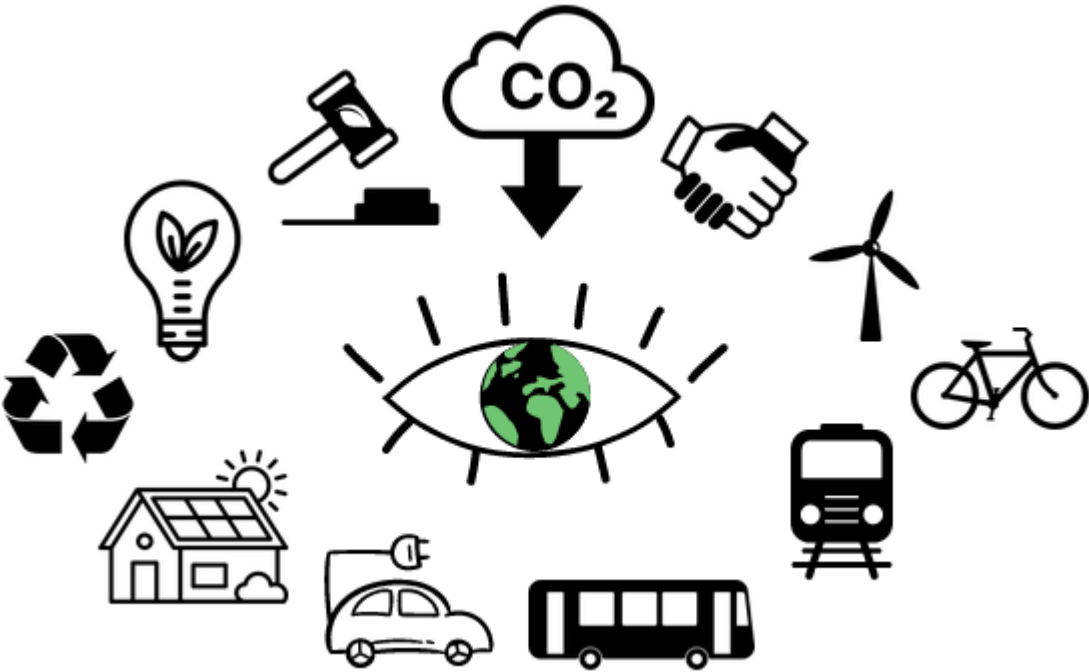

Comparison of (Best) Mitigation Measures from Nordic-Baltic countries and Ukraine



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Comparison of (Best) Mitigation Measures from Nordic-Baltic countries and Ukraine

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Comparison of (Best) Mitigation Measures from Nordic-Baltic countries and Ukraine

Introduction

Civil society organisations from Nordic and Baltic countries - Denmark, Latvia, Lithuania, Sweden, Norway - , Belarus (in exile) and Ukraine have compared national climate mitigation policy measures for meeting climate targets and contribute to the EU Green Deal.

For each policy measure, the authors have evaluated how well it contributes to a sustainable development to carbon neutral societies and how far it is implemented in the country/ies, where it is used. The listed best mitigation measures are all good measures under the right conditions, but not necessarily under all circumstances.

Some measures are identified as problematic as it is questionable if they can prolong unsustainable activities rather than lead to necessary transition to a low emission society. They are included as “worst mitigation measures” at the end of the. The list of measures is not exhaustive. We have not dealt with agriculture and nature conservation, circular economy and with policies specifically for sufficiency/lifestyle changes.

The types of best policy measures covered are:

- Climate Laws and targets
- Climate taxation and VAT reductions, including road pricing/toll roads
- Energy efficiency
- Renewable energy and fuel shift, including electrification
- Transport
- Important climate policies and measures.

This publication is made by a working group with members from Air Clim Secretariat in Sweden, INFORSE-Europe with Danish CSOs, Norges Naturvernforbund, Latvijas Zaļā kustība / Latvian Green Movement, Žiedinė ekonomika / Circular Economy in Lithuania, Ecoaction from Ukraine, Ekokoncepcija from Lithuania (Ecodome from Belarus). The views expressed are those of the working group authors and not necessarily those of the organisations.

The publication was made in the framework of the project “Better Green Deal with CSO policy proposals, visions and scenarios for best mitigation policies for Baltic Sea Countries and Ukraine”. The Project is supported by the Nordic Council of Ministers via the Prosperous Futures Program, and by AirClim Secretariat and INFORSE-Europe.

It is the hope that this paper can inspire additional action for national climate plans, including in the National Energy and Climate Plans (NECPs) that all EU countries and Ukraine are making.

About the Countries

The seven countries covered are Nordic - Baltic Sea Countries (Denmark, Norway, Sweden, Latvia, Lithuania), and EU neighbourhood countries Belarus, and Ukraine, which is also an EU candidate country.

The countries are different in many ways. For a comparison of countries' greenhouse gas (GHG) emissions, below is a table with national GHG emissions (latest available data as of 2021), GHG reductions since 1990, GHG emissions per capita, GHG emissions in electricity production per kWh, as well as renewable energy (RE) share in primary energy and in electricity.

Country	GHG emissions, kiltons CO ₂ e ¹ excluding/including LULUCF	GHG reductions since 1990,% ¹ including LULUCF	GHG emissions per capita t CO ₂ e/capita* excluding/including LULUCF	GHG emissions in electricity production, t CO ₂ e/MWh ²	RE share in final energy consumption, % ³	Renewable Energy share in electricity,%
Belarus	60938/ 48915	-58%	6.52/5.23	0.285	7.9%	4%
Denmark	43851/ 47972	-39%	7.49/8.19	0.103	39.7%	73%
Latvia	10738 /7241	-63%	5.69/3.84	0.301	43.8%	59.4%
Lithuania	20252/ 14161	-67%	7.24/5.06	0.078	31.7%	57.2%
Norway	49200/ 33405	-18%	9.10/6.18	0.012	61.3%	95.6%
Sweden	47 817/ 6106** ⁴	-76%	4.62/0.59	0.008	58.4%	66.9%
Ukraine	21020/ 22420	-63%	7.30/7.79	0.430	8.7%	11.1%

*Calculated by authors from total emissions (from 1) and inhabitants

**Other sources indicate 60,640 ktCO₂e

¹ <https://unfccc.int/ghg-inventories-annex-i-parties/2023>

² <https://data.jrc.ec.europa.eu/dataset/919df040-0252-4e4e-ad82-c054896e1641>

³ <https://www.iea.org/data-and-statistics/data-tools/energy-statistics-data-browser?country=UKRAINE&fuel=Sustainable%20Development%20Goals&indicator=SDG72modern>

⁴ https://edgar.jrc.ec.europa.eu/report_2023?vis=ghgtot#emissions_table

Climate Laws and Targets

Climate laws and targets are widely used in Nordic and Baltic countries and they are important frameworks for climate action. They are increasingly interlinked with the global framework in the UNFCCC that require National Determined Contributions (NDCs) and for EU countries National Energy and Climate Plans (NECPs) that add up to the joint EU NDC.

Climate Laws typically include:

- Climate Targets
- A process for regular evaluating of national climate actions and progress in achievement climate targets with an annual review process
- Establishment of an independent climate council to oversee progress in achieving targets

We find that the best practice is to include all of the above in a climate law as it gives the strongest legal basis for climate action. In the following table is a simple comparison of the climate laws in the countries analysed regarding their status and targets.

Country	Status	2030 target from 1990	Long-term target	Sectors etc.
Denmark ⁵	Law adopted	-70%	GHG neutral 2050	Include LULUCF, only domestic
Norway ⁶	Law adopted	-55%	-90-95% in 2050	As in NDC not LULUCF, can include reductions outside Norway
Sweden ⁷	Law adopted	Target set by Parliament	Targets set by Parliament	Up to 15% reduction outside Sweden and with carbon removal. Implementation is lacking.
Latvia	Government decree	-55%	2050 - 100%	Include LULUCF, domestic
Lithuania ⁸	Parliament decree	-70%	2040: -85% from 1990 2050: -100%	Include LULUCF & cement CO ₂ absorption, only domestic
Ukraine ⁹	Under development, the draft of the Climate law was presented in 2024	-65% (in NDC)	GHG neutral 2060 (in NDC)	Include LULUCF, only domestic

⁵ https://climate-laws.org/document/the-climate-act_dae7

⁶ <https://lovdata.no/dokument/NL/lov/2017-06-16-60>

⁷ <https://rkrattsbaser.gov.se/sfst?bet=2017:720>

⁸ <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/7eb37fc0db3311eb866fe2e083228059?positionInSearchResult>

⁹ Ukraine Climate Law is under development (the draft law “On the main principles of state climate policy” was published in February 2024.

<https://mepr.gov.ua/povidomlennayapro-oprylyudnennya-proyektu-zakonu-ukrayiny-pro-osnovni-zasady-delzhavnoyi-klimatychnoyi-polityky/>)

Climate Targets, short timeframe (2030 and earlier)

Given the urgency of the climate crisis and the need for early action to reduce emissions, short term targets are important. In the Nordic and Baltic countries there are mostly national targets for 2030, while the more comprehensive targets for greenhouse gas budgets covering the years until the target year are not used in national policies. The targets also differ in their scope: some include land use emissions and forestry (LULUCF) and some allow use of credits for reductions in other countries. None of the targets include emissions outside the countries caused by consumption of imports.

We find that the best practice is:

- Targets covering multi-annual budgets, for instance for 5-year periods.
- Targets covering the entire economy, but divided with separate targets for LULUCF and other emissions.
- Targets covering activities in the country, no use of credits for emission reductions outside the country instead of national reductions.
- Supplementary target for reduction of emission from imports, international aviation and shipping.
- This can be supplemented with targets for climate drivers not covered by UNFCCC (vapour from aviation, black carbon, imported biomass). It can also include targets for emissions caused by other activities outside the country such as financing, as soon as robust methodology is developed for such targets.

In the following table is an overview of short-term targets in the countries analysed.

Country	Status	Target	Sectors etc.	Remarks
Denmark ¹⁰	In Climate Law	-50-54% from 1990 to 2024-26 -70% 1990-2030	UNFCCC GHG, include LULUCF	Only domestic reductions
Norway ¹¹	In Climate Law	-55% 1990-2030	UNFCCC GHG, exclude LULUCF	Targets can be met with credits for reductions outside Norway*
Sweden ¹²	Set by Parliament	-63% 1990-2030 -70% 2010-2030 in domestic transport (not aviation)	UNFCCC GHG, only sectors in EU effort sharing (small emitters not in EU-ETS, not LULUCF)	Targets can be met with credits for reductions outside Sweden & LULUCF up to 8% ¹³
Latvia	Government Strategy Plan	-68% 1990-2030 (-17% from 2023)	Not LULUCF	Only domestic reductions
Lithuania ¹⁴	Parliament decree	-70% 1990-2030 (-21% from 2005)	UNFCCC GHG + cement CO ₂ absorption, include LULUCF	Only domestic reductions
Belarus ¹⁵	NDC (adopted by the Council of Ministers of the Republic of Belarus dated September 29, 2021 No. 553)	-35% 1990-2030 (increase from -57% in 2021)	UNFCCC GHG, include LULUCF	
Ukraine ¹⁶	NDC (adopted by the Cabinet of Ministers of Ukraine)	-65% 1990-2030 (which means -7% 2019-2030)	UNFCCC GHG, include LULUCF	Only domestic reductions

¹⁰ <https://eeac.eu/wp-content/uploads/2023/03/Status-Outlook-2023-English-Policy-Brief.pdf>

¹¹ <https://www.energiogklima.no/nyhet/sporsmal-og-svar-om-norges-klimamal>

¹² <https://www.krisinformation.se/en/hazards-and-risks/climate-change/swedens-climate-goals>

¹³ <https://www.regeringen.se/contentassets/38eaf6f23f284fb0a440b0742fe7bcf7/national-forestry-accounting-plan-fo-r-sweden/>

¹⁴ https://commission.europa.eu/document/download/cd246df6-377e-4db3-bb48-8475c80aa43c_en?filename=LITHUANIA%20DRAFT%20UPDATED%20NECP%20EN.pdf

¹⁵ https://unfccc.int/sites/default/files/NDC/2022-06/Belarus_NDC_English.pdf

¹⁶ Ukraine: 65% reduction 1990-2030 (including LULUCF), which means 7% emission reduction by 2030 compared to 2019 https://unfccc.int/sites/default/files/NDC/2022-06/Ukraine%20NDC_July%2031.pdf

* In addition to the flexible target in the climate law, the current government has set a 55 % reduction target in Norway in their policy platform (omstillingsmålet).

Long Term and GHG neutrality targets

In order to mitigate the climate crisis, countries should reach climate neutrality by the middle of the century, and most countries have done this in some way, including the Nordic and Baltic countries, and Ukraine. Environmental organisations have called for European countries to reach climate neutrality by 2040, given their high current and historical emissions of European countries and given their higher capability than the poorer countries of the world.

Also for the long-term targets, good practice is that the target is divided in LULUCF and other emissions and does not include credits for emission reductions outside the country instead of national reductions.

In the following table is an overview of long-term targets in the countries analysed.

Country	Status	Target	Sectors etc.	Remarks.
Denmark ¹⁷	In government agreement	Climate neutral 2045 10% negative 2050 (In climate law is climate neutrality 2050)	UNFCCC GHG, include LULUCF	Only domestic reductions
Norway ¹⁸	In Climate Law	90-95% reduction 2050 Parliament decision: climate neutral 2030	UNFCCC GHG	Targets can be met with credits for reductions outside Norway, in particular in 2030
Sweden ¹⁹	Set by Parliament	-75% in 2040 No net emissions 2045 with 85% reductions in emissions, 15% from LULUCF, credits, CCS	UNFCCC GHG, only sectors in EU effort sharing (small emitters not in EU-ETS, not LULUCF)	2040 targets can be met with credits for reductions outside Sweden & LULUCF up to 2%. 2045 target with 4% CCS, 4% reductions outside Sweden
Latvia	Government decree	Carbon neutral by 2050	UNFCCC GHG, include LULUCF	Only domestic
Lithuania ²⁰	Parliament decree (Law)	Carbon neutral 2050	UNFCCC GHG + cement CO ₂ absorption, include LULUCF &	Only domestic reductions
Ukraine ²¹	Ukraine NDC	Carbon neutral 2060	UNFCCC GHG, include LULUCF	Only domestic reductions

¹⁷ <https://eeac.eu/wp-content/uploads/2023/03/Status-Outlook-2023-English-Policy-Brief.pdf>

¹⁸ <https://www.energiogklima.no/nyhet/sporsmal-og-svar-om-norges-klimamal>

¹⁹ <https://www.krisinformation.se/en/hazards-and-risks/climate-change/swedens-climate-goals>

²⁰ https://commission.europa.eu/document/download/cd246df6-377e-4db3-bb48-8475c80aa43c_en?filename=LITHUANIA%20DRAFT%20UPDATED%20NECP%20EN.pdf

²¹ Ukraine updated NDC: https://unfccc.int/sites/default/files/NDC/2022-06/Ukraine%20NDC_July%2031.pdf

Climate Taxes and Tax/VAT Reductions

Economic instruments are well-proven and widely used in the Nordic climate policies. Since the introduction of the EU emissions trading scheme (EU-ETS), taxes are primarily used for sectors not covered by EU-ETS, but with some important exceptions.

To make polluters pay for climate and environment, it is a good practice to have climate and environment taxes on sufficient level to compensate the society for the environmental costs and to drive climate action. CO₂ taxes have been of great importance and have for instance in Sweden helped phasing out oil-fired heating and the use of fossil fuels in district heating.

For taxes on households, compensation of low-income households can be necessary, but as the low-income households have the lowest consumption, the compensation will not have a large effect on the total consumption. Compensation should preferably be in the form of direct support, or as a minimum threshold for taxation specifically for low-income households.

Tax deductions should be to promote low-emission practices and should not contribute to increased inequality.

We have identified the following types of taxes and other economic instruments as important for climate policy:

- Carbon/GHG tax for sectors outside EU-ETS sectors
- Carbon/GHG tax for sectors in sectors covered by EU-ETS
- Taxes on HFCs & strong greenhouse gases
- Aviation passenger tax
- Tax reduction/exemption for public transport
- Tax deduction for commuting
- Road pricing and payment for driving in cities

Taxing carbon/GHG outside EU-ETS

Denmark has CO₂/energy taxes for private households and public institutions as well as car fuel taxes that are partly climate taxes, partly payment for use of roads etc. The government has decided to introduce a CO₂ tax on business outside EU-ETS, to be phased in until 2030, where the level shall be 750 DKK (100€)/ton.²²

Norway has a CO₂/energy tax that today is around 1,000 NOK (85 €)/ton CO₂ and will increase to 2000 NOK in 2030 outside EU-ETS.²³

Sweden has a CO₂/energy tax that today is around 1330 SEK (122 €)/ton CO₂ on all sectors outside EU-ETS.²⁴

In Ukraine, a carbon tax is part of the environmental tax (in 2022, the Tax Code was amended to increase the carbon tax rate from UAH 10 (\$0.24 EUR) to UAH 30 (\$0.7 EUR) per tonne of CO₂ emitted).²⁵

Taxing carbon/GHG in EU-ETS sectors

Denmark will phase in CO₂/energy tax on sectors covered by EU-ETS up to a level of 375 DKK (50 €)/ton CO₂ in 2030, except production of cement and ceramic industry non-metallic minerals) where the tax will only be 125 DKK (16.5 €)/ton.²⁶

²² <https://www.cepweb.org/denmarks-green-tax-reform-g20-countries-should-take-notice/>

²³ https://lovdata.no/dokument/STV/forskrift/2023-12-14-2075/KAPITTEL_5-2#KAPITTEL_5-2

²⁴ <https://www.government.se/government-policy/swedens-carbon-tax/swedens-carbon-tax/>

²⁵ https://climate-laws.org/document/tax-code-of-ukraine-no-2755-vi_2333

²⁶ <https://www.cepweb.org/denmarks-green-tax-reform-g20-countries-should-take-notice/>

Norway also has a CO₂/energy tax on some sectors covered by EU-ETS. Norway is part of EU-ETS with its association agreement with the EU, but most are exempted.²⁷

Sweden had a tax on waste and fossil fuels for cogeneration and district heating, but it was abolished in 2023.²⁸

Ukraine is not covered by EU-ETS presently but plans to launch ETS in a pilot mode in 2025.²⁹

Taxes on HFCs & strong greenhouse gases

Denmark has a tax on strong greenhouse gases, rated according to their greenhouse warming potential (GWP). The level is 0.18 DKK/ton CO₂e (2023 rate, the rate is increased with inflation. The highest rate is for the strong GHG SF₆, where the tax is 4,294 DKK (575 €)/kg SF₆ (2023-level).

Denmark also has a tax on methane emissions from gas fired power and CHP plants with a level similar to the CO₂ tax times the GWP of methane.³⁰

Aviation passenger tax

Denmark has no aviation tax at the moment, but by decision of the government, taxation will be starting in 2025, increasing to 50 DKK (6.7 €) for intra-EU flights and 410 DKK (50 €) for long-haul flights in 2030.

Norway has a tax of 85 NOK (7.3 €)/trip for European travel and 332 NOK(29 €)/trip for long-haul flights.³¹

Sweden has a tax of 6 €/trip for shorter distances and up to 21 €/trip for long-haul flights (25 € for business class. 2023 level. Proposed to be lowered to €3.6/trip for shorter distances.³²

No and reduced VAT on public transport

To support public transport, all countries analysed have no or reduced VAT on public transport. Good practice is no VAT, but public transport must also be supported to fulfil its potential for reducing transport emissions.

Denmark: No Vat (normal VAT 25%)*

Norway: 12 % rate (normal VAT 25%)

Sweden: 6% rate (normal VAT 25%)*³³

Latvia: 12% rate (normal VAT 21%)*

Lithuania: 9% rate tax (normal VAT 21%)*³⁴

Ukraine: no VAT³⁵

* Source for EU countries (2021 status).³⁶

²⁷<https://www.regjeringen.no/no/dokumenter/notification-co2-tax-exemption-for-undertakings-covered-by-the-ets2/id3028459/>

²⁸<https://www.energiforetagen.se/4a0314/globalassets/dokument/nordenergi/sk-21-nordenergi-tax-2023-final.pdf>

²⁹<https://www.kmu.gov.ua/en/news/natsionalna-systema-torhivli-vykydamy-v-pilotnomu-rezhymi-zapratsiuiie-u-2025-r-otsi-ruslan-strilets>

³⁰https://ens.dk/sites/ens.dk/files/EnergiKlimapolitik/annex_8_-_additional_information_on_policies_and_measures_related_to_ghg_emissions_and_removals.pdf

³¹<https://www.regjeringen.no/no/tema/okonomi-og-budsjett/skatter-og-avgifter/avgiftssatser-2024/id2997383/>

³²<https://www.regeringen.se/rattsliga-dokument/departementsserien-och-promemorior/2024/04/promemoria-sankt-lygskatt/>

https://www.transportenvironment.org/wp-content/uploads/2023/07/tax_gap_report_July_2023-1.pdf

³³<https://www.regjeringen.no/no/tema/okonomi-og-budsjett/skatter-og-avgifter/avgiftssatser-2024/id2997383/>

³⁴ <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.163423/asr>

³⁵ https://ips.ligazakon.net/document/view/t10_2755?an=14921&ed=2020_02_04

³⁶https://taxation-customs.ec.europa.eu/document/download/28091aa6-62e0-4b27-922c-4f701e2f0ce3_en?filename=vat_rates_en.pdf

Tax deduction on commuting

Tax deduction on commuting increases commuting, thereby increasing GHG emissions, in particular if the tax deduction is covering transport with fossil fuelled cars. The best for the climate would be no tax deduction, but also the different tax types of tax deductions have different climate effects. Tax deduction, that favours bicycling and public transport, is better for the climate than tax deduction that favours car use. Tax deduction will favour car use, if the tax deduction is only for longer distances (in which case it will not support bicycling, though it will support public transport) and if the tax deduction is highest for car use. In all countries analysed with tax deducting on commuting, it increases GHG emissions in at least one of these ways.

In Denmark, the tax deduction is the same for all transport modes but only for longer commuting than 12 km each way. The deduction in 2024 is 2.23 DKK (0.30 €) per km each way up (so 4.46 DKK/km distance above 12 km), but reduced for commuting above 60 km each way.³⁷

In Norway, the tax deduction is the same for all transport modes but only for longer commuting than 33 km each way.³⁸

In Sweden the tax deduction is similar to Norway. There was a “mode-neutral” tax deduction proposition, so the tax deduction would have been the same the same distance irrespective of if car, public transport or bicycle were used, to be in force from Jan 1, 2023, but the new government 2022 decided not to enact it.

Road pricing and payment for driving in cities

In Denmark there is no road pricing, but there will be road pricing for trucks from 2025, though only for trucks of 12 tons and above.³⁹

In Norway there is payment for entering main cities such as Oslo, Bergen, and for using many new roads. The payment for entering the cities is higher in peak hours. Reduced fees for 0-emission cars. The income is used for both roads and public transport infrastructure in cities.⁴⁰

In Sweden there is a tax for entering Stockholm and Gothenburg.

Latvia has tax on major roads, but only for buses and trucks above 3.5 tons*.

Jūrmala city has an entrance fee of 3 €/24 hours for non-residents. Those funds go for ecology needs. The only city in Latvia.

Lithuania has tax on major roads, but only for buses and trucks above 3.5 tons*

Belarus has tax on major roads, but only for buses and trucks above 3.5 tons.⁴¹

Ukraine: no tax or fee on using roads, but there are discussions about implementing road-pricing for trucks of 12 tons and above.

Energy Efficiency

Energy efficiency is important for reducing emissions. It is often cheaper, faster and better for the environment to combine change to renewable energy with energy efficiency than just trying to cover all energy demands with renewable energy or other potentially emission free energy sources. Since EU regulations are promoting energy efficiency in a number of ways, including with the EU ecodesign regulation on products and with emission limits on cars, we have not repeated in this paper these regulations that all countries will follow. Instead, we have identified a national life-cycle energy efficiency policy that supplement EU regulations and financial measures (taxes, subsidies etc.) and that can inspire

³⁷<https://skat.dk/en-us/individuals/deductions-and-allowances/deduction-for-transport/deduction-for-transport-between-home-and-work>

³⁸<https://www.regjeringen.no/no/aktuelt/er-du-dagpendler-husk-at-reisefradraget-har-okt-betydelig/id2966708/>

³⁹ <https://vejafgifter.dk/en>

⁴⁰ <https://bomstasjon.no/>

⁴¹ <https://www.e-tar.lt/portal/lt/legalAct/TAR.A7D82E8EDC6B/asr>

others. We have also identified a number of transport policies and measures that increase energy efficiency in transport. They are described below in the section on transport.

Lifecycle greenhouse gas limits for buildings

In Denmark, there is a limit of lifecycle GHG emissions of new buildings above 1,000 m² including construction-related emissions. The limit is 12 kg CO₂e/m² per year (expected lifetime 50 years). The current limit is easy to meet, but it is the plan to make the limit increasingly impactful until 2029 (the limit is expected to be reduced gradually to 7.5 kg CO₂e/m² in 2029). The change of the limit will be introduced following evaluations of the impact.⁴²

For all EU countries and Norway, it is a requirement to calculate lifecycle emissions of new, larger buildings, but there is no limit of emissions.⁴³

Renewable Energy and Fuel Shift

Increase of renewable energy to cover energy demands is key to reducing emissions. This includes the transition away from fossil fuel for specific sectors and uses with transition to renewable energy and to electricity and hydrogen that can be produced by renewable energy. We have identified a number of important policies for this:

- Renewable energy targets
- Siting of wind and solar parks
- Support for local energy communities
- Subsidy for solar energy
- Support for green hydrogen
- Biomass diversification
- Phase out fossil fuel based heating
- Emission free construction sites
- Support for electric cars
- Stop the sale of new fossil fuel driven cars
- Subsidy for electric shipping

⁴²<https://nordicsustainableconstruction.com/news/2023/january/denmark-introduces-co2-limit-for-new-constructions>

⁴³https://www.dibk.no/globalassets/byggteknisk-forskrift-tek17/klimagassregnskap_veileder_01.07.2022.pdf

Renewable Energy Targets

To guide the development of renewable energy, ambitious renewable energy targets (RETs) are important, and many of the countries analysed have ambitious targets, as shown in the table below. Use of land and environmental consideration generates conflict of interests. Increased use of renewable energy sources are an important part of climate change mitigation, but energy efficiency must always be the first fuel.

Country	Targets	Status	Sectors etc.	Remarks.
Denmark ⁴⁴	4-doubling solar and wind on land, 6-doubling offshore wind 2020-2030	Agreement by Parliament	Electricity	
Norway ⁴⁵	8 TWh/y solar electricity by 2030 30,000 MW offshore wind 2040	Solar: Agreed by Parliament Off-shore wind target is government plan	Electricity	A Government commission estimated the need for 60 TWh new renewable consumption in 2030 for substitution and new industry.
Sweden ⁴⁶	No specific target			Electricity should come from fossil free sources in 2040
Latvia ⁴⁷	44% of RET by 2025	National strategy by government	Electricity	General target - fossil free energy
Lithuania ⁴⁸	100% renewable electricity 55% all energy by 2030	Legal Act	Electricity All energy	
Belarus	9,5% renewable in 2040 (from 8,3% in 2022)		All energy	
Ukraine ⁴⁹⁵⁰	27% renewable in 2030 of primary energy	Draft renewable energy action plan and draft of NECP	All energy ⁵¹	

⁴⁴ https://energywatch.com/EnergyNews/Policy_Trading/article14189516.ece

⁴⁵ <https://www.nve.no/media/16752/notatet-nves-svar-paa-oppdrag-om-solkraft-og-annen-lokal-energiproduksjon.pdf>

⁴⁶ <https://naturvernforbundet.no/content/uploads/2023/05/02.05.23-NOU-2023-3-Mer-av-alt-raskere-horningsuttalelse.pdf>

⁴⁷ <https://likumi.lv/ta/id/312423-par-latvijas-nacionalo-energetikas-un-klimata-planu-20212030-gadam>

⁴⁸ <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.398874/asr>

⁴⁹ <https://economy.gov.by/uploads/files/Kontseptsija-NSUR-2040.pdf>

⁵⁰ https://sae.gov.ua/sites/default/files/DraftNPDVE_2030_SAE_21_09_2022.pdf

⁵¹ <https://www.me.gov.ua/Documents/Detail?lang=uk-UA&id=f7088035-142e-4912-9aa0-6fe2def80c1b&title=ProektNatsionalnogoPlanuZEnergetikiTaKlimatuUkraini2025-2030>

Windpower / solar parks on land and at sea

While the EU is promoting that countries identify “go-to” areas for solar and wind power, countries are implementing various plans for siting of the new renewable energy.

The environmental organisations in this project propose that countries focus on “no-go” areas to minimise conflicts and waste of time, while for other areas a comprehensive process needed involving all local stakeholders, the population affected by the plans and proper environmental impact assessments with care for nature.

In Denmark, placing renewable energy on land is primarily a question for the municipalities, but in 2023, the government proposed 32 renewable-energy areas for larger installations. In the following debate, it was decided that the municipalities will have veto right for the use of these areas. For off-shore developments, in April 2024, the government announced tenders for 6 GW windpower on 6 sites, in addition to 3,300 MW existing and planned. This new tender is the first step to reach the target for increase of offshore windpower.⁵²

In Norway, renewable energy sites on land are increasingly decided by the municipalities as a result of strong opposition to many renewable-energy projects. Regarding off-shore, the first auction for 1,500 MW windpower concluded in March 2024, as a first step to reach 30,000 MW in 2040.⁵³

In Latvia are plans for 10 wind parks that together shall replace 40,000 ha of forests. These plans are at the moment contested by Latvian environmentalist organisations that are against such large deforestation (alternatively the windmills could be placed in existing forests outside special nature protection areas).

In Lithuania, more than 8 GW of onshore wind and solar is planned until 2030. In addition, two 700 MW offshore windpower parks are being developed.⁵⁴

Sweden is the leading wind power country in the region with 34 TWh/16 GW installed 2023 and a 2026 forecast for 55 TWh/19,5 GW, in spite of reduced incentives (for offshore wind). Earlier incentives of great importance were electricity certificates, but prices have dropped to insignificant levels.⁵⁵

Support for local energy communities

To increase development of renewable energy, to increase the local benefits for renewable energy developments, and to reduce conflicts, EU legislation (electricity market directive, renewable energy directive) introduces energy communities. With this, all countries should allow citizens and many local actors to join energy communities. The countries should establish an enabling framework for energy communities.

The environmental organisations are concerned that the enabling framework is lacking in most of the countries analysed.

In Denmark, there is only a minimal implementation of EU regulation for energy communities and there is effectively no enabling framework, except for a small state fund for feasibility studies of 650,000 €/year.⁵⁶

In Lithuania, there is a fund for energy communities of €62 million € + additional 90 million € for energy poverty reduction that can be used for energy communities that reduce energy poverty.⁵⁷

In Ukraine, some legislation supporting the creation of energy cooperatives exists, but no alignment with the EU Directives, no transposition of the citizen energy communities and renewable energy communities definitions.

⁵² www.altinget.dk/artikel/regeringens-bud-her-er-de-32-steder-i-danmark-hvor-vi-kan-bygge-energiparker and <https://kefm.dk/aktuelt/nyheder/2024/apr/havvindsudbud>

⁵³ <https://www.regjeringen.no/no/aktuelt/ventyr-nordsjo-ii-har-vunnet-auksjonen-om-tildeling-av-prosjektomrade-for-havvind-i-sorlige-nordsjo-ii/id3030559/>

⁵⁴ <https://enmin.lrv.lt/lt/naujienos/luzio-taskas-nacionalineje-energetikoje-pasigaminame-beveik-puse-poreikio/>

⁵⁵ <https://swedishwindenergy.com/wp-content/uploads/2024/04/Statistics-and-forecast-Q1-2024.pdf>

⁵⁶ <https://www.rescoop.eu/policy/transposition-tracker/enabling-frameworks-support-schemes/denmark>

⁵⁷ https://commission.europa.eu/document/download/cd246df6-377e-4db3-bb48-8475c80aa43c_en?filename=LITHUANIA%20DRAFT%20UPDATED%20NECP%20EN.pdf

Subsidy for solar energy

Several countries have existing or planned subsidies for solar energy. Subsidies can help diversify solar investments to have more installations on houses and near energy uses rather than on fields. The following table give an overview for the countries analysed

Country	Status	Subsidy
Denmark ⁵⁸	Planned, not in force	Support for renewable energy on complicated sites, such as above parking lots, probably as tenders. ⁵⁹
Norway	In force	For household installations, the subsidy is 10,000 NOK +1,000 NOK/kW, max 32,500 NOK (2,800 €). For commercial building solar are applicable for competitive support together with energy efficiency.
Sweden ⁶⁰	In force	For private households installing solar, there is an income tax reduction of 0.6 SEK/kWh for feed-in electricity up to own consumption and an (income) tax credit related to the work costs of the installation cost equal to an investment subsidy of 10-15%.
Latvia	In force, budget limit 30 million € in 2022-2024	For private households up to 15,000 € in subsidy.
Lithuania	In force, budget limit 40+16 million € in 2024	Subsidy for private households 255 €/kWp up to 10 kWp/household.
Ukraine	Partially in force	There are feed-in tariffs and since last year - net billing. No financial support from the state, some separate loan programs from Ukrainian banks for the installation.

In several countries, different support schemes have supported the development of solar and other renewable energy until it became self-financed. In Denmark, feed-in tariffs have been successful, but are now not needed any longer. In Sweden, green certificates have been a very successful instrument, but they are not needed anymore. Without support, onshore wind power is expected to grow in Sweden from 33 TWh 2023 to 53 TWh 2027, according to the latest short term forecast from the National Energy Administration in Sweden.

Green hydrogen for hard to abate sectors

Hydrogen is a new energy carrier for the energy transition, but to be part of the transition, it must be green hydrogen made from renewable electricity. There are several proposals for use of hydrogen made with fossil fuel or nuclear power that are increasing climate and environmental problems rather than reducing them. Hydrogen is also a costly form of energy as it is to be made from electricity with some losses. Thus, the environmental organisations are eager that hydrogen is only developed in places where enough renewable electricity is available and that it is used in “hard to abate” sectors as steel production, where it can replace coal and for long-distance shipping that can use liquid fuels made from hydrogen. Further, the production of hydrogen from electricity require substantial supply of water and should be only be made in sites, where sufficient water is available for the hydrogen production as well as for local purposes Use of hydrogen based fuel for aviation fuel can support the increase of aviation and as most of the harmful climate impact comes from water vapour that is not reduced with the change of fuel, it is not a good climate solution, but a diversion of climate funding and attention.

⁵⁸ <https://kefm.dk/Media/638379734168312589/Klimaaf tale%20om%20mere%20gr%C3%B8n%20energi%20fra%20sol%20og%20vind%20p%C3%A5%20land%202023.pdf>

⁵⁹ <https://www.enova.no/privat/alle-energitiltak/solenergi/solcelleanlegg/>

⁶⁰ <https://caneurope.org/content/uploads/2024/04/Sweden-Residential-Rooftop-Solar-Country-Profile.pdf>

Given the many issues with hydrogen, we include problematic hydrogen production under the section “Worst mitigation measures”, see below.

Most of the countries analysed are supporting hydrogen development or are planning to support it. Unfortunately, not all projects are environmentally benign, so the hydrogen production and use should be limited using above criteria.

In Denmark, the state supports hydrogen with tenders for Power-to-X projects with hydrogen and the state owned transmission operator, Energinet is planning a hydrogen pipeline and storage including a pipeline to Germany, partly with conversion of an old gas pipeline and storage to hydrogen.⁶¹

In Norway there is support for hydrogen from the state agency Enova and from other state agencies. The main focus is to make fuel for the maritime sector.⁶²

Sweden is a pioneer of green steel production, in which coal and coke are replaced by green hydrogen. Iron and steel production is a major source of CO₂ – about 8 percent of global emissions. The HYBRIT project by the mining company LKAB, steel producer SSAB and energy company Vattenfall has started hydrogen steel production. They are planning for large-scale production and use by 2026 and for the total elimination of coal by 2030. This project and the later “H2 Green Steel” each aim for more than a million tons of green steel production capacity by 2026, and twice as much by 2030. Then all steel from SSAB will be produced without coal. The Swedish projects are intended to produce hydrogen close to the point of use. They do not require long pipelines or require plans for hydrogen-to-power. This means faster, cheaper and more efficient deployment.⁶³

In Lithuania, there is support of 50 million € for hydrogen projects.⁶⁴

In Ukraine, there is being developed a “Hydrogen Strategy 2050” with plans first and foremost focused on the export to the EU countries (specifically, Germany) and to use it in different sectors in Ukraine.

Biomass diversification, subsidy for scrapping old stoves etc.

Still a large part of biomass use is traditional use of wood stoves. It is often a very polluting form of energy and too often with negative impact on forests, so a good climate policy is to support the change to other forms of renewable energy such as heat pumps or to clean burning stoves (the debate is still ongoing about how clean stoves should be to be acceptable). Thus, several countries have regulations or subsidies in place to scrap the polluting wood stoves.

In Denmark, municipalities can ban wood stoves installed before 2008, and now some urban municipalities including Copenhagen are discussing to use this competence.⁶⁵

In Latvia, there is a program to diversify away from wood stoves in cities including a subsidy to change from old wood stoves. If the change, for instance to a heat pump, is combined with solar PV, the subsidy can be up to 15,000 €/household.

In Lithuania, there is financial support to change old wood boilers (and to change gas boilers) to cleaner burning wood boilers (with emission class 5, equivalent to current EU ecodesign regulation) or heat pumps outside district heating areas.⁶⁶

⁶¹ https://ens.dk/sites/ens.dk/files/ptx/strategy_ptx.pdf

⁶² <https://www.enova.no/heilo/hydrogen/stotte-til-hydrogenprosjekter/>

⁶³ <https://www.hybritdevelopment.se/en/>

⁶⁴ <https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/4d313670fb3611edbc0bd16e3a4d3b97?positionInSearchResults=0&searchModelUUID=e2bb98d1-c2c5-4de8-92af-adc924059275>

⁶⁵ <https://www.sn.dk/broenshoej-husum/forbud-mod-aeldre-braendeovne-rykker-taettere-paa/>

⁶⁶ <https://www.ena.lt/inpa-katilokeita/>

Phase out fossil fuel heating

In Denmark, there is a target for phasing out oil and gas heating until 2035 and strong reductions until 2030. The targets are supported with subsidies for change from fossil fuel heating to district heating or heat pumps. It is currently debated how strict the 2035 target should be followed.⁶⁷

In Norway, fossil fuel heating has been banned since 2020 in existing and new buildings.⁶⁸

In Sweden, Lithuania, and Latvia, there are subsidies to replace fossil fuel boilers with heat pumps. In Sweden the subsidy is only a 30% tax deduction of the work to replace the boiler with the heat pump, not the heat pump itself. In Lithuania and Latvia are direct investment subsidies with available budget allocations. Sweden has a high market penetration of heat pumps and hardly any fossil fuel heating left (today heat pumps mainly replace inefficient, direct electric heating).⁶⁹

Sweden has a large share of district heating mainly for industries, offices and multi-family dwellings. It is to a large extent fuelled by waste, including plastics, some of which imported. There is no plan to phase out the waste.

In Ukraine, according to the draft NECP the target for share of alternative energy sources (renewable energy sources but also other secondary energy resources) in the production of thermal energy by objects in the heating sector in 2025 is 30%, in 2035 - 40%.

Emission free construction sites

Fossil fuel is the primary fuel in most construction sites. As this is also to be phased out, it is high time to start moving from fossil fuel to electricity in construction machinery. This is, however, only happening to a very limited extent.

In Norway, in the five biggest cities including Oslo, there are plans to phase out fossil fuels in construction and phase in emission free construction sites in all public projects until 2025. In Oslo the regulation will be mandatory also for private developers from 2030.⁷⁰

Support for batteries

Batteries are increasingly useful with use of electricity for transport and for the change to renewable and local electricity supply with less large power plants. Batteries are, however, resource and energy intensive to produce, and many batteries are made with electricity from coal power, giving them a high life-cycle emissions. Sustainable battery production must be based on renewable electricity. Battery production needs a large supply of water, so battery factories should be allocated in sites with sufficient water supply for the factory and for local demands. The large use of chemicals in battery production requires sustainable supply of materials and a high environmental standard at the battery factories.

Given the high resource use for batteries, sustainable use of batteries also requires that they are used, where they have the highest value and that there is recycling of batteries at their end-of-life.

In Sweden, several large battery factories are under construction or planned, which have received large amounts of support from the EU and nationally. The first factory, Northvolt Ett in Skellefteå, aims to operate at full capacity by 2025. In Sweden the battery factories can be supplied with renewable electricity, making them more sustainable than most imported batteries.

In Sweden, battery storages are growing fast, much driven by the state grid company Svenska Kraftnät, which expects to pay 750 Million € in 2024 for grid system support that can be delivered from batteries (50 Hz frequency stability and similar fast regulation services).

⁶⁷ <https://rgo.dk/en/we-must-not-stumble-on-the-finish-line%2C-we-must-get-rid-of-the-gas-stoves/>

⁶⁸ <https://oljefri.no/oljefyringsforbud-fra-2020/category931.html>

⁶⁹ https://www.coolproducts.eu/wp-content/uploads/2023/10/Annex-1_GHA1_National-incentive-schemes-2023-august.pdf

⁷⁰ <https://www.sintef.no/fagomrader/utslippsfrie-byggeplasser/historien-om-utslippsfrie-bygge-og-anleggsplasser-i-norge/>

Support for electric cars

Support for electric cars is a very used way to promote lower CO₂ emissions from transport. While it does reduce emissions from individual car users that change to electric cars, lower car taxation can increase the total number of cars. The environmental profile of electric cars depends on the electricity they use, so with the introduction of electric cars, renewable electricity supply should be increased in parallel. Another issue is that a substantial part of a cars' lifecycle emissions are from the car production. Further, many support schemes for electric cars are mainly benefiting the rich that buy the most expensive cars and most electric cars while all taxpayers are paying via taxes. A special concern is support for hybrid cars that have very little or no effect in reduction of emissions compared with fossil fuelled cars.

All countries have support for electric cars in one or more ways. The table below gives an overview.

Country	Purchase subsidy	Annual tax	Other benefits
Denmark ⁷¹	No sales tax to up to 426,000 DKK Also some tax reduction for hybrid cars	Low annual tax	Some free parking Some subsidies for chargers
Norway ⁷²	No VAT up to 500,000 NOK	Low annual tax	Some free parking, reduced toll Support for chargers
Sweden ⁷³		low road tax and no circulation tax, lower annual tax than for fossil cars	
Latvia	Subsidy for new cars 4,500€, used cars - 2,250€	No annual tax	Free parking, use bus lines
Lithuania ⁷⁴	Subsidy for individuals new cars 5,000 €, on used imported cars 2500 €. For companies new cars 4,000 € and no VAT up to 50,000 €		In some towns free parking and use bus lanes
Belarus	No VAT/import tax		Free parking
Ukraine	No VAT/import tax		

Ban new fossil cars

The EU has agreed that new fossil fuelled cars should not be sold from 2035, but this can be introduced earlier as several environmental organisations are proposing.

In Norway, the Parliament has agreed on a ban on fossil cars from 2025, covering personal cars. It is not introduced as a law and it will probably not be enforced, but the sale of personal cars driven on fossil fuels will be very low in 2025. Already in the first quarter of 2024, the share of electric car sales of new cars is 90.2 %.⁷⁵

In Sweden, Volvo Cars, the only car manufacturer in the Nordic countries, will stop production of fossil cars by 2030.⁷⁶

⁷¹<https://www.ampeco.com/fr/ev-charging-grants-incentives/denmarks-ev-revolution-tax-benefits-and-infrastructure-boost/> and <https://www.ampeco.com/fr/ev-charging-grants-incentives/denmarks-ev-revolution-tax-benefits-and-infrastructure-boost/>

⁷² <https://www.regjeringen.no/no/aktuelt/esa-godkjenner-endret-momsfritak-for-elbiler/id2951454/>

⁷³ <https://alternative-fuels-observatory.ec.europa.eu/transport-mode/road/sweden/incentives-legislations>

⁷⁴<https://sumin.lrv.lt/lt/veiklos-sritys/darnus-judumas/elektromobilumas/elektromobiliu-naudojima-skatinancios-priemones/>

⁷⁵ <https://www.energiogklima.no/klimavakten/utrulling-av-elbiler>

⁷⁶ <https://www.volvocars.com/se/edit/artikel/volvo-elektrisk-framtid>

Fossil fuel free public transport

Also the public transport should be fossil fuel free, which is gradually introduced in the countries analysed.

In Denmark, electric public buses and trains are gradually introduced, including battery trains on smaller train lines. Copenhagen and other municipalities have a target of electrifying all buses in 2025, while some regional public transport companies have a fossil fuel free 2030 target. Denmark, Luxembourg, Netherlands lead the way on emissions-free buses.⁷⁷

In Norway, Oslo has established a target to reach emission free public transport (buses, ferries, trams and metro) by 2028. Already in 2023 the target was almost reached. The experience is that the battery electric traction is still challenging during the coldest winter period.⁷⁸

In Sweden, almost all local buses are fuelled by biofuel, and electric buses are phased in for example in Stockholm.

In Latvia, Riga introduces 85% fossil fuel free public transport in 2026, including trolley buses.

In Lithuania, the government supports municipalities to change to electric and biomethane buses while there is electrification of train lines.⁷⁹

In Belarus, three municipalities plan to change to 100% electric buses. There is a production of electric buses in Belarus.

Subsidy for electric shipping

Also shipping needs to become fossil fuel free and while long-distance shipping most likely will need fuels from hydrogen (as mentioned above under the hydrogen paragraphs), shorter distances can be covered with electric ships, which is the most efficient way of motorised shipping.

In Norway, the state requires in its procurement of ferry transport that new ferries are electric. On a project basis, there is state support (investment subsidies, support for technical development) for electric fishing boats and for coastal cargo transport. In these cases, the private owners get a state subsidy for the purpose.⁸⁰

In other countries there is project support for electric ferries. There are a few electric ferries, for instance on the Danish-Swedish "Helsingør-Helsingborg" line (at the time biggest electric ferries in the world.⁸¹

Transport

Given the high share of CO₂ emissions that come from transport, change to more environmental modes of transport is important to reduce emissions. All countries support environmental modes of transport, in some countries with success, while in other countries, environmental alternatives are deteriorating due to lack of support and political will. We have in this chapter collected some good examples, also some that are not big successes. We have not documented the cases of deteriorating public transport.

⁷⁷<https://www.transportenvironment.org/discover/denmark-luxembourg-netherlands-lead-way-emissions-free-buses/> and https://fm.dk/media/25209/aftale-om-infrastrukturplan-2035_a.pdf

⁷⁸<https://ruter.no/en/about-ruter/reports-projects-plans/fossilfree2020/oslo-european-green-capital/?sq=green+capital>

⁷⁹<https://esinvesticijos.lt/naujienos/susisiekimo-ministerija-lietuvos-autobusu-parkus-kviecia-atnaujinti-elektriniai-ir-vandeniniai-autobusai-skiriamas-66-mln-eur-finansavimas>
<https://ltginfra.lt/en/electrification/>

⁸⁰ <https://businessnorway.com/articles/norway-showcases-award-winning-electric-ferry-technology>

⁸¹<https://valjframtiden.se.abb.com/varldens-storsta-batterifarjor-tar-dig-till-danmark-pa-sex-minuters-laddning/> and for a line to the Danish island Ærø.

Bicycle infrastructure support

With good bicycle infrastructure, bicycling can be an important mode of transport, especially in towns. It requires, however, support for development of bicycle paths and other infrastructure for bicycling.

In Denmark, bicycling is very popular in and around Copenhagen, due to continued development of bicycle-paths, including a network of "super bicycle paths" for longer commuting. Many of the users use electric bi-cycles (pedelecs) for longer commuting. While the municipalities are in charge of development of most bi-cycle infrastructure, the state supports some municipal bicycle projects with 50-60% support, but due to a low state budget allocation, only 1/3 of the municipal projects are supported. This low support hampers the development of bicycle infrastructure throughout the country.⁸²

Norway also has support for development of bicycle infrastructure, and for instance in Oslo there are now many bicycle paths.

Stockholm has 1,140 km of bicycle roads.⁸³

In Latvia, a network of bicycle roads are constructed in and around Riga with EU recovery support.

In Lithuania, there are investments into more bicycle lines all over the country.⁸⁴

Support for public transport

Good public transport can replace much car travel, but it needs support and good planning. Some good examples are mentioned here.

In Norway, there is a special agreement between the state and municipalities in the nine main urban areas on development of public transport infrastructure. There is a joint coordination of planning and financing. Including financing from toll roads.⁸⁵

In Sweden, the region Skåne has successfully increased public transport in recent years.⁸⁶

In Latvia, there is a Green Tram program for Riga, Liepaja, Daugavpils that will improve public transport in the three towns. The trams are produced in Latvia, contributing to the activity of the country.

Support for international trains, night trains

Longer distance trains, including night trains, can replace aviation up to distances around 1,500 km. There are several night train lines in the Nordic-Baltic region and there are many night trains in Ukraine, connecting all big cities. There are also some new developments including:

Sweden has with support and a tender established new night trains of Stockholm-Hamburg and Stockholm - Berlin.

In Lithuania and Latvia, the Rail Baltic (Warsaw - Vilnius - Riga - Tallinn) is developed, but it has not opened yet.⁸⁷

Travelling to and from Ukraine is difficult due to the closed airspace because of the war, so the state company "Ukrzaliznytsia" continues to actively develop international rail connections with Europe (with several already in place).⁸⁸

⁸²<https://fulfill-sufficiency.eu/wp-content/uploads/2023/10/D5.2-Report-on-the-comparative-analysis-of-sufficiency-policies-0923-1.pdf>

⁸³ <https://cykla.stockholm/cykelnat/>

⁸⁴<https://www.esinvesticijos.lt/naujienos/lietuvos-regionai-gali-pradeti-naudotis-es-fondu-investicijomis-darniam-juu-mui-miestuose-skatinti-susiekimo-ministerija-patvirtino-planavimo-dokumentus>

⁸⁵<https://www.regjeringen.no/no/tema/transport-og-kommunikasjon/kollektivtransport/byvekstavtalerogtilskudd/id2571977/>

⁸⁶ <https://www.goswift.ly/blog/skanetrafiken-expands-ridership-increases-customer-satisfaction>

⁸⁷ <https://www.railbaltica.org/>

⁸⁸<https://visitukraine.today/blog/1250/abroad-by-rail-which-trains-run-between-ukraine-and-european-countries>

Other Important Climate Policies and Measures

The environmental organisations involved in this publication have identified many other important policies and measures, where we have not analysed national actions. These include:

- Reduction of food waste
- Policies for more plant-based food
- Agricultural policies to reduce emission from agriculture and agricultural inputs, such as fertiliser
- Increasing carbon stocks through ecosystem restoration, soil protection measures, preventing forest degradation, restoring degraded lands, reducing the area of ploughed land etc.
- Sufficiency policies for more sustainable lifestyles, reducing transport demands, housing size, consumption and others
- Circular economy policies to reduce the climate footprint of consumption.

Questionable Measures/Worst Mitigation Measures

The environmental organisations involved in this publication have also identified some mitigation measures that we find are problematic and do not lead to good climate solutions. We have not analysed national actions for this, but they are supported in some of the countries analysed. These measures are:

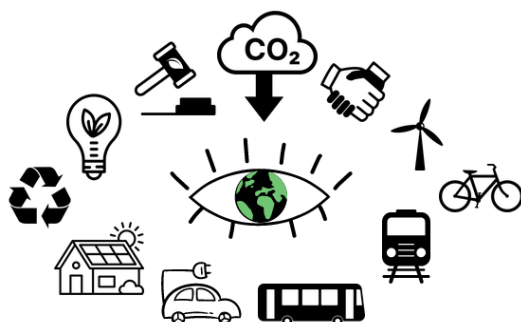
- Support for liquid biofuels. A large part of the liquid biofuels come from unsustainable sources, where the climate effects are comparable to fossil fuels, so the further use of liquid biofuel will only reduce emissions marginally.
- Support for Carbon Capture and Storage (CCS). CCS is a risky and not well proven technology that is also quite expensive. Given the costs and technological risks, CCS has the potential to slow down climate action, as long as it replaces other, more reliable solutions. It is also not needed according to several scenarios, see for instance the European CLEVER Scenario.⁸⁹
- Support for nuclear power. It is a risky and very expensive technology that is also very slow to build. Experiences from several countries are showing that focus on nuclear power will slow down development of renewable energy, and as nuclear is very slow to build, this will slow down climate mitigation.⁹⁰ Nuclear power can also make the grid less stable: the two major grid breakdowns that Sweden has experienced since 1980 did involve nuclear power plants (1983, 2003).
- Development of hydrogen production from fossil fuels and from nuclear power as well as hydrogen production at sites, where there is insufficient water or green electricity available. Both black (or brown) hydrogen made from coal and grey hydrogen made from fossil gas have large CO₂ emissions. Blue hydrogen made from fossil gas with CCS requires storage of large volumes of CO₂ with the same storage problems as other CCS. Pink hydrogen (sometimes called yellow hydrogen) is made from nuclear power, resulting in the same problems as nuclear power.

This is not an exhaustive list of questionable mitigation measures, but some of the most problematic measures that are used in the countries analysed.

⁸⁹ <https://clever-energy-scenario.eu/>

⁹⁰ <https://eu.boell.org/en/nuclear-lobby>

Comparison of (Best) Mitigation Measures from Nordic-Baltic countries and Ukraine



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