be electrifying the car fleet.[292]

[290] Microsoft Power BI.
[291] National Transport Plan – NTP | Regjeringen.no
[292] *Flere land tar klimahensyn i sin transportplanlegging* (Several countries take climate considerations into account in their transport planning) | Norwegian Environment Agency

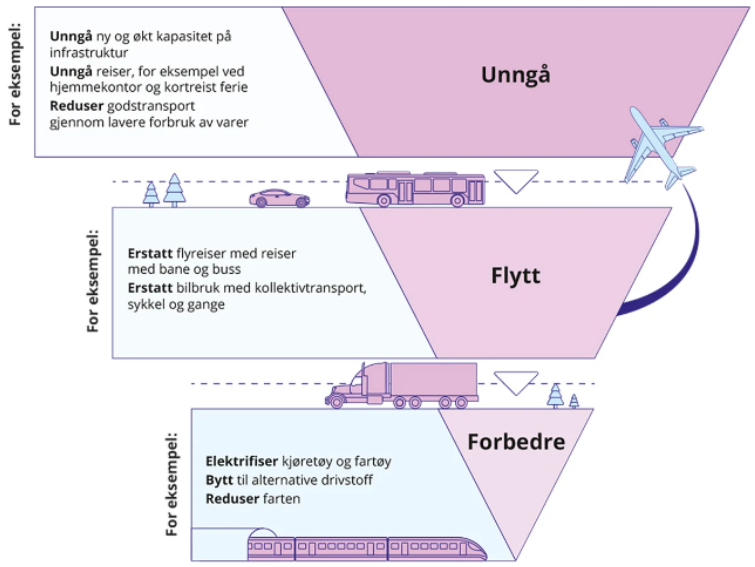


*Figure 17: The figure is taken from **'Omstilling til lavutslipp — Veivalg for klimapolitikken mot 2050'** ('Transition to low emissions — Roadmap for climate policy towards 2050')[293], which is subject to consultation.*

Goal: Reduce physical travel.

In the health service, the measures to avoid transport and travel concern minimising patients' and healthcare professionals' need to travel. At locations to which patients have a long journey, it can be assessed whether offering selected health services locally would be beneficial from a holistic perspective. Besides reducing travel-related emissions, access to health services within the districts could also ensure better patient welfare and health benefits.

Norway is in a special position in terms of variation in the distance between the health and care services and the population. This means that the need for means of transport and transport solutions will vary from region to region.

***Measure**: Consider adopting digital consultation forms where appropriate*

The health service is working to make hospital services more accessible to patients. Norwegian hospitals share the goal that by 2030, at least 20 per cent of outpatient consultations will take place via video and telephone. By focusing on digital follow-up from home, the aim is to offer services that are better matched to each individual, make smarter use of resources, and also reduce the use of hospital resources and travel times for patients.[294]

In the National Health and Coordination Plan, the government has set a goal that 'more patients are followed up in their homes using digital and other technology as part of the care pathway'.[295] In addition to digital consultations, this also concerns welfare technology and other health technology solutions. Consideration of vulnerable groups is important. In many cases, online consultations will not be suitable.

Text for box: The national commitment to digital coordination services is subject to step-by-step development and introduction. This includes the patient's medication list, the patient's medical

[293] NOU 2023: 25 | regjeringen.no
[294] *Rammeverk for miljø og bærekraft i spesialisthelsetjenesten | Helse Sør-Øst* (Framework for environment and sustainability in the specialist health service) | Southern and Eastern Norway Regional Health Authority
[295] White Paper 9 (2023-2024) – regjeringen.no

records, the patient's test results, the patient's measurement data, and the pregnancy health card. Each service contributes different elements, to create a holistic and more efficient working life for healthcare professionals and contribute to information accompanying the patient.

The patient's medication list gives a better overview of the patient's medication, the patient's medical records give faster access to relevant medical information and the patient's critical information improves the quality of critical information and avoids duplicate registration. This reduces the risk of incorrect treatment. The patient's test results reduce the number of tests, give the patient insight into their own test results, and test results can be compiled over time.[296]

For some patients or patient groups, such as patients followed up on an outpatient basis, the online consultation solution should be considered before inviting the patient to a consultation in person. Good online tools, and instruction and support for healthcare professionals and patients, are important for this type of consultation.

Text for box: UN Sustainable Development Goals and National e-Health Strategy

It is a declared policy that the health and care sector should contribute to sustainable development and support the UN Sustainable Development Goals. This supports Norway's ability to deliver on the sustainability agenda and the UN Sustainable Development Goals towards 2030.[297] In the e-health strategy, UN Sustainable Development Goal 13 (Climate Action) is particularly linked to the strategy's goals 1, 2 and 3.

Measure: Consider adopting welfare technology solutions in the municipal health and care services where appropriate

Through the now-completed National Welfare Technology Programme, gains have been realised in connection with transport and travel.[298] The experience from the welfare technology programme is now being followed up via the new health technology scheme, with follow-up of the dissemination of welfare technology solutions in municipalities. Reducing travel is particularly related to online supervision, electronic medication support, e-locking and online follow-up in the home.

With a greater proportion of people with chronic conditions, there is an increased need for innovative strategies to meet the needs of the population for good, future-oriented health services. Using welfare technology allows individuals to be followed up in their own homes by the health and care services, frees up resources and contributes to preventing or deferring institutional admissions.[299]

Recent research indicates that even though digital solutions and welfare technology result in some carbon emissions and carbon footprint, the net drop in emissions resulting from the reduction in

[296] National e-Health Strategy for the health and care sector – ehelse
[297] UN Sustainable Development Goals and National e-Health Strategy – ehelse
[298] *Gevinstrealiseringsrapport – en kunnskapsoppsummering fra Nasjonalt Velferdsteknologiprogram, 2021.pdf* (Benefit realisation report – a knowledge summary from the National Welfare Technology Programme, 2021)(helsedirektoratet.no).
[299] *Digital hjemmeoppfølging* (Digital follow-up in the home) – Norwegian Directorate of Health.

travel is still significant. This means that increased use of technology such as video consultations and electronic medication support can be important tools in achieving SDG 13.[300]

Text for box: In 2020, St Olav's hospital in Trondheim conducted a total of 135,355 online consultations. They estimated that this represented travel savings of 3 million kilometres, and reduced emissions by more than 400 tonnes of CO_2.[301]

Text for box: A Finnish study has looked at savings from using online services.

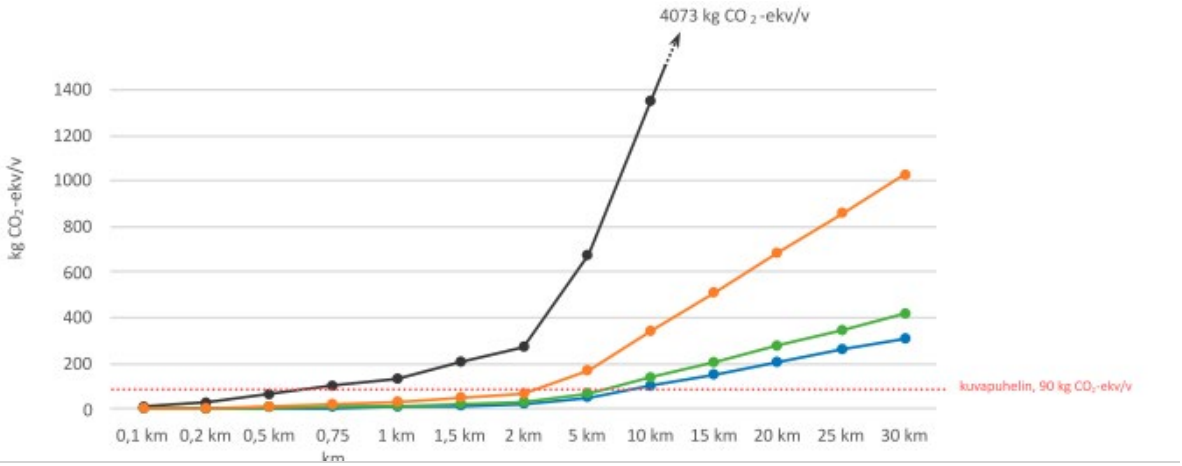


Figure 18: The figure shows that for a travel distance from around 750 metres and upwards, replacing a petrol-driven car (black line) with online services (dotted red line) will reduce greenhouse gas emissions. On switching to an electric vehicle (orange line), the same emission saving from online services will occur after approximately two kilometres. With a distance of 5-10 kilometres, online services will give lower emissions than using an electric bicycle/ordinary bicycle (green and blue lines, respectively). At long travel distances, online services thus reduce emissions significantly.[302]

Text for box: At Helse Bergen, a new check-up scheme has been tested for patients with wrist fractures, to reduce follow-up of patients who do not need this. These patients have to respond to a text message, and based on the score from the patient's response, it is decided whether the patient is to be called in for a check-up or not. All patients who so wish are offered a check-up, and can then choose between attending in person, or a telephone or video consultation.[303]

Text for box: There are a number of examples of digital follow-up in the specialist health service. One example is Vestre Viken, where online follow-up of patients is in focus, so that patients can be treated and followed up at home, as far as possible.[304] For example, home follow-up is offered to patients with atrial fibrillation.[305] This means that patients answer health-related questions via a form, and some patients also have equipment in the home to measure their heart rate. Responses and any results are assessed by relevant personnel, and an assessment is made of whether the patient must attend the hospital or whether a consultation can take place by telephone.

[300] Assessment of environmental impacts caused by digitalization in public sector services (valtioneuvosto.fi)
[301] The Specialist Health Service Social Responsibility Report for 2020.
[302] Minna Tuominen-Thuesen et al. (2022). Digitalisaation aiheuttamien ympäristövaikutusten arviointi julkishallinnon palveluiss Digitalisaation aiheuttamien ympäristövaikutusten arviointi julkishallinnon palveluissa (valtioneuvosto.fi)
[303] The Specialist Health Service Social Responsibility Report for 2022
[304] *Vestre Vikens virtuelle sykehus* (Vestre Viken's virtual hospital) | Vestre Viken HF
[305] *Oppfølging av atrieflimmer* (Atrial fibrillation follow-up) | Vestre Viken HF

Text for box: In the municipalities, online follow-up at home has been introduced at some locations. Online follow-up at home in the municipalities is an option for patients with chronic diseases such as COPD, diabetes and heart failure, whereby they are followed up at home. Patients perform home measurements themselves, which are then checked by a nurse. Repeated deviating measurements are reported to the GP. Experience is positive; patients experience coping and security and the project has probably helped avoid hospitalisations.[306]

Example for box: The use of mobile X-rays in Namdalen was developed as a test project in 2018 and was put into normal operation in 2019. In the region, the travel distance to Namsos Hospital can exceed two hours for the outward journey, and mobile X-rays therefore present considerable savings in driving and travel costs. Around 1,000 examinations are performed annually, and it is estimated that in 2019 almost 133,000 kilometres of patient transport were eliminated.[307]

Measure: Review personnel travel and reduce any unnecessary travel

One of the specialist health service's own targets is to reduce personnel's travel activities. This can be achieved by facilitating car sharing and encouraging the use of active transport and public transport. Another target is to reduce the number of kilometres by air by 40 per cent by 2030.[308]

Personnel travel can possibly also be reduced by using more online solutions and new technology.

Example for box: Green Congress is an initiative from Diakonhjemmet Hospital to reduce the number of trips in connection with congress activities. When the annual European Congress of Rheumatology is held, only a limited number of people attend the congress itself. Afterwards, a national conference, with summaries of presentations and highlights, is held that can be attended in person or online. Green Congress is environmentally certified under the Foundation for Environmental Education (FEE), Norway.[309]

Example for box: Helse Bergen's greenhouse gas budget shows that by reducing air travel by 40 per cent by 2030, Helse Bergen will annually save NOK 20 million in travel costs and reduce CO_2 emissions by 830 tonnes.[310]

Goal: Implement more climate-friendly travel options.

More climate-friendly travel options involve changing the way transport takes place, in favour of more climate-friendly alternatives. Switching from passive transport to active transport can also provide a number of health benefits.

Measure: Facilitate walking and cycling for personnel where possible

Public transport, walking and cycling can reduce emissions. It should be facilitated that personnel in the health and care services can more easily cycle, walk or take public transport, not only to and from work, but also for business travel. An example of where this can work well is when home nurses make patient visits in densely built-up areas. According to the World Health Organization (WHO), walking and cycling for respectively 30 and 20 minutes daily can also reduce the risk of premature

[306] *Økt trygghet og bedre helse med digital hjemmeoppfølging* (Greater security and better health with online home follow-up) | Norwegian Directorate of Health.
[307] The Specialist Health Service Social Responsibility Report for 2022
[308] Board case 41 – 2023 | Northern Norway Regional Health Authority
[309] Green Hospital | Diakonhjemmet Sykehus AS
[310] Greenhouse gas budget 2024-2030 | Helse Bergen

death (10 per cent), cardiovascular disease (10 per cent), type 2 diabetes (30 per cent), and cancer (30 per cent).[311]

Text for box: In Steinkjer Municipality, there is a new bicycle parking scheme at the healthcare and emergency department and town hall. Six e-bikes have been purchased to be used by the municipality's personnel when a new health centre is ready, for transport between the town halls and the healthcare and emergency department. A booking system has also been created, as well as an operation and maintenance plan. The reduction of greenhouse gas emissions has not been calculated, but reduced emissions are expected as a result of less car use.[312]

Textbox: In a travel survey of personnel at Akershus University Hospital (Ahus), a wish was expressed for an overview of fast cycle routes to and from the hospital. Ahus announced these fast, green routes in 2020, and has since been certified as a cycling-friendly workplace. This contributes to the goal of a low-emission society, as well as better health for around 5,000 employees.[313]

Measure: Promote public transport where possible

Choosing public transport rather than a private car is an important climate measure.[314]

Text in box: Several municipalities participate in 'home-work-home', which is a mobility scheme to reduce passenger car traffic. Examples of measures are fare reductions for public transport, bicycle/e-bicycle lending and so on. Better health is also named as a reason for participating in the scheme.[315]

Example for box: Drone transport of biological samples is an example of how new technology can reduce transport. In 2021 and 2022, Røros Hospital tested whether drones could be used to transport biological samples to Trondheim, compared to transport by car. Drones had the potential to be faster, price competitive, entail 95 per cent lower CO_2 emissions and be available as needed. The project has shown that the technology is mature and legal to use in the healthcare sector.[316]

Measure: Facilitate carpooling and route planning

A good system for planning car use can help reduce road transport in the health service. Carpooling can reduce the passenger car transport volume and make better use of the vehicles' capacity. This will lead to lower greenhouse gas emissions, better local air quality and lower noise levels.[317] Artificial intelligence can be used as a route planning tool.[318]

Text for box: Tønsberg Municipality has looked into the climate impact of introducing logistics tools in the home nursing service. On average, the number of kilometres driven can be reduced by 27 per

[311] Cycling and walking can help reduce physical inactivity and air pollution, save lives and mitigate climate change | WHO
[312] *Sykkelparkering ved helse- og beredskapshus og rådhus* (Bicyle parking at the healthcare and emergency departments and town hall) | Norwegian Environment Agency.
[313] The Specialist Health Service Social Responsibility Report for 2020.
[314] *Kollektivtransport* (Public transport) | Anskaffelser.no
[315] *Mobilitet i hverdagen* (Mobility in everyday life) | Hjemjobbhjem.no
[316] The Specialist Health Service Social Responsibility Report for 2022
[317] *Samkjøring* (Car-pooling) | Eco-Lighthouse Foundation
[318] *Status, muligheter og behov relatert til kunstig intelligens i kommunal helse- og omsorgstjeneste* (Status, opportunities and needs related to artificial intelligence in municipal health and care services)

cent by planning more efficient routes for the home nursing service. The municipality can thereby save time, money and emissions.[319]

[319] *Ressurseffektivitet og utslippskutt* (Resource efficiency and cutting emissions) | Norwegian Environment Agency

6.4 Circular economy and waste

Circular economy

In a circular economy, the same resources are used several times, which reduces emissions from production. Products are repaired, upgraded and reused. Designing for longer durability, more efficient use of materials, smarter consumption, reuse, increased recovery of materials from discarded products, and the use of waste-based raw materials in new products, are strategies for a circular economy.[320] In Norway, emission cuts are among other things related to circulation and reduced waste of product groups such as textiles, plastics, food, construction materials, and electrical and electronic products.[321]

Text for box: Norway aims to increase the materials recycling rate by up to 65 per cent in 2030.[322] Under the new Packaging Regulation, the EU has just agreed on common packaging recycling targets of 65 per cent in 2025 and 70 per cent in 2030. The regulation is expected to come into effect at the end of 2024, with Norwegian implementation in 2025.[323]

Goal: Ensure follow-up of national strategies and common circular economy guidelines.

There are several circular economy strategies and guidelines that are relevant for health and care services. This will help achieve climate and environmental goals, but also support the UN Sustainable Development Goals, value creation, long-term competitiveness and social justice.

Measure: Follow up on the national action plan for the circular economy

The government's action plan for the circular economy emphasises that today's use of resources is the most important cause of climate change and environmental crises, and focuses on transforming Norway from a linear to a circular economy, to reduce resource consumption and environmental impact. The action plan builds on previous strategies and presents concrete measures to accelerate the transition. The action plan refers to seven prioritised value chains such as batteries, vehicles, packaging and textiles, which must undergo extensive changes to become more circular.[324]

Text for box: An expert group has been set up to look at measures to reduce the consumption of resources and contribute to a more circular economy.[325]

Measure: Follow up the national strategy for a green, circular economy

Norway has developed a national strategy to promote a green and circular economy. The strategy includes a number of measures, ranging from local initiatives and infrastructure changes to economic instruments that will support the effective use of resources and their reuse in non-toxic cycles. The

[320] *Sirkulær økonomi* (Circular economy) | Norwegian Environment Agency
[321] *Klimagassutslipp fra avfall* (Greenhouse gas emissions from waste) | Norwegian Environment Agency
[322] Waste Plan 2020-2025 | regjeringen.no
[323] *Nye reguleringer stiller økte krav til medlemsrapportering* (New regulations impose increased requirements on members' reporting) – Grønt Punkt Norge (grontpunkt.no)
[324] *Handlingsplan for en sirkulær økonomi 2024-2025* (Action plan for a circular economy 2024-2025) (regjeringen.no).
[325] *Regjeringen lanserer handlingsplan for sirkulær økonomi* (Government launches circular economy action plan) – regjeringen.no

measures will reduce environmental impacts and promote sustainable methods in various sectors, including healthcare.[326]

Measure: Follow up measures in the Norwegian Association of Local and Regional Authorities' guide to a circular economy

The Norwegian Association of Local and Regional Authorities (KS) has created a guide to a circular economy for municipalities and county municipalities. The guide deals with governance and management processes, construction, green transport, food systems and waste. It also has an example bank.[327]

Textbox:Asker Municipality has a preliminary project to outline solutions for comprehensive and circular management of disability aids in the municipality. This involves systemisation of reuse, repair and redesign, assigning responsibility and tasks, and establishing routines. A pilot project will also be undertaken whereby the municipality uses its work centres for persons with functional impairment to maintain the disability aids.[328]

Measure: Follow up on any new act on sustainable products and supply chains

A new act on sustainable products and supply chains has been proposed. The act aims to promote sustainable products and supply chains for products that contribute to a resource-efficient and sustainable production and consumption pattern. New regulations will also affect health and care services. The consultation deadline was 01.10.23.[329]

Goal: Reduce emissions from single-use equipment

The healthcare sector uses a lot of single-use equipment made from different materials. This equipment is often easy to use, is inexpensive and meets hygiene requirements. Single-use equipment is a key source of emissions from the sector. According to a Danish report, a lot of the equipment is discarded unused and is not sorted even if it is well-suited for recycling. There are good alternatives to a lot of single-use equipment that, when handled correctly, will not increase the risk of infection for patients. This may result in higher purchase prices and sterilisation costs, but is deemed to present savings in the long term.[330]

Measure: Switch from single-use to reusable equipment

This will require mapping of which types of medical equipment can be replaced with reusable equipment. For example, cardboard kidney trays can be replaced with metal kidney trays. Reusable equipment requires washing and sterilisation after use, but it reduces emissions compared to single-use equipment.[330]

Text for box: At the emergency department at Regionshospitalet Randers in Central Jutland, Denmark, they have replaced all their suture sets with reusable suture sets. This has reduced consumption by around 1,500 sets, equivalent to around 200 kg of metal and plastic. A reusable

[326] *Nasjonal strategi for ein grøn, sirkulær økonomi* (National strategy for a green circular economy) | regjeringen.no

[327] *Veileder for sirkulærøkonomi* (Guide for a circular economy) | Norwegian Association of Local and Regional Authorities (KS).

[328] *Sirkulær hjelpemiddelforvaltning* (Circular administration of disability aids) | Norwegian Environment Agency

[329] *Høring – forslag til ny lov om bærekraftige produkter og verdikjeder* (Consultation – proposed new act on sustainable products and supply chains) | regjeringen.no

[330] *Bæredygtighedskataloget* (Sustainability Catalogue) (rm.dk).

suture set has around 90 per cent lower emissions than a single-use set, even when water, detergent and energy for washing are included.[330]

Text for box: Heating jackets are an example of equipment that it should be possible to use several times. By replacing disposable heating jackets with reusable jackets that are washed, plastic consumption can be reduced by 12 tonnes annually.[331]

Measure: Switch from disposable to reusable tableware

Switching from disposable cardboard or plastic items to reusable tableware can reduce CO_2 emissions by as much as 90 per cent. There may be higher one-off costs of purchasing reusable items and any washing facilities, but there will be savings in the long term because the expense of ongoing purchases is avoided.[330]

Text for box: In the maternity ward at Regionshospitalet Gødstrup, patients and relatives are encouraged to bring their own drinking bottles for the hospital stay. This has led to a sharp reduction in the consumption of disposable tableware, and both patients and relatives are positive about the measure.[332]

Text for box: Reprocessing of single-use medical equipment was permitted in Norway until 1 January 2022, but it was then prohibited on the introduction of Regulation (EU) 2017/745 (MDR).[333] Sykehusinnkjøp HF describes how this creates large amounts of waste and is also very expensive. On behalf of the regional health trusts, Sykehusinnkjøp HF has therefore requested amendment of *Regulation no. 1476 of 9 May 2021 on medical equipment* so that reprocessing of single-use medical equipment is once again permitted.[334] The Ministry of Health and Care Services has concluded that further investigation will be required to determine the economic and climate benefits of permitting reprocessing of single-use medical equipment. The European Commission will prepare a report on this topic by the end of May 2024.[335]

Goal: Reduce plastic consumption and increase plastic recycling.

Being 'plastic-smart' is about taking a critical and conscious stance on what you use plastic for, and cutting out unnecessary plastic. It is estimated that 60 per cent of residual waste is plastic, much of which is recoverable.[336]

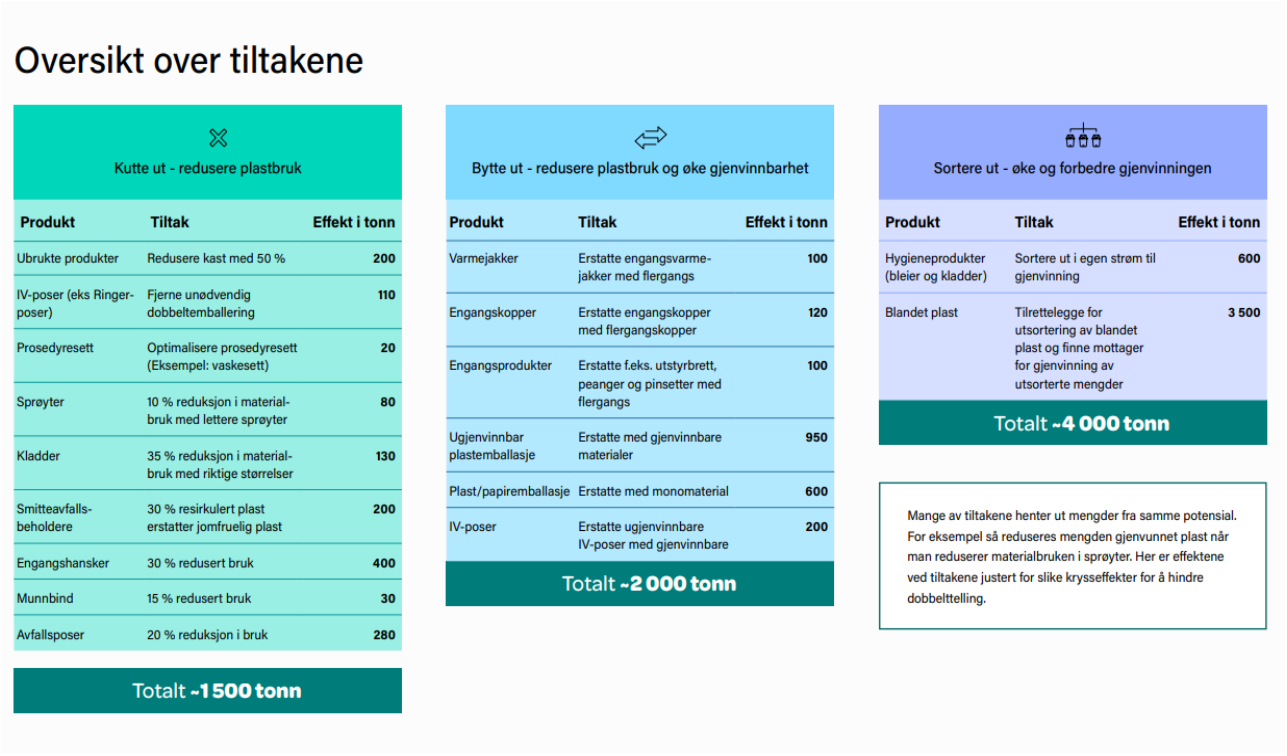
Text for box: In a survey at Oslo University Hospital in collaboration with Mepex, three hospital departments generated 200 kg of residual waste within 36 hours. Around 20,000 tonnes of plastic from Norwegian hospitals is incinerated every year.[336]

Measure: Implement the measures described in the 'Plastic-Smart Hospital' report

Plastic-Smart Hospital is a collaboration project between the waste consulting company Mepex and Oslo University Hospital, with the aim of reducing plastic consumption and increasing the recycling of plastics. The report proposes a number of different measures that will contribute to this, while also

[331] spesialhelsetjenesten_rapport_2023.pdf (helse-midt.no)
[332] *Bæredygtighedskataloget* (Sustainability Catalogue) Bæredygtighedskataloget(rm.dk).
[333] *Forbud mot reprosessering av medisinsk engangsutstyr fra 1. januar 2022* (Prohibition of reprocessing single-use medical devices as from 1 January 2022) | Norwegian Medical Products Agency (dmp.no).
[334] Sykehusinnkjøp HF (email)
[335] *Medisinsk utstyr* (Medical equipment) | regjeringen.no
[336] Plastic-Smart Hospital.

reducing emissions and costs.[336] A number of measures can also be assessed in the municipal health and care sector.



Oversikt over tiltakene

Kutte ut - redusere plastbruk

Produkt	Tiltak	Effekt i tonn
Ubrukte produkter	Redusere kast med 50 %	200
IV-poser (eks Ringer-poser)	Fjerne unødvendig dobbeltemballering	110
Prosedyresett	Optimalisere prosedyresett (Eksempel: vaskesett)	20
Sprøyter	10 % reduksjon i material-bruk med lettere sprøyter	80
Kladder	35 % reduksjon i material-bruk med riktige størrelser	130
Smitteavfalls-beholdere	30 % resirkulert plast erstatter jomfruelig plast	200
Engangshansker	30 % redusert bruk	400
Munnbind	15 % redusert bruk	30
Avfallsposer	20 % reduksjon i bruk	280

Totalt ~1 500 tonn

Bytte ut - redusere plastbruk og øke gjenvinnbarhet

Produkt	Tiltak	Effekt i tonn
Varmejakker	Erstatte engangsvarme-jakker med flergangs	100
Engangskopper	Erstatte engangskopper med flergangskopper	120
Engangsprodukter	Erstatte f.eks. utstyrbrett, peanger og pinsetter med flergangs	100
Ugjenvinnbar plastemballasje	Erstatte med gjenvinnbare materialer	950
Plast/papiremballasje	Erstatte med monomaterial	600
IV-poser	Erstatte ugjenvinnbare IV-poser med gjenvinnbare	200

Totalt ~2 000 tonn

Sortere ut - øke og forbedre gjenvinningen

Produkt	Tiltak	Effekt i tonn
Hygieneprodukter (bleier og kladder)	Sortere ut i egen strøm til gjenvinning	600
Blandet plast	Tilrettelegge for utsortering av blandet plast og finne mottager for gjenvinning av utsorterte mengder	3 500

Totalt ~4 000 tonn

Mange av tiltakene henter ut mengder fra samme potensial. For eksempel så reduseres mengden gjenvunnet plast når man reduserer materialbruken i sprøyter. Her er effektene ved tiltakene justert for slike krysseffekter for å hindre dobbelttelling.

Figure 10. The image is taken from the Plastic-Smart Hospital report. A detailed description of the measures can be found in the report[337]

Text for box: A national project has been launched to reduce plastic consumption in Norwegian hospitals and increase the recycling of plastic waste. The aim is to replace plastic products with more environmentally friendly alternatives and efficiently sort the plastic waste for recycling. The laboratories are major consumers of plastic and single-use equipment. The Laboratory Clinic at Haukeland University Hospital is therefore the 'test arena' for the project. Greater awareness among employees is vital, and the project therefore includes information and training on the correct sorting of waste at source. Personnel commitment has been positive, and management support has been important. Both the environmental gains and cost savings from increased plastic recycling are strong arguments for continuing these efforts.[338]

Text for box: At the Great Ormond Street Hospital in London, an information campaign was conducted to reduce the use of disposable gloves. The hospital developed a 'The gloves are off' campaign to reduce the use of disposable nitrile gloves. During the first year, glove use was reduced by 4.3 million gloves. This led to savings of 21 tonnes of residual waste and cut costs by more than NOK 1.3 million (GBP 100,000 in procurement costs and GBP 1,500 in waste costs).[337]

[337] Plastsmart Sykehus.

[338] *Nasjonalt prosjekt skal vise hvordan sykehusene kan bruke mindre plast og gjenvinne mer* (National project will show how hospitals can use less plastic and recycle more) | Plastforum.no

Goal: Increase share of reused fixtures/furniture, equipment, textiles and building materials

Focusing on reuse makes different projects more climate-efficient. Materials that are reused do not create new greenhouse gas emissions from production, and emissions are therefore limited to activities to dismantle, transport and prepare the materials for new use. Local reuse is always climate-efficient.[339] By increasing the reuse of fixtures/furniture, textiles and building materials, healthcare facilities can reduce greenhouse gas emissions.

Measure: Increase the reuse, sorting at source and materials recycling of textiles

Increased reuse, sorting at source and materials recycling of used textiles will reduce the content of fossil material from synthetic textiles in the residual waste that is incinerated. It can also reduce environmentally hazardous emissions associated with the production of textiles.[340]

Text for box: A new healthcare uniform (smock and trousers) has an emission of approximately 8.5 kg of CO_2e.[341]

Reports from NorTekstil have so far shown that about 30,000 garments disappear each year in Vestre Viken alone. This represents the emission of about 125 tonnes of CO_2e per year. The waste can cost Vestre Viken HF up to NOK 3 million a year.[341]

Measure: Increase reuse, sorting at source and recycling of furniture and movables

Furniture is often replaced due to wear and tear that has caused the furniture to no longer function properly or not look as good. This need can often be covered by upgrading or repairing the furniture the enterprise already has. A lot of furniture with residual value is thrown away.

Used furniture is environmentally friendly compared to new items because it reduces the need for new furniture production and extends the life of the furniture. When acquiring used furniture, it should be ensured that the furniture meets the needs of the enterprise and that the service life is relatively long.[342]

Besides reducing the environmental impact and CO_2 emissions, it can be financially profitable to both buy and sell used furniture.[343]

Text for box: At Helse Bergen, they have developed a strategy for increased reuse of furniture when moving to new premises. For a long time, the hospital has had a furniture store that has been put to good use, and which contains furniture that can be used without having to be repaired. One target of the strategy is that, on relocation, 40 per cent of the furniture will be reused by 2025.[344]

Text for box: Rather than buying new furniture when moving into new premises, Trondheim Municipality takes a different approach. The municipality has reviewed, assessed and registered its

[339] Greenhouse Gas Reduction Guide
[340] *Klimagassutslipp fra avfall* (Greenhouse gas emissions from waste) | Norwegian Environment Agency
[341] The Specialist Health Service Social Responsibility Report for 2022
[342] *Grønne og sirkulære anskaffelser av møbler* (Green and circular furniture procurement) | Anskaffelser.no
[343] *Ombruk og salg av brukte møbler og løsøre* (Reuse and sale of used furniture and movables) | Anskaffelser.no
[344] *Strategi for økt gjenbruk av møbler ved flytting til nye lokaler* (Strategy for increased reuse of furniture when relocating to new premises) (helse-bergen.no).

existing furniture, and this has led to a plan to reuse as much as 70 per cent of the furniture. The remaining 30 per cent will mainly be purchased second-hand.[345]

Text for box: Asker Municipality has employed Norway's first full-time furniture administrator, and ensures that used furniture is reused in new buildings.[346]

Measures: Increase reuse, sorting at source and recycling of building materials

Production of building materials accounts for a substantial proportion of the energy and climate footprint associated with construction. The climate footprint can be reduced by choosing the right building materials, but a reduction by over 60 per cent requires rehabilitation and reuse of already produced materials.
Relatively new buildings are often demolished, and the building elements can often be reused. The reuse of materials contributes to the circular economy and reduces energy use and greenhouse gas emissions from materials production. In addition, reuse reduces the need for waste management. Reusing building materials in direct proximity to current development also reduces the need for the transport of waste and building materials.[347] Reuse also presents an advantage over newly produced materials in general in terms of the direct economic gain at the other end, and vast amounts of resources can be saved by reusing more.[348]

Goal: Reduce food waste

Norway is committed to reducing food waste by 50 per cent by 2030.[349] For the health service, reducing food waste provides an opportunity to contribute to emission reduction, economic efficiency and social accountability. Food waste leads to unnecessary consumption of resources and increased greenhouse gas emissions. From a global perspective, where food shortages are a reality for many people, food waste in the healthcare system also represents an ethical problem.[350]

Text for box: The specialist health service has set a goal of reducing food waste by 50 per cent by 2045.[351]

Text for box: Nursing homes in the municipalities accounted for an estimated 3,000 tonnes of food waste in 2020. The total amount of food waste in the public sector (nursing homes, nursery schools and elementary schools) amounted to a climate footprint of around 17,650 tonnes of CO_2e in 2020.[352] Many nursing homes have addressed this issue, and the Norwegian Institute for Sustainability Research, NORSUS, in collaboration with the Municipalities of Fredrikstad, Sandefjord, Østre Toten and Voss, has developed a guide to reducing food waste in the care sector.[353]

---

[345] *Satser på gjenbruk av møbler* (Focus on reusing furniture) – Trondheim Municipality.
[346] *Norges første heltids møbelforvalter* (Norway's first full-time furniture administrator) | Asker Municipality
[347] Criteria Wizard (anskaffelser.no)
[348] *Klimavennlige byggematerialer. Potensial for utslippskutt og barrierer mot bruk.16.10.2020.pdf*(Climate-friendly building materials. Potential for cutting emissions and barriers to use).
[349] *Bransjeavtale om reduksjon av matsvinn* (Sector agreement on reduction of food waste) | regjeringen.no
[350] *4 grunner til at matsvinn er et miljø- og klimaproblem* (Four reasons why food waste is an environmental and climate problem) | MatPrat.
[351] Microsoft Power BI.
[352] *Sektorrapport for matbransjen, offentlig sektor og husholdningsleddet* (Sectoral report for the food industry, public sector and households).
[353] *Veileder for reduksjon av matsvinn i omsorgssektoren* (Guide to reducing food waste in the care sector).

Text for box: An assessment in Vestre Viken HF shows that food waste can be divided into storage waste, production waste, order-related waste and plate waste, with the latter accounting for almost half.[354]

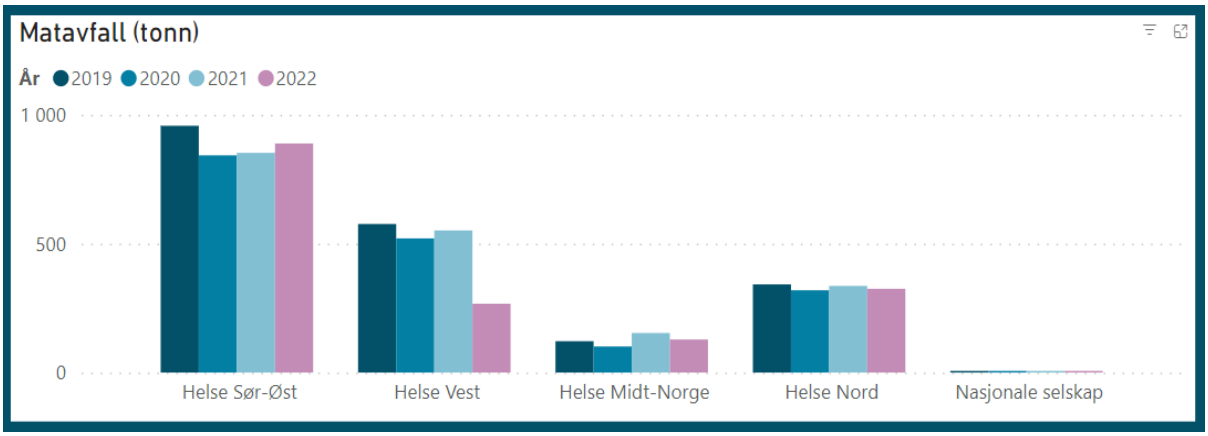


Figure 10. The image shows food waste statistics for the regional health trusts from 2019 to 2022. During this time, the specialist health service reduced food waste by 19.4 per cent. The Western Norway Regional Health Authority accounts for most of the reduction.[351]

Text for box: Trondheim Municipality wanted to raise awareness of food waste through a project supported by Klimasats. The municipality has developed climate-friendly menus for its units. However, the food waste challenges are also at the system level. For example, they have revealed that even though the meal portions and nutritional content of nursing home meals are carefully assessed, a lot of packaged food from the production kitchen ends up in the waste bin – untouched by users. The municipality found it crucial to involve their own procurement officers and nutritionists to identify why food waste occurs and what is needed to reduce it.[355]

Measure: Consider implementing DFØ's guide to preventing and reducing food waste

DFØ's guide will help public enterprises to initiate systematic work to prevent and reduce food waste. This includes methods for mapping food waste, tips for reuse, and planning procedures.[356]

Text for box: Bergen Municipality wanted to conduct a pilot project to focus on reducing food waste. The pilot project shows that focusing on food waste leads to less food being thrown away.[357]

Measure: Conduct food waste due diligence assessments

In 2023, the government's Food Waste Committee submitted a report proposing various measures and actions to prevent food waste. The report describes the health service as an important player in the efforts to achieve the national target for the reduction of food waste. The report proposes that hospitals, nursing homes and other public enterprises should be subject to a due diligence assessment requirement. This will entail analysing how and where food waste occurs, from purchasing to consuming food, and introducing strategies to prevent and reduce food waste. There

[354] Environment and Climate Conference 2022 | Northern Norway Regional Health Authority.
[355] *(Redusert matsvinn og klimavennlige menyer)* Reduced food waste and climate-friendly menus | Norwegian Environment Agency
[356] *Veileder om forebygging og reduksjon av matsvinn* (Guide to preventing and reducing food waste) | Anskaffelser.no
[357] *Sluttrapport: Pilotprosjekt for reduksjon av matsvinn på to sykehjem i Bergen kommune* (Final report: Pilot project for reducing food waste at two nursing homes in Bergen Municipality) – Norsus.

should also be continuous monitoring of measures and reporting on progress in reducing food waste.[358]

Measure: *Individual adjustment to special dietary considerations*

As previously stated, to varying degrees patients need a special diet adapted to their health condition, diagnosis, lifestyle and outlook on life. Adjustments to individual needs can lead to less food being thrown away.[359] National professional advice on nutrition, diet and meals in the health and care services should be followed, so as to meet individual nutritional needs.[360]

Measure: *Plan menus and meals*

The dietary manual recommends planning menus based on the nutritional needs of the patient or patient groups.[361] Planning meals makes it easier to take nutritional considerations into account and also to reduce food waste. Menus should comprise both standard and special meals and include all meals throughout the day. It must be possible to order meals in different portion sizes. [362]

Text for box: Fredrikstad[363] and Bergen[364] are examples of municipalities that have drawn up a separate plan for food and nutrition.

Measure: *Hiring food hosts*

In a survey of food and meals in nursing homes, around half of the managers and healthcare professionals responded that they had employed a food host attached to their nursing home. A food host who prepares and serves meals has proved to free up resources so that healthcare professionals can spend time on other tasks. A food host can help create a good framework for the meals served to patients in all parts of the health service. This can lead to greater enjoyment of food and improved nutritional status, especially for the elderly in nursing homes. A food host with adequate professional catering expertise can help to increase patient and user safety through better kitchen hygiene, as well as better utilisation of the food, reducing food waste.[365,366]

Text for box: Bærum Municipality has employed food hosts at Stabekk Health Centre to set tables and ensure a pleasant atmosphere in the dining room. They also prepare and serve four meals each day. The goal is for patients to gain weight and be healthier when they return home. In the long run,

[358] Rapport fra matsvinnutvalget – Anbefalinger til helhetlige tiltak og virkemidler (Report from the Food Waste Committee – Recommendations for comprehensive measures and actions) | regjeringen.no
[359] Hospital Services to Improve Nutritional Intake and Reduce Food Waste: A Systematic Review – PMC
[360] *Ernæring, kosthold og måltider i helse- og omsorgstjenesten* (Nutrition, diet and meals in the health and care services) | Norwegian Directorate of Health.
[361] *Kosthåndboken – Veileder i ernæringsarbeid i helse- og omsorgstjenesten* (The dietary manual – a guide to nutritional interventions in the health and care services) | Norwegian Directorate of Health.
[362] *Leve hele livet – en kvalitetsreform for eldre* (Living your life to the full – a quality reform for the elderly) (White Paper 15 (2017-2018)) | regjeringen.no
[363] *Plan for mat og ernæring | Fredrikstad kommune*
[364] *Maten servert* (Plan for food and nutrition | Fredrikstad Municipality Food served). (bergen.kommune.no)
[365] *Mat og måltider i sykehjem* (Food and meals in nursing homes) | unit.no
[366] *Eksempler på matvertordninger* (Examples of food host schemes) – Norwegian Directorate of Health.

this means that more people can stay in their own homes for longer. In addition, the food host frees up a full-time nurse/healthcare worker, who can spend this time on patient contact instead.[367]

Measure: *Map the use of medicinal nutritional products*

Medicinal nutritional products such as nutritional drinks and energy enrichment products are used as a supplement to or substitute for normal food where there is a medical indication for this. There is little data on how far these products are used in Norwegian hospitals and how much may be thrown away and wasted.

Waste

The most effective way to reduce waste is to buy less and choose items without unnecessary packaging.[368] Reducing waste and the circular economy are closely linked. Reuse and repair of medical equipment and materials, and reduced waste of e.g. food, will reduce waste volumes. Effective recirculation of special waste such as medical equipment and consumables is also important.

In line with the Norwegian Waste Plan 2020-2025, the health service in Norway will undergo changes designed to achieve a more sustainable and environmentally friendly approach. Close cooperation with the local community and local authorities is important to make use of existing schemes and infrastructure.[369]

Goal: Reduce waste volumes and increase the sorting rate

Waste from healthcare facilities is defined as commercial waste, and the facility itself is responsible for ensuring that waste is brought to an official waste facility or recycled.[370]

The Waste Pyramid

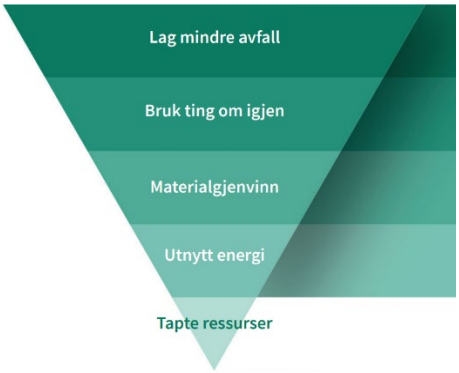


Figure 10. The waste pyramid illustrates the priorities set for Norwegian waste policy and the EU Waste Framework Directive. The pyramid should be read and understood from top to bottom, and the goal is for the waste to be treated as

[367] Hørt om matverter før? *De kan være med på å løse den fremtidige krisen i helsevesenet* (Heard of food hosts before? They can help resolve the future crisis in the health service) | Aftenposten.
[368] *Slik får du mindre restavfall* (How to reduce residual waste) | Hadeland og Ringerike avfallsselskap.
[369] Waste Plan 2020-2025 | regjeringen.no
[370] Act Concerning Protection Against Pollution and Concerning Waste (the Norwegian Pollution Control Act) – Chapter 5. On waste. | Lovdata

close to the top of the pyramid as possible.
In 2021, waste accounted for 4.5 per cent of total greenhouse gas emissions in Norway.[371]

Text for box: The Norwegian Waste Regulations govern liability for packaging waste and the duty to prevent waste. Section 7-5 describes the duty to be a member of a producer responsibility organisation for businesses that produce or import at least 1,000 kg of a specific type of packaging, while Section 7-6 concerns the duty to ensure waste prevention.[372]

Measure:Follow up the waste plan

The Waste Plan 2020-2025 discusses and assesses possible measures and actions that will contribute to Norway reaching binding targets in the EU waste regulations for preparation for the reuse and materials recycling of household waste and similar commercial waste, building and construction waste, and for materials recycling of packaging waste. The changes may require adjustments to waste sorting systems and the implementation of new waste treatment solutions. The measures may lead to increased costs in the initial phase, but can ensure more efficient and environmentally friendly operation over time.[373]

Text for box: In new buildings, Oslo University Hospital (OUS) is planning effective waste management. The environmental stations in these buildings are equipped with drop-in hatches for soiled clothing and waste in bags. Residual waste, paper and plastic are transported to the waste centre via a waste vacuum system in the walls of the environmental stations, where the waste is compressed. Other types of waste such as cardboard, clinical biowaste and batteries are sorted and transported for centralised waste disposal using trolleys, assisted by automated guided vehicles (AGVs). Sorting at source starts in the premises where personnel work. OUS aims to reduce the proportion of residual waste to 35 per cent by 2035. A separate system for handling infectious waste and soiled textiles has also been implemented.[374]

Measure: Facilitate sorting at source

Better use of waste resources can protect the environment and reduce greenhouse gas emissions. [375]

Chapter 10a of the Regulation on the recycling and processing of waste states that undertakings that generate household-like waste must ensure that food waste and plastic waste from which materials can be recycled is sorted and delivered for recycling.[376]

Food waste is defined as waste that can be broken down organically. In hospital operations, food waste is mainly related to canteen operations and food provided to patients and relatives.[377] As from 1 January 2023, new sorting requirements came into force that affect all Norwegian public and

[371] *Klimagassutslipp fra avfall* (Greenhouse gas emissions from waste) | Norwegian Environment Agency
[372] Packaging – Norwegian Environment Agency (miljodirektoratet.no)
[373] Waste Plan 2020-2025 | regjeringen.no
[374] *Avfallssug og avfallshåndtering* (Waste vacuum system and waste management) | Oslo universitetssykehus HF
[375] *God avfallshåndtering forhindrer klimagassutslipp* (Good waste management prevents greenhouse gas emissions) – Statistics Norway.
[376] *Forskrift om gjenvinning og behandling av avfall (avfallsforskriften)* (Regulation on the recycling and processing of waste (Norwegian Waste Regulation)) – Chapter 10a. *Utsortering og materialgjenvinning av enkelte avfallstyper* (Sorting and recycling of materials from certain types of waste) | Lovdata
[377] *Interregional indikatorkatalog – klima og miljø* I (Interregional indicator catalogue – climate and environment) | Western Norway Regional Health Authority.

private enterprises and institutions.[378] The changes will ensure that materials from waste resources are recovered and used as raw materials in new products, as part of a circular economy.[379] One of the new requirements is that enterprises must sort food waste (and plastic waste) and deliver this for materials recycling.

Sorting food waste can reduce greenhouse gas emissions and help preserve valuable resources. Correct sorting reduces the amount of organic matter in landfills, reduces methane emissions and allows for the production of useful products such as fertiliser or biogas.[380]

Text for box: It is difficult to say precisely how far emissions are associated with waste, as the same type of waste is handled and processed differently both inside and outside the regions. The waste may be sent for incineration in one place, while in other areas equivalent waste may be sent to a landfill. This means that a tonne of residual waste from an enterprise does not necessarily correspond to as many tonnes of CO_2 emissions as a tonne of residual waste from another enterprise.[381] Waste used for energy recovery is the largest emission item and accounts for almost 70 per cent of greenhouse gas emissions from waste.[382]

Text for box: The Norwegian Environment Agency's guide to the Waste Regulation's requirements for undertakings with household-like waste can be useful for institutions in the health and care services.[383]

Measure: Review procedures for infectious waste

Waste from healthcare facilities defined as infectious requires special treatment in accordance with the Regulation on infectious waste from health services and animal health services, etc.[384] Improving routines and procedures for handling infectious waste can result in more efficient handling of waste, diminish volumes and reduce emissions from waste management.[385] Handling of infectious waste is described in more detail on NIPH's website.[386]

Text for box: In 2019, around 943 tonnes of infectious waste was sent for waste treatment at OUS.[385]

---

[378] *Forskrift om gjenvinning og behandling av avfall (avfallsforskriften)* (Regulation on the recycling and processing of waste (Norwegian Waste Regulation)) – Chapter 10a. *Utsortering og materialgjenvinning av enkelte avfallstyper* (Sorting and materials recycling of certain types of waste) | Lovdata.

[379] *Fra 1. januar 2023 skal næringslivet kildesortere matavfall og plast* (As from 1 January 2023, the business sector must sort food waste and plastics at source) | Avfall Norge.

[380] *Matavfall* (Food waste)| Avfall Norge.

[381] *Klimaregnskap i spesialisthelsetjenesten – innsiktsdokument* (Greenhouse gas accounts in the specialist health service – insight document) | Norwegian Directorate of Health.

[382] *Avfall i klimaregnskapet* (Waste in the greenhouse gas accounts) | Norwegian Directorate of Health.

[383] *Avfallstyper og krav til utsortering av avfall – Miljødirektoratet* (Waste types and requirements for sorting waste – Norwegian Environment Agency) (miljodirektoratet.no)

[384] *Forskrift om smittefarlig avfall fra helsetjeneste og dyrehelsetjeneste mv* (Regulations on infectious waste from health services and animal health services, etc.) | Lovdata

[385] *Avfallssug og avfallshåndtering* (Waste vacuum system and waste management) | Oslo universitetssykehus HF

[386] *Avfallshåndtering* (Waste management) | NIPH.

The risk associated with this type of waste is handling in accordance with the regulation mandated by the Norwegian Working Environment Act and guide to the Working Environment Act.[387]

Text for box: In 2019, Helse Stavanger had 209 tonnes of infectious waste. This figure does not include the weight of pathological and medical waste. Today, the infectious waste is transported 1.2 kilometres on public roads between the hospital and the energy recovery plant. There are several benefits to having a separate machine that handles infectious waste: The HSE aspect, economic and positive environmental effects, as well as the handling of the waste, will save a lot of time and energy. Load carriers rigged in accordance with applicable legislation (ADR legislation) can be eliminated, reducing the road transport burden on the environment. Helse Stavanger has estimated that the gain from purchasing a machine that converts infectious waste into residual waste is NOK 1.5 million per year.[388]

Measure: Monitor requirements for electrical and electronic waste

The health service uses a lot of electrical and electronic (EE) equipment and must be aware of how this is handled as waste. Norwegian regulations for EE waste are in accordance with, and in some respects stricter than, the EU regulations. This ensures a high standard of collection, recirculation and safe handling of EE waste. Hazardous substances and materials in EE waste must be handled and recirculated or destroyed in a responsible way. Manufacturers and importers of EE products are responsible for the products even after they become waste, including financing the collection and treatment of the waste.[389]

Measure: Follow up on the action plan for building and construction waste

The national action plan for building and construction waste for the period 2021-2023 prioritised waste minimisation, and aimed for 80 per cent of the waste to be suitable for material recycling by 2023. The plan also emphasised reducing the amount of waste from demolition, rehabilitation and new construction.[390]

[387] *Avfall fra helseinstitusjoner og avløp* (Waste from healthcare facilities and wastewater) | NIPH.
[388] The Specialist Health Service Social Responsibility Report for 2019.
[389] Waste Plan 2020-2025 | regjeringen.no
[390] *Nasjonal handlingsplan for bygg- og anleggsavfall* (National action plan for building and construction waste).

6.5 Construction and energy

The potential for reducing emissions from hospital buildings is significant. Effective measures can lead to significant environmental benefits, as well as cost savings, over time. The greenhouse gas emissions associated with purpose-built buildings, including hospital buildings, can be broken down into three main categories: Approximately 21 per cent derive from the production of building materials, approximately 26 per cent are related to energy use during operation, and approximately 48 per cent are due to the transport of patients, relatives and equipment.[391]

Text for box: An analysis from SINTEF found that rehabilitation of existing buildings can present a major climate benefit compared to new construction, because the emissions from rehabilitation only account for up to half of the emissions from new construction. Here, there are major differences from building to building and the combination of environmentally friendly choices of materials. Implementation of energy efficiency measures and the use of renewable energy are the most important emission reduction measures that should be considered on the rehabilitation of existing buildings.[392]

Text for box: In 2022, the municipalities reported that their combined facility premises totalled 5,660,158 m^2 (Statistics Norway, table 11906). Energy expenditure for these premises exceeded NOK 1.2 billion. This is equivalent to NOK 230 per square metre (table 12905).[393]

Goal: Reduce greenhouse gas emissions from construction projects (new and old buildings)

One of the most important measures to cut greenhouse gas emissions is to demolish fewer buildings in favour of new construction, because new buildings give the most emissions.
Of the annual emissions from the construction and real estate sector, 70 per cent come from new construction activity, although the intake of new construction is only 1-2 per cent a year.[394]

Text for box:

A number of pilot projects in recent years have shown that it is possible to reduce greenhouse gas emissions from new construction or rehabilitation by 40-50 per cent without major additional costs. The climate action to halve emissions from construction and real estate is:

1. Less demolition
2. Reuse of more materials.
3. Choose solutions and building materials that give low emissions in a lifecycle perspective.
4. Demand 100 per cent fossil-free and soon fully emission-free building and construction sites.

[391] *Standard for klima og miljø i sykehusprosjekter* (Standard for Climate and Environment in Hospital Projects).
[392] *De mest bærekraftige byggene finnes allerede* (The most sustainable buildings already exist) | SINTEF.
[393] *Utgifter til forvaltning, drift og vedlikehold av utvalgte kommunale formålsbygg, etter art og funksjon (K) 2015 – 2022* (Expenses for the management, operation and maintenance of selected municipal purpose-built buildings, by nature and function (K) 2015-2022). | Statistics Norway
[394] *Klimakur for bygg og eiendom* (Climate action for construction and real estate) | Norwegian Green Building Council

5. Make existing buildings more energy efficient.

If everyone who builds or rehabilitates orders low-emission materials and requires fossil-free and eventually also emission-free construction sites, emissions could be reduced by over 5 million tonnes of CO2 per year. This corresponds to annual emissions from at least 2.3 million petrol cars.[395]

Measure: Apply the 'Standard for Climate and Environment in Hospital Projects' to all major construction processes

The 'Standard for Climate and Environment in Hospital Projects' will govern all major hospital projects, for both new construction and rehabilitation.[396] Sykehusbygg HF is the health trusts' development organisation and has a special responsibility to offer construction projects sustainable solutions that help reduce greenhouse gas emissions in line with the government's objective.[397]

Text for box: When the health trusts (which are the clients) are to choose environmentally sound energy solutions and reduce greenhouse gas emissions during construction and the hospital's lifetime, Sykehusbygg HF must be a competent and updated adviser in the area of climate and the environment. On behalf of the four regional health trusts, Sykehusbygg HF has developed the Standard for Climate and Environment in Hospital Projects. The most important decisions that affect climate and the environment in construction projects are made in the early stages. Localisation and new construction vs. rehabilitation have a significant impact on the climate footprint. The standard requires that climate and the environment be given a clearer voice when such decisions are made.[398]

The purpose of the standard is to introduce effective measures in construction projects to enable health trusts to contribute to Norway reaching its greenhouse gas emission targets. The initiatives are based on the principles that environmental goals must be established and emphasised, environmental management must be an integral element of project management, and climate and environmental issues must be emphasised throughout the project.[396]

Text for box: Key measures for climate- and environmentally-friendly hospital projects[396]

- Hospitals should have an urban, central location in the catchment area, and as close to a public transport hub as possible.
- Climate and environment issues must be included at an early stage, so that sustainable solutions become a premise in financing and budgets.
- Climate and environmental requirements must be set in all procurement procedures.
- Buildings must be planned and designed for a much longer lifespan than today.
- Buildings and infrastructure must be designed to withstand changing climate conditions.
- Buildings must be flexible so that a change in use will not require extensive conversions.
- Buildings must be designed to need the lowest possible supply of energy.
- All construction projects must be planned for high biodiversity in outdoor areas.
- Existing buildings must preferably be reused and not demolished. New buildings must be designed so that building elements can be dismantled and reused.

[395] *Klimakur for bygg og eiendom* (Climate action for construction and real estate) | Norwegian Green Building Council.
[396] *Standard for klima og miljø i sykehusprosjekter* (Standard for climate and environment in hospital projects).
[397] *Miljøpolicy og miljømål* (Environmental policy and environmental goals) – Sykehusbygg HF.
[398] The Specialist Health Service Social Responsibility Report for 2021.

Text for box: Røros Municipality made climate-friendly choices when applying for climate funding to convert both medical centres and healthcare centres. Buildings, technical systems and energy supply are designed for the lowest possible greenhouse gas emissions on an overall basis, in particular to ensure economic sustainability. In the longer term, the selected measures will reduce operating costs for the operation of the building.[399]

Measure: Consider supplementing the 'Standard for Climate and Environment in Hospital Projects' with guidance on universal building design

Universal building design can contribute to reducing greenhouse gas emissions in several ways. By designing buildings that are accessible to everyone, more efficient use of resources can be achieved, with a reduced need for conversions,[400] saving both materials and energy. It must be assessed how universal design can contribute to the green transition, and how to switch to products and services that have less negative climate and environmental consequences.[401]

Text for box: Glasblokkene (the glass blocks), the new Haukeland Hospital for children and young people, incorporates future-oriented energy solutions with energy wells, a centralised heating system and windows with built-in solar panels. The project has received NOK 39 million in support from Enova under the 'Energy-efficient new buildings' programme. The vision is for patients and their families to experience a holistic, customised and cohesive programme. Right from birth, as infants and toddlers, during adolescence and until young adulthood.[402]

Measure: Follow up the universal design action plan

The government's universal design action plan 2021-2025 emphasises measures within area planning, infrastructure, construction, transport and digitalisation to promote a fair and sustainable society. Universal design is closely linked to the UN Sustainable Development Goals.[401]

Text for box: The natural surroundings can have a significant positive healthcare effect by reducing stress, anxiety and depression in patients. Nature can promote a faster recovery and improve general mental health. The open-air hospital, based on this idea, offers patients and their relatives the opportunity to spend time in nature while receiving healthcare, which can give a welcome break from the clinical environment and contribute to a better quality of life during treatment.[403]

Measure: Consider developing environmental requirements related to the technical operation of existing buildings and infrastructure

Environmental requirements related to the technical operation of existing buildings and infrastructure should be developed, followed up and introduced in the management systems.

Developing environmental requirements will make it possible to work systematically on reducing greenhouse gas emissions. If the requirements are also measurable, we know that reducing greenhouse gas emissions contributes directly to achieving national and international climate targets

[399] *Ombygging legesenter og helsestasjon* (Conversion of a medical centre and healthcare centre) | Norwegian Environment Agency.
[400] *Universell utforming og tilgjengelighet* (Universal design and accessibility) – Norwegian Directorate of Health
[401] *Bærekraft og like muligheter – et universelt utformet Norge (2021–2025)* (Sustainability and equal opportunities – a universally designed Norway (2021-2025)) – regjeringen.no
[402] Glasblokkene – Helse Bergen HF (helse-bergen.no).
[403] *Vil du gjeste vår trehytte?* (Would you like to visit our tree house?) - Sørlandet sykehus HF (sshf.no)

and reduces the negative consequences of global warming. In economic terms, greater energy efficiency and optimal resource use lead to significant cost savings over time, and support schemes for environmentally friendly initiatives can also be beneficial. Environmental requirements should be measurable and followed up.

The requirements that are developed can be incorporated in the 'Standard for Climate and Environment in Hospital Projects'.

Measure: Focus on climate-friendly solutions in smaller rehabilitation and remodelling projects
Rehabilitating a building rather than constructing a new building increases the lifespan of the building on a climate-friendly basis. Using environmentally-friendly materials in the conversion work can further reduce emissions.[404] In the market for climate-friendly materials, a lot has already happened in recent years. There is significantly greater potential to reduce emissions from material use if rehabilitation is combined with using the most climate-friendly materials on the market, compared to constructing new low-emission buildings.[405] From an isolated climate perspective, it is not a good strategy to replace existing buildings with new ones, even if they give rise to lower emissions while the building is in use.[406]

Goal: Reduce energy consumption and achieve energy efficiency in buildings

Energy saving is a very important measure to reduce emissions and will also improve economic efficiency. Conversion to renewable power and other sources of low-emission energy, such as solar power plants, will contribute to reducing greenhouse gas emissions.[407] The health and care services face unique challenges in terms of energy efficiency, given their continuous operations and high energy needs.

Text for box:

Figure 22: Energy consumption is the greatest source of emissions from hospital operations, and the specialist health service has a common goal of reducing energy consumption by 20 per cent in the 2019-2030 period[408]

[404] *Nå kommer de sirkulære byggeprosjektene* (Here come the circular construction projects) – Fremtidens by
[405] *Klimavennlige byggematerialer. Potensial for utslippskutt og barrierer mot bruk* (Climate-friendly building materials. Potential for emission reductions and barriers to use).
[406] *Del 5 – Alle bygninger kan bli mer klimavennlige* (Part 5 – All buildings can be more climate friendly) – Digitalt (ra.no)
[407] *Innsatsområder framover* (Action areas going forward) | Norwegian Directorate of Health
[408] Microsoft Power BI.

Measure: Follow up on energy efficiency action plan

The action plan for energy efficiency in Norway aims for 30 per cent more efficient use of energy by 2030 and a 10-TWh reduction of power use in buildings. The plan coordinates the authorities' work and increases funding for energy efficiency projects, which include increased support through Husbanken and Enova. Another key aspect is improvements to municipal buildings, such as extra insulation and ground source pumps to improve the housing standard, and support low-income households.[409]

Text for box: Hospital buildings often have large roof surfaces that may be well-suited for the placement of solar panels. This could be an important measure to reduce the need for supplied electricity. According to SINTEF, this could be profitable for large roof and wall areas, but requires plans for run-off of rain and snow, while it is also important to know what consequences this will have for physical buildings and any fires that might occur.[410]

Measure: Consider introducing a digital energy follow-up system

An Energy Follow Up Survey (EFUS) is an important tool for tracking and analysis of energy consumption. An EFUS ensures a systematic approach to collecting, processing and reporting energy data. This enables periodic monitoring of energy consumption to identify areas of disproportionately high usage.

Based on the EFUS findings, measures can be taken to reduce energy consumption. This may include repairing or replacing inefficient equipment, improving insulation, installing energy-efficient lighting, or changing operating procedures. Through the efficient use of EFUS, organisations can not only achieve considerable energy savings but also contribute to sustainable practices.[411]

Text for box: Energy Follow Up Surveys are standard for all new construction projects in the specialist health service.[412]

Text for box: Recovered power is an environmental measure that the authorities want to reward and which therefore has a reduced tax level (cf. regulations and special taxes).[413] Recovered power entails that energy from waste heat from Norwegian industrial plants is captured and used to generate electricity. This contributes to the green transition in industry and increases climate and environmental efficiency in production.[414] The use of recovered power was introduced in the specialist health service in 2021. Elkem Salten is one of the producers. The new energy recovery plant recovers around 30 per cent of the electrical energy used there, which corresponds to the electricity consumption of around 15,000 Norwegian households. Instead of energy being wasted, it is recovered and used in the health trusts.[415]

---

409 *Handlingsplan for energieffektivisering i alle deler av norsk økonomi* (Action plan for energy efficiency in all parts of the Norwegian economy) | regjeringen.no

410 *Bygningsintegrerte solceller kan spare både energi og byggematerialer* (Building-integrated solar panels can save both energy and building materials) – SINTEF

411 Energy Follow Up Surveys (EFUS) | Enova Kunnskap

412 Sykehusbygg HF, by email.

413 *Forskrift om særavgifter* (Regulation on special taxes) | Lovdata.

414 *Klimagassutslipp* (Greenhouse gas emissions) | Norwegian Directorate of Health.

415 The Specialist Health Service Social Responsibility Report for 2022

Goal: Prevent leaks of HFC gases from cooling and refrigeration systems

According to the Norwegian Environment Agency, the use of fluorinated gases (F gases) must be phased out, and the authorities have already introduced taxes, import controls and strict rules for new equipment and the use of F gases.[416]

Measure: Check air conditioning systems for HFC leaks

The cooling medium in many A/C systems contains hydrofluorocarbons (HFC), which are F gases with a large climate footprint.[417] Leaks of HFC gases from refrigeration systems, air conditioning and heat pumps are the major sources of F gas emissions.

Textbox:A new refrigeration system has been purchased at the Bjørgene Care Centre in Haugesund Municipality. By assuming 15 per cent leakage from the old system on an annual basis, they have now calculated an emission reduction of 23.5 tonnes of CO_2 equivalents if the system is replaced.[418]

Text for box: In an audit performed by the Norwegian Environment Agency at nursing homes in ten municipalities in 2022, there were leaks at seven facilities. In a small facility, there was a 10-kg leak of the refrigerant R404A, equivalent to a year's CO_2 emissions from 22 petrol-powered passenger cars.[419]

Text for box: A seawater heat pump is two to four times more efficient than conventional electrical heating, and will cover almost the entire (about 85 per cent) heating requirement for heat and hot water.[420] At St. Olav's Hospital, the mental health campus consists of the Nidaros DPS building (7,200 m^2), the emergency department Østmarka (4,600 m^2) and the security building (6,770 m^2). As part of a long-term environmental ambition, a seawater heat pump has been established in each of the three buildings. The heat pumps cover approximately 50 per cent of the heating requirement, which in practice means 80-90 per cent of the buildings' energy consumption.[421]

Text for box: Many of the large new construction projects that will soon be completed, such as Stavanger University Hospital (SUS) and Nordmøre Hospital, are equipped with heat pump technology that takes heat and cooling from the fjord or the ground (ground source heat). This reduces the buildings' thermal energy requirement by up to 60 per cent and will be an important step for the specialist health service towards achieving their environmental goals.[422]

[416] *Fluorholdige gasser (f-gass)* (Fluorinated gases (F gases)) | Norwegian Environment Agency.
[417] Terms | Directorate of Health.
[418] *Nytt kjøleannlegg ved Bjørgene Omsorgssenter* (New refrigeration plant at Bjørgene Care Centre) | Norwegian Environment Agency
[419] *Dårleg kontroll med klimagassar i anlegg på sjukeheimar* (Poor control of greenhouse gases at plants in nursing homes) | Norwegian Environment Agency.
[420] *Sjøvarmepumpe* (Seawater heat pump)| Energismart.
[421] The Specialist Health Service Social Responsibility Report for 2021.
[422] Sykehusbygg HF, via email.

6.6 Digitalisation and use of information technology

Digital transformation is at the heart of creating a more sustainable way of providing health and care services[423]. Rapid medical development, new technology and digital health and care services provide for earlier detection of disease, new treatments, better access to health information and more effective contact with the health and care services. Residents can more easily protect their own and their loved ones' health, and become more self-reliant, and more services can be provided in patients' and users' own homes. This will ease the burden on personnel, and contribute to increased care capacity and reduced travel. Digitalisation can also give healthcare professionals access to patient information across services and levels, so that responses to tests and examinations can be used by several people.[424] This can lead to better sustainability and lower climate emissions from the health and care services. At the same time, IT equipment uses around 10 per cent of the world's energy, and consumption is increasing eight times faster than global energy production.[425]

Text for box: The government's commitment to digital coordination, to ensure rapid and secure shared information flows, includes Core records (helsenorge.no),[426] Helsenorge (helsenorge.no)[427] E-prescription (nhn.no)[428] and Helsenettet (the Health Network).[429] The initiative will ensure that e-health solutions are used whereby the person's health details follow the patient, but also that the cooperation internally in the health and care services is smoother.[430] This commitment to digital solutions makes it important to have good systems that help minimise the climate and environmental impact of digital platforms.

Goal: Adopt digital changes and systems that minimise the climate and environmental impact of digital platforms

The National e-Health Strategy, the sector's common strategy, is a central premise for the national implementation of digitalisation work in the health and care sector. It will contribute to joint overall priorities and increased implementation capacity in the e-health area in Norway.[431] The strategy is followed up via the Roadmap for a National e-Health Strategy and Strategic e-health indicators, so that
digitalisation measures are coordinated across different stakeholders, to improve healthcare services, increase accessibility, and contribute to a more sustainable health and care sector.

Text for box: Artificial Intelligence (AI) is arriving at full speed in our healthcare services and can contribute to better diagnostics, treatment and prognoses. In many ways, AI can help relieve the pressure on the health and care services. [432] It is also important to be aware that the operation of the

[423] *Digital transformation* | Digdir.
[424] *Om kjernejournal* (About core records) – Helsenorge.
[425] *Klima – Vinduet for omstilling smalner* (Climate – The window for change narrows) | Digdir.
[426] *Kjernejournal* (Core records) – Helsenorge.
[427] *Helsenorge – din helse på nett* (Helsenorge – your health online) – Helsenorge.
[428] *Om e-resept* (About e-prescription) – Norsk helsenett (nhn.no).
[429] *Ny film om Helsenettet* (New film about Helsenettet) – Norsk helsenett (nhn.no).
[430] *Nasjonale e-helseløsninger og digital samhandling* (National e-health solutions and digital coordination) – regjeringen.no.
[431] *Nasjonal e-helsestrategi for helse- og omsorgssektoren* (National e-Health Strategy for the health and care sector) | eHelse.
[432] *Rammer og retning for kunstig intelligens* (Framework and direction for artificial intelligence) – Norwegian Directorate of Health.

large data centres necessary to be able to use AI consumes a lot of energy and large amounts of fresh water in order to operate.[433]

The National e-Health Strategy emphasises that increased digitalisation results in digital pollution, and e-health should therefore play a role in avoiding overuse of power by stimulating sustainable digital behaviour.[434]

Text for box: New technology, pandemics and changing needs have impacted the way health and care services are requested and delivered. The Healthcare Personnel Survey on e-health 2022 shows that close to 6 out of 10 healthcare professionals find that digital support overall contributes to an easier working life.[435]

With emissions related to energy consumption from the operation of medical devices, resource-intensive data centres that handle increasing amounts of health information, greater use of advanced technological equipment, and exponential growth in data that needs to be stored and processed,[436] the health and care services must seek to limit emissions from the use of ICT. This entails promoting energy-efficient solutions, optimising data handling and storage, and promoting more sustainable use of digital technology.

Digitalisation is not sustainable in itself, but can facilitate services and solutions that take us in the right direction. The Norwegian Directorate of Health is responsible for ensuring that national strategies, investigations and experience reports in the e-health field concern how the action areas contribute to the UN Sustainable Development Goals.

Measure: Follow up the work on the sustainable development goals in the National e-Health Strategy

Among other things, the National e-Health Strategy highlights sustainable development goals 12 'Responsible Consumption and Production' and 13 'Climate Action' as relevant.[437] The work is followed up via reporting to the national e-health portfolio. The portfolio consists of digitalisation measures of national interest in the health and care sector, which contribute to the core activity and are essential to the success of the e-health strategy.

Action owners in the sector regularly report to the portfolio on which sustainable development goals their measures contribute. The results are summarised annually in the status report for the national portfolio. Each measure's reporting and status report are available on the Directorate's website.

Text for box: Although the population's opinion is divided, the *2023 e-health population survey* shows that more than one in three people would like access to more digital health services than they can access today.[438]

---

[433] *Kunstig intelligens, vann og klima* (Artificial intelligence, water and climate) – Energi og Klima.
[434] *FNs bærekraftsmål og Nasjonal e-helsestrategi* (UN Sustainable Development Goals and National e-Health Strategy) | eHelse.
[435] *Helsepersonellundersøkelsen om e-helse* (Healthcare personnel survey on e-health) | eHelse.
[436] *Digital teknologi kan løse klimautfordringer, men også skape nye. Hva gjør vi med det?* (Digital technology can resolve climate challenges, but can also create new ones. What do we do about this?) | Digi.no.
[437] *FNs bærekraftsmål og Nasjonal e-helsestrategi* (UN Sustainable Development Goals and National e-Health Strateg) | eHelse.
[438] *Innbyggerundersøkelsen om e-helse 2023* (Population survey on e-health 2023) | Norwegian Directorate of Health.

Goal: Reduce energy use and emissions from data storage

Data storage requires vast amounts of power. The more data, the greater the emissions. The way we store data is crucial. Previously, data was stored on dedicated servers, which utilised 15 to 25 per cent of capacity. When data is stored in the cloud, we only buy the storage space we need. Cloud solutions therefore have a lower environmental impact than yesterday's solutions with server-based data storage.[439] It is also important that the data centres use renewable energy sources, while there is also potential to use surplus heat from data centres.[440]

Healthcare services have strict data security and privacy requirements, especially with regard to patient data. Data centres used in healthcare services must therefore comply with local and international privacy laws and standards, such as GDPR in Europe, or equivalent national laws.[441]

Measure: Save to the cloud rather than save to a server

Cloud storage provides better capacity utilisation than server storage. Cloud storage is not emission-free, but according to the Norwegian Digitalisation Agency, cloud storage provides better capacity utilisation than older solutions.[442]

Measure: Avoid unnecessary storage on servers or in cloud storage solutions

Demand for data centre services is growing rapidly, and technologies such as artificial intelligence can further increase demand.[443] Data centres are known to be energy-intensive and account for around 1 per cent of global power consumption. Emails and documents on servers require energy. Avoiding sending unnecessary emails and deleting old emails and old documents that no longer have any value will have some positive effects.[444] [445] Limited storage capacity can be a tool in this context.

Measure: Use computers and devices energy-efficiently

Turn off computers, monitors and other digital devices when not in use, especially overnight and at weekends. Use energy-saving mode or sleep mode on computers and monitors and reduce screen brightness to save energy where appropriate.[446]

Measure: Adopt new technology and innovative solutions with a sustainable approach

Digital technologies can play a key role in the path to a low-emission society, to reduce pollution and preserve biodiversity, while IT equipment, data centres and digital networks already have a large climate footprint. Energy consumption for information and communication technology is increasing eight times faster than global energy production, which may lead to restrictions on the use of ICT. Artificial intelligence is a highly energy- and resource-intensive technology. Extensive use of digital services and frequent replacement of equipment reinforce this trend.[447]

---

439 *God digitalisering = berekraftig utvikling* (Good digitalisation = sustainable development) | Digdir.
440 *Overskuddsvarme* (Excess heat) – SINTEF.
441 *Personvern og informasjonssikkerhet* (Data privacy and information security) | Directorate of Health.
442 *God digitalisering = berekraftig utvikling* (Good digitalisation = sustainable development) | Digdir.
443 Recalibrating global data center energy-use estimates | Science
444 *Vi vet ikke hvor stort klimaavtrykk en e-post har* (We don't know how big a climate footprint an email has) | Faktisk.no.
445 *Hever debatten om digitale fotavtrykk* (Raising the digital footprint debate) | Atea.
446 *Grønn bruk av IKT* (Green use of ICT) | UngEnergi.
447 *Klima – Vinduet for omstilling smalner* (Climate – The window for change is narrowing) | Digdir.

Text for box: a search on the ChatGPT AI service is around 15 times more resource-intensive than a Google search.[448]

[448] *KI kan bruke like mye energi som hele Sverige. Nå har danske forskere en løsning* (AI can use as much energy as the whole of Sweden. Danish researchers now have a solution (forskning.no)

7. Climate adaptation in the health and care services

The health and care services must address health impacts related to climate change, such as the increasing incidence of infectious and non-communicable diseases. The need for healthcare might increase, for example, for patients who have suffered stress-related disorders such as post-traumatic stress syndrome (PTSD) after experiences resulting from extreme weather conditions,[449] or gastrointestinal infections as a consequence of extreme weather conditions leading to contamination of drinking water.[450] These health effects of climate change, infrastructure challenges, changes in other sectors of society and the overall impact of climate change affect how the health sector and health and care services should be designed going forward. Access to knowledge, expertise and equipment becomes critical.[451] This can have serious consequences for individuals and put the healthcare system under major, long-term pressure.[452] It is important to equip the health and care service to meet these challenges and to increase knowledge and contingency measures, including crisis management.[451]

Textbox:In 2023, the UK Health Security Agency published a comprehensive report on the health impacts of climate change. When it comes to mental health, the report points out, among other things, that flooding can have serious long-term consequences for mental health. The report also describes how nature-based solutions that can reduce the risk of flooding can also be beneficial for mental health.[453]

In the White Paper *'A changing climate – united for a climate-resilient society',* the Norwegian government is introducing an improved governance system for the national climate adaptation work.[454] A key aspect of the system is national climate vulnerability analyses that will strengthen the basis for policy development. The responsibility for developing these analyses has been assigned to the Norwegian Environment Agency. The Norwegian Directorate of Health and the Norwegian Institute of Public Health represent the health and care sector in this work. The first analysis is to be completed by the end of 2026 and then updated at least every four years. The work is being undertaken in cooperation with relevant sector authorities and stakeholders.

The White Paper on emergency preparedness 'A Resilient Health Emergency Preparedness' from November 2023 sets the strategic and political direction for the Norwegian health emergency response. The report recognises that climate change is an important factor affecting the health emergency response: Climate change contributes to more extreme weather conditions, which in turn

[449] *Nå er det alvor – rustet for en usikker fremtid* (Now it's serious – ready for an uncertain future)| regjeringen.no
[450] *Klimaendringer og mikrobiologisk drikkevannskvalitet – Tilpasning til klimaendringer i norske kommuner* (Climate change and microbiological drinking water quality – Adaptation to climate change in Norwegian municipalities) (klimakommune.no)
[451] *Klimaendringer og helse* (Climate change and health) | Norwegian Environment Agency.
[452] Horingssvar VS Sak videresendt fra NSF FRD0033409 – Innspill til neste folkehelsemelding.pdf
[453] Climate change: health effects in the UK – GOV.UK
[454] *Sammen for et klimarobust samfunn* (A changing climate – united for a climate-resilient society) | regjeringen.no

can affect global food production, cause food shortages, and affect water access, conflict levels, migration flows and the prevalence of infectious diseases.[455]

Text for box: Climate adaptation measures must be implemented in parallel with, and without diminishing, the efforts to cut greenhouse gas emissions.

Goal: Make health and care services more robust in the face of climate change

It is expected that extreme weather events such as floods, avalanches and heatwaves will occur more often, including in Norway. This could cause damage to infrastructure, buildings and properties. Health and care services must prepare for various situations, such as operational disruptions and damage to buildings. It is necessary to design and equip both existing and new healthcare buildings to address climate change.[456]

Text for box: Due to its geographical location, strong economy, and well-developed health and care services, Norway is less vulnerable and better equipped than many other countries to deal with the consequences of climate change.[457]

Measure: Plan climate adaptation using basic information and climate projections

It has been described how rapid climate change can also have consequences for the health and care services in Norway. It is also challenging to predict what the consequences will be, or what kind of changes in the disease profile we will see. To be able to plan as well as possible, it is necessary to use basic information and models that aim to show probable effects going forward.

Text for box: The Norwegian Centre for Climate Services (NCCS) prepares county climate profiles that show how climate change is expected to occur towards 2100.[458]

The report 'Climate in Norway 2100' from 2015 was commissioned by the Norwegian Environment Agency to provide fundamental information about climate adaptation in Norway. The report summarises the current climate and climate development in Norway so far. With 1971-2000 as the reference period, future climate development towards the year 2100 is calculated, subject to different assumptions about greenhouse gas emissions. The calculations are subject to significant uncertainty, but the report nonetheless gives a clear picture of the main aspects of how man-made climate change is expected to be manifested in Norway.[459]

The Intergovernmental Panel on Climate Change uses different climate change scenarios. These are used to develop future scenarios, and to analyse and assess climate policy choices under given conditions.[460]

---

[455] *Beredskapsmeldingen – En motstandsdyktig helseberedskap* (White Paper on emergency preparedness – 'A Resilient Health Emergency Preparedness').
[456] *Klimatilpasning av bygg og anlegg* (Climate adaptation of buildings and facilities) | Norwegian Environment Agency.
[457] *Sårbarhet og tilpasningsbehov i helse- og omsorgssektoren i Norge* (Vulnerability and the need for adaptation in the Norwegian health and care sector) | NIPH.
[458] *Klimaprofilene – et kunnskapsgrunnlag for klimatilpasning* (Climate profiles – a knowledge base for climate adaptation) | Norwegian Centre for Climate Services (NCCS).
[459] *Klima i Norge 2100* (Climate in Norway 2100).
[460] *Lær mer om FNs klimapanels scenarioer* (Learn more about the Intergovernmental Panel on Climate Change scenarios) | Norwegian Environment Agency.

The Climate in Norway 2100 report is expected to be updated on the basis of new knowledge.[461]

Measure: Integrate public health profiles into municipal planning and investigation

The public health profiles are unique reports for each of the country's municipalities, and for the city districts of Oslo, Bergen, Trondheim and Stavanger. They provide information about health status and influencing factors, and are a basis for local efforts to improve public health.[462]

Public health profiles provide a data basis that helps municipalities identify which health challenges they face. According to the Norwegian Planning and Building Act, municipalities must ensure that future climate change is assessed and taken into account in economic and land planning and construction case management. Climate change adaptation must be an integral aspect of a municipality's areas of responsibility. It must be assessed what consequences both current and future climate change can have, and this consideration must be assessed in the same way as other factors which the municipality includes in their planning. This applies, for example, to consequences for public health.[463] The government's website provides guidance and tools for urban and site development.[464]

Measure: Conduct local risk, vulnerability and emergency response analyses in hospitals and municipalities

The municipality must undertake comprehensive risk and vulnerability analyses, cf. Section 2 of the Regulation on the municipal emergency response obligation.[465]

In a risk and vulnerability analysis, vulnerability is emphasised in particular. Risk analysis examines potential risks associated with activities, in order to understand, describe and quantify them, and assesses the probability and consequences of various events. It is used to inform decision-makers, assess the safety level of activities and identify the need for action. [466]

Emergency preparedness analyses focus on developing strategies and plans to manage and mitigate the risks identified in the risk analysis. This includes the preparation of emergency response plans, drills and training, as well as measures to increase the resilience of the health and care services and society as a whole. The goal is to ensure that the health and care services can maintain the activity and provide necessary healthcare during climate-related events.[467]

[461] *Nye klimaframskrivninger for Norge* (New climate projections for Norway) | Norwegian Centre for Climate Services (NCCS).
[462] *Folkehelseprofilene for kommuner og bydeler 2023* (Public health profiles for municipalities and districts 2023) | NIPH.
[463] *Klimatilpasning* (Climate adaptation) | regjeringen.no
[464] *By- og stedsutvikling* (Urban and site development) | regjeringen.no
[465] *Forskrift om kommunal beredskapsplikt* (Regulation on the municipal emergency response obligation) | Lovdata.
[466] *Risiko- og sårbarhetsanalyse* (Risk and vulnerability analysis) | Store norske leksikon.
[467] *Beredskapsanalyse* (Emergency response analysis) | Store norske leksikon.

Measure: Ensure that the physical and digital infrastructure of the health and care services is sufficiently resilient to withstand extreme weather conditions and other climate-related events

Municipalities and regions are encouraged to develop their own climate adaptation strategies matched to local conditions, to ensure that healthcare facilities in different municipalities can handle current challenges.[468]

The digital infrastructure is just as important as the physical infrastructure. One example is incidents where extreme weather conditions have disrupted safety alarms, which from a climate footprint perspective increases the need for outreach services and the procurement and installation of new safety alarms.

The local healthcare sector's ability and opportunities to implement climate adaptation measures should be strengthened, and opportunities to earmark resources for the implementation of measures should be assessed.[469]

Text for box: On choosing a site for the construction of new healthcare facilities, the basic conditions should be taken into account. The decommissioning of land areas leads to emissions of around two million tonnes of CO_2 annually. The municipality's land planning work is crucial to reducing these emissions. Assessment of ground conditions is also important, as unstable ground conditions can lead to greater use of emission-intensive construction materials.[470]

Measure: Consider supplementing the Standard for Climate and Environment in Hospital Projects with guidance on climate adaptation of existing buildings, property and infrastructure

Norway's climate has always set strict requirements for the planning, design, location and maintenance of buildings. Global warming reinforces the vulnerability of the built-up environment.[471] It can therefore be important to assess whether it is relevant to supplement the 'Standard for Climate and Environment in Hospital Projects' with an update on climate and environmental responsibility and value-preserving management of existing buildings, property and infrastructure, which includes assessment of vulnerability to climate change and climate adaptation.

Measure: Consider the inclusion of climate adaptation in the specialist healthcare service's due diligence assessment

The OECD's supplementary guide 'Managing Climate Risks and Impacts Through Due Diligence for Responsible Business Conduct' is included in the ongoing work on climate and environment in the specialist healthcare service's due diligence assessment.[472]

Measure: Consider conducting training and drills

Conduct regular training and drills for healthcare professionals and emergency response personnel to prepare them for climate-related health crises. Climate change is setting new premises for health

[468] *Lokal tilpasning til et klima i endring* (Local adaptation to a changing climate) | Norwegian Association of Local and Regional Authorities (KS).
[469] *Sårbarhet og tilpasningsbehov i helse- og omsorgssektoren i Norge* (Vulnerability and the need for adaptation in the Norwegian health and care sector) | NIPH.
[470] *Klimavennlig areal- og transportplanlegging* (Climate-friendly area and transport planning) | Norwegian Environment Agency.
[471] *Klimaendringer stiller byggsektoren overfor store utfordringer* (Climate change poses major challenges for the construction sector) – the Norwegian Directorate for Building Quality (dibk.no).
[472] Managing Climate Risks and Impacts Through Due Diligence for Responsible Business Conduct: A Tool for Institutional Investors | OECD

preparedness globally, with an increased incidence of extreme weather conditions as a significant factor. This directly affects global food production, which can lead to food shortages, and also affects access to clean water, increases conflict levels, and drives migration and the spread of infectious diseases. Norway, and especially its northern regions, must strengthen its ability to handle these climate-related crises, which make new demands of national and local health preparedness.[473]

Goal:Increase the knowledge base for the changed disease burden as a consequence of climate change

Calculations of climate change's impact on the disease burden in the Norwegian population are either uncertain or deficient, particularly for conditions that are indirectly affected. Under the auspices of the Norwegian Institute of Public Health, work has started on a systematic review and interdisciplinary risk analysis to increase knowledge of how climate change has affected human health up to today, as well as how the population's health can be expected to be affected in the future.

Measure: Assess how the disease burden in Norway will be affected by climate change and develop the health and care services in line with the population's needs

In 2023, the Norwegian Institute of Public Health released the report 'Climate change: Vulnerability and adaptation needs in the health and care sector',[474] which revealed that only a minority of both local health authorities and state health authorities have implemented vulnerability assessments or adaptation measures.

Text for box: The Norwegian government will assess how the national analysis of vulnerability and adaptation needs in the health and care sectors, as a consequence of climate-related changes and emergency climate events, must be followed up. The goal is to ensure an adequate healthcare response in the light of climate change.[473]

[473] *En motstandsdyktig helseberedskap – Fra pandemi til krig i Europa* (A Resilient Health Emergency Preparedness – From Pandemic to War in Europe) (White Paper 5 (2023–2024)) | regjeringen.no
[474] *Klimaendringer: Sårbarhet og tilpasningsbehov i helse- og omsorgssektoren i Norge* (Climate change: Vulnerability and adaptation needs in the health and care sectors in Norway) | NIPH.