Latvia 2024

Energy Policy Review

International Energy Agency

INTERNATIONAL ENERGY AGENCY

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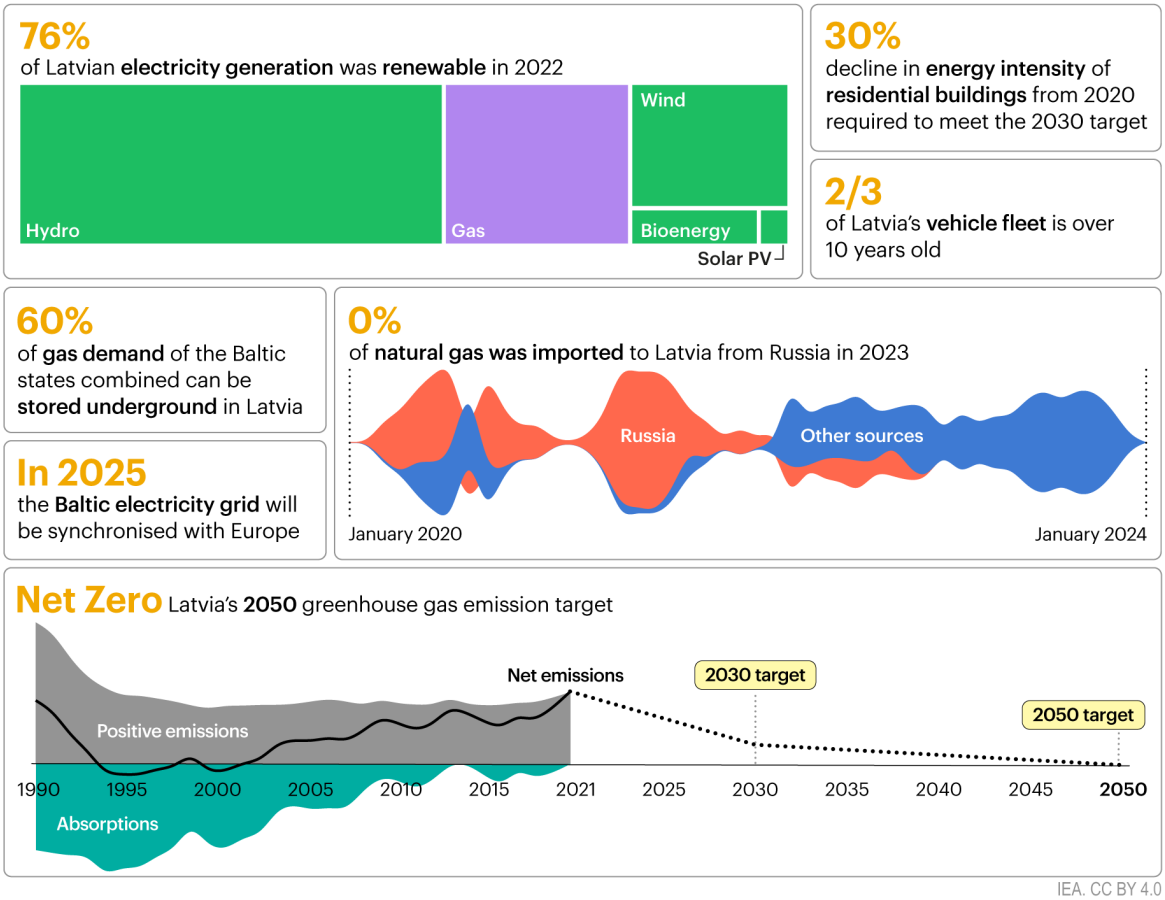
Executive summary

Latvia's energy transition is poised for renewed momentum. The IEA peer review of Latvia took place 18-25 September as part of Latvia's accession to the IEA. It came at an opportune time for Latvia, which is in the process of updating its National Energy and Climate Plan 2021-2030, in line with more ambitious European Union (EU) climate and energy transition targets. The creation of a new Ministry of Climate and Energy in January 2023 will further support Latvia's climate and energy goals by ensuring a more dedicated and systematic government approach to policy making and implementation. Moreover, given Latvia's historic dependence on energy imports from Russia, its transition to clean energy sources offers an important opportunity to bolster energy security and lower energy prices.

Latvia is making progress towards a clean and secure energy future



The electricity sector is dominated by renewables, but more decarbonisation is needed in other sectors. Latvia has already made inroads on the share of renewable energy in its fuel mix, with sizeable shares of bioenergy and hydropower. Renewable energy sources dominate its electricity mix, accounting for around three-quarters of domestic generation.

Other sectors, notably transport and buildings, continue to consume large amounts of energy and rely on dated infrastructure that hinders stronger reductions in energy consumption and greenhouse gas (GHG) emissions. The government should, therefore, prioritise energy efficiency and fuel switching in these sectors.

Sectoral roadmaps would clarify pathways to meeting climate targets. Latvia's national target is to reduce total GHG emissions (without land use, land-use change and forestry [LULUCF]) by 65% from 1990 levels by 2030. Latvia is still on track toward this goal as emissions had fallen by 59% in 2021, though most of this was achieved between 1990 and 1995, based on economic shifts after independence from the Soviet Union. Emissions in recent years have, in fact, been growing.

Unusually for an EU country, most of Latvia's emissions fall outside of the EU Emissions Trading Scheme (ETS). As Latvia looks toward achieving its 2050 climate neutrality target, actions taken today will inform the pace and scale of the country's energy transition. Notably, energy-related sectors would benefit from detailed sectoral roadmaps that clarify the government's envisioned pathways to achieving 2030 and 2050 climate targets, including detailing policy levers, technology penetration and financing requirements.

Electricity will be the cornerstone of Latvia's energy transition. Latvia's hydro-dominated electricity system provides a favourable starting point to use clean electricity to decarbonise other economic sectors and meet the target of 57% renewables in total final consumption by 2030. To support electrification, the government should ensure an enabling investment environment for additional growth in renewable electricity generation, especially wind and solar. Though Latvia does not offer financial support for new electricity investments, the government should continue to streamline and remove bottlenecks in the permitting process and eliminate regulatory hurdles for new investments. Bringing wind and solar power projects online will also help reduce Latvia's dependence on natural gas imports and can contribute to lower electricity prices; current efforts to develop offshore wind will support this outcome. The government will likewise need to clarify the role of natural gas co-generation plants in the energy mix over the long term, given their outsized role in ensuring system stability.

Latvia could achieve considerable energy savings by renovating its building stock. Latvia holds considerable potential to accelerate energy efficiency

outcomes in the buildings sector, which will go a long way toward meeting climate targets and lowering energy bills. Latvia's energy demand is dominated by an ageing building stock, which accounts for nearly half of total final consumption, with residential buildings alone accounting for a third of total consumption. There is a sizeable investment gap on the path to meeting Latvia's renovation targets, and the country is almost exclusively reliant on EU funding for energy efficiency programmes. There is thus considerable work ahead to increase ambition, expand funding over longer time horizons, explore innovative financing mechanisms, cut red tape and increase consumer awareness. The recent energy crisis can serve as a mobilising force in this regard.

The government should prioritise efforts to reduce energy consumption in road transport. Latvia's transport sector, predominantly road transport, is also a major energy consumer. Around 95% of transport energy demand is met with oil products, indicating that Latvia has potential to both lower oil consumption and to switch from oil to alternative sources. Latvia's car fleet is relatively old and uptake of electric vehicles (EVs) to date has been slow. Moreover, the use of public transport has generally been on a downtrend in recent years. The government has now placed a greater emphasis on lowering emissions from the transport sector, including through new EV incentives and a planned overhaul of the public transport network. Additional policies and sustained financial backing for efforts to lower energy demand in the transport sector will further help Latvia achieve its climate goals.

Energy security considerations will continue to dominate energy policy making. The energy crisis stemming from Russia's invasion of Ukraine has had broad implications across Latvia's energy system (from oil and gas to electricity and heating), which has historically been heavily dependent on and interconnected with Russia's. Overall, Latvia has made considerable progress in unlinking its energy dependency from Russian imports in a short period of time, including by imposing bans on the import of electricity and natural gas from Russia in 2023. The government is also changing its storage model for oil reserves to further fortify its oil security.

These changes have created new vulnerabilities that Latvia needs to manage carefully. In electricity, Latvia will need to move forward with efforts to synchronise with the European grid on an accelerated timeline. For natural gas, Latvia will become heavily reliant on liquefied natural gas (LNG) supply as well as (soon to be expanded) gas storage. Meanwhile, Latvia will remain fully dependent on oil imports, and will have to manage supply diversification efforts (without Russian supply) accordingly.

1. General energy policy

Overview

Latvia's energy system is relatively well-diversified, with sizeable shares of renewables in the form of hydro and bioenergy. Its electricity system, in particular, is dominated by hydropower. The largest energy-consuming sector is buildings, followed by transport. Still, the energy system remains dependent on imported fossil fuels.

Latvia has set a target to reduce GHG emissions by 59% from 1990 levels by 2030 and to achieve climate neutrality by 2050. While the electricity system is already predominantly based on renewables, Latvia's energy transition will need to focus more concertedly on the buildings and transport sectors to meet both domestic and EU targets.

Latvia's energy system has been heavily impacted by the Russian Federation's (hereafter "Russia")-Ukraine energy crisis. In response, the government and industry have taken measures to significantly reduce imports of energy from Russia, with bans in place on both electricity and natural gas. Future focus for the government will be on ensuring energy security and diversification of import sources, while also accelerating the energy transition.

Economic overview

Latvia's economy has demonstrated steady growth in GDP per capita since 2010, with only a minor setback in 2020 due to the impact of the Covid-19 pandemic. However, despite this positive trajectory, in 2022, the country's GDP per capita stood at USD 30 934, lower than the IEA average in 2021 of USD 44 790 and behind other countries in the region. Additionally, Latvia has experienced a decline in population from 1.97 million in 2015 to 1.88 million in 2022.

Latvia's economy entered a recession after Russia's invasion of Ukraine, driven by soaring inflation. Energy prices, which were already increasing, spiked after the invasion, placing a considerable strain on the economy, especially on private consumption and investments. Additionally, the geopolitical instability resulting from the invasion has adversely affected investor confidence and foreign direct investment, thereby impacting economic growth. However, exports to Russia and Belarus were not affected significantly in 2022.

Accelerating investments in renewables and the clean energy transition is a core component of the government's strategy to bring down energy prices and bolster

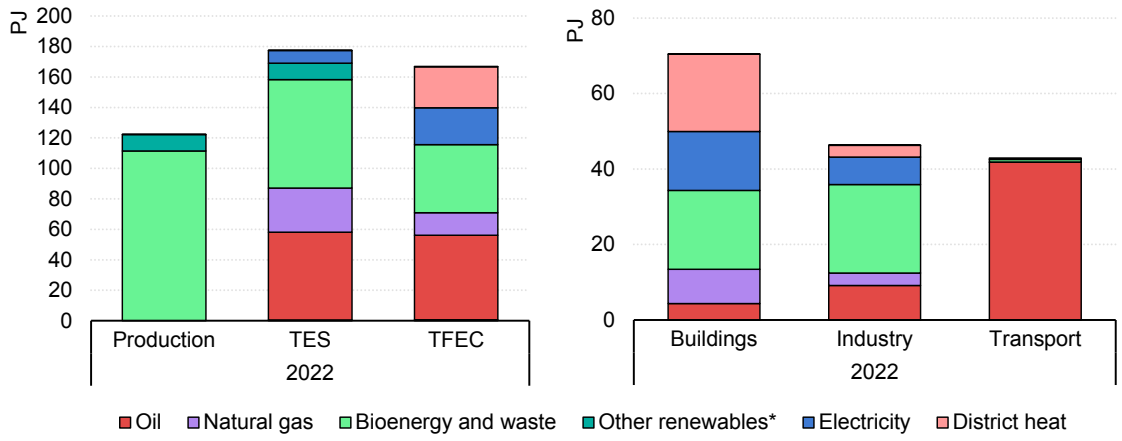
energy security. This will require realigning investment signals, policy support mechanisms and skills to support an expansion of new clean energy investments.

Energy production, supply and demand

The main source of energy supply in Latvia is bioenergy, drawn from domestic sources, which covers two-fifths of total energy supply (Figure 1.2). Bioenergy (mainly in the form of biomass) is used for electricity and heat generation and directly used in the buildings and industry sectors. The other main domestic energy source is hydro, used for electricity generation. The remaining part of energy supply comes from imported oil, gas and electricity.

The buildings sector accounts for almost half of Latvia's energy demand, followed by industry and transport. The district heating network is well developed in Latvia and covers a large part of heating demand in buildings, together with bioenergy. Transport is almost completely fuelled by oil, with a small share of biofuels. Bioenergy is the main energy source for industry, followed by oil and electricity.

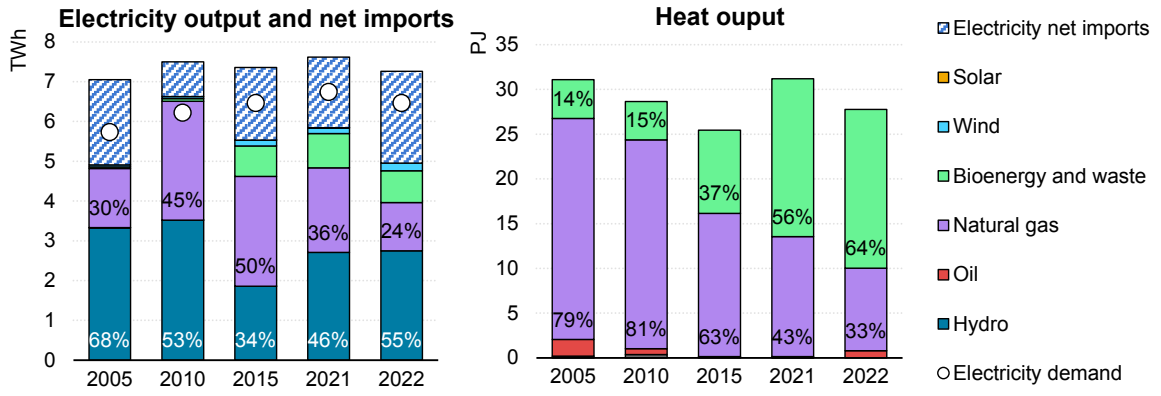
Figure 1.1 Energy production, total energy supply and total final energy consumption by fuel and sector in Latvia, 2022



Notes: PJ = petajoule; TES = total energy supply; TFC = total final consumption.
* "Other renewables" include hydro, solar, wind and tide.
Source: IEA (2023), World Energy Balances (database).

Electricity is generated using hydro, natural gas and bioenergy, with a small but increasing share of wind (4% in 2022). The use of natural gas for electricity generation almost halved from 2021 to 2022, due to high gas prices, and was mostly replaced by higher electricity imports. District heating supply is now mainly covered by bioenergy, followed by natural gas. The share of fossil fuels in district heat generation has gradually decreased to 33% for natural gas and 2.9% for oil in 2022 from 79% and 6% for natural gas and oil, respectively, in 2005.

Figure 1.2 Electricity and heat supply by fuel in Latvia, 2005-2022



Source: IEA (2023), World Energy Balances (database).

Institutional overview

The Ministry of Climate and Energy, created on 1 January 2023, is the lead organisation for developing and implementing Latvia's energy and climate change policy. It works in close co-operation with other parts of the government, including the Ministry of Environmental Protection and Regional Development and the Ministry of Economics. As a relatively new ministry, it is still being staffed.

The Ministry of Economics, previously responsible for all energy sector policies, retains responsibility for the maintenance and monitoring of strategic oil reserves and issues related to the implementation of support programmes for energy efficiency in housing.

The Ministry of Environmental Protection and Regional Development is responsible for developing and implementing environmental policies, as well as promoting sustainable regional development.

The Public Utilities Commission is an independent regulatory agency responsible for regulating the energy sector in Latvia. Its primary responsibilities include setting tariffs for electricity and natural gas distribution and ensuring that energy companies comply with regulatory requirements.

The Latvian Environment, Geology and Meteorology Centre is responsible for monitoring and managing the environmental impact of Latvia's energy sector, including as it relates to air and water quality. It also leads on conducting environmental impact assessments.

Under the Ministry of Economics, the State Construction Control Bureau oversees the mechanism of compulsory purchase of electricity, administers energy efficiency measures and, since 2020, also has oversight over petroleum products.

In addition, it licenses and supervises upstream activities, supports natural gas as a transport fuel, and administers oil reserves. With the creation of the new Ministry of Climate and Energy, the State Construction Control Bureau has taken on some tasks related to licensing.

The State Revenue Service is Latvia's primary tax administration authority, including for the energy sector. It not only collects taxes and enforces tax laws but also gathers important data about the energy sector (such as production and consumption data).

"Possessor" Ltd is a capital company entrusted with the privatisation of state property and selling state capital shares, primarily focusing on state-owned residential buildings. Possessor is undergoing changes that will expand its responsibilities to include managing Latvia's strategic oil reserves, ensuring efficient storage and distribution.

State-owned companies also play an important role in Latvia's energy sector. Electricity generation is dominated by AS Latvenergo, a 100% state-owned company which owns the largest Latvian hydroelectric stations and thermal plants. The electricity transmission system operator is likewise 100% owned by the government and holds monopoly status, while the distribution system operator is owned by Latvenergo and covers 99% of the market.

Energy transitions policy overview

Latvia's headline target under its National Energy and Climate Plan (NECP) is to reduce GHG emissions by 65% relative to 1990 levels by 2030 (compared to the EU-wide target of 40%). As part of this, the country also has 2030 targets to reach a 50% share of renewables in gross final consumption, a 7% share of renewables in transport and 30-40% of imports in gross national energy consumption. Latvia's NECP is currently being updated to align with the European Union's "Fit for 55" package; a draft was submitted to the European Commission in December 2023 (see Chapter 2).

Latvia also has a target to achieve climate neutrality by 2050. However, it does not yet have a long-term energy strategy to underpin the target, nor does it have sectoral roadmaps towards it.

Latvia's energy transition strategy is primarily rooted in three areas: 1) the EU ETS; 2) increasing the deployment of renewable energy; and 3) improving energy efficiency. While the EU ETS is administered at the EU level, renewables and energy efficiency are supported by several domestic measures, mainly financed with EU funds.

Most of Latvia's emissions fall outside the EU ETS, and are governed by the EU Effort Sharing Regulation (ESR). Latvia also has domestic obligations under other EU directives, notably the EU Energy Efficiency Directive and the Renewable Energy Directive. REPowerEU, the European Union's response to the energy crisis stemming from Russia's invasion of Ukraine, further sets obligations for member countries to reduce import dependency, lower energy consumption and increase the share of renewable energy.

The main financing for energy transition programmes comes from emissions unit sales proceeds, EU Structural Funds, the EU Modernisation Fund (to promote the transformation and modernisation of the energy sector) and the general budget. EU funds are time-limited, which have created variability in available funding for Latvia's energy programmes.

Latvia's electricity system is already heavily dominated by renewables (76% in 2022), mainly hydropower (55%). Given the variability of water inflows into Latvia's hydropower plants, natural gas co-generation plants play an important balancing role in Latvia's power supply.

For renewables in electricity, the government has offered support in the form of investment co-financing (EU Structural Funds), national green investment schemes, state and municipal budgets, fuel and electricity taxation, electricity feed-in tariffs, other regulatory measures, and end user information campaigns. However, Latvia no longer offers new state subsidies for large-scale electricity generation capacity, instead relying on market signals. To facilitate new renewables generation, though, the government has recently undertaken efforts to streamline the permitting process for wind generation and explore options for siting offshore wind (see Chapters 4 and 6).

Latvia has relatively high energy consumption in its buildings sector, due to its older building stock. Regulatory measures to promote energy efficiency improvements include standards for district heating systems, the development of metering and billing of electricity and district heat for end use consumers, energy performance standards in buildings, support for energy management systems, and investment co-financing programmes (see Chapter 3).

In the transport sector, which is heavily dependent on oil in road transport, the government imposes a biofuels blending obligation (temporarily made voluntary in 2023), motor vehicle inspection requirements and public procurement of energy-efficient vehicles. Following an excise tax hike in 2015, vehicle taxation has been based on CO_2 emissions values since 2017. Latvia has also taken measures to increase the penetration of EVs, though support schemes are being reconsidered (see Chapters 3 and 4).

Energy poverty

Latvia generally falls below EU averages on its energy poverty performance. In 2018, 7.5% of Latvians reported they could not adequately keep their houses warm (compared to the EU average of 7.3%), while 11.6% could not pay their utility bills on time (compared to the EU average of 6.6%). There are currently no targeted policies to address energy poverty in Latvia, nor has it been systematically analysed. However, following blanket support offered to households amid the recent energy crisis, Latvia is evaluating and developing a targeted support programme for households experiencing energy poverty (see below).

Energy sector diversity

Latvia currently does not have specific policies, goals or entities responsible for promoting gender diversity in the energy sector. However, its legal framework supports equal opportunities and addresses gender-based discrimination. Efforts at the EU level also indirectly influence gender diversity in Latvia's energy sector.

Energy crisis response

The energy crisis stemming from Russia's invasion of Ukraine has had broad implications across Latvia's energy system (oil, gas, electricity and heating), which has historically been heavily dependent and interconnected with that of Russia. Overall, Latvia has made considerable progress in unlinking its energy dependency from Russian imports in a short period of time. Most notably, on 1 January 2023, Latvia banned natural gas imports from Russia and Belarus and in May 2023 it banned commercial electricity purchases from Russia. The government is also changing the model of storage for strategic oil reserves.

In response to the energy crisis, Latvia also imposed price controls to shield customers from the impact of price spikes for gas (1 January 2022-30 April 2023), electricity (1 October 2022-30 April 2023) and heating (1 October 2022-30 April 2023). After planning to move to a new support mechanism that would last indefinitely, in response to abated market conditions, the government decided to continue the support mechanism only for protected customers. Details of the upcoming support mechanism are forthcoming.

Energy data and reporting

The Central Statistical Bureau of Latvia is responsible for collecting, processing and disseminating energy statistics. As an OECD member country, Latvia has already established data collection frameworks to comply with OECD energy-related data requirements. Its statistics are also harmonised and developed in

accordance with EU statistical collection requirements. Latvia will have additional energy data-reporting obligations as a member of the IEA.

Energy and environmental taxation

All oil products (including liquified petroleum gas, or LPG) and natural gas are subject to an excise duty. Biogas and other bio-based gaseous hydrocarbons, coal, peat and other similar solid products are not subject to an excise duty.

Latvia applies several carbon-pricing policies on its energy sector:

The Natural Resources Tax is applied on CO_2 emissions from combustion installations with a total rated thermal input below 20 megawatts (MW) and aircraft operators who do not participate in the EU ETS. Starting 1 January 2022, the tax rate is set at 15 EUR/tonne CO_2. In light of high EU ETS prices, the tax rate is under review.

Excise duty rates on fossil fuels (same as above) correlate with the carbon intensity of products to deter the consumption of fuels with the greatest environmental impacts.

The Vehicle Operation Tax is designed to promote the purchase of more efficient and environmentally friendly vehicles by applying a tax on light-duty vehicles with CO_2 emissions of 50 grammes per kilometre or greater.

The Electricity Tax is an indirect carbon-pricing mechanism applied to electricity supplied to end users and used for self-consumption at a rate of EUR 1.01 per megawatt hour (MWh). Presently, the Electricity Tax also applies to renewable energy used in co-generation facilities. There are several exemptions for the Electricity Tax.

The primary objective of the Natural Resources Tax is to reduce emissions; that of the Excise Duty, Vehicle Operation Tax and Electricity Tax is to raise state revenues.

Energy security

Russia's war on Ukraine and its ensuing impacts on energy trade have created new energy security vulnerabilities for Latvia, which are overarching priorities for the government to address. In this regard, transitions to clean energy are closely interlinked with energy security objectives.

Electricity: The ban on purchases of electricity from Russia and Belarus has decreased electricity imports from those countries by 77%. However, Latvia is still reliant on the Russian/Belarussian electricity grid for balancing. To address this, Latvia, together with Estonia and Lithuania, is investing in projects to synchronise

with the European electricity grid instead. The time frame for implementing these projects is now targeted for early 2025, one year sooner than originally planned before Russia's invasion of Ukraine. In the meanwhile, Latvia's energy security risk is high in the event that Russia shuts off access to its grid.

Natural gas: In response to the energy crisis, in 2022, Latvia started its gas injection season earlier and declared an early warning for its gas supply to ensure robust gas reserves at the Inčukalns underground gas storage facility. To replace Russian gas imports, Latvia has mainly turned to LNG imports from its neighbours. Latvia signed a ten-year capacity reserve contract with the Lithuanian Klaipeda LNG terminal to cover 70% of its domestic consumption. The remaining 30% is expected to come from the newly built Inkoo LNG terminal in Finland or Estonia's Paldiski LNG terminal. In 2022, Latvia considered building its own LNG terminal, but the government decided not to back one, so a terminal would only go forward if a private company built one purely on market-based terms.

Oil: Latvia's oil market is relatively small, and the country heavily relies on imports to meet its demand for oil and petroleum products, as it has limited domestic production and no confirmed, significant oil reserves. Likewise, Latvia does not have any oil refineries of its own and is reliant on importing refined petroleum products. Latvia has traditionally relied on two main sources of fuel supply: the Mažeikiai refinery in Lithuania and refineries owned by the Finnish company Neste. Both companies have stated that they no longer purchase crude oil from Russia. A large share of Latvia's LPG imports still come from Russia.

Assessment

Latvia is undertaking its energy transition with some promising results to date. It has made inroads on the share of renewable energy in its fuel mix, with sizeable shares of bioenergy and hydropower. In particular, 76% of its domestic electricity generation comes from renewable sources (mainly hydro), ranking it sixth among IEA countries (after Norway, New Zealand, Luxembourg, Denmark and Austria). Though domestic generation capacity is sufficient to cover demand, for economic reasons, around one-third of electricity is imported, mainly from Estonia.

Relative to Latvia's target of a 65% reduction in GHG emissions from 1990 levels by 2030, emissions have already fallen by 59% in 2021. Nonetheless, a large share of this was achieved between 1990 and 1995, based on economic shifts after independence from the Soviet Union (see Chapter 2). Still strong dependence on oil in transport and natural gas in electricity and heating suggests that additional work is needed to lower energy-sector GHG emissions, which account for two-thirds of the country's total emissions. In particular, achieving the target to reduce emissions in non-ETS sectors by 17% by 2030 compared to 2005 levels will require a more targeted focus.

With an eye to climate neutrality by 2050, Latvia should identify opportunities to accelerate its energy transition by advancing measures that debottleneck investment processes, modernise infrastructure and support innovation across its energy sectors. As part of this, the energy sector would benefit from detailed sectoral roadmaps that clarify the government's envisioned pathways to achieving 2030 and 2050 climate targets. The government should also provide long-term planning for subsectors, like biofuels and biomethane, to enhance investor confidence to start-up business in these sectors.

As an EU country, Latvia follows EU laws and regulations, including as they apply to climate change and energy. As a result, its large combustion facilities in the power and industry sectors are part of the EU ETS, whereas non-ETS emissions are subject to the EU ESR. Latvia must also comply with the EU Energy Efficiency Directive and the Renewable Energy Directive, all of which impose domestic targets and obligations. More recently, the European Union has updated its energy and climate targets, notably in the Fit for 55 package and the REPowerEU Plan, so Latvia will need to finalise its updated domestic targets accordingly.

Moreover, Latvia relies heavily on EU financing for its energy transition efforts, notably in the areas of energy efficiency, renewables and infrastructure investments. The government prioritises domestic budgetary outlays for other sectors, such as education and healthcare.

As EU requirements are generally strong, Latvia should assess its domestic policies and budgetary outlays to identify opportunities for increasing support in line with the elevated priority that the energy transition plays in achieving macroeconomic objectives. Specifically, in light of the energy crisis stemming from Russia's invasion of Ukraine, an accelerated shift to clean energy solutions (especially energy efficiency and renewables) can bring down energy costs and bolster energy security by limiting Latvia's heavy dependence on imported fossil fuels. Most measures in Latvia's NECP (see Chapter 2) extend programmes already in place; the NECP also calls for some additional measures, but many have not yet been implemented. The IEA, therefore, encourages the Latvian government to not only extend and expand existing programmes that have proven successful, but to also identify and implement new measures that can bear results quickly, especially in the area of energy efficiency. In a similar vein, Latvia should also ensure that NECP measures are backed by adequate and predictable financial resources, including, but not limited to, EU financing mechanisms.

Latvia's hydro-dominated electricity system provides a favourable starting point to use clean electricity to decarbonise other economic sectors. However, to fully take advantage of this opportunity, Latvia will need to further expand the role of renewables in its electricity generation mix while ensuring system stability that is currently provided by natural gas co-generation. Latvia's market-based approach

to electricity investments will help ensure low costs, but the government should also investigate options for targeted support mechanisms and removing barriers for deployment in areas where investment is failing to mobilise on the level or time frame required to meet climate objectives. Government efforts to streamline permitting procedures for onshore wind as well as preparations for offshore wind are positive steps in this direction.

Latvia's buildings sector has the highest energy demand in the country. A relatively old building stock, built mainly on outdated standards, means the sector offers considerable potential to lower energy consumption and GHG emissions. Therefore, as Latvia finalises its updated NECP, the government should prioritise measures to improve energy efficiency, significantly increasing the ambition of its targets and support programmes; at the current speed, it will take well over a century before all houses are renovated. The government should also put more emphasis on derisking investments and cutting red tape to enable more private sector investments.

Latvia's transport sector, predominantly road transport, is also a major energy consumer. Around 95% of transport energy demand is met with oil products, indicating that Latvia has potential to both lower oil consumption and to switch away from oil to alternative sources. Latvia's car fleet is relatively old and uptake of EVs to date has been slow. Increased efforts to update transport infrastructure (especially rail) and lower costs for users should be prioritised.

From a taxation perspective, Latvia's existing excise taxes in the energy sector (Natural Resources Tax, Excise Duty, Vehicle Operation Tax, Electricity Tax) do not appear to be driving noticeable changes to lower consumption or the uptake of alternative fuels. As a result, the IEA welcomes the efforts outlined in Latvia's NECP to review the system of taxation to better align with energy transition objectives, and urges faster progress toward this end.

In terms of energy security, Latvia has made impressive strides in reducing its energy dependency on Russia in a short period, notably the rapid cessation of electricity and natural gas imports. However, the changes have created new vulnerabilities that need to be managed carefully. In electricity, Latvia will need to move forward with efforts to synchronise with the European grid on an accelerated timeline, while closely monitoring its grid balancing efforts in the interim, ensuring sufficient backup capacity should Russia prematurely cut off access to its grid. For natural gas, Latvia's efforts to secure LNG supply are welcome and should be expanded to ensure that gas supply covers all domestic needs (and likewise supports regional gas security).

Notwithstanding progress in electricity and gas, Latvia has not materially reduced its imports of LPG from Russia. The government should step up efforts to help its industry source LPG from alternative countries.

Latvia should also ensure that price support mechanisms to assist all consumers with electricity and heating bills are transitional and that any future support is only targeted at the most vulnerable customers to address energy poverty and encourage reduced energy consumption. The forthcoming updated support mechanism is, therefore, welcome news. Similarly, the government should ensure that the design of other incentives for clean energy deployment (e.g. energy communities, energy efficiency support programmes, distributed generation) benefit low-income households.

The IEA notes that despite the shortage of qualified labour in the energy sector, Latvia does not have any programmes in place targeted at helping young people develop skills in the sector. This applies equally to the government administration itself, where staffing and expertise could be boosted to ensure sufficient capacity to develop and implement policies and programmes. Together with schools, universities and companies, the government could promote skills development and employment in the energy sector and ensure sufficient qualified staff for its administration. The same goes for ensuring gender balance in the energy sector workforce, for which the government does not yet collect data.

Latvia has a number of dominant state-owned companies, including in the energy sector, which sometimes receive preferential treatment or experience more attractive regulation than their competitors. To stimulate all companies to actively contribute to the energy transition, the government should ensure a level playing field for all companies.

Recommendations

The government of Latvia should:

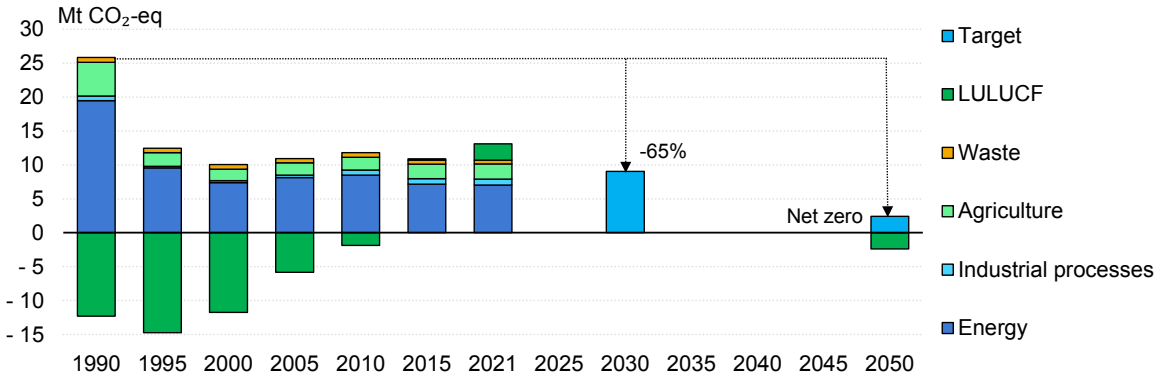
- Issue detailed sectoral roadmaps across energy sectors to 2030 and 2050 that clarify longer term decarbonisation pathways.
- Ensure sufficient financial backing, regulatory structures and government staff to support the implementation of policies and measures outlined in the National Energy and Climate Plan.
- Prioritise efforts to streamline permitting and modernise energy infrastructure.
- Accelerate plans to overhaul the taxation system to support clean energy transition outcomes.
- Closely monitor security of supply across the electricity, natural gas and oil sectors during the shift away from Russian imports.

2. Energy and climate change

Overview

Latvia has a national target to reduce GHG emissions by 65% by 2030 compared to 1990 levels, and to achieve net zero emissions by 2050 (Figure 2.1). From 1990 to 2021, Latvia's GHG emissions excluding LULUCF fell by 59%, from 26 million tonnes of carbon dioxide equivalent (Mt CO_2-eq) to 11 Mt CO_2-eq, but most of the reduction (52%) took place from 1990 to 1995, when the economy shifted after independence from the Soviet Union. In 2021, 65.6% of GHG emissions (excluding LULUCF) were energy-related, followed by agriculture (21%), non-energy related industrial processes (8.1%) and waste (5.3%).

Figure 2.1 Greenhouse gas emissions by sector in Latvia, 1990-2021 and targets for 2030 and 2050



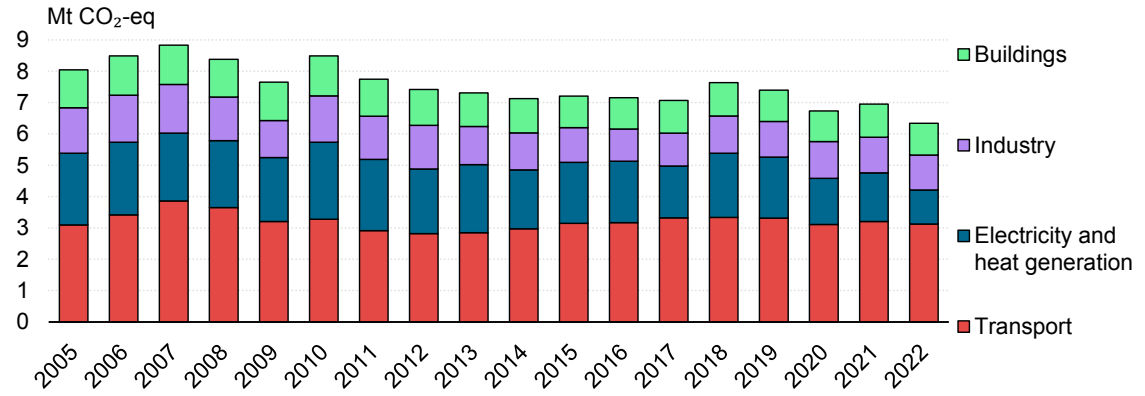
Notes: Mt CO_2-eq = million tonnes of carbon dioxide equivalent; LULUCF = land use, land-use change and forestry.
Source: IEA analysis based on data from UNFCCC (2023).

Latvia's carbon neutrality target relies on substantially increasing the level of carbon removal through LULUCF. LULUCF previously absorbed GHG emissions (15 Mt CO_2-eq in 1995), but the absorption level has been declining. Since 2015, LULUCF has become a net source of GHG emissions, emitting as much as 2.4 Mt CO_2-eq in 2021, as carbon removals from forest land have fallen significantly. Still, forests and afforestation have high carbon mitigation potential in Latvia. The climate strategy has set a target for the LULUCF sector to offset unabated emissions from other sectors by 2050.

Energy-related greenhouse gas emissions

From 2005 to 2022, Latvia's energy-related GHG emissions fluctuated from a peak of 8.8 Mt CO_2-eq in 2007 to a low of 6.3 Mt CO_2-eq in 2022 (Figure 2.2). The reduction in energy-related emissions since 2007 was driven mainly by the drop in emissions from electricity and heat generation, due to higher power generation from renewable sources and increased energy efficiency in buildings. Energy-related emissions dropped in 2020 due to decreased transport during the Covid-19 pandemic. After a slight rebound in 2021, they reached a historical low in 2022, due to a drop in emissions from electricity generation. In 2022, transport accounted for almost half of energy-related emissions (49%), followed by industry (18%), electricity and heat generation (17%), and buildings (16%).

Figure 2.2 Energy-related greenhouse gas emissions by sector in Latvia, 2005-2022



Note: Mt CO_2-eq = million tonnes of carbon dioxide equivalent.
Source: IEA (2023), Greenhouse Gas Emissions from Energy (database).

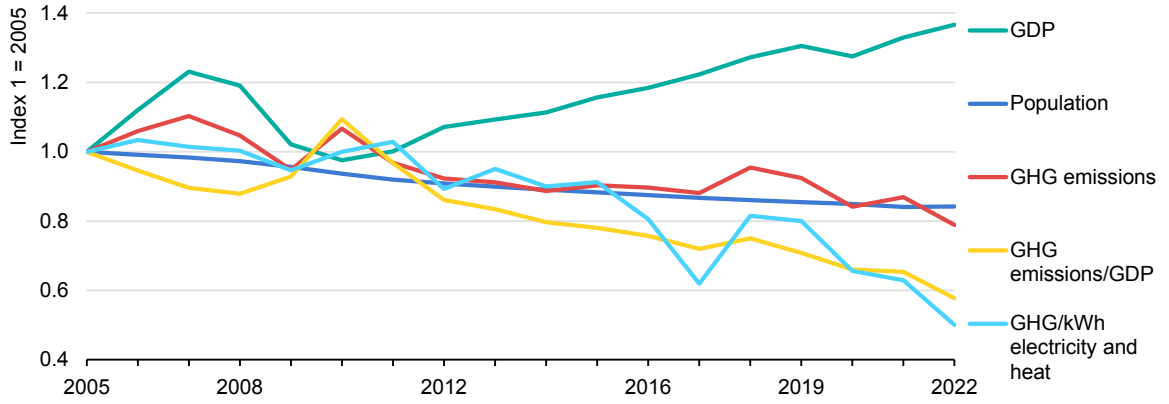
The transition away from electricity generation based on coal and natural gas to renewable sources led to a significant reduction in emissions from electricity and heat generation, which decreased by 56% between 2010 and 2022. Over the same period, there was a smaller decline in GHG emissions from industry (25% to 1.1 Mt CO_2-eq), driven by increasing use of bioenergy. From 2010 to 2022, GHG emissions from buildings declined (21% to 1.0 Mt CO_2-eq), driven by increasing energy efficiency in the industry sector and fuel switching from coal and natural gas to bioenergy. Emissions from the transport sector were stable over the period, as oil consumption only fell by 0.4%.

Emissions drivers and carbon intensity

Since recovering from the impacts of the 2008 financial crisis, Latvia is showing signs of decoupling GHG emissions from economic growth (though its population has also declined) (Figure 2.3). From 2010 to 2021, energy-related

GHG emissions declined by 20%, while GDP increased by 33%. As a result, the GHG intensity of Latvia's economy has steadily fallen, led by a strong reduction in the carbon intensity of electricity generation, which fell from 163 g CO_2-eq/kWh to 103 g CO_2-eq/kWh from 2010 to 2021. Continuous growth in the direct use of bioenergy in industry and buildings, improvements in energy efficiency in buildings, and a higher level of renewable power generation have also played instrumental roles in the decoupling.

Figure 2.3 Energy-related greenhouse gas emissions and main drivers in Latvia, 2005-2022



Notes: GDP = gross domestic product; GHG = greenhouse gas; kWh = kilowatt hour.
Source: IEA (2023), Greenhouse Gas Emissions from Energy (database).

Institutional overview

With the establishment of the new Ministry of Climate and Energy on 1 January 2023, overall responsibility for Latvian GHG projections and the co-ordination of monitoring policies and measures regarding climate and energy is now held by a single entity. These responsibilities were previously shared between the Ministry of Economics and the Ministry of Environmental Protection and Regional Development.

Climate change targets

Latvia's climate targets are based on international agreements: the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol (Doha amendment); the Paris Agreement; as well as common EU polices, such as the EU 2020 Climate and Energy Package, the 2030 Climate and Energy Policy Framework, the 2050 Long-term Strategy, and the European Climate Law.

Large combustion facilities in the power and industry sectors are part of the EU ETS, whereas non-ETS emissions are subject to binding national GHG targets under the EU ESR. EU-wide ETS emissions must fall by 43% from 2005 levels by

2030, while non-ETS emissions must be reduced by 30% from 2005 levels. The EU Fit for 55 package updates the economy-wide target to at least 55% (compared to 40%) below 1990 levels by 2030, with an ETS target of 62% from 2005 levels.

Latvia's large electricity generators and industrial facilities are subject to the EU ETS. Unlike in many other EU states, these sectors account for a relatively small share of Latvia's total emissions (19.2% in 2021). ESR sectors include transport, buildings, agriculture and waste. In Latvia, these sectors account for a disproportionate share of total GHG emissions, notably the transport sector. Latvia's target for ESR sector emissions is to reach 7.1 Mt CO_2-eq by 2030 (-17% compared to 2005). Latvia is not on track to meet the non-ETS target for 2030, as early estimates indicate that non-ETS emissions were 8.3 Mt in 2022. The target for the LULUCF sector is the most challenging.

In line with international, EU and national commitments, Latvia's main target is carbon neutrality by 2050. As part of this trajectory, Latvia has established an interim target for 2030 of a 65% reduction from 1990 levels; a target for 2040 is currently under development. Table 2.1 provides a breakdown of 2030 targets, as established in the country's NECP 2021-2030. Latvia is currently in the process of updating its NECP to align with the EU Fit for 55 package. It submitted a draft of its updated NECP to the European Commission in December 2023.

Table 2.1 Latvia's 2030 energy and climate targets

Indicator	2030 target
Greenhouse gas emissions reduction (compared to 1990)	-65%
Non-Emissions Trading System emissions reduction (compared to 2005)	-17%
LULUCF activities (thousand tonnes CO_2-eq)	-644
Share of renewables in gross final energy consumption	57%

Note: LULUCF = land use, land-use change and forestry.
Source: IEA analysis based on European Commission (2024), Latvia's National Energy and Climate Plan.

Climate policies and measures

Latvia's key national cross-sectoral policy documents to promote the implementation of climate policy and targets (as approved by parliament) are:

- The Sustainable Development Strategy for Latvia until 2030 (approved in June 2020) is a medium-term strategy focused on sustainable growth and energy security. It includes a focus on reducing GHG emissions (by 45% from 1990 levels), increasing the share of renewable energy, lowering the energy intensity of the economy and fostering greater innovation.
- The National Development Plan 2021-2027 (approved in July 2022) is Latvia's primary development planning document to achieve the goals outlined in the

Sustainable Development Strategy for Latvia until 2030. Under one of its priority areas, “Nature and the environment”, it includes measures such as improving air quality in cities through low-carbon transport options, encouraging behavioural change to support environmental outcomes, working with regional governments on sustainable infrastructure, and increasing housing energy efficiency and building renovations.

- The NECP 2021-2030 (approved in February 2020) is a ten-year integrated plan required of all EU member states to outline measures to achieve climate targets. It covers decarbonisation; energy efficiency; energy security; internal energy markets; and research, innovation and competitiveness.
- The Strategy of Latvia for the Achievement of Climate Neutrality by 2050 (approved in 2020) is a long-term, cross-sectoral policy planning document integrating GHG emissions reduction and climate resilience goals across the economy. It determines objectives to reduce GHG emissions by 85% compared to 1990 levels not including the LULUCF sector and by 76% including LULUCF emissions for 2040. For 2030, the GHG reduction target excluding LULUCF is 65%; including LULUCF emissions, it is 38%. It notes two basic approaches to achieve climate neutrality: technological solutions and lifestyle changes.

Latvia is currently in the process of issuing a new Climate Law that will combine all climate policies and regulations, which are currently spread across several laws and strategies, into a single law. The draft Climate Law completed a public consultation in September 2023. The law is expected to include an article on sectoral targets and to identify the relevant ministries to implement the targets. The Ministry of Climate and Energy will serve a monitoring and co-ordination function across government on the climate policies embodied in the new law.

The main financing instruments in Latvia for decarbonisation are Kyoto allowance sales, EU ETS revenues, EU Structural Funds and the Modernisation Fund.

NECP policies and measures

Latvia’s NECP is predominantly rooted in efforts to increase energy efficiency across economic sectors and the use of renewable energy. Priority areas for decarbonisation action under Latvia’s NECP include:

- improving the energy performance of buildings
- improving energy efficiency and promoting renewables in heating and cooling and in industry
- promoting emissions capture technologies in electricity generation
- promoting economic self-generation and self-consumption of energy
- improving energy efficiency and increasing alternative fuels in transport
- bolstering energy security, reducing import dependency, achieving full integration of energy markets and modernising infrastructure

- improving efficiency and reducing GHG emissions of waste and wastewater management
- increasing efficiency and reducing GHG emissions from agriculture
- increasing carbon sequestration in LULUCF sectors
- reducing the use of fluorinated GHGs
- reforming the tax system to promote energy efficiency and renewables
- increasing public information, education and awareness.

The NECP predicts that under a baseline scenario in 2030, the agriculture sector will account for the largest share of emissions (39%), followed by transport (32%) and other non-ETS energy (22%).

The primary strategy outlined in the NECP for Latvia to reduce emissions is to improve energy efficiency (see Chapter 3). As action items on energy efficiency, the NECP lists a more comprehensive application of the "energy efficiency first" principle into policy and investment planning, reviewing the existing energy efficiency obligation scheme to strengthen and extend the programme, and improving the energy efficiency monitoring system to make it more efficient. The plan also notes a stronger focus on public information and education campaigns around energy efficiency measures.

In addition, Latvia plans to undertake reforms to its taxation system to more directly reflect the "polluter-pays" principle and ensure that taxation is progressively in line with GHG emissions. The government also plans to phase out energy subsidies and provide tax relief only for outcomes that improve energy efficiency, increase renewables use or otherwise lower GHG emissions.

The NECP also highlights the role that research and innovation in climate technologies will play in decarbonisation. Latvia's National Development Plan 2027 includes an indicative target of 2% of GDP for investments in R&D in 2027, which is planned to be carried forward until 2030. It notes that of this total amount, at least 25% should be directed toward the development and implementation of climate technologies in order to achieve Latvia's climate targets, including R&D activities for increasing energy efficiency, renewables and climate adaptation, as well as water management, agriculture, forestry and waste management (see Chapter 5). It also sets out a target of increasing science-based personnel in priority areas for the European Union, which includes the energy transition.

On a sectoral basis, Latvia's electricity sector already plays a strong role for renewables, mostly derived from hydropower. However, due to fluctuations in hydro generation based on water inflows, natural gas co-generation plants still play an important role in Latvia's energy supply. The NECP targets a declining role for fossil generation and increased reliance on renewable generating

capacity, including fostering growth potential for solar and wind. The NECP notes that wind development should take place based on market conditions, without additional state financial support, though government action can facilitate the expansion in areas such as permitting. For solar and offshore wind development, the plan notes the possibility of support programmes, including leveraging EU funding for a joint offshore wind park among the Baltic states (see Chapter 6).

The buildings sector also holds significant potential for decarbonisation given the relatively high energy consumption of existing buildings. Therefore, the NECP calls for the average thermal energy consumption of the building stock for heating to be at least 30% less than in 2020, for at least 2 000 multi-apartment residential buildings and at least 5 000 private houses to have zero-emission renewable energy source technologies or renovated district heat connections, improved energy performance in government buildings, and to develop a long-term solution for improving the energy performance of the residential building stock (see Chapter 3). Relatedly, the NECP also calls for expanding and upgrading district heating systems, increasing connectivity to these systems, and increasing efficiency and the use of renewables in individual heating systems as well as the use of efficient, centralised and individual cooling systems.

In transport, the largest sectoral source of GHG emissions (and energy consumption) in Latvia, the NECP calls for promoting greater use of public transport in urban areas, improved energy efficiency, and increased use of alternative fuels and renewable energy sources. The old age of the vehicle fleet and heavy dependence on petroleum-based fuels are considered to be key challenges in decarbonising the transport sector. As such, the plan calls not only for efforts to improve public transport infrastructure to reduce private vehicle usage, but also to promote alternative energy sources, including biofuels (see Chapter 3).

Latvia's NECP emphasises the need for a co-ordinated approach to decarbonisation across the Baltic states, especially given the interconnectedness of their energy sectors. In particular, based on EU ETS prices and market conditions, thermal power capacity in the Baltic states is expected to shut down in the coming years, increasing the need for strong transmission capacity and interconnectors, including with the European market, to ensure energy security and avoid price increases. Similarly, it also calls for the creation of a regional natural gas market.

The European Commission's assessment of Latvia's final NECP noted a lack of detail on policy measures to achieve its targets. The assessment also estimated that up to EUR 8.2 billion (around 2.7% of annual GDP) in investments would be needed over 2021-30 to implement the plan's policies and measures. This breaks down into EUR 1.7 billion for energy efficiency in buildings, EUR 1.6 billion for

efficiency and renewables in district heating and cooling, EUR 1 billion for decarbonising the energy sector, EUR 988 million for sustainable transport, and EUR 830 for energy infrastructure. EU funding is expected to be the primary source for these investments.

A draft of the updated NECP was submitted to the European Commission in December 2023 and a final plan is due by 30 June 2024. The updated plan includes more ambitious targets in some areas, though the policy focus remains largely unchanged. The European Commission's assessment of Latvia's draft updated NECP notes insufficient details on how the country will meet more ambitious targets under the EU Fit for 55 package and REPowerEU plan.

Climate adaptation

The Latvian National Plan for Adaptation to Climate Change until 2030 serves as a national-level, long-term development planning document. It describes the climate change observed so far in Latvia and identifies adaptation solutions for various risks and opportunities. The measures are based on studies related to an assessment of the risks and vulnerabilities and identification of adaptation measures in six areas: 1) landscape planning and tourism; 2) biodiversity and ecosystem services; 3) civil protection and disaster management; 4) building and infrastructure planning; 5) health and welfare; and 6) agriculture and forestry.

Latvia's climate risk assessment notes several risks for the energy sector, including higher annual temperatures that increase the demand for electricity generation and the strain on grids; reduced snow pack and changes to groundwater levels that can challenge hydropower resources; extreme weather events that can disrupt electricity generation facilities and grid infrastructure; and increased sunshine that can improve solar energy production.

Latvia's Recovery and Resilience Plan includes approval of a report on the implementation of a disaster risk management system to support climate adaptation and wildfire prevention.

Assessment

Latvia has set a range of ambitious emissions reduction targets, supported by an array of policies and planning across the energy sector that signal its commitment to climate action. These include energy efficiency measures for buildings and district heating, improvements to the public transport network, financial support for the purchase of EVs, and the early stages of exploring biomethane production and use. Latvia can build on this progress through targeted sectoral policy planning and roadmaps to improve outcomes on emissions reductions in the energy sector. Key elements should be legislated to ensure longevity and increase trust in the future policy environment.

Latvia's NECP 2021-2030 lays out pathways for meeting its national emissions reduction and Paris Agreement target of 65% by 2030 from 1990 levels. In addition, the Sustainable Development Strategy for Latvia until 2030, the National Development Plan 2021-2027 and the Strategy of Latvia for the Achievement of Climate Neutrality by 2050 also describe targets and high-level strategies for emissions reductions. Latvia is now in the process of drafting a national Climate Law, which will combine all the various pieces of strategies and legislation on climate change into a single, unified law. The new Climate Law will align with the updated NECP, which was submitted in draft form to the European Commission in December 2023, though with minimal details on meeting revised targets.

As Latvia looks toward achieving its 2050 target of climate neutrality, actions taken today will inform the pace and scale of its energy transition. Toward this end, timely finalisation of the updated NECP and Climate Law will help clarify pathways to 2030 and 2050, including the development of 2040 targets and sectoral decarbonisation roadmaps. This will provide more detail on the government's vision for addressing climate change, assist in societal planning, mobilise necessary investments, and direct government policy making and implementation in this direction.

Latvia has an annual review process in place to assess the efficacy, strengths and weaknesses of existing climate change and energy measures across relevant ministries. Current review processes are not independent of the ministries and do not appear to include stakeholder input outside of government ministries. There is opportunity for Latvia to increase the rigour and transparency of reviewing its climate change and energy policies to ensure that progress toward its targets remains on track and opportunities for course correction are identified frequently. For example, several IEA countries (such as Australia and the United Kingdom) have established independent commissions to track progress toward emissions reduction targets based on existing policies, and they offer advice on improving them. The assessments are usually conducted annually and often require a government response, thereby ensuring frequent, independent, rigorous and high-level monitoring and accountability for climate targets.

On a sectoral basis, unusually for an EU member state, Latvia's key emissions are from non-ETS sources. The most significant source of non-ETS emissions is the transport sector. Around 90% of transport sector emissions come from road transport, which is dominated by an emissions-intensive, older vehicle fleet reliant predominantly on diesel.

Latvia is not on track to meet its updated target of reducing emissions in non-ETS activities by 17% in 2030 compared with 2005 levels. The government of Latvia should, therefore, prioritise improving and expanding policy measures for emissions reductions in the transport sector while balancing price impacts on households. Latvia is already considering options such as improving the public

transport network and encouraging car sharing and micro-transport options. The government should further consider the following measures in its planning:

- limiting the age and/or types of imported second-hand vehicles
- cash-back schemes for surrendering older, emissions-intensive vehicles
- further leveraging the tax system to increase the costs of emissions-intensive vehicles and fuels while reducing costs for cleaner alternatives
- assessing options for reducing the costs and increasing the accessibility of biofuels
- accelerating measures to increase the availability and accessibility of EVs and their supporting infrastructure
- providing support for lower income households to replace high-emissions vehicles with low-emissions alternatives
- accelerating plans to upgrade, improve accessibility and usability, and remove barriers to public transport networks
- assessing decarbonisation options for diesel cargo ships through R&D and/or retrofitting ships with emerging emissions-reducing technologies (referring to innovations elsewhere, as in Finland).

Though Latvia has a range of funding for a variety of emissions reduction measures from energy efficiency to renewables and transport, the government should clarify how it is considering the specific emissions reduction potentials of each of these policies and actions toward meeting 2030 and 2050 emissions reduction targets. Notably, a cost-benefit analysis using the cost per abatement of emissions for each policy would support more targeted outcomes.

Latvia has committed to a series of ambitious emissions reduction targets and has a demonstrated history of meeting its emissions targets through the Kyoto Protocol under the UNFCCC. Nonetheless, Latvia has not yet committed to methane-specific reduction targets nationally or by emissions sector, and it has not yet joined the 150 members of the IEA Global Methane Pledge to reduce methane emissions by at least 30% by 2030 from 2020 levels. Though the energy sector is a minor source of methane in Latvia, there are opportunities to combine action in the agriculture and waste sectors to reduce the emissions intensity of the energy sector through biomethane capture and use.

Latvia continues to have strong, compliant emissions reporting under the UNFCCC through its annual national inventory submissions. Under the UNFCCC framework, Latvia has committed to a quality assurance and quality control plan, and a continuous improvement plan for its national GHG emissions inventory. This inventory is central to addressing climate change as it is used for measuring emissions profiles, emissions reductions and the efficacy of related policies.

The IEA encourages Latvia to prioritise and commit additional resources as needed to improve emissions estimation methods for key categories, particularly

in the energy sector. There are opportunities to explore the integration of emerging technologies and scientific studies as appropriate, and to move towards direct measurement methods as is practicable and reasonable. Latvia could also investigate opportunities to improve its quality assurance and quality control plan, such as leveraging emerging technologies for top-down verification of emissions, to further improve the rigour of emissions estimates as appropriate.

On climate adaptation, Latvia's National Plan for Adaptation to Climate Change until 2030 outlines risks in six of the country's most vulnerable sectors. However, energy is not included as a discrete at-risk sector. Latvia should consider including energy-sector risks as a priority area given the vulnerability of energy infrastructure to the effects of climate change and to ensure that sufficient resources are directed toward bolstering the climate resilience of energy infrastructure.

More broadly, though Latvia's policies on climate change seem to have broad political support and are underpinned by EU directives, climate change still appears to rank relatively low as a priority among the general public. As the government prepares to issue the updated NECP and new Climate Law, it should prioritise ongoing work to identify opportunities to improve public perceptions through information campaigns and targeted communications that note the benefits to affordability, health and well-being that energy transitions can bring for Latvia (such as energy efficiency upgrades for homes). This may involve local showcases, social media campaigns, education, and/or emphasising benefits and savings to households and businesses, engaging communications experts, where relevant.

Recommendations

The government of Latvia should:

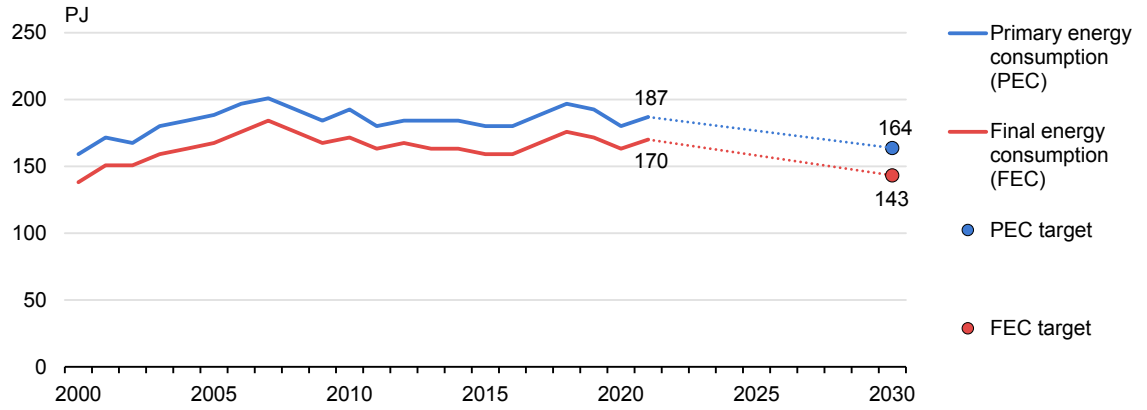
- Expedite, improve and consolidate planning around climate change and energy policies to ensure a stable and predictable policy environment.
- Strengthen the monitoring and accountability of climate targets by introducing into law an annual, independent review process of climate change plans and emissions reduction targets.
- Prioritise and expand policies and measures for emissions reductions in the transport sector while balancing economic impacts on households.
- Mainstream the abatement potential and marginal cost of abatement across all emissions reductions policies and strategies to improve transparency, prioritisation and the cost effectiveness of plans.
- Prioritise undertaking clear and impactful communication on Latvia's climate priorities and successes to increase public support for the energy transition.

3. Energy efficiency

Overview

Latvia has targets to reduce both primary energy consumption (PEC) and final energy consumption (FEC) by 2030 (Figure 3.1). Both PEC and FEC dropped in 2020 due to the pandemic, but as the economy slowly recovered in 2021, both rose again to 2005 levels.

Figure 3.1 Latvia's energy efficiency targets until 2030



Source: IEA analysis based on Eurostat (2023), Complete energy balances and European Commission (2024), Latvia's National Energy and Climate Plan.

Additionally, in line with the revised EU Energy Efficiency Directive, Latvia has set a mandatory target of cumulative end-use energy savings of 106.3 PJ by 2030.

To implement measures outlined in the NECP, the government mainly plans to use public funding (European Union, national and municipal) and national co-financing of EU budget instruments.

Institutional overview

Energy efficiency policy design, implementation and evaluation are the responsibility of the Ministry of Climate and Energy. The ministry is primarily responsible for transposing EU laws as well developing and amending national legislation. In addition, it is responsible for the implementation of policies to achieve the energy efficiency targets outlined in the NECP 2021-2030.

The Ministry of Economics is responsible for energy efficiency in buildings, in particular for the implementation of the EU Directive on the Energy Performance

of Buildings as well as developing and amending national legislation. In addition, the Ministry of Economics is responsible for developing support programmes to improve energy efficiency in the building and commercial sectors.

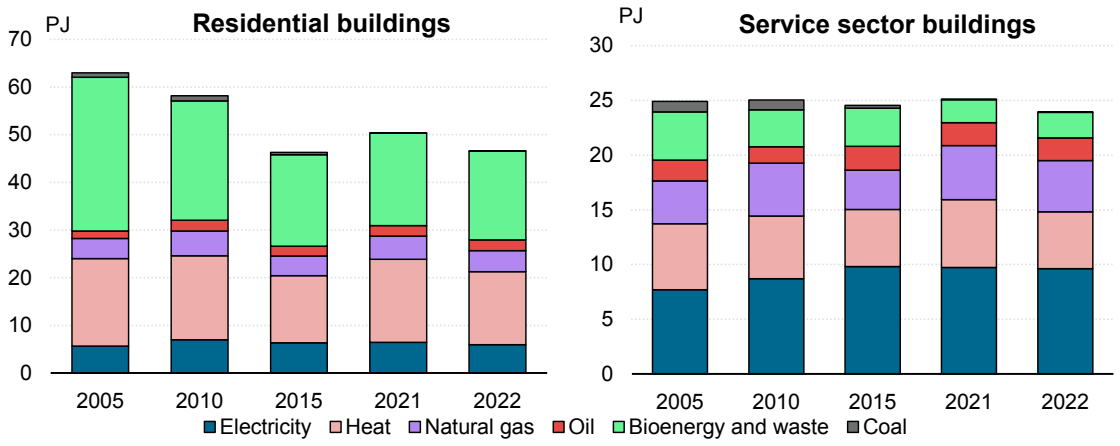
The State Construction Control Bureau is responsible for monitoring the implementation of energy policy in line with targets, including the preparation of annual analysis of energy savings in final consumption and fulfilment of the public sector obligation for buildings renovation (see below).

The Central Finance and Contracting Agency is responsible for the implementation of EU funding for 2021-27 and other financial instrument projects, while the state-owned development finance institution Altum develops financial instruments for financing energy efficiency projects.

Energy efficiency in buildings

The buildings sector has the highest energy demand in Latvia (44% of total final energy consumption [TFEC] in 2022), with residential buildings accounting for 29% of TFEC and service sector buildings 15%. Energy demand in the buildings sector (including both residential and service sector buildings) is mainly covered by bioenergy and waste (30%) and district heating (29%), followed by electricity (22%), natural gas (13%), and oil (6%). Compared to 2005, the share of bioenergy and waste decreased in both residential and service sector buildings while electricity demand increased slightly from 2005 to 2022 in service sector buildings (Figure 3.2).

Figure 3.2 Energy demand in buildings by source in Latvia, 2005-2022

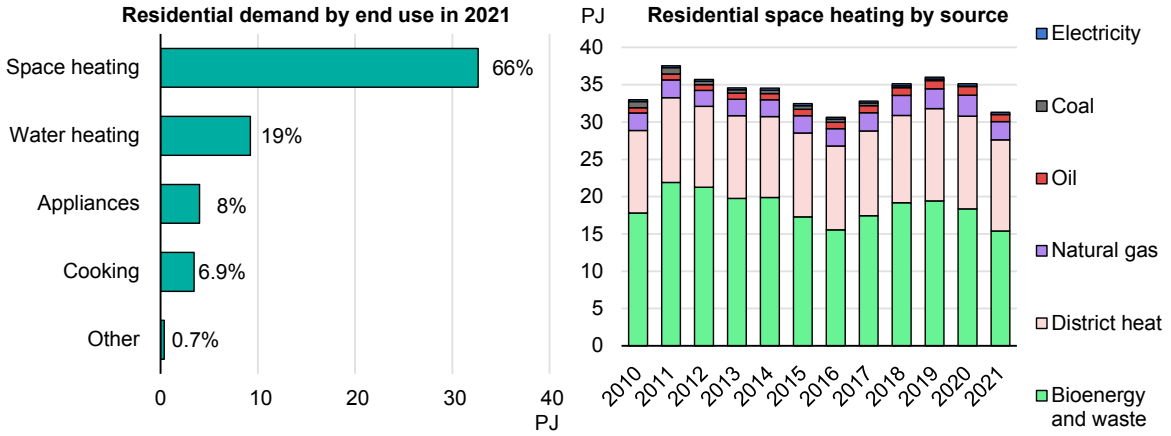


Source: IEA (2023), World Energy Balances (database).

Space heating accounted for two-thirds of residential demand by end use in 2021, with bioenergy and waste accounting for 49% of the energy use for heating,

followed by district heating (39%), natural gas (7.8%), oil (3%), electricity (0.8%), and coal (0.1%) (Figure 3.3).

Figure 3.3 Residential space heating in Latvia by end use and source, 2010-2021

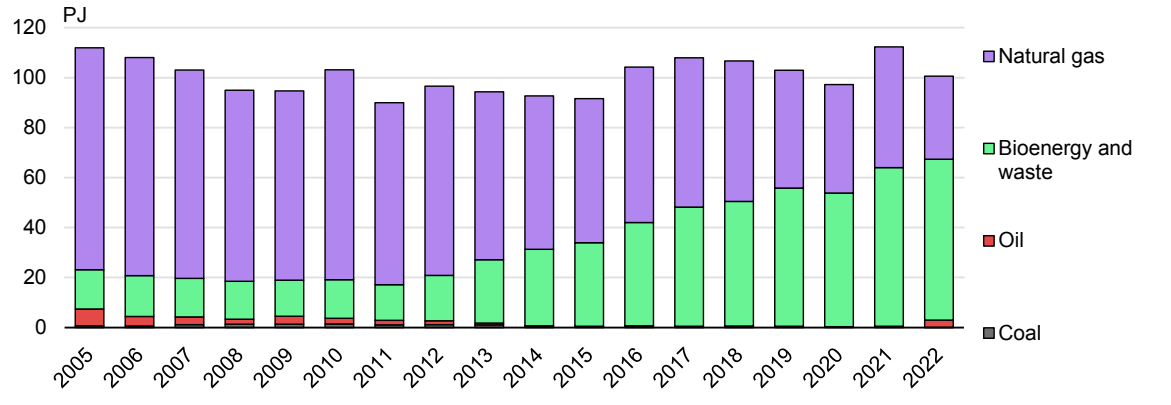


Source: IEA (2023), Energy End-uses and Efficiency Indicators (database).

District heating

In 2021 Latvia had the fourth-highest share of district heat in TFEC among IEA countries. In 2022 district heat covered 33% of energy demand in the residential sector and nearly a quarter in the service sector. The energy mix of district heat generation has shifted in the past decades from being based on fossil fuels to bioenergy (Figure 3.4). Co-generation makes up nearly three-quarters of district heat generation in Latvia.

Figure 3.4 District heat generation in Latvia, 2005-2022



Source: IEA (2023), World Energy Balances (database).

Energy efficiency policies in buildings

The EU Energy Efficiency Directive requires 3% annual renovation of the public sector's building stock over 2021-30, for a total area of 500 000 m^2 by 2030, in addition to 1.9% annual energy savings in the public sector. The renovation targets for 2021 and 2022 have already been met in Latvia based on surplus renovations in the previous years.

In the period up to 2030, Latvia is also proposing to reduce the average specific heat consumption in buildings by up to 120 kWh/m^2/year.

Latvia first set thermal engineering requirements for building envelopes in 2003, though compliance with the standard was limited. From 2015, Latvia set stricter thermal requirements for building envelopes. Regulatory action established permitted levels of heating for both renovated/reconstructed buildings and new buildings, as well as requirements for the gradual transition to near zero-energy buildings for new construction. From 2019 onwards, all new state and local government buildings in Latvia and from 2021 all new buildings must be "near zero-energy" buildings (as detailed in the Law on Energy Efficiency of Buildings).

Latvia's building stock is relatively old. Around 10% of all residential buildings were constructed after 2003, while only 3% of the total share of residential buildings have been constructed since the new construction standards took effect. Most buildings built before 2003 in Latvia fall under class E and F, meaning that they consume high levels of energy and that heating systems are considered outdated compared to currently available technologies. At present, Latvia has limited experience with near zero-energy buildings, mainly based on a few pilot projects.

Since 2016, Latvia has implemented the Construction Information System with two new registers: one for energy performance certificates for buildings, in which statistical data on the assessment of the energy performance of buildings can be compiled; the other a register of independent experts.

During the 2014-20 programming period for EU funds, Latvia introduced several support programmes for improving energy efficiency in buildings, including one co-financed by the European Regional Development Fund on "Promotion of energy efficiency in residential buildings". Across Latvia, since the beginning of the programme in the spring of 2016, 821 project applications were submitted for a preliminary amount of EUR 375 million.

From 2009 to 2019, EUR 235.27 million were allocated for renovating multi-dwelling buildings to lower the energy consumption of residential heating to 95.61 kWh/m² on average annually, and 66 kWh/m² for service sector buildings. Of this amount, EUR 106.45 million came from EU Structural Funds.

Latvia's National Recovery and Resilience Plan included EUR 248 million in funding for improving the energy efficiency of residential, commercial and public buildings based on large-scale renovation efforts.

NECP targets and measures

Latvia's original NECP highlights that the building sector holds significant potential to improve energy efficiency given the relatively high energy consumption of the existing building stock. Therefore, the NECP sets out targets to reduce the thermal energy consumption of the building stock by at least 30% from 2020. It also calls for at least 2 000 multi-apartment residential buildings and 5 000 private houses to be outfitted with renewable energy sources or renovated district heat connections and to improve the energy performance of government buildings and develop a long-term solution for improving the energy efficiency of the residential building stock.

The NECP notes that the lack of public interest in energy efficiency improvements to their homes has been an impediment to progress on lowering energy consumption. The government has spearheaded information campaigns to boost public awareness, notably the "Live warmer" campaign, launched in 2010, to educate the public about a 2009 EU aid programme to improve energy efficiency in multi-apartment residential buildings.

As action items for buildings, the NECP highlights the 3% EU renovation target for public sector buildings as well as continued support through EU funding for improving energy efficiency in multi-apartment residential buildings. It also calls for increasing private investment in energy efficiency projects, including through the development of an energy service contract (ESCO) market in Latvia, which is still currently nascent. Moreover, municipal governments are constrained in their ability to use ESCOs given restrictions on taking out loans, so energy savings can negatively impact public budgetary outlays. The plan does not place mandatory obligations for undertaking energy efficiency improvements in buildings, but rather relies on voluntary agreements between owners and residents to undertake measures and financial liabilities.

For private houses, the plan proposes a condition for installing zero-emissions renewable energy solutions during energy efficiency upgrades. The government will facilitate this by streamlining application procedures as well as the option to use municipal energy consultants or a one-stop agency for administrative support.

As part of efforts to develop a long-term plan for improving the energy efficiency of the residential building stock, the NECP calls for a quantifiable target by 2050 and for studies toward the development of solutions.

Given the lack of experience with ESCOs in the public sector, the government also plans to develop guidelines for projects, organising tenders and for preparing contractors.

Appliances, equipment, lighting

The EU Ecodesign Directive is implemented through product-specific regulations. The EU Energy Labelling Regulation complements the Ecodesign requirements with mandatory labelling requirements. Both are directly applicable in all EU countries, including Latvia.

The Consumer Rights Protection Centre of Latvia has carried out several consumer and business information campaigns on energy labelling, ecodesign and energy efficiency.

Heating and cooling

Heating for buildings in Latvia is provided by district heating, local heating and individual heating. Municipalities oversee heating in their administrative territories in accordance with the autonomous function legally assigned to them.

Latvia has the fourth-highest share of district heat in TFEC among IEA countries. District heat covers 33% of energy demand in the residential sector and nearly a quarter in the service sector. The energy mix of district heat generation has shifted in the past decades from being based on fossil fuels to bioenergy. Co-generation makes up nearly three-quarters of district heat generation in Latvia.

Most of Latvia's district heating systems were built over 25 years ago, so heat loss in transmission and distribution networks has historically been high (though there have been improvements in recent years). The NECP notes that over 60% of boilers have been operating for more than 15 years.

Until 2020, EU Structural Funds provided support for the promotion of energy efficiency and the use of local renewable energy in district heating, supporting 104 projects to invest in the installation of storage systems, heating generation sources and the renovation of heating pipes.

Latvia's NECP identifies the upgrading of district heat systems, including to increase the use of renewable energy sources. As part of this, the plan proposes banning the installation of new combustion plants using only solid or liquid fossil fuels (except in very limited quantities together with renewable fuels). The NECP also targets increasing the number of connections to district heat and local heat systems, as well as improving the efficiency of and increasing the use of renewables in individual heating.

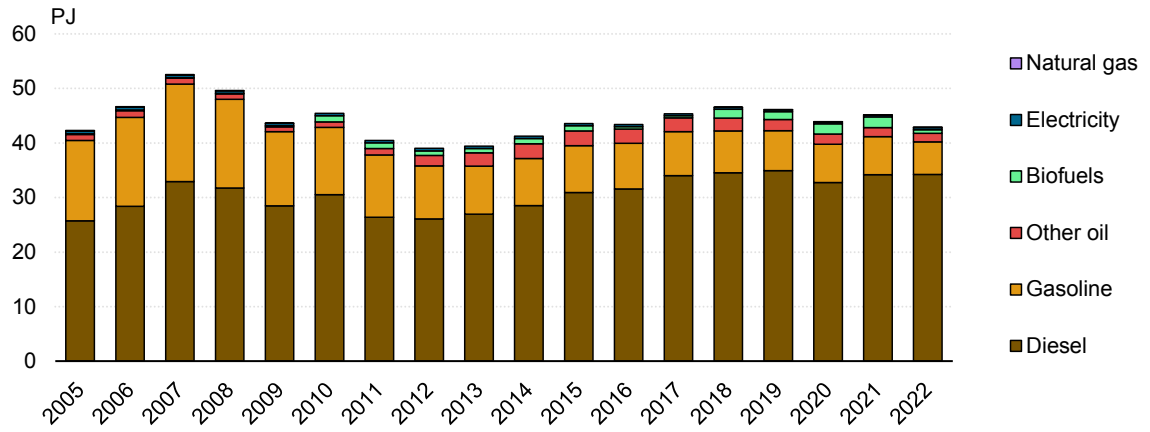
The NECP notes that accelerating energy efficiency improvements in district heat systems has been hindered by limited investment, constraints on the part of municipalities to take out loans and the slow rate of capital turnover.

As annual air temperatures rise due to climate change, Latvia also expects its cooling needs to grow. Currently, there are very few centralised cooling systems in the country. To address this, Latvia aims to expand the use of district cooling as an environmentally friendly solution.

Energy efficiency in transport

The transport sector accounted for 27% of Latvia's TFEC in 2022, with the majority of transport energy demand coming from road transport (96.8%), followed by rail (2.8%), domestic navigation (0.2%) and a very small share of domestic aviation (0.1%). Transport energy demand fluctuated from 2005 to 2022, reaching its peak in 2007 (52 PJ) and its lowest level in 2012 (39 PJ). There was a notable drop in 2020 due to the pandemic and, after a rebound in 2021, energy consumption in the sector decreased again in 2022 (Figure 3.5). Oil products dominate energy demand in the transport sector, at 97% in 2022, mainly diesel (80%), followed by gasoline (14%). The share of biofuels decreased from 3.1% in 2019 to 1.5% in 2022.

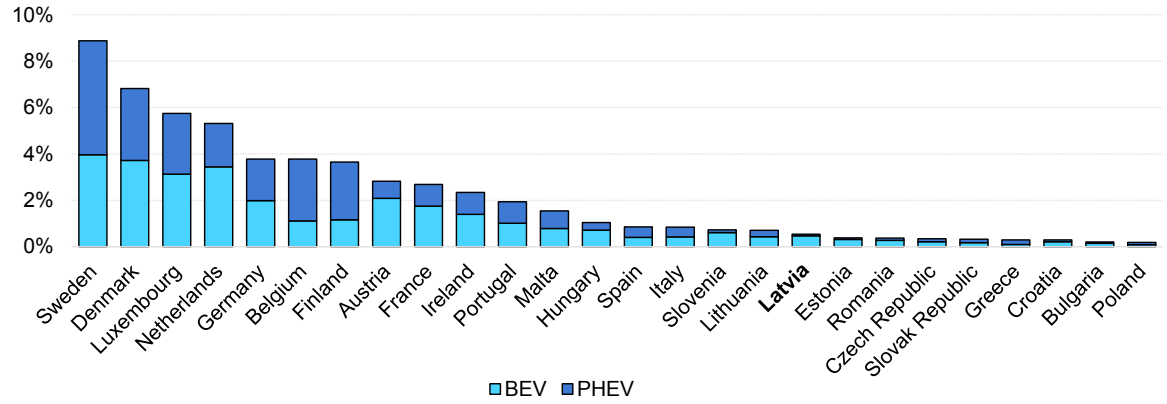
Figure 3.5 Energy demand in transport by source in Latvia, 2005-2022



Source: IEA (2023), World Energy Balances (database).

EV deployment is limited in Latvia: the number of EVs only grew from 10 in 2012 to 2 646 (2 078 battery EV and 568 hybrid) in 2022. However, the shares of EVs in new sales and the total vehicle fleet are very low. In 2022, EVs reached 4.6% of new sales (compared to the EU average of 19%) and 0.35% of the total fleet (compared to the EU average 2%).

Figure 3.6 Share of electric vehicles in total passenger vehicles stock in European Union countries, 2022



Notes: PHEV = plug-in hybrid electric vehicle; BEV = battery electric vehicle.
Source: IEA analysis based on European Alternative Fuels Observatory (2023), Country comparison.

Energy efficiency policies in transport

Latvia has one of the oldest vehicle fleets in the European Union. The average vehicle age is 12.6 years, mainly in the form of diesel vehicles. The predominant use of diesel vehicles in part stems from national tax policy, which helps make the price of diesel more attractive compared to petrol. Moreover, the trend in the transport sector is for growing use of private vehicles and less use of public transport.

Latvia started offering a subsidy for EVs for the first time in 2014, when the Electromobility Development Plan 2014-2016 was issued. More recently, starting in 2022 (lasting until the end of 2023), Latvia began a subsidy programme, totalling EUR 10 million, for the purchase of new EVs and plug-in hybrid vehicles. EV purchases receive a subsidy of EUR 4 500 and plug-ins of EUR 2 250 (under several conditions), with a EUR 1 000 bonus for scrapping an old car.

Latvia has also taken steps to build out its EV charging network. It currently has 240 public recharging stations for EVs and 1 public hydrogen refuelling station. A project co-financed by the European Regional Development Fund aims to expand the buildout of fast-charging infrastructure in Latvia. Other measures have been introduced to promote the use of EVs, such as free parking, the possibility of using public transport lanes, etc.

Given the high share of transport in energy consumption and GHG emissions, the original NECP included proposals for changing the tax system to incentivise lower emissions vehicles. This includes a proposal to evaluate the possibility of applying excise duty rates on road transport based on CO_2 emissions intensity. It also proposes to introduce reduced tax rates for biofuels. Several tax measures are

also proposed to promote the use of commercial EVs and plug-in hybrid vehicles. Furthermore, to promote the use of lower emissions private passenger cars, the NECP proposed a review of the value-added tax (VAT) on vehicles, especially for larger vehicles. There is also a consideration to cancel the Electricity Tax for electricity used in EVs and to introduce a Passenger Car Registration Tax for older vehicles.

Latvia's NECP calls for promoting the use of alternative sources of energy in transport, including biofuels, electricity, and – in the future – hydrogen. The government also plans to foster regional co-operation with neighbouring countries in the transport sector through the development of shared charging infrastructure, the harmonisation of biofuels blending levels and the production of renewable fuels.

The draft updated NECP includes a target to reduce the GHG intensity of transport by 15% relative to 2005 levels by 2030. The government is considering proposals to promote a low-emissions car fleet, optimise public transport, create mobility points, establish a unified electronic system for purchasing public transport tickets (to facilitate usage), introduce low-emissions zones, promote car sharing and carpooling, and implement measures to turn over the car fleet toward newer models.

In 2021, only 18% of total rail energy demand was covered by electricity, compared to the IEA average of 30%. Rail Baltica is a major international rail infrastructure project funded by the European Union and the Baltic states. It will deploy high-speed passenger and freight lines in Estonia, Latvia and Lithuania that link to the rest of Europe through Poland. The project has a budget of around EUR 6 billion and is expected to be completed in 2030, with some rail sections potentially operating in 2028.

The use of public transport in Latvia has generally been on a downtrend in recent years, partly explained by its relatively high costs and dated infrastructure. Moreover, Latvia has limited infrastructure for bicycles and is considered unfriendly for pedestrians. As such, a core pillar of the NECP is to reduce the use of private vehicles in favour of public transport and other modes of transport, including through the development of supporting infrastructure in major urban areas.

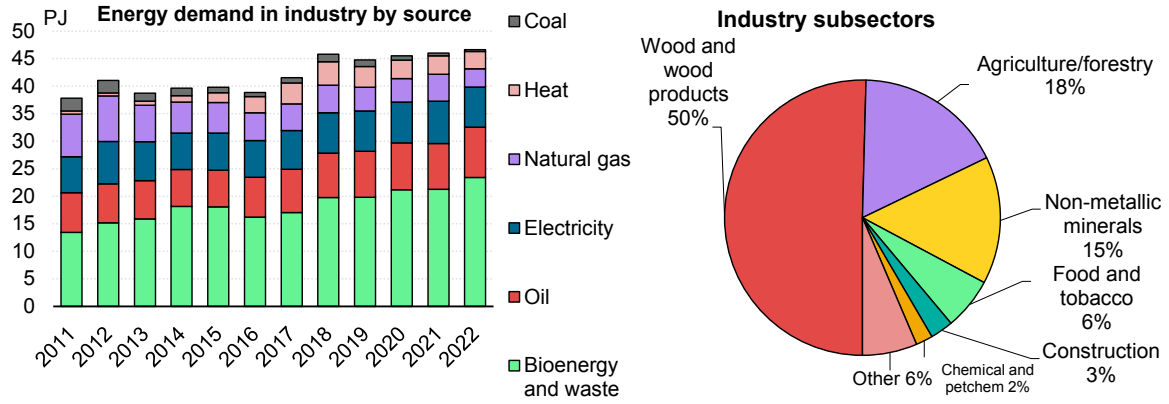
Latvia's National Recovery and Resilience Plan included EUR 295 million for an overhaul of the transport system in the Riga Metropolitan area, which covers 65% of Latvia's population. The project's goal is to create an interlinked, multimodal public transport network and encourage greater use of public transport by upgrading infrastructure, including rail, trams, electric buses and bicycle lanes. The investments are expected to be completed by 2026.

Energy efficiency in industry

In 2022, Latvia's industry sector accounted for 29% of TFEC (in line with the IEA average). Industry energy demand increased notably after 2016, reaching 47 PJ in 2022 (Figure 3.7). The main industrial subsectors in Latvia are wood and wood products, agriculture/forestry, and non-metallic minerals, which together account for 83% of industry's TFEC (Figure 3.7).

Latvia's industrial sector has a diverse energy mix, with a notably high share of demand covered by bioenergy and waste (50.2%), followed by oil (19.6%), electricity (15.6%), natural gas (7.1%), and heat (6.7%). A small share of coal (0.8%) completes Latvia's industrial energy mix.

Figure 3.7 Energy demand in industry by source and industry subsectors in Latvia, 2011-2022



Source: IEA (2023), World Energy Balances (database).

Energy efficiency policies in industry

In Latvia, the Energy Efficiency Obligation Scheme required 14 electricity retailers to achieve energy savings through consumer information campaigns on energy efficiency measures and energy-efficient lighting. The programme was introduced in stages over 2014-17 and 2018-20, though its impact has been limited (in part because it was not backed by funds to undertake efficiency improvements). The government is in the process of reviewing the scheme with an eye to extending its scope to include all types of energy.

In addition, in line with previous EU requirements, Latvia's Energy Efficiency Law imposes obligations on large companies and large electricity consumers (more than 500 MWh, or 1.8 TJ, for two consecutive years) to undertake an energy audit or introduce a certified energy management system (ISO 50001) or environmental management system (ISO 10004) within a year of inclusion on the list of qualified entities. Monitoring of compliance with the law indicates that the majority of

enterprises choose to carry out energy audits, and the number of energy audits has been increasing in recent years.

A company commits to implementing at least three energy efficiency measures identified in an audit or management system with the greatest energy savings or economic return. Compliance with the management systems is around 75%. To date, energy savings in enterprises have been achieved from equipment replacement and more efficient use of transport. Enterprises have access to support programmes for implementing energy efficiency measures in manufacturing enterprises.

Energy efficiency improvement measures and savings in large enterprises and large electricity consumers in 2021 amounted to 103 gigawatt hours (GWh) (0.4 PJ). Based on this, cumulative energy savings of 882 GWh (3.2 PJ) are projected in the period to 2030. To achieve the 2021 energy savings, large companies and large electricity consumers invested more than EUR 61.3 million in 2021. Measures for the implementation of energy documents are expected to remain in place until at least 2030.

The law also states that enterprises may enter into a voluntary agreement with the government on energy efficiency improvements, including the promotion of energy efficiency services.

The State Construction Control Bureau oversees the monitoring and verification of energy efficiency outcomes in large enterprises, large electricity consumers, cities and municipalities, as well as state institutions. It also monitors voluntary agreements on energy efficiency and the Energy Efficiency Obligation Scheme.

In the public sector, municipalities and public institutions have the right to use ESCOs and to conclude energy efficiency service contracts. Nonetheless, investments made within the scope of the contract are considered a public debt (despite energy savings earned through the contract) and serve as a limitation for application (given the ceiling on public debt municipalities are allowed to carry, which is often used for other purposes).

Assessment

Latvia holds great potential to advance energy efficiency programmes across economic sectors. Its energy demand is dominated by an ageing building stock (44% of TFEC in 2022), with residential buildings alone accounting for 29% of TFEC. Latvia's overarching 2030 targets for primary and final energy consumption, as well as cumulative final energy savings, need to be strengthened in the final updated NECP.

Buildings sector

Policies and measures needed to bridge the significant investment gap toward the ambitious 2030 renovation targets, as set out by Latvia's 2020 long-term renovation strategy, are missing. The Ministry of Economics is taking steps to simplify energy efficiency renovation programmes and notably develop standard renovation projects for serial Soviet era buildings. Still, some improvements could be made in designing the support for renovation programmes and identifying buildings suitable for renovation. In particular, the government can target support schemes to energy-poor households, which are currently supported mainly through general social programmes, as a priority. In this way, it can address the dual goals of lowering energy bills for the poorest and improving environmental outcomes.

Moreover, existing renovation programmes rely heavily (almost exclusively) on the availability of EU funds. In the past, this led to periods of up to two years in which no renovation programmes were launched, causing market instability and a sharp increase in the price of construction works by the time the programmes were re-established. Identifying additional funding, as well as developing, scaling up and promoting innovative energy efficiency financing products and schemes, is needed to ensure continuity and higher rates of renovation.

The EU Energy Efficiency Directive requires a 3% annual renovation of the public sector's building stock over 2021-30. The targets for 2021 and 2022 have already been met in Latvia based on surplus renovations in previous years. Still, upgrading the municipal building stock has proven challenging. One of the fiscal obstacles imposed on municipalities and public institutions is that investments made within the scope of energy performance contracts are considered public debt, constraining their ability to enter into such arrangements given statutory limits on the levels of public debt they can carry.

District heating generation has notably shifted in the past few years, from being based on natural gas to biomass. The share of renewables in heating and cooling in Latvia reached 64% in 2022, from only 15% in 2010. Latvia should not only continue to promote the decarbonisation of its heating systems, but also explore potential use of innovative technologies, support the introduction of heat meters in apartments and improve overall market conditions. In the city of Riga, for instance, tendering on the energy exchange for heating takes place on a weekly level, discouraging the participation of local gas-fired co-generation plants (given much shorter trading windows for electricity), leading to unutilised waste heat.

Latvia should advance efforts in conducting market surveillance and ensuring that energy-related products placed on the market comply with the requirements of the EU Ecodesign Directive and Energy Labelling Regulation. Latvia is carrying out a limited number of label inspections, exclusively based on EU funding, especially

at the points of sale. The inspections of ecodesign and energy labelling technical documentation are carried out in low numbers, as are testing of products. This generates concerns with respect to a level playing field among economic operators and uncertainty over compliance levels of the concerned products, and therefore possible missed energy and CO_2 savings. Also, the high rates of non-compliance observed in the market show that further action is needed.

Industry sector

Latvian industry accounted for 29% of TFEC, which is in line with the IEA average. The main subsectors include wood and wood products, agriculture/forestry and non-metallic minerals. The observed trend on energy savings in industry has been negative in the last few years. Energy savings reported by large enterprises and large electricity consumers fell rapidly from 209 GWh in 2019 to 103 GWh in 2021.

Large enterprises and large electricity consumers in Latvia are subject to either energy audits or certified energy management systems (or environmental management systems). Notably, the Latvian Energy Efficiency Law imposes additional obligations well beyond the requirements of EU legislation for these companies to implement at least three energy efficiency improvement measures identified in the energy documents (audits or management systems) with the highest estimated energy savings or economic returns. However, if measures are labelled as economically challenging due to upfront costs, an enterprise in practice can opt for any low-cost alternative. Steps should be taken to ensure continued implementation of meaningful energy-saving measures.

Additionally, in parallel to the upcoming transposition of the recast Energy Efficiency Directive, Latvia could further consider lowering the thresholds for enterprises to become subjects of energy audits or management systems or to obligate the adoption of certain measures resulting from them.

The Energy Efficiency Monitoring System is an important asset that allows the State Construction Control Bureau to effectively monitor the achieved savings and measures that companies plan to implement.

Better strategic planning is also one way to ensure the quality of energy audits and energy/environmental management systems. Namely, greater predictability when it comes to the launch of calls to support energy efficiency improvements in industry would help. Altum is recognised as setting good examples toward this end.

Transport sector

Latvia's transport sector offers considerable potential for reducing energy consumption given the relatively old, inefficient vehicle fleet combined with growing levels of car ownership and heavy dependence on diesel. Though the country's original NECP outlined a number of measures to lower energy demand

and emissions from transport, results to date have been limited. More recently, however, the government has taken stronger steps to address this issue, including a 2022 subsidy programme for EV purchases by private individuals and a major investment project to expand and upgrade the Riga metropolitan public transport network. Preparation of the Transport Energy Law marks another positive step, as it will enable Latvia to streamline planning in the transport sector.

Still, more can be done to ensure sustained results. In particular, the government should extend the EV programme past 2023 while ensuring that incentives are not supporting luxury EVs (such as caps on how much an EV costs to still benefit from subsidies). It should also simultaneously extend the support towards private companies and the public administration. Moreover, to help address the older fleet of existing cars, the government could implement car scrappage schemes that offer consumers a discount on more efficient, low-emissions models in exchange for scrapping their older, polluting vehicles.

As part of the updated NECP, Latvia is planning a bold transformation of its transport sector. Proposals include not only measures to turn over the vehicle fleet toward lower emissions models, but also efforts to optimise public transport, introduce low-emissions zones and promote car sharing. The IEA commends the government for these ambitious proposals and encourages their implementation.

The Riga metropolitan public transport overhaul is an ambitious project and Latvia deserves praise for moving it forward. The government's main task now is to ensure it is delivered with sufficient financial backing to realise the full scale of the plan. Similar efforts could be made in other cities, though on a smaller scale, to discourage private car ownership.

Recommendations

The government of Latvia should:

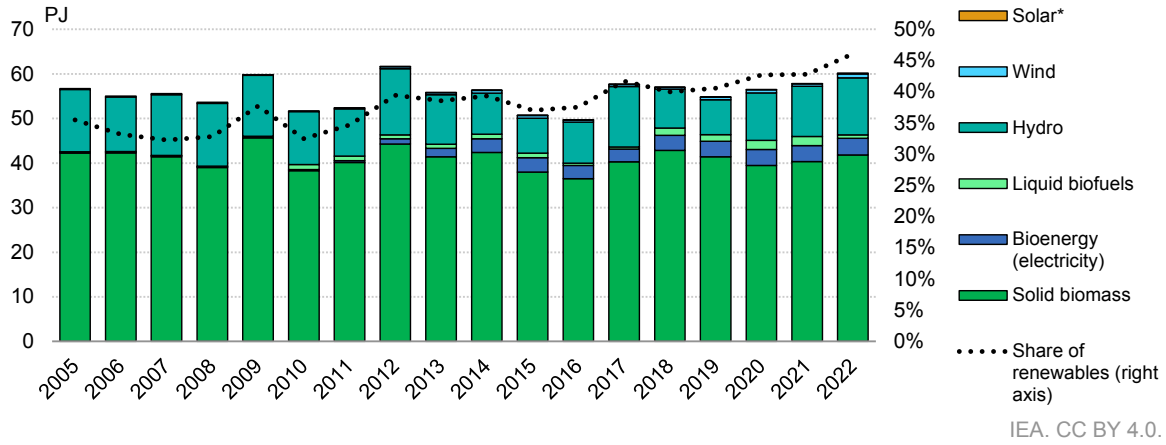
- Significantly ramp up energy efficiency renovations of the existing building stock, including by creating more predictable funding support and promoting innovative energy efficiency financing models.
- Work toward aligning the time resolution of the district heating allocation in the energy exchange of Riga with the time allocation of the electricity market to foster greater uptake of waste heat.
- Remove legal barriers for using energy performance contracts in the public sector.
- Ensure the implementation of meaningful energy-savings measures from large energy consumers identified in mandatory energy audits and management systems.
- Extend and expand incentives for turning over the vehicle fleet in favour of newer, more efficient models, including EVs.

4. Renewables

Overview

From 2010 to 2022, the share of renewables in Latvia's TFEC increased from 33% to 46% (Figure 4.1). The main reason for the increase was the use of bioenergy in electricity generation, which rose from 0.2 PJ in 2010 to 3.7 PJ in 2022. The use of liquid biofuels also increased by 80% from 2010 to 2021 (from 1.1 PJ to 2.1 PJ) but dropped in 2022 to 0.8 PJ as the Latvian government temporarily suspended the mandatory blending requirement from 1 July 2022 to 31 December 2023, shifting it to a voluntary measure. In 2021, Latvia's share of renewables in TFEC ranked fourth-highest among IEA member countries (43%, compared to the IEA average of 20%). The share of bioenergy in Latvia's total renewable energy consumption was 82% in 2022, 30% higher than the IEA average in 2021 (52%).

Figure 4.1 Renewable energy in total final energy consumption in Latvia, 2005-2022



* Solar is not visible on this scale and accounted for 0.2 PJ in 2022.
Source: IEA (2023), World Energy Balances (database).

Under the EU Renewable Energy Directive, all EU member states have 2030 targets for renewables in gross final energy consumption, electricity generation, heating and cooling, and transport.[1] Taken together, EU member states aim to achieve an EU-wide target of 42.5% in gross final energy consumption by 2030.

Under its original NECP, Latvia aimed to reach 50% of gross final consumption and more than 60% in electricity generation by 2030 (Table 4.1). Under its updated

[1] Shares are based on Eurostat methodologies used to track progress on renewable energy targets and are different from the IEA methodology. Eurostat applies formulas to normalise fluctuations in wind and hydro generation and uses multiplication factors that give higher shares to advanced transportation biofuels and renewable electricity in transport.

NECP, Latvia is planning stronger renewable energy targets, including 57% in final energy consumption (Table 4.1).

Figure 4.2 Table 4.1 Latvia's 2030 renewables targets and actual 2022 values

Metric	2022 status[1]	2030 target under original NECP	Planned 2030 target under updated NECP
Gross final energy consumption	43.3%	50%	57%
Electricity	53.3%	>60%	–
Heating and cooling	61%	57.4%	66.4%
Buildings	56% (2021)	-	68%
Industry	55% (2021)	-	64.9%
Transport	3.1%	7%	–
Transport GHG intensity relative to 2005	-1.1% (2021)	–	-15%
Advanced biofuels' share in transport	2.3% (2021)	3.5%	5.5%

Notes: NECP = National Energy and Climate Plan.

Sources: IEA analysis based on Eurostat (2023), Share of energy from renewable sources, European Commission (2020), Latvia's National Energy and Climate Plan, European Commission (2024), Latvia's National Energy and Climate Plan.

Institutional overview

The Ministry of Climate and Energy has responsibility for overall renewable energy policy planning, including setting targets for renewable electricity, heating and cooling, and transport, as well as establishing sustainability criteria for biofuels and bioenergy.

All tax measures are the responsibility of the Ministry of Finance, and sectoral ministries can propose changes, exceptions or reductions to taxes for specific fuels or activities.

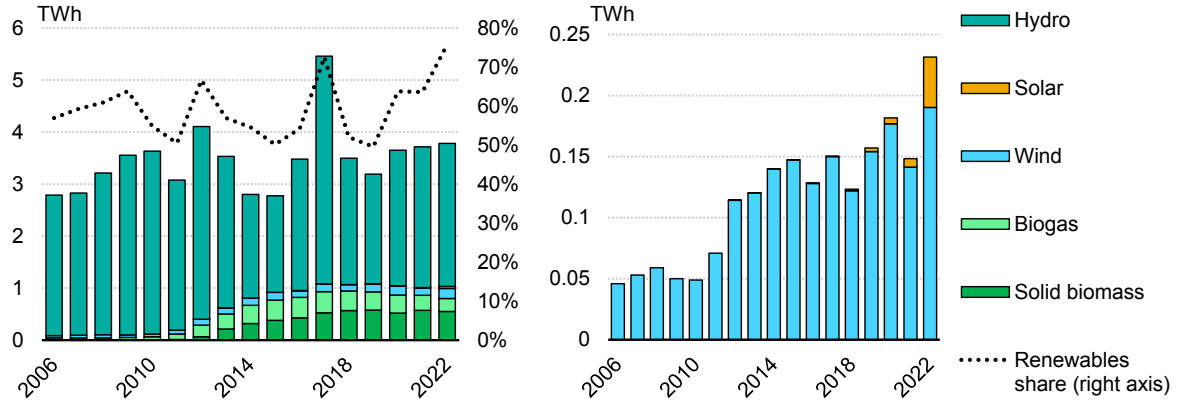
Sectoral ministries propose and implement support programmes that directly or indirectly promote renewable energy. This includes the Ministry of Agriculture for farmers; the Ministry of Economics for industrial producers or buildings; and the Ministry of Transport, the Ministry of Climate and Energy, and the Ministry of Environmental Protection and Regional Development for the purchase of clean vehicles, public transport and clean transport infrastructure.

In addition, municipalities can implement renewable energy projects using their own finances, public funding or by applying for state treasury loans.

Renewables in electricity generation

From 2010 to 2022, Latvia experienced significant growth in the share of renewables in electricity generation, from 55% to 76% (Figure 4.2). The bulk of renewable electricity generation in Latvia consists of hydro (55% of total generation in 2022), which fluctuates depending on water availability. Hydro experienced a peak in 2017 due to exceptional water availability due to high levels of precipitation during the summer. The use of solid biomass and biogas increased significantly from 2011 to 2017 but has stagnated since. Generation from wind, on the other hand, grew steadily (with fluctuations due to wind availability) from 2010 to 2022, when it reached a record high of 190 MWh. Electricity generation from solar experienced an impressive sevenfold increase from 2011 to 2022, though still accounted for only 0.8% of total electricity generation.

Figure 4.3 Renewables in electricity generation in Latvia, 2006-2022



Note: TWh = terawatt hour.
Source: IEA (2023), World Energy Balances (database).

Latvia has supported technological neutrality in the development of its electricity sector, meaning that at present, state support is no longer offered to renewable electricity generators; rather, generation capacity investments are driven by market signals. As such, Latvia no longer offers any feed-in-tariffs or contracts for difference to producers for electricity produced from renewable energy resources. Generators sell electricity at the market price. Latvia does not plan to create a support scheme for renewables-based electricity, though an auctioning system is under consideration for offshore wind. Latvia is pursuing measures to facilitate the build out of wind and solar generation facilities. Given the country's fragmented system of land ownership, the government is looking into options to simplify permitting procedures and offer compensation to local communities for their support, looking to Nordic countries for best practice examples. Latvia's National Recovery and Resilience Plan, passed following the Covid-19 pandemic, included measures to eliminate regulatory impediments to the siting of onshore wind

facilities. At the end of 2022, the government streamlined rules for establishing "green corridors" for solar and wind farms, shortening the environmental impact assessment timeline by six months. In addition, in June 2023, the government altered regulations to allow wind farm development on public forest land, granted through an auction system. The government is also in the process of drafting energy communities legislation, as in several other EU countries and proposed by EU law.

The government is directly involved in two wind projects: one offshore project with Estonia (Elwind) that is planned by 2030 and one onshore project in a state forest, planned for 2026. Latvia expects to tap into co-financing from the European Union's Connecting Europe Facility, with an investor auction for the Elwind project possible by 2025. However, Latvia does not yet have an offshore wind regulatory framework in place. The government expects that additional offshore generation capacity (15 GW potential) would be dependent on interconnections with other EU countries, namely Germany or Sweden.

During the Baltic Sea Wind Forum in Berlin in May 2023, the transmission system operators (TSOs) of Baltic states signed a memorandum of understanding for the establishment of the "Baltic Wind Connector", an offshore electricity transmission interconnection in the Baltic Sea. The initiative involves the installation of approximately 750 kilometres of submarine power cables in the seabed between Estonia and Germany.

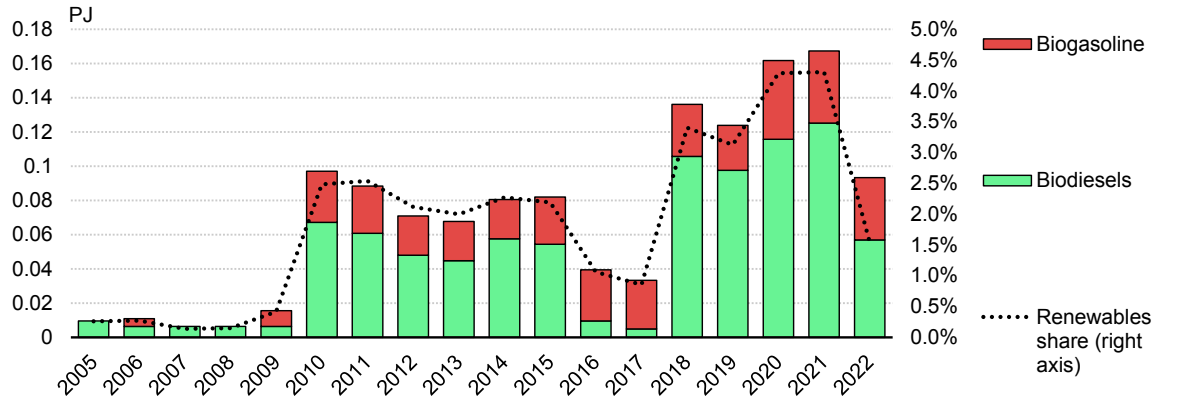
Latvia's original NECP noted that the country's electricity transmission grid is capable of accepting an additional 800 MW of new renewable generation capacity, roughly equal to a third of the country's total installed generation capacity. This is only a fraction of the active applications for grid connection of wind and solar PV that total 6 GW.

Through EU funds, Latvia also has a programme in place that offers grants to single-family buildings to improve energy efficiency. Among others, the programme offers EUR 4 000 for the installation of solar panels on rooftops. Over 2021-23, the programme has led to a boom in new rooftop solar installations, though the trend is now stabilising.

Renewables in transport

The share of renewables in transport in Latvia has fluctuated since 2005, including sudden increases in 2010 and 2018 (due to the establishment and then strengthening of mandatory blending obligations), and a drop in 2016 and 2017. In 2022, renewables accounted for 1.5% of transport sector demand at 0.05 PJ. From 2017 to 2022, the use of biodiesel grew 10.5 times, while biogasoline use grew by 28% (Figure 4.3).

Figure 4.4 Renewable energy in transport in Latvia, 2005-2022



Source: IEA (2023), World Energy Balances (database).

Latvia proposes to replace its previous target for 7% renewables in transport by 2030 with a target to reduce the GHG intensity of transport by 15% by 2030. However, it retained a target for advanced biofuels in transport, which increased from 3.5% in the original NECP to 5.5% in the draft updated NECP.

There are currently no support mechanisms for the production of renewable transport fuels.

According to provisions in Latvia's draft Transport Energy Law, and in line with the updated EU Renewable Energy Directive, an emissions reduction target of 15% by 2030 will be set for fuel suppliers, who can then decide on which technologies/solutions they will apply to meet the target. The law plans to propose annual targets toward the 2030 target.

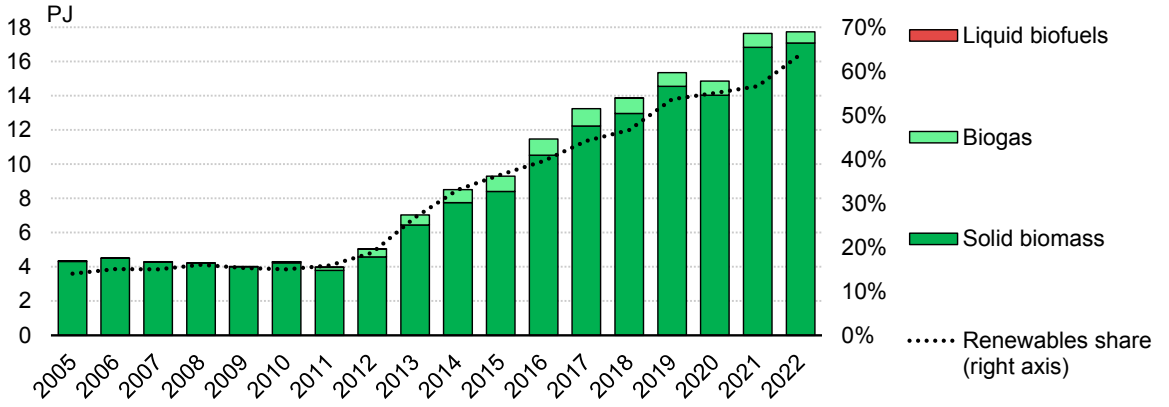
Current regulation requires a minimum of 6.5% biodiesel blending into all diesel fuel sold in Latvia (for the summer period); the minimum requirement for biofuels in gasoline is 9.5%. The standards have been harmonised across all Baltic countries since 2019. However, due to rising fuel prices, the Latvian government temporarily suspended the mandatory blending requirement from 1 July 2022 to 31 December 2023, shifting it to a voluntary measure.

A key challenge to meeting the overall renewable energy target in transport is a very old overall vehicle fleet (predominantly diesel-fuelled), driven by the population's low purchasing power. This poses an important obstacle to electrification. In addition, low population density (one of the lowest in the European Union) creates challenges for public transport. Moreover, road transport dominates the transport sector in Latvia, with passenger cars accounting for around 60% of transport. Measures for rail transport, therefore, have limited effectiveness.

Renewables in heating and cooling

The share of renewables in heating and cooling in Latvia steadily increased from 15% in 2010 (4.3 PJ) to 64% in 2022 (18 PJ) (Figure 4.4). Growth was mainly driven by an increase in solid biomass use, which has more than tripled since 2010, along with biogas, which also increased from 2010 (0.05 PJ) to 2022 (0.6 PJ). The use of renewables for heating and cooling dropped slightly in 2020 but rose again by 19% in 2021 and remained stable in 2022.[2] Nonetheless, gas boilers remain integral to managing peak loads, given their operational flexibility.

Figure 4.5 Renewable energy in heating and cooling in Latvia, 2005-2022



Notes: Liquid biofuels are not visible on this chart.
Source: IEA analysis based on Eurostat (2023), Short assessment of renewable energy sources.

Latvia's target under its original NECP was to increase renewables in heating and cooling to 58% by 2030, a target it already nearly reached in 2021. The government is planning to strengthen the target to 66.4% by 2030 under its updated NECP, in accordance with the updated EU Renewable Energy Directive.

There currently are no support mechanisms for renewable heating and cooling, other than some financial support (EU funding) for project implementation in individual heating. Within the framework of various public support programmes, it is (and will remain) possible to receive support for activities such as the replacement of fossil fuel heating equipment with renewable energy resources and connections to efficient, centralised heat supply systems.

[2] In 2021, the EU changed the methodology used to calculate the amount and share of renewable energy in heating and cooling. This included the addition of renewable cooling and other statistical changes that result in a break in consistency of data from 2020 to 2021. The notable change in the volume and share of renewable heating and cooling in 2021 in Figure 4.4 results mainly from the change in methodology.

Assessment

Latvia already has a high share of renewables, which supplied 46% of total energy demand and 76% of domestic electricity production in 2022. Latvian production of renewable energy is mainly from biomass and hydropower and has remained relatively stable over the last decade. Significant new renewable energy capacity needs to come online to reach the updated Latvian target of more than 70% in renewable electricity consumption and 57% in final energy consumption by 2030 (planned under the NECP update). Toward this goal, Latvia holds considerable potential, especially for wind and solar power.

Electricity

Until 2021, the installed capacities of wind and solar power were below 200 MW, but investor interest in these technologies has increased dramatically since then, with current applications for grid connection amounting to 1.2 GW of wind power and 4.8 GW of solar power, which have all paid a grid guarantee fee. These projects would be developed without any state aid. Bringing wind and solar power projects online will reduce Latvia's dependence on natural gas imports and contribute to lower electricity prices.

The Latvian TSO has imposed a temporary pause on new applications for grid connection, as the large capacities cannot be incorporated in the grid under current regulation, which requires full grid access for all connected producers. The Latvian government should place a high priority on facilitating the connection of new unsupported renewable energy capacity to the grid. Experience from countries with higher shares of variable renewable energy sources shows that project developers will accept some curtailment in peak production hours.

Latvia has recently changed its regulation on permitting for renewable energy projects to allow faster permitting procedures. However, work is still needed on implementation before project developers see their effect.

Starting in 2022, Latvia has seen a sharp increase in household solar PV installations, mainly incentivised through different support schemes for energy efficiency. Latvia should further promote the uptake of small-scale PVs by finalising legislation on energy communities in accordance with EU legislation. In the future, Latvia could consider distributed energy resource registries, such as those used in Australia, to help grid operators track and manage high levels of solar PV.

The Latvian government has proposed regulations with preferential rights for the state utility company, Latvenergo, to develop wind energy both offshore and in state-owned forests. The offshore regulation was withdrawn, while the regulation on wind energy in state-owned forests was passed with amendments. Latvia could

realise more efficient projects and higher resource rents by allowing competition for these resources. As such, the government should foster a more level playing field between private investors and the state-owned utility.

Transport

Renewable energy in transport has been fluctuating in Latvia, reaching 2.5% in 2010, dropping to less than 1% in 2017, increasing to 4.3% in 2021 before going back down to 1.5% in 2022. Due to rising fuel prices, the Latvian government temporarily made the mandatory biofuels blending requirement voluntary from 1 July 2022 to 31 December 2023; as a consequence, the share of renewable energy in transport is expected to be near zero in 2023. Latvia could achieve more stable and predictable GHG reductions in the transport sector with consistent application of the blending mandate.

Based on the latest revision of the Renewable Energy Directive, Latvia is working toward implementing requirements on GHG reductions in transport fuels, phasing in the 15% reduction target with a linear profile from 2025 to 2030. The government should refrain from additional deviations from the biofuels blending requirement and from the requirements on GHG reductions.

The IEA commends Latvia for consolidating all regulation on energy use in transport in the upcoming Transport Energy Law, which should provide more long-term guidance to the sector and investors.

Heating

The share of renewables in heating and cooling has increased steadily over the last decade and reached 63% in 2022. This is predominately thanks to the high share of bioenergy in district heating and individually heated homes. Latvia's updated NECP plans to set a target of 66.4% renewable energy in heating for 2030. Further penetration of renewables in heating and cooling can be achieved by increasing electrification through heat pumps and increasing the share of renewables in electricity generation. Support measures, including through EU funding, could further be channelled in this direction.

A priority should be placed on electrification of heating systems reliant on fossil fuels, especially district heating systems using natural gas.

Recommendations

The government of Latvia should:

- Facilitate the realisation of new wind and solar power projects by pushing for flexible grid connection conditions that allow dual use of grid connections for wind and solar as well as curtailment in hours of peak production.
- Strive for timely implementation of simplified permitting procedures for new wind and solar plants.
- Ensure a level playing field between the state utility company and other developers of renewable energy projects.
- Maintain a stable regulatory regime for renewable energy in transport (and other sectors), allowing market participants to make long-term investments without undue risk of sporadic political intervention.

5. Energy research, development and innovation

Overview

Latvia recognises that research, development and innovation (RD&I) will play an important role in its energy transition, and is expanding research programmes to include energy and climate-related fields. Though Latvia has several research and innovation policies and measures currently underway, there is no dedicated strategy for clean energy technology development.

Institutional overview

In Latvia, the government prepares and submits national research development strategic plans for approval by the parliament. It also approves national research programmes and ensures co-operation between ministries and the implementation of the regulatory framework.

Within the government, the Ministry of Education and Science ensures the development and implementation of science policy; organises the financing and evaluation of scientific institutions; co-ordinates international research co-operation; and is responsible for the planning, co-ordination, implementation and monitoring of science policy in higher education and scientific institutions.

The Latvian Council of Science supports the ministry, overseeing strategic implementation and communication of science policy, plans and implements scientific research programmes, provides scientific expertise for the public and private sectors, and promotes and co-ordinates international scientific co-operation. Since July 2020, the Latvian Council of Science is directly under the supervision of the Minister for Education and Science.

In the public sector, the main research organisations related to clean energy areas are Riga Technical University, the Institute of Physical Energy and the Institute of Solid State Physics.

Riga Technical University performs a range of electricity market and energy system operation modelling, analysis of energy efficiency improvements and implementation of renewable energy solutions, and the development of smart devices.

The Institute of Physical Energy makes a significant contribution to the development of national and EU energy and climate policy, as well as to smart grid research issues.

Solutions developed by the University of Latvia's Institute of Solid State Physics in electronics and photonics inform analysis on the operation of smart devices.

The Latvia University of Lifesciences and Technologies is a leading educational and research institution for the development of agricultural and forestry energy solutions and GHG reduction solutions in the Baltics. The Institute of Electronics and Computer Sciences specialises in the development of smart co-operative systems that promote the development of technologies related to smart cities and smart mobility.

In the private sector, environmental, clean technology and new product solutions are mainly developed by several competence centres: the Competence Centre of Smart Engineering Systems, Transport and Energy; the Competence Centre of Smart Materials and Technologies; the Competence Centre of Mechanical Engineering; and the Competence Centre of Information and Communication Technologies.

Innovation clusters created in Latvia – for example the "green and clean technology cluster", the "Latvian wood construction cluster", the "clean technology cluster" and the "smart city cluster" – have had a positive impact on the creation of co-operation networks among research organisations and stakeholders, as well as the development of projects by companies in clean energy areas.

State-owned enterprises also play an integral role in Latvia's innovation ecosystem, notably Latvenergo in the energy sector.

Energy innovation priorities and guiding documents

The foundational documents for Latvia's science policy are the Science, Technology Development and Innovation Guidelines 2021-2027 and the Law on Scientific Activity.

The Latvian research system is developed in line with the European Research Area to harmonise the Latvian research system with those of other EU member states, increase research results to EU standards and strengthen scientists' capacity in Latvia to solve global societal challenges.

The Sustainable Development Strategy of Latvia to 2030 includes a vision for innovation and the development of low-carbon goods and services, the use of renewables and the development of renewable technologies, and identifies the need to foster co-operation between research institutions and companies in the

field of renewable energy. However, no specific goals, action lines or support measures are defined, nor are there specific priority areas for technologies.

Over 2021 to 2027, Latvia's original NECP notes plans for targeted support for the development and implementation of RD&I climate technologies, in particular within the scope of implementation of the 2014 Smart Specialisation Strategy.

The Smart Specialisation Strategy has five specialisation areas, one of which is "smart energy and mobility". The smart energy category includes clean technologies and new materials; engineering and digital solutions for the acquisition, storage and integration of renewables into the energy system; energy efficiency in construction; automation and optimisation of production processes; and alternative transport fuels. It is organised around steering groups comprised of representatives from a broad range of stakeholders, including ministries, industry associations, industry clusters and competence centres, research organisations, academia, and industry leaders. There are four steering groups for the smart energy and mobility category: 1) biofuel and storage; 2) hydrogen; 3) sustainable aviation; and 4) smart cities.

Latvia's energy research and innovation thematic niches are renewable energy, smart energy systems, energy efficiency (buildings and industry), sustainable transport, energy governance and markets. At the same time, most of the thematic niches require greater linkages between fundamental research, technological development and commercialisation, in particular in research and innovation for renewable energy sources and technologies, which is one of the most promising energy areas in the coming decades.

Latvia's NECP included an action item to strengthen the contribution of RD&I to achieving climate and energy targets, focused on a few priority areas. These include renewable energy technologies (in particular, biomethane, hydrogen and modern biofuels, smart use of biomass before combustion, and the use of solar energy in transport); energy storage, integration and smart transmission; as well as carbon capture, utilisation and storage (CCUS); and energy efficiency and sustainability in buildings (including heating insulation materials and technologies).

Latvia currently has several initiatives underway or in development to promote increased private sector innovation, including updating regulation to facilitate the formation and operation of start-ups, support for participation in international conferences and bilateral meetings with investors, ensuring the availability of higher risk capital funding, and assistance (such as start-up visas) to attract employees from other countries. In addition, the country is promoting a co-operation platform to support increased investments by Latvian state companies

in RD&I, and the establishment of a Latvian Innovation and Technology Support Fund. Some aid programmes are also directed at improving the ability for Latvian companies to enter export markets.

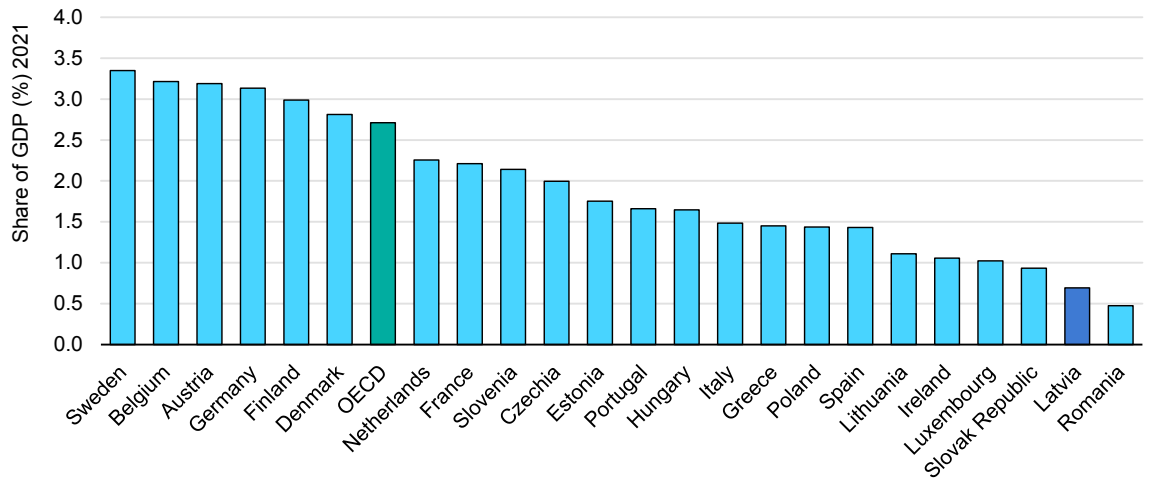
The Ministry of Energy and Climate is currently preparing a national strategy for hydrogen and its supporting policy documents. As such, Latvia has not yet set any specific goals or targets for the sector's development. The Transport Development Guidelines for 2021-2027 is a policy planning document that calls for a study on scenarios for the development and use of hydrogen fuel in Latvia; the most cost-effective solutions for the provision of renewable hydrogen in the transport sector; as well as evaluating the most suitable types of hydrogen production, filling stations and supply options.

Latvia's vision for hydrogen deployment in transport is long term and includes plans for the development of hydrogen infrastructure. Moreover, innovation is prioritised and is expected to be achieved via the implementation of the national RD&I Smart Specialization Strategy over 2021-2027.

Resource push

Latvia has not previously prioritised RD&I, and it ranks toward the lower end among EU and OECD countries on total public R&D expenditures (Figure 5.1). Latvia's R&D spending has remained relatively flat over the last decade (declining slightly over 2011-21). Moreover, Latvia does not track energy-related R&D spending.

Figure 5.1. Government spending on research and development as a share of GDP, 2021



Source: IEA analysis based on OECD (2023), Gross domestic spending on R&D.

The target indicator set in the National Reform Programme of Latvia for the Implementation of the EU 2020 Strategy for investments in R&D for 2020 is 1.5% of GDP. So far, investments in R&D have barely reached 0.7% of GDP in the last five years, which is a significant obstacle to the development of RD&I in any economic sector, including energy. On a percentage basis, Latvia's R&D spending is heavily dominated by the public sector compared to the private sector.

Nationally, Latvia's State Research Programme 2018-2021 included funding for 11 projects, amounting to EUR 5.3 million in the energy sector, covering energy efficiency, heating and cooling systems, renewables, energy and climate modelling, gas infrastructure, smart grid technology, and transport policy.

The National Development Plan of Latvia for 2021-2027 sets a target for R&D spending of 1.5% of GDP by 2027, provisionally projected to be the target for 2030 as well. Over the 2021-27 period, there are plans for more targeted support to RD&I in climate-related areas, specifically for 25% of R&D spending to be dedicated to the achievement of climate targets (in particular, areas related to energy efficiency, renewable energy, adaptation, and water and waste management). Potential priority areas include: biomethane, hydrogen, modern biofuels, energy storage, smart transmission and energy efficiency in budlings.

Latvia plans to rely mainly on EU Structural Funds aimed at the development of new technologies and innovations, knowledge and technology transfer, commercialisation of research results, creation of products and services with higher added value, and improving the competitiveness of companies, including in energy efficiency and decarbonisation areas.

According to the NECP, EU Structural Funds are currently supporting a "practical research programme" that targets R&D aimed at commercialisation, of which 14% are in areas relating to clean energy, while one of eight "competence centres" are focused on smart engineering, transport and energy. The funds also support a "technology transfer system" that promotes knowledge sharing and technology transfer toward commercialisation. Lastly, the funds include a "cluster programme" to promote co-operation among research, educational, municipal and other institutions in interrelated areas.

Table 5.1 Latvia's targets for research, development and innovation under its original

Policy outcome for RD&I	2017	2030 target
Turnover of innovative products (%)	46.5	>14
Share of enterprises active in innovation (%)	30.5	>40
Share of high-technology sector exports (% of total exports)	10.2	>15
Global Competitiveness Index (world ranking)	42	<40
Investment in R&D (% of GDP)	0.51	>2
Investments in R&I for achieving energy and climate objectives (% of total R&I investments)	–	25+
Public R&I funding for achieving energy and climate objectives (% total R&I investments)	19	25+
Requested public foreign R&I funding for climate, energy and transport (% total funding for Latvia)	24	25

Note: R&I = research and innovation.
Source: IEA analysis based on European Commission (2020), Latvia's National Energy and Climate Plan.

Under the European Strategic Energy Technology Plan, which was designed to promote the development of new technologies and bring down their costs, Latvia's targeted allocation of clean energy investment areas for 2017-27 are: renewable energy (15%), smart energy systems (20%), energy efficiency systems for residential buildings and industry (38%), sustainable transport (20%), carbon capture and storage (2%), nuclear energy (0%), and energy management and market development (5%).

Latvia's Recovery and Resilience Plan following the Covid-19 pandemic included an instrument to support the development of innovation clusters, with the objective to increase private R&D investment through targeted public investments.

From a human resources perspective, scientific innovation capabilities fall below EU levels, with the ratio of R&D employment to the total labour force standing at only 0.62%, compared to the EU average of 1.39% (2017). Around 1 000, or 18% of, Latvian science-based workers are involved in research related to the EU Energy Union (energy, construction, climate, environmental engineering technologies); Latvia aims to increase this to 1 800 personnel by 2030 under its NECP. Meanwhile, in education programmes, around 4.5% of students and 13% of PhD students are in fields related to smart energy (as defined under the Smart Specialisation Strategy).

In terms of patents, Latvia ranked 37th out of 49 countries registered with the European Patent Office in 2021, with 11.73 patent applications per 1 million residents. Over 2014-17, 17% of patent applications related to clean energy technologies, including for biomass combustion equipment, biofuels, wind and solar technologies.

Latvia also lags behind EU countries in terms of company innovation, at 32% over 2018-20, compared to the EU average of 52.7%. This mainly stems from the structure of Latvia's private sector, which is dominated by micro and small enterprises with limited capacity for R&I investments. Around 50 companies in total in Latvia are undertaking innovation in areas related to the European Commission's research and innovation strategies for smart specialisation (EU RIS3) area of "smart energy".

Knowledge management

International collaboration

The Ministry of Education and Science supports international collaboration in a number of areas, including the EU Strategic Energy Technology Plan, 2Zero, the Clean Hydrogen Partnership, the Clean Energy Transition Partnership, the European Driving Urban Transitions Partnership and the Mutual Learning Exercise on Industrial Decarbonisation.

To foster co-operation in RD&I with other EU regions, since 2014, Latvia has been part of the EU RIS3 platform. It is co-ordinated by the European Commission's Joint Research Centre, which oversees and monitors implementation of EU RIS3 policy.

In 2018, a co-operation agreement in the field of energy research was signed by Baltic and Nordic countries for 2018-21 with the general objective of promoting research and analysis in the field of energy in the Baltics. This includes the promotion of mutual research projects with participation from Baltic researchers, co-operation on doctoral programmes and an exchange of energy researchers between the countries.

Since 2019, Latvia has been actively involved in the European Technology and Innovation Platform for Batteries Europe. It is also a participant in the 2023 Clean Hydrogen Partnership, BalticSeaH_2, which plans to establish a cross-border hydrogen valley around the Baltic Sea between Estonia and Finland, connecting to local valleys in surrounding countries.

Assessment

Latvia has made RD&I a central pillar of its NECP and the government will place a greater emphasis on the clean energy transition as part of its research programmes. Given that clean energy technologies will form a critical part of any country's energy transitions, the IEA welcomes this new focus.

Nonetheless, Latvia currently does not track energy-related R&D expenditure. Some research projects are enabled through regular energy funding mechanisms

and others through various innovation funds and programmes, mainly from the European Commission. The government should consider adopting a specific programme for energy, bringing together all existing funding opportunities at both the national and European/international levels.

At the national level, the allocation and expansion of specific funds for energy research could stimulate such activities in research institutions and industry. The State Research Programme Energy 2018-2021, with its EUR 5.3 million budget, has enabled the funding of 11 projects on topics relevant to the government. While specific calls may be useful to provide answers to the government's needs, a more open energy research budget could potentially stimulate additional projects. Such a budget could be declared in the updated National Development Plan and reserved in the Latvian Council of Science's annual call.

In addition, Latvia's innovation landscape could benefit from stronger co-operation between industry (including start-ups and small and medium-sized enterprises) and research institutions, as well as with state capital companies. The government should ensure that these institutions all have opportunities to access grants from both the public and private sectors. In the framework of start-up funding programmes, energy topics should also be considered.

Latvia approved the Smart Specialization Strategy for Cooperation and Growth in 2014. One of its priority areas is smart energy and mobility. The government should ensure that the recommendations of the steering groups are systematically evaluated and considered in the development of public policy. In addition, the selection process for members of the steering group should be transparent.

The alignment of the priority areas with the short- and medium-term goals of national energy policy can be beneficial from an efficient use of resources perspective. Still, the funding of basic research should also be further promoted. Strong basic research enables knowledge expansion and serves as the groundwork for technological breakthroughs in the field of energy. In all cases, continuity in funding should be preserved.

Latvia should also give due consideration to technologies in which it may have competitive advantages. Given the government's objective to reduce the use of fossil fuels in heating and transport, research into alternatives such as second- and third-generation biofuels should be supported.

To ensure collaboration, synergies and further innovation across the research and energy ecosystems, the results of state-funded energy research should be made publicly available and promoted by the Latvian Council of Science in close co-operation with the relevant ministries.

The research capacity in Latvia is more than two times lower than the EU average. Currently, 4.5% of students choose programmes related to energy topics. Attracting and supporting (including financially) young researchers is essential to ensure future innovation. Latvia should increase its efforts in this regard.

Recommendations

The government of Latvia should:

- Bundle state energy-related research funding programmes, allocate funds for this purpose and strive for public-private partnerships to increase innovation in energy and related fields.
- Align national energy and research policy by defining priority areas at different stages of the technology readiness level while ensuring stability in research funding.
- Promote knowledge transfer from research projects and enable active dialogue between the public sector, research institutions and industry (including start-ups and small and medium-sized enterprises). Ensure feedback mechanisms from research findings into policy development.
- Step up efforts, including increased investments, at educational institutions to encourage more students to enter scientific fields and join the research community.

6. Electricity

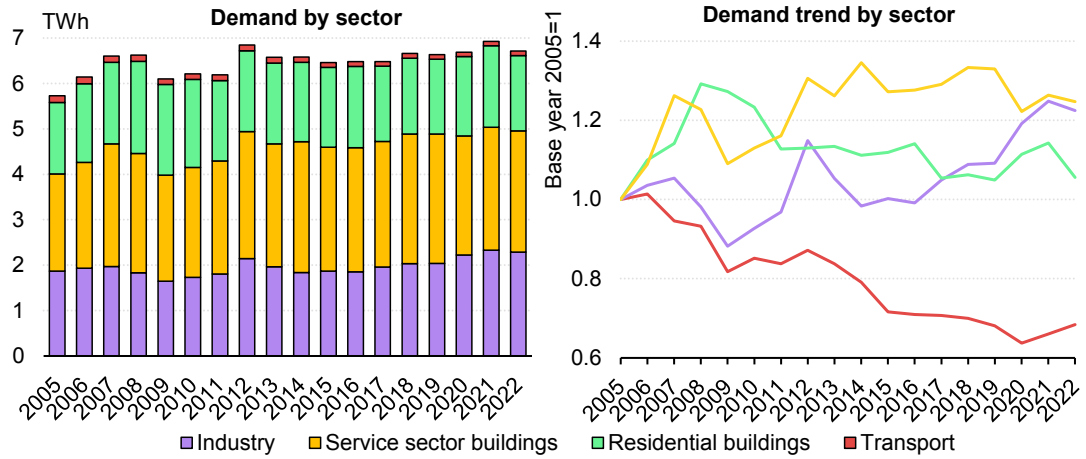
Overview

Latvia's electricity demand increased from 6.2 TWh to 6.7 TWh between 2010 and 2022. This growth was mainly driven by a 32% increase in the industry sector and a 10% increase in service sector buildings (Figure 6.1). Electricity demand from residential buildings decreased by 1% between 2010 and 2022. Electricity demand from transport is very low, mainly from rail, and declined from 2010 to 2022.

Until 2010, Latvia's electricity generation mix consisted mostly of hydro and natural gas, with a considerable share of net imports. From 2010 to 2022, the share of bioenergy and waste in electricity generation rose from 1% to 16% and wind from 0.7% to 3.8%, while that of gas decreased from 45% to 24%. (Figure 6.2).

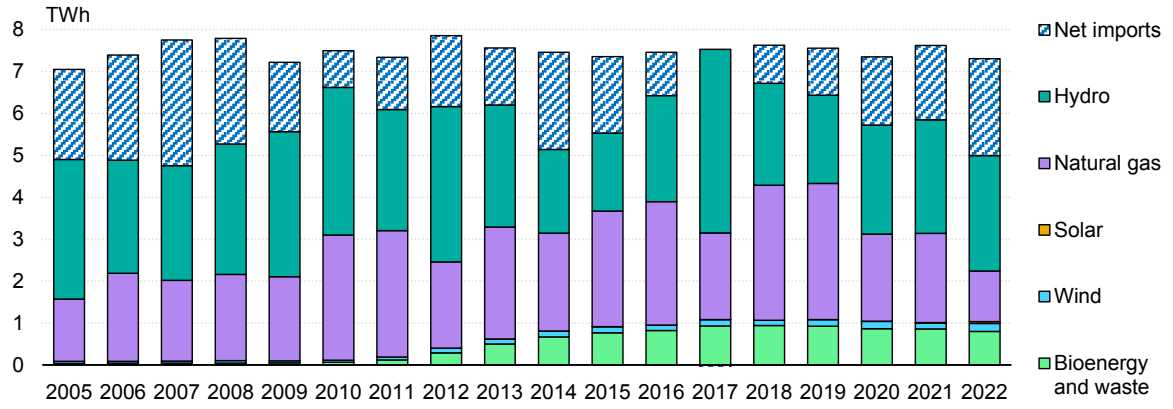
Given the variability of water inflows into Latvia's hydropower plants, natural gas co-generation plants play an important balancing role in Latvia's power supply.

Figure 6.1 Electricity demand by sector in Latvia, 2005-2022



Source: IEA (2023), Electricity Information (database).

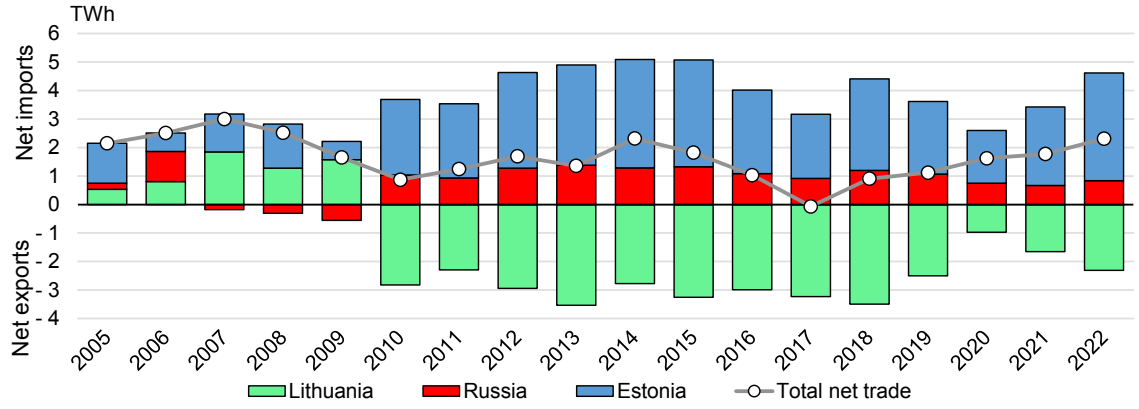
Figure 6.2 Electricity generation by source and net trade in Latvia, 2005-2022



Source: IEA (2023), World Energy Balances (database).

Latvia imported electricity from Estonia and Russia and exported to Lithuania from 2010 to 2022. Both imports from Estonia and Russia and exports to Lithuania declined from 2018 to 2020 but rose again until 2022 (Figure 6.3). Latvia's net trade was exceptionally low at 0.1 TWh in 2017, but then gradually increased to 2.3 TWh of net imports in 2022. Latvia reduced its dependence on Russian imports between 2018 (1.2 TWh) and 2022 (0.8 TWh). Due to the Russian invasion of Ukraine, Latvia stopped commercial electricity imports from Russia in May 2022.

Figure 6.3 Latvia's electricity trade, 2005-2022



Source: IEA (2023), Real-Time Electricity Tracker.

Looking ahead, the TSO expects total electricity consumption growth in a baseline scenario from 7.4 TWh in 2022 to around 7.9 TWh in 2030 (with a 2030 range between 7.6 TWh and 8.1 TWh in more conservative and more optimistic scenarios, respectively). Though demand is expected to grow based on increased

deployment of EVs, heat pumps and microgeneration, final electricity consumption by households will be partly offset by a declining population.

Electricity market structure

Electricity generation in Latvia is dominated by the company AS Latvenergo, a 100% state-owned company, which is the owner of the largest Latvian hydroelectric stations as well as the biggest thermal plants.

The TSO in Latvia is AS Augstsprieguma tīkls (AST). AST is 100% owned by the government and holds monopoly status as Latvia's sole TSO. AST is responsible for secure and stable electricity system operation, system planning and interconnections with neighbouring countries, power adequacy planning in the short- and long-term prospectives, as well as for system maintenance. AST is a regulated business, regulated by tariffs approved by Latvia's regulator, the Public Utilities Commission (PUC).

Similarly, AS Sadales tīkls (ST) is the distribution system operator (DSO) in Latvia, holding *de facto* monopoly status (there are 10 DSOs in total, but ST covers over 99% of the country, supplying 790 000 customers). It is owned by Latvenergo and operates under the oversight of the PUC. ST operates and maintains the distribution network, ensuring that electricity reaches households, businesses and other consumers in a timely and uninterrupted manner. ST collaborates with other entities for system development, participates in interconnection projects with neighbouring countries and sets tariffs approved by the regulator.

The regulator, the PUC, is an institutionally and functionally independent, autonomous body governed by public law, carrying out regulation of public services in energy and other sectors.

Since January 2018, AST and the other Baltic TSOs have operated in a common model for balancing the power systems of Estonia, Latvia and Lithuania, known as the common Baltic co-ordinated balancing area.

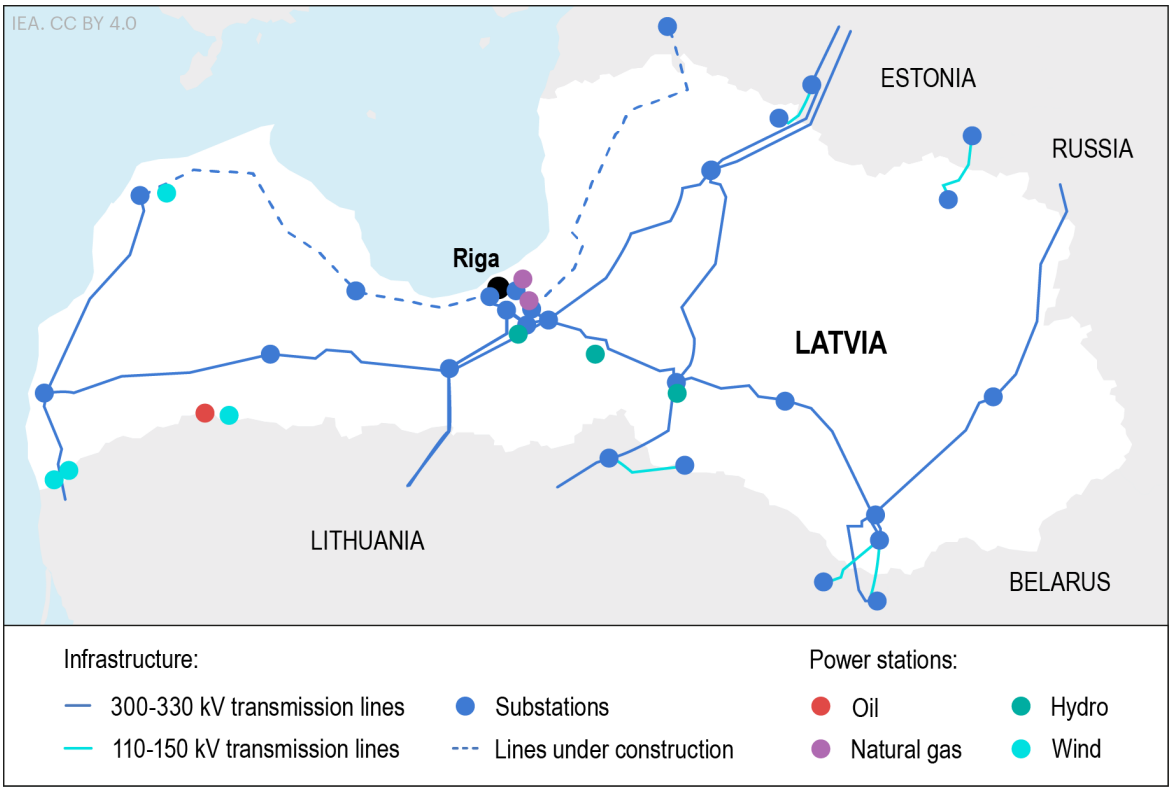
Infrastructure

The transmission network links Latvia's power stations with the energy systems of its neighbouring countries as well as distribution network companies. Latvia's transmission network consists of 110 kilovolt (kV) and 330 kV transmission lines and substations. Latvia's transmission system has eight 330 kV interconnections with neighbouring countries: one with Russia, three with Estonia and four with Lithuania. There are also five 110 kV interconnections, but they are only used in case of repairs on the other systems. Latvia's 330 kV power network represents the middle point of the energy system of neighbouring Baltic states to the north and south. As such, all 330 kV substations, except for Daugavpils, have dual

power flows. Cross-border interconnection capacity with Estonia and Lithuania amount to 2 780 MW. Technical losses on networks are around 7%.

According to the Electricity Market Law, the TSO must annually develop and submit a 10-year Power Transmission System Development Plan to the PUC for approval. The regulator determines the information that must be included in the Plan, the procedure for its submission, and approves it and supervises its implementation. The power transmission network is also developed in accordance with the European Ten-Year Network Development Plan (inclusion in the European Ten-Year Network Development Plan is one of the preconditions for projects to apply for European co-funding). One of the main funding sources for grid expansions and upgrades is the power transmission tariff, approved by the PUC, from which a portion is allocated to grid development projects. European co-financing from the Connection Europe Facility is also possible, as is using funding from the TSO's congestion management revenues for projects that remove bottlenecks from lines.

Figure 6.4 Electricity map of Latvia



Major forthcoming challenges to the electricity system outlined by the TSO include the synchronisation with the European grid (2013-25), facilitating renewable energy connections, the regional Rail Baltica project (2023-30) and Baltic Sea offshore grid development (2023-50).

Latvia's total installed capacity is around 3.1 MW for plants above 1 MW of capacity. Most electricity in Latvia is generated by the three Daugava hydropower plants (1.6 GW installed capacity) and two co-generation plants (1.1 GW capacity), owned by Latvenergo. Though the country's hydropower fleet is relatively old, ongoing refurbishments have ensured longer term operation. The ability of the Daugava hydro plants to generate electricity depends on water inflow in the Daugava River. During the flooding season, they can cover electricity demand for all of Latvenergo's customers and trade excess on the Nord Pool exchange. Outside peak seasons, the plants provide storage capacity. The operation of Latvenergo's co-generation plants can be flexibly adjusted to electricity market conditions and guarantees sizeable baseload electricity capacity for Latvia. Both co-generation plants can cover Latvian electricity consumption almost completely in circumstances where, due to certain factors, electricity imports from foreign countries are limited. The country also has around 52 MW of smaller co-generation installed capacity.

Table 6.1 Electricity generation capacity by type in Latvia, 2020-2023

Production type (MW)	2020	2021	2022	2023
Wind onshore	74	84	87	165
Hydro run-of-river and pondage	1 578	1 578	1 588	1 609
Solar	9	11	14	63
Fossil gas	1 026	1 021	1 162	1 157
Biomass	145	149	164	177
Total capacity	**2 832**	**2 843**	**3 015**	**3 171**

Source: Entso-e (2023), Installed Capacity per Production Type

Latvia does not offer support schemes for new generation sources, aside from a subsidy to consumers for microgeneration installations. However, through the Mandatory Procurement Scheme, the government provides monthly capacity payments to co-generation plants to cover their fixed costs, as approved by the PUC. The support scheme is due to expire on 23 September 2028, and the government has not yet decided whether to extend it.

Looking ahead, AST, in its ten-year forecasts, expects existing hydro and co-generation capacity to remain constant, while natural gas co-generation capacity for managing peak load and guaranteeing reserves will drop across all scenarios (49% in the base case). Growth is the strongest in wind (onshore and, from 2030, offshore), followed by solar. In the baseline scenario, wind grows more than sevenfold, while solar's growth is fivefold from 2022 to 2030.

Since 2022, Latvia has seen a surge in grid connection requests, for a total of 6 GW of capacity. Of these, 81% were for solar power and 16% were for wind. Due to the influx of requests, the TSO paused the issuance of connection requests, awaiting further regulatory guidance from the government.

Distributed generation is starting to pick up in Latvia. In the DSO system, there are currently 15 300 small-scale generators (with power up to 11.1 kW), with a total capacity of 122 MW. There are 786 other larger generators with a total capacity 306 MW. Moreover, there is strong interest for new system connections, with the DSO receiving applications and issuing technical requirements, for a total capacity of more than 580 MW (as of June 2023). Small producers, including microgenerators in households, are expected to continue to grow (albeit more slowly) in the coming years.

Desynchronisation from Russia

In response to the Russian invasion of Ukraine, Baltic TSOs have agreed to make changes to reduce dependence on the Russian energy system. Though imports from Russia have stopped, the three Baltic countries still synchronise their grid with Russia and Belarus under the BRELL system. From June 2022, balancing of demand and generation in the Baltics is now ensured mainly through balancing capacities on the Baltic, Nordic and Polish markets, which should eliminate the need to make any payments to Russia for balancing services.

There is a major ongoing infrastructure project to desynchronise the Baltics from the Russian electricity system and synchronise their grids with the continental European grid through Poland. Based on a July 2023 agreement among Baltic state grid operators, the decoupling from the Russian grid will take place by February 2025, sooner than originally planned. The project is supported by EUR 1.6 billion of EU funding. Current infrastructure allows the synchronisation of the Baltics with continental Europe to take place in a matter of hours under emergency circumstances. The project involves two phases: the first is to reconstruct and fortify two existing connections between Estonia and Latvia; the second is to construct additional direct current connections between Lithuania and Poland.

Electricity market operation

The Latvian electricity market at the wholesale level is directly integrated with the Baltic states and Nordic countries. The retail market is organised at the national level.

Latvia is an integral part of the European Union's internal electricity market, which operates in accordance with the principles of EU policies and laws. The integration

of the Latvian electricity market into the EU market began in 2009, with the approval of the Baltic Energy Market Interconnection Plan.

In line with the principles of the single integrated electricity market adopted by the European Union, there are several interconnected stages in the electricity market – from the long-term (forward markets) to the real-time (balancing) market. The operation of the system is organised around the day-ahead and intraday markets.

The electricity exchange in Latvia started operating in 2013. It ensures electricity market integration with other interconnected EU electricity markets. Currently, Nord Pool is the sole nominated electricity market operator (electricity exchange) in Latvia. It performs the operation of the electricity exchange, under the frameworks of the day-ahead and intraday markets.

In line with Baltic Balancing Roadmap, the TSO is in the process of transitioning to a 15-minute trading and imbalance settlement period, as required by EU regulation (as of January 2021, but a derogation was issued in Baltic countries for implementation by the end of 2024).

The Latvian retail electricity market is fully open to competition and all consumers are free to choose their energy supplier. Most suppliers offer both fixed and variable (dynamic) price products. The most common offering is a fixed-price product (87% of all contracts in the household segment and 52% in the non-household segment at the end of Q1 2023).

Electricity policies

Latvia's original NECP included several policy goals for the electricity sector, as electricity is expected to form a central component of the country's decarbonisation strategy. Toward this end, Latvia plans to reduce its dependence on imported fossil fuels by developing sufficient renewable energy sources, notably wind. In this way, it hopes to both bolster its energy security and to realise its decarbonisation objectives.

Though Latvia does not plan to offer state aid for the development of clean electricity, the NECP noted the removal of barriers to renewables development, such as facilitating and expediting the issuance of permits. The government also plans to open up agricultural and forest land for the development of wind farms and to develop publicly available maps that demonstrate wind and solar potential in Latvia, including spatial planning restrictions. The plan also highlighted the need to increase demand for renewable electricity by imposing an obligation on electricity suppliers to indicate the share of renewables in electricity bills as well as to develop regulation for power purchase agreements and peer-to-peer trading

mechanisms. It also proposed a review of fossil fuel taxation to boost the competitiveness of renewable energy.

In terms of financing for renewables projects, the NECP noted that the most cost-effective solution for Latvia is through transnational co-operation projects. The government thus hopes to tap into the funds through the Connecting Europe Facility and Projects of Common Interest to establish joint offshore wind infrastructure in the Baltic states, offered through an auction system.

Since the first NECP was issued, Latvia has made progress on advancing wind projects, including on an onshore project in a state forest and an offshore project planned with Estonia (see Chapter 4).

Electricity is expected to play a crucial role in the decarbonisation of other sectors, such as transport and heating. As a result, overall electricity consumption will increase in the medium and long terms. Several projects are planned or currently underway to increase total installed capacity, in particular of solar PV and wind. Should new capacity bring down prices, this can also incentivise new consumption.

Several regulatory measures have recently been adopted or planned in Latvia to align with EU regulation. In 2022, the government advanced regulations related to energy communities, active consumers and energy sharing. These are expected to increase end user participation in the energy system and incentivise decentralised generation. Several state aid programmes also offered grants for microgenerator installation for self-consumption. The pace of microgeneration development after 2023 will largely depend on the continuation of state subsidies. The government also plans new regulation to encourage power purchase agreements, which have not been popular to date.

Electricity system flexibility

Flexibility and demand management are presently not considered to be challenges in Latvia, but the growth in distributed and variable energy sources in the coming years is projected to increase the need for system flexibility options. As a result, new balancing solutions are expected to be introduced, including battery resources.

Smart meters

The replacement of the electricity meter fleet was completed at the end of 2022, introducing smart electricity meters in at least 99% of all distribution system users (over 1 million customers). The DSO, Sadales tīkls, reports data online in customer portals, and indicates that already over half of customers are applying the data to shift consumption patterns.

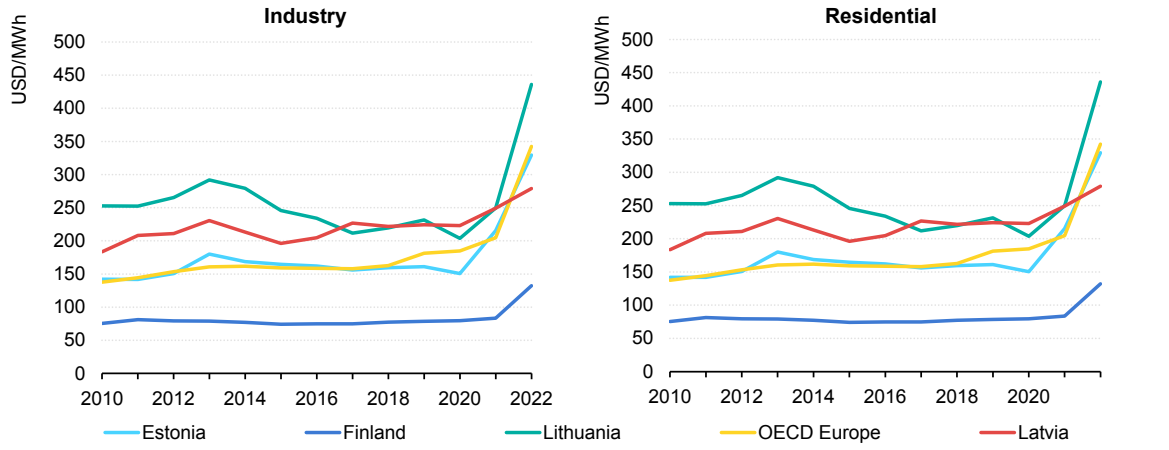
Electricity prices

The final electricity bill in Latvia consists of three main components: 1) electricity price (50-70%); 2) distribution and transmission network tariff (20-30%); and 3) VAT (~20%).

Approximately 160 000 vulnerable and protected customers receive state support for their electricity bills (people with special needs, socially vulnerable households, families with 3 or more children).

National average electricity prices for the industry and residential sectors in Latvia increased from 2015 to 2022. However, the increase in 2022 was less strong than in other neighbouring countries and of the OECD Europe average (Figure 6.5). In response to the energy crisis, Latvia imposed energy price controls on all customers, including for electricity (1 October 2022-30 April 2023). In response to abated market conditions, the government is planning to apply a revised support mechanism only for households facing energy poverty.

Figure 6.5 Industry and residential electricity price trends in Latvia and neighbouring countries, 2010-2022



Notes: USD/MWh = US dollars per megawatt hour. USD 1 ≈ EUR 0.93.
Source: IEA (2023), Energy Prices (database).

Electricity security

Latvia's electricity system has demonstrated an improvement in disruptions in the past few years. Based on the System Average Interruption Frequency Index (SAIFI), compared to an average of 5 disruptions in 2010, in 2022 the country had 2.4. Latvia's System Average Interruption Duration Index (SAIDI) also fell, from 1 292 minutes in 2010 to 240 minutes in 2022. The DSO's target is to bring down unplanned SAIFI to below 1.3 and unplanned SAIDI to under 65 minutes.

The DSO has applied for REPowerEU funding to accelerate improvements in SAIDI/SAIFI parameters.

TSOs manage system imbalance by activating reserves offered by balance service providers. These energy products are exchanged via the balancing market operated by the TSOs.

Under its ten-year network development plan, AST calculates and models transmission capacity under several scenarios, including transmission capacity using N-1 criteria or power flow analysis.

Latvia still relies on the Russian electricity grid to maintain the synchronous operation of its power grids. Therefore, due to the current political situation, Latvia must consider the risk of Russia stopping co-operation and forcing desynchronisation. This would lead to Latvia disconnecting from the BRELL grid and being forced to maintain the entire system on its own. In this case, Latvia would need to start using additional capacity at one of its co-generation plants, which, in turn, would require additional gas reserves. To solve the issue, in April 2022, the government of Latvia ordered Latvenergo to buy and hold an additional 1.8 TWh of gas reserves.

From an adequacy perspective, AST notes in its ten-year forecast that in a conservative scenario (assuming low renewables growth and slow economic growth), generation capacity would be insufficient to cover peak load, provide system reserves and guarantee secure power supply in the winter in the period 2022-32. In this case, existing baseload capacity (Daugava hydro plants and co-generation plants) play an integral role in ensuring electricity security. In the baseline scenario, AST's assessment finds that generating capacity is sufficient to meet peak load over 2022-32, though existing baseload should remain in place. Only in the optimistic scenario would Latvia have surplus capacity over peak load; starting from 2030, the two co-generation plants could be shut down and replaced by renewable generation. In this case, Latvia could export surplus generation to neighbouring countries.

The growing role of information systems and operational data exchange in the electricity system is increasing the importance of cybersecurity, protection of information systems and business continuity. Several data centres and critical systems have been separated and protected, and external access firewalls and data encryption at the level of systems and control terminals have been created. The DSO has put in place special safety requirements for electricity metering devices and their connecting systems. Business continuity and cybersecurity have also been incorporated into the system development planning process.

Assessment

Latvia's electricity sector, which is dominated by renewable energy sources (mainly hydro), provides a strong basis for the country to undertake its energy transition. The next stage of Latvia's electricity sector evolution is to continue to expand the share of renewables in the generation mix and leverage the electricity sector to decarbonise other sectors through electrification while ensuring system stability.

Due to the Russian invasion of Ukraine, Latvia stopped commercial electricity imports from Russia in May 2022. Moreover, the Baltic states have jointly agreed to desynchronise the Baltics from the Russian electricity system and synchronise their grids with the continental European grid. The IEA commends Latvia on its rapid response to cutting dependence on Russia and, together with its Baltic neighbours, advancing the desynchronisation date to February 2025. Careful monitoring of the system should be maintained until that time in the event that Russia suddenly or prematurely cuts off access to its grid.

In preparation for the forthcoming integration with the continental European electricity system, Latvia follows the common Baltic balancing roadmap. Latvia has already taken steps toward upgrading some of the technical system capabilities, to secure system stability and operational security (even considering the upcoming decoupling from the Russian electricity system in early 2025). The IEA applauds Latvia's efforts on reconstructing and modernising its electricity infrastructure. It urges Latvia to ensure progress on necessary future investments, essential for completing network infrastructure modernisation and adequate repair preparedness for the Eastern part that is still to be modernised. Latvia should also continue to ensure the supply chain and cybersecurity as part of this effort.

In the aftermath of the energy crisis, the government of Latvia also took action to diversify its import sources of natural gas following a ban on Russian supply in January 2023. Given that Latvia is still dependent on natural gas for electricity generation (especially for balancing variability in hydro), the country also helped improve the security of electricity supply.

Furthermore, by increasing the production capacity of a large, state-owned gas-fired co-generation plant, Latvia has taken additional remedial action on supply security. However, the installed capacity of smaller co-generation plants (connected to the distribution grid) is generally predicted to decrease, and its withdrawal from the procurement system could have an impact on overall capacity, as well as operational system services. In addition, the state subsidy for larger co-generation plants (as a capacity payment) is currently a time-limited mechanism (due to expire in 2028). The timing of thermal capacity closures, not just in Latvia but across the region (Latvia currently imports large volumes of electricity from Estonia), bears monitoring from a security of supply

perspective. Toward this end, Latvia would benefit from a sectoral roadmap for the electricity sector that clarifies the generation mix required to meet longer term climate and renewable energy targets in the electricity system while also ensuring security of supply.

In line with decarbonisation objectives, Latvia's NECP places an emphasis for the power sector on additional growth in renewable electricity, albeit without state support (previous support mechanisms had to be rescinded due to hefty costs). Wind and solar, in particular, are expected to play greater roles. Electricity generation from solar has been increasing in recent years, bolstered by financial support from the government to end users who install solar PV panels on rooftops. Wind power capacity is also expected to grow in the coming years due to new onshore wind parks currently under development. Furthermore, a joint initiative for offshore wind parks in the Baltic Sea is under consideration between Latvia and Estonia (Elwind). The government should ensure an efficient and transparent regulatory framework for new renewable energy generation, both to support new projects and to ensure public support for them. To this end, the government's efforts to streamline permitting procedures for new onshore wind projects are welcome and their implementation should be expedited. Grid connection requests to the TSO, which have been paused due to oversubscription, should also be addressed (see Chapter 4).

To support increased interest in renewable energy supply, the EU Renewable Energy Directive provides the option to offer guarantees of origin certificates, which track the sources of electricity that energy suppliers and traders procure so they can disclose the amount of renewable electricity in their supply. Several IEA countries have imposed obligations on such certifications with success. Latvia could also move forward with a similar obligation.

Looking ahead, as Latvia's generation mix shifts toward greater shares of variable renewable energy generation, it should also place a greater emphasis on introducing more flexibility mechanisms into its electricity system. Moreover, as the long-term power mix shifts, it can give rise to an increased need for balancing power/ancillary services.

Though the majority of Latvian electricity production is owned by the state, private market actors can also play an important role in the future balancing of markets. Therefore, Latvia should work toward opening balancing markets to all producers of renewable electricity. As part of this, the government should reassess the importance of small-scale hydropower production as a resource for both distributed electricity generation and electricity storage.

Likewise, Latvia should give due consideration to the role that electricity demand can play in system balancing. As households shift toward more self-consumption and the penetration of EVs increases, Latvia's regulatory

framework should also enable more demand-side management tools and services. Moreover, Latvia's successful roll-out of smart meters to nearly 100% of households offers considerable potential to use demand response as a system management tool, which has so far not been utilised.

Battery electric storage could provide cost-effective balancing services, but it is currently dissuaded by the tariff structure. Latvia should remove barriers for the operation of commercial batteries in the electricity system, including by removing consumption tariffs on temporarily stored electricity.

Notwithstanding the urgent political imperative to insulate consumers from the impacts of high energy prices in 2022, the government should ensure that such measures are temporary and that blanket cost protection to all consumers is avoided in the future. Support mechanisms should be targeted to only the lowest income households to reduce fiscal burdens and preserve the incentive for lowering energy consumption that higher prices offer. Toward that end, Latvia should refine its measurement and tracking of energy poverty to ensure that financial support is focused on the most vulnerable consumers.

Recommendations

The government of Latvia should:

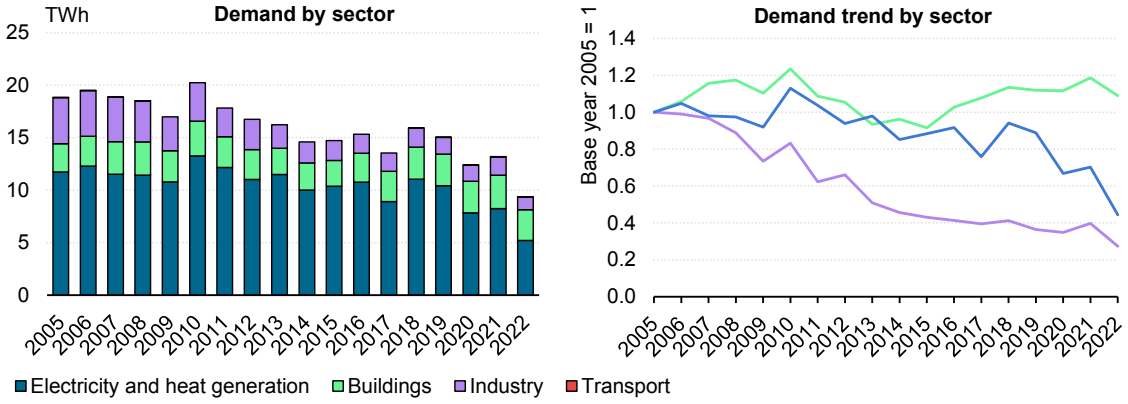
- Develop a sectoral roadmap for the electricity sector in line with the updated national target on renewable electricity, underpinned by scenario analysis, to assist grid planning and provide investment guidance. The roadmap should consider long-term capacity adequacy and operational security in light of forthcoming changes in the generation mix.
- Ensure the timely issuance of regulatory frameworks and tariff reforms to support the participation of market actors that provide flexibility services (e.g. battery storage, small hydro).
- Avoid blanket price supports; instead, target support mechanisms to only the poorest households.
- Consider imposing an obligation on electricity traders to indicate the use of renewable electricity in purchase contracts.

7. Natural gas

Overview

Latvia's natural gas demand has been gradually decreasing since 2010 despite some rebounds in 2016, 2018 and 2021 (to 13.3 TWh). By 2022, the decrease reached 9.3 TWh (driven by Russia's invasion of Ukraine, warm temperatures and high prices). Natural gas demand from industry has been declining since 2005, while demand from buildings increased from 2015 to 2021 (Figure 7.1). Transport sector demand for natural gas is very low (0.027 TWh).

Figure 7.1 Natural gas demand by sector and its trend in Latvia, 2005-2022



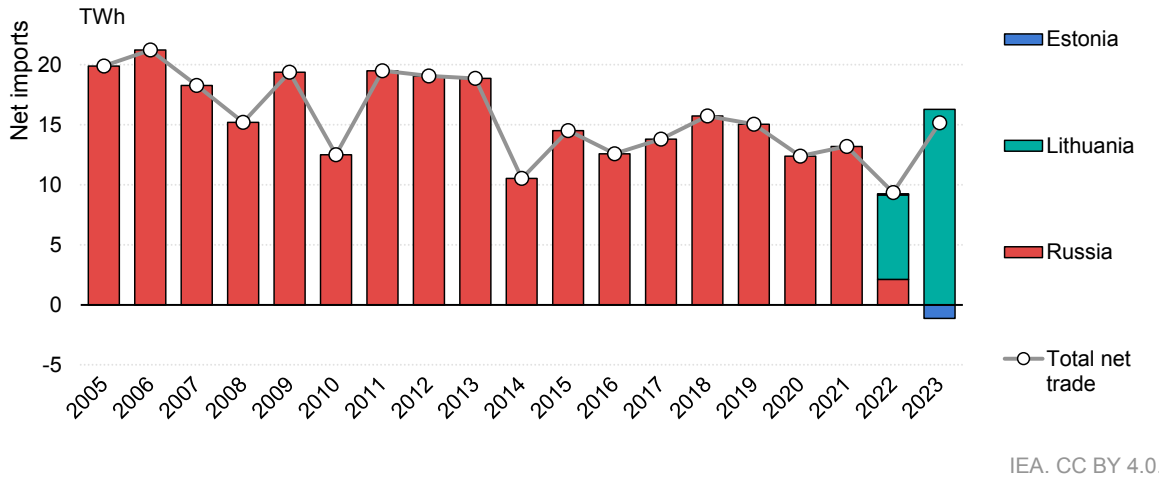
Notes: Transport demand is not visible on this chart.
Source: IEA (2023), Natural Gas Information (database).

Latvia experienced an exceptional decline in gas demand in 2022 as a result of the energy crisis stemming from Russia's invasion of Ukraine. The demand reduction was mainly due to lower generation from co-generation plants, which was offset by greater electricity imports. High gas prices also prompted a switch from gas-based heating to biomass (wood chips) and lower water heating temperatures that were applied to households.

The drop in natural gas prices in 2023 could again increase gas consumption, though evidence so far shows demand has not reached pre-2022 levels. Nonetheless, gas consumption will experience a downward trend in the long term, mainly related to lower demand for gas from co-generation plants, energy efficiency measures and the shift toward renewable energy resources. In the short term, electricity demand for natural gas is expected to increase due to the impact of the desynchronisation from the Russia-Belarus electricity system.

Latvia has had a historically strong dependence on Russian natural gas imports (Figure 7.2). In 2022, however, it significantly reduced natural gas imports from Russia, and imports have fully stopped based on a ban that took effect on 1 January 2023, replaced by LNG imports. Latvia has already signed a ten-year contract with the Lithuanian Klaipeda LNG terminal (for terminal capacity rather than directly with LNG suppliers) to ensure gas deliveries of 6 TWh per year, roughly 70% of current consumption. The other 30% could come from the Paldiski LNG terminal in Estonia, or the newly built Inkoo LNG terminal in Finland (based on spot purchases) further in the future. In the first seven months of 2023, while Latvia sourced none of its supply from Russia, 75% came from Lithuania, 23% from Finland and 1% from Estonia. Latvia hosts on its territory a large underground gas storage (UGS) facility, Inčukalns, with a capacity larger than the annual gas consumption of Estonia, Latvia and Lithuania combined. In the long run, Latvia expects its natural gas imports to decline, in line with falling domestic demand.

Figure 7.2 Latvia's natural gas supply by source and net trade, 2005-2022



Notes: Data for Estonia are not visible on this chart and accounted for 0.1 TWh.
Source: IEA (2023), Natural Gas Information (database).

Infrastructure

The Latvian gas network has interconnections with the gas networks of Estonia, Finland and Russia (Figure 7.3). Imports have historically been made via pipeline, and the main supply connection point has been at Luhamaa with Russia. However, due to recent events and in light of the gas import ban from Russia, access to this point is restricted to transit flows (which are almost non-existent). Imports currently come from LNG terminals in neighbouring countries (Klaipeda LNG in Lithuania and Inkoo LNG in Finland). There is an additional possibility to import gas from other European countries via the Gas Interconnection Poland-Lithuania.

Latvia has robust underground gas storage with a technical working capacity of 22.6 TWh (for the 2023/24 storage cycle). Gas delivered to neighbouring countries via LNG terminals is stored at the Inčukalns UGS facility.

There are two ongoing infrastructure projects of common interest within the EU context:

1) The Latvia-Lithuania interconnector, costing EUR 10 million, with an indicative end date of 31 December 2023. Upon completion, the project will clear up a bottleneck between Latvia and Lithuania and approximately double capacity in both directions.

2) Enhancement of the Inčukalns UGS, costing EUR 88 million, with an indicative end date of 1 December 2025. The aim of the project is to enhance operation of the storage to allow it to maintain functionality after a pressure upgrade in the Baltic transmission system and to increase withdrawal capacity.

The TSO is responsible for developing ten-year development plans in line with EU gas system development plans. The development of new gas infrastructure is based on market needs, with a thorough analysis of potential market demand and economic viability. It involves active participation from relevant stakeholders, considering long-term sustainability and adherence to regulatory frameworks.

Latvia is looking into adapting the existing natural gas infrastructure for hydrogen. Currently, less than 1% can be utilised for the transport of hydrogen, but the Latvian natural gas TSO is currently undertaking research with European, Estonian, Finnish and Lithuanian TSOs on how to increase the concentration of hydrogen in the natural gas mix. Latvia is also researching the option for new hydrogen infrastructure, in particular for export to Germany.

Figure 7.3 Baltic natural gas transmission network

Notes: LNG = liquefied natural gas.

The Ministry of Climate and Energy is responsible for national natural gas policy and its implementation. Regulatory oversight of the Latvian natural gas market is the responsibility of the PUC.

The PUC develops tariff methodology, approves tariffs and oversees compliance with rules governing third-party access to infrastructure. The regulator is also responsible for the certification process of transmission, storage and distribution operators. The regulator is institutionally and functionally independent.

There are no natural gas production sites in Latvia, and therefore no upstream regulatory framework.

Natural gas market structure and operation

Latvia has a liberalised retail gas market in line with EU directives. A tariff regulation for households was abolished in May 2023, so Latvijas Gāze AS (LG) no longer serves the role of a public supplier, providing natural gas to households at regulated prices. This marked the final step in market liberalisation that started in 2017.

The Latvian natural gas market is part of the Common Natural Gas Market (also known as FinEstLat), established in 2020. The Latvian and Estonian gas TSOs have established a joint balancing area, so the Latvian wholesale market is connected to the Estonian one. Additionally, Finland has joined Estonia and Latvia in one tariff zone, effectively setting one entry tariff for the Finnish and Estonian-Latvian market areas, reducing cost differences for delivering gas to any of the countries.

JSC Conexus Baltic Grid is the sole natural gas transmission system and storage owner and operator in Latvia. It provides access to the transmission system and storage to certified traders in Latvia and neighbouring countries. Third-party access is granted under rules established and governed by the PUC.

There are four key importers in the wholesale market in Latvia: Ignitis UAB (28%), LG (17%), Latvenergo AS (15%) and Eesti Gaas AS (14%).

In 2021, the natural gas DSO was created by splitting it from the Latvian main gas merchant, AS Latvijas Gāze. Moreover, April 2023 marked the final phase of selling the natural gas DSO AS Gaso to the Estonian company Eesti Gaas. The transaction aimed to exclude Russian or Belarussian investors from the management of the company.

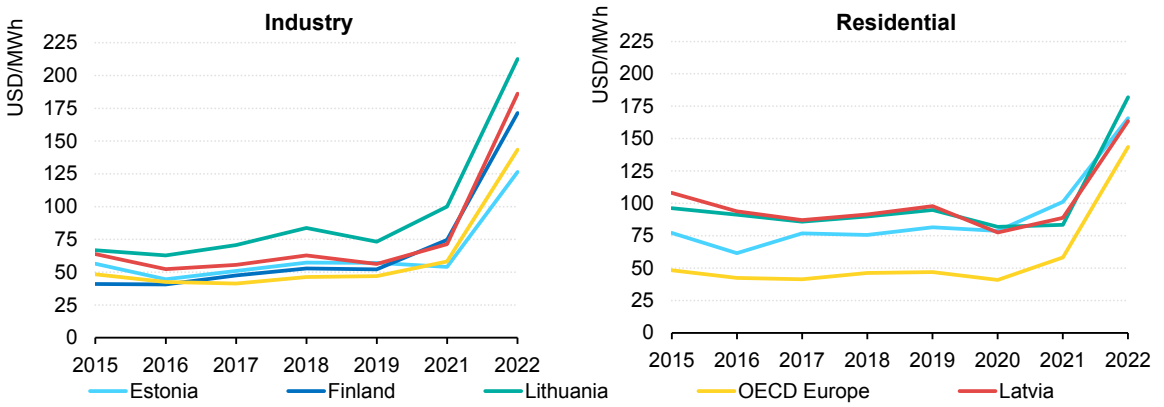
Historically, almost all natural gas consumption sites in Latvia are connected to the DSO, AS Gaso. There are around 30 gas suppliers in Latvia.

Most gas trading takes place over the counter in Latvia, as liquidity in the Baltic exchange is limited.

Natural gas prices

Both industry and residential natural gas prices in Latvia steadily increased from 2020 to 2021, and spiked in 2022, as in the rest of Europe. Natural gas prices in Latvia more than tripled from 2020 to 2022 for both the industry and residential sectors, reaching one of the highest levels in the region (Figure 7.4).

Figure 7.4 Industry and residential natural gas price trends in Latvia and neighbouring countries, 2015-2022



Notes: USD/MWh = US dollar per megawatt hour. USD 1≈ EUR 0.93. 2020 data for Finland's industry natural gas prices are not available. Residential data for Finland were not available.
Source: IEA (2023), Energy Prices (database).

The final gas bill in Latvia consists of five components: 1) price of natural gas; 2) transmission tariff; 3) distribution service tariff; 4) excise tax; and 5) VAT.

The price differential between commercial consumers and households is related to the types of contracts. Almost all (99%) households have fixed-term contracts while 70% of commercial consumers have variable price contracts. It is common for suppliers to prioritise large customers, so competition is greater than in the household sector.

Since the natural gas market opening on 3 April 2017, all consumers, including household, have the right to freely choose their natural gas supplier. Based on amendments to the Energy Law, the natural gas market was fully opened to households from 1 May 2023, so the status of captive user, which allowed households to buy natural gas at a regulated price, no longer exists. Natural gas is supplied at the market price, though suppliers are obligated to offer households a universal service for six months at a capped market price (Title Transfer Facility (TTF) price plus EUR 30/MWh). Regulated tariffs still remain for infrastructure services (transmission, distribution and storage).

There are no subsidies or social tariffs for natural gas consumption, though in response to the most recent energy crisis (2022), the government imposed temporary price protections for natural gas bills (along with electricity and heating) from 1 January 2022 to 30 April 2023.

Natural gas policies

Latvia's original National Energy and Climate Plan 2021-2030 included several measures related to natural gas, including:

- strengthen infrastructure by enhancing interconnection points and ensuring the full functioning of infrastructure to foster security of supply and promote the future development of renewable gases
- continue the modernisation of the Inčukalns UGS to increase efficiency and flexibility, thereby improving security of supply for the whole region
- foster diversification of natural gas sources by promoting new supply routes for the region
- strengthen cybersecurity for natural gas infrastructure
- foster regional co-operation and promote deeper regional integration in the form of a regional gas market.

Though the overall the plan is oriented toward the transition to renewable energy, natural gas infrastructure is expected to play a significant role in the development of a biomethane market and in bolstering energy security to achieve decarbonisation targets.

Latvia has not set targets for phasing out the use of fossil fuels in electricity or heating.

Renewable gases

A preparatory process for the development of a national biomethane market is currently underway, led by the natural gas TSO. The project envisages the construction of biomethane injection points, which would provide an opportunity for off-grid biomethane producers to inject biomethane into the transmission network.

There are approximately 50 biogas production sites in Latvia which can potentially become biomethane production plants. According to the Energy Law, from 1 July 2023, a guarantee of origin system for biomethane produced from renewable energy sources was supposed to be in place, but it has been delayed. There currently are not any subsidies or other incentive schemes in place to promote biogas or biomethane production.

Natural gas security

The primary measure for ensuring security of gas supply in Latvia is a strategic gas reserve stored in the Inčukalns UGS, as mandated by the Energy Law. The state holds 1.8 TWh of energy supply security reserves in the Inčukalns UGS. There are no gas storage obligations for wholesale market participants.

The main demand-side crisis management measures are voluntary and mandatory gas consumption restrictions, which are set out in Latvia's Emergency Action Plan (gas). In an emergency scenario, the DSO can cut off gas supply to consumers.

The main risks to supply are physical acts on Latvia's gas infrastructure and industrial accidents on critical gas infrastructure, which prevent the supply of gas to a large percentage of households. These risks are mitigated with frequent inspections and maintenance works. Moreover, Inčukalns UGS has significant redundancy and can continue partial operation even after an attack or an industrial accident. The previously existing risk of gas deliveries from Russia being suspended as a means of political pressure was eliminated on 1 January 2023 as imports of Russian natural gas have been outlawed. An ongoing risk is adequacy of gas stocks in Inčukalns, which is partly mitigated by strategic gas reserve obligations.

In 2022, based on the energy crisis, Latvia proclaimed an early warning and started its gas injection season earlier, ensuring robust gas reserves in the Inčukalns UGS facility. Though a priority ruling for gas delivered from the Klaipeda LNG terminal for injection into storage is no longer in force, the early warning status remains in effect.

In addition, during the Baltic Council of Ministers' meeting in Tallinn in May 2023, Latvia signed a memorandum of understanding with Estonia for co-operation on the joint utilisation of the Paldiski LNG terminal in the case of a natural gas supply crisis.

Assessment

Latvia's natural gas policy, as reflected in its NECP, is rooted in the dual objectives of reducing demand to lower emissions and diversifying supply to improve energy security. Latvia has made important strides in the past year toward these goals.

Since the onset of the global energy crisis in late 2021, Latvia has demonstrated considerable success at diversifying its gas supply away from Russian imports since the invasion of Ukraine. This is a remarkable achievement given its near total dependence on Russian gas prior to 2022. The Latvian experience can serve as an example to other countries which have yet to diversify from Russian gas.

The reduction in Russian supply has been achieved through the following effective public policy actions:

- **Gas storage**: the Latvian state has held strategic reserves at the Inčukalns UGS in the amount of 1.8 TWh. There is also funding for enhancing the facility to raise withdrawal rates when volumes in the site fall.

- **Interconnection capacity**: funding and policy support for the bi-directional interconnector between Latvia-Lithuania. Both import and export capacity are expected to double, enabling Latvia to import up to ~65 TWh, up from 32.5 TWh. Additionally, enhancement of the Estonia-Latvia interconnector was undertaken prior to 2022, raising bi-directional capacity.
- **Russian gas ban**: an outright ban on Russian pipeline imports came into effect on 1 January 2023.

In addition, policy has supported the deepening of gas market co-operation in the Baltics. The government and TSO have worked together with counterparts in Estonia and Finland to establish a Common Natural Gas Market (known as FinEstLat), which will help improve liquidity and enable the tariff-free flow of molecules across the region.

Although it does not have LNG import terminals of its own, Latvia now receives most of its gas through LNG deliveries from Lithuania and Finland. Thanks to these alternative routes, Latvia did not import any gas from Russia in 2023, down from a share of Russian imports of 100% in 2021 and 23% in 2022. By contrast, Lithuania accounted for 75% of gas imports in 2022. Most Latvian gas supply is now met through LNG imports from Lithuania's Klaipeda terminal. The remainder is imported from the LNG terminal at Inkoo in Finland.

State-run electricity generator and gas trader Latvenergo has a ten-year contract for 6 TWh/year of regasified LNG at Klaipeda, which would cover the bulk of Latvian gas demand (8 TWh in 2022). However, the contract is for terminal capacity rather than for supply contracts with LNG suppliers, which means that Latvia is relatively exposed to global gas price fluctuations. Still, when prices peaked in the summer 2022, Latvian buyers were still able to procure gas to fill storage ahead of the winter season, providing some evidence that even at high prices, Latvia would still be able to source volumes.

Moreover, the shift from pipeline gas to LNG is only part of Latvia's gas diversification story. Overall gas demand fell some 30% between 2021 and 2022, notably in the power sector (-37%), where high prices and increased use of renewables made gas-fired generation uncompetitive. Moreover, in response to record-high prices, the government supported schemes to encourage fuel-switching, particularly for households. Simultaneously, the government supported consumers through temporary direct payments, mitigating the impact of record prices.

Given that gas prices have fallen by around 90% below their summer 2022 peak, it is possible the consumption decline will be reversed; so far, however, any demand recovery has been limited. This likely supports the longer term forecast of falling demand driven by lower gas-fired power generation and greater renewables deployment.

Despite Latvia's clear progress on diversification and security of supply, uncertainty remains about the longer term role of gas in the energy system given decarbonisation objectives. Though Latvia is a relatively small consumer of natural gas compared to its European counterparts, power sector decarbonisation is likely to play a key role in achieving climate neutrality by 2050. Given that gas-fired co-generation accounts for the largest share of gas consumption, the next iteration of the NECP should clarify the future role of Latvia's co-generation plants, including the possible extension of existing incentives, which are due to expire in 2028 and currently play a critical role in ensuring security of electricity supply (see Chapter 6).

Latvia has also expressed a goal to increase the market for biomethane in its energy mix as a strategy for decarbonising the gas sector. However, there is no clear roadmap for delivering this ambition nor is there any policy support for the production of biomethane. The framework for guarantees of origin has been delayed. The next iteration of the NECP should, therefore, also consider a roadmap (building off private sector work in this area) for the deployment of biomethane as well as support mechanisms to jumpstart production. Achieving security of supply objectives through deeper integration of the Baltic gas market also presents opportunities to create future markets for biomethane. Notably, Latvia's large underground storage sites present further opportunities for the production of biomethane across the Baltics, which could use existing grid interconnections to store biomethane in Latvia. Industry and network operators have indicated that they need clear policy and regulatory support from the government if they are to invest in biomethane assets.

Latvia's integrated grid and underground storage sites also potentially offer opportunities for the transport and storage of hydrogen. While there is enthusiasm from industry and network operators and studies are underway on the compatibility of the existing infrastructure with hydrogen, there are no incentives in place to foster a domestic hydrogen industry. Looking ahead, Latvia should more systematically assess its potential and develop accompanying strategies, including in co-operation with other European countries.

A similar picture is presented for CCUS, where there is a ban on carbon storage in Latvia. Nonetheless, a well-integrated gas grid across the Baltics could present opportunities to transport captured CO_2 into Latvia, where there is considered to be vast underground storage potential. As a first step, the government should explore whether the geology of storage sites is suitable for this purpose and subsequently consider enabling regulatory frameworks for deploying CCUS.

Recommendations

The government of Latvia should:

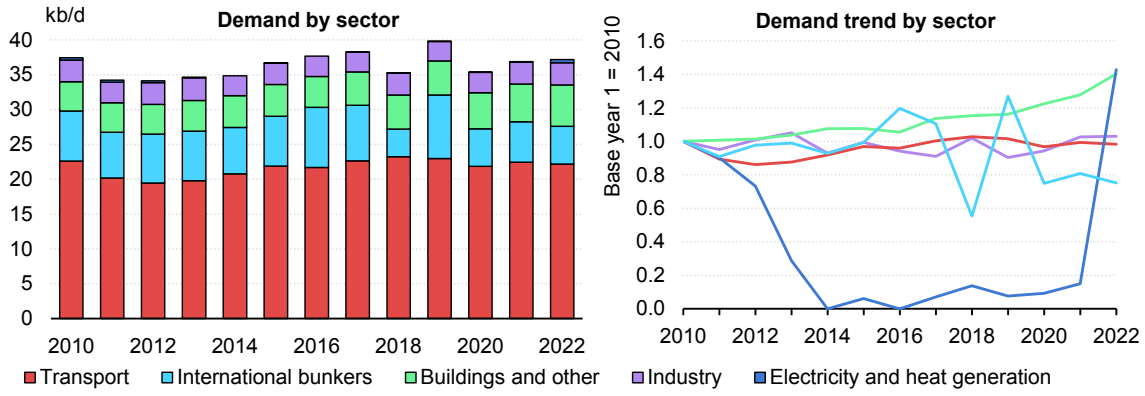
- Assess whether existing security of gas supply arrangements (reliant on spot LNG sales) are sufficient in extreme supply scenarios, including through engaging with industry on the benefits of securing long-term LNG supply contracts for delivery into Klaipeda or Inkoo.
- Develop and publish a clear roadmap on the deployment of biomethane, outlining potential policy support to mobilise private investment and meet REPowerEU targets. Undertake feasibility studies into the compatibility of existing gas infrastructure to transport and store biomethane.
- Foster the development of a hydrogen sector by issuing a roadmap and assessing the suitability of existing gas infrastructure to transport hydrogen.
- Investigate the viability of CCUS in the decarbonisation of natural gas and publish findings about the suitability of Latvian sites for the storage of sequestered regional CO_2.

8. Oil

Overview

The share of oil in Latvia's total energy supply fluctuated around 31% from 2005 to 2022. Oil products are used mainly in transport, where they cover 97% of energy demand, and in industry (20%) (Figure 8.1) Latvia aims to reduce the role of oil in transport and industry to achieve carbon neutrality in 2050, but its oil demand has not yet started to decline. Oil products demand slightly increased from 35.9 thousand barrels per day (kb/d) in 2005 to 37 kb/d in 2022. Oil demand increased by 15.5% in the transport sector from 2012 to 2022, largely due to increased diesel oil consumption.

Figure 8.1 Oil products demand and trend by sector in Latvia, 2010-2022



Source: IEA (2023), Oil Information (database).

Looking ahead, Latvia's demand for oil products is expected to gradually decline due to various factors, including energy efficiency measures, the promotion of renewable energy, growing use EVs, as well as the development of public transportation infrastructure. Nonetheless, demand for oil products in Latvia could also be influenced by external factors, such as global oil price changes stemming from the Russia-Ukraine war or other geopolitical developments. In the short term, demand for oil is expected to remain strong due to the transport sector.

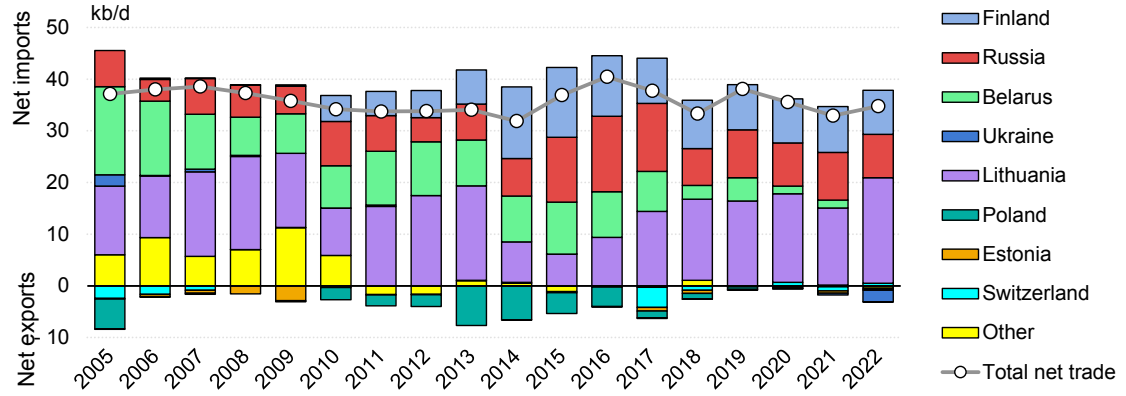
Oil products trade

Latvia does not have an oil refinery (nor plans for one), and does not trade any crude oil. It imports oil products from nearby refineries. In 2022, net imports mainly came from Lithuania (59%), Finland (24%) and Russia (24%) (Figure 8.2). Before

2017, the country had been importing significant amounts of oil products from Belarus, but since 2018 imports from Belarus have been decreasing, to reach 0 in 2022. In 2022, Latvia exported 2.2 kb/d of oil products to Ukraine.

Latvia's strategic location in the Baltic Sea helps the country serve as a transit hub and to export oil products despite the lack of a refinery. Major ports in Riga and Ventspils have extensive storage facilities and transportation infrastructure that allow Latvia to import oil products from neighbouring refineries, store them and then re-export to Scandinavia, Baltic states and Western European countries, with the advantage of being a member state. Low transit service costs further enhance Latvia's position as a transit country for oil products.

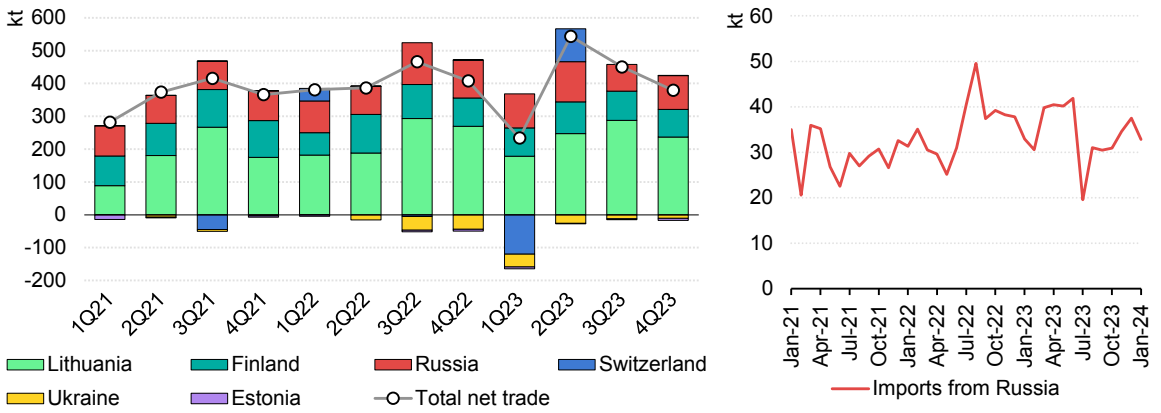
Figure 8.2 Latvia's oil products net trade by country, 2005-2022



Source: IEA (2023), Oil Information (database).

Following Russia's invasion of Ukraine, oil products imported from Russia consist primarily of LPG (Figure 8.3). LPG is exempt from Western sanctions and can be used as a vehicle fuel, petrochemical feedstock or for heating. LPG may, therefore, alleviate the burden of high gas and oil prices.

Figure 8.3 Latvia's quarterly net oil product imports and monthly imports from Russia, 2021-2023



Note: kt = kilotonne.
Source: IEA (2023), Monthly Oil Statistics

Infrastructure

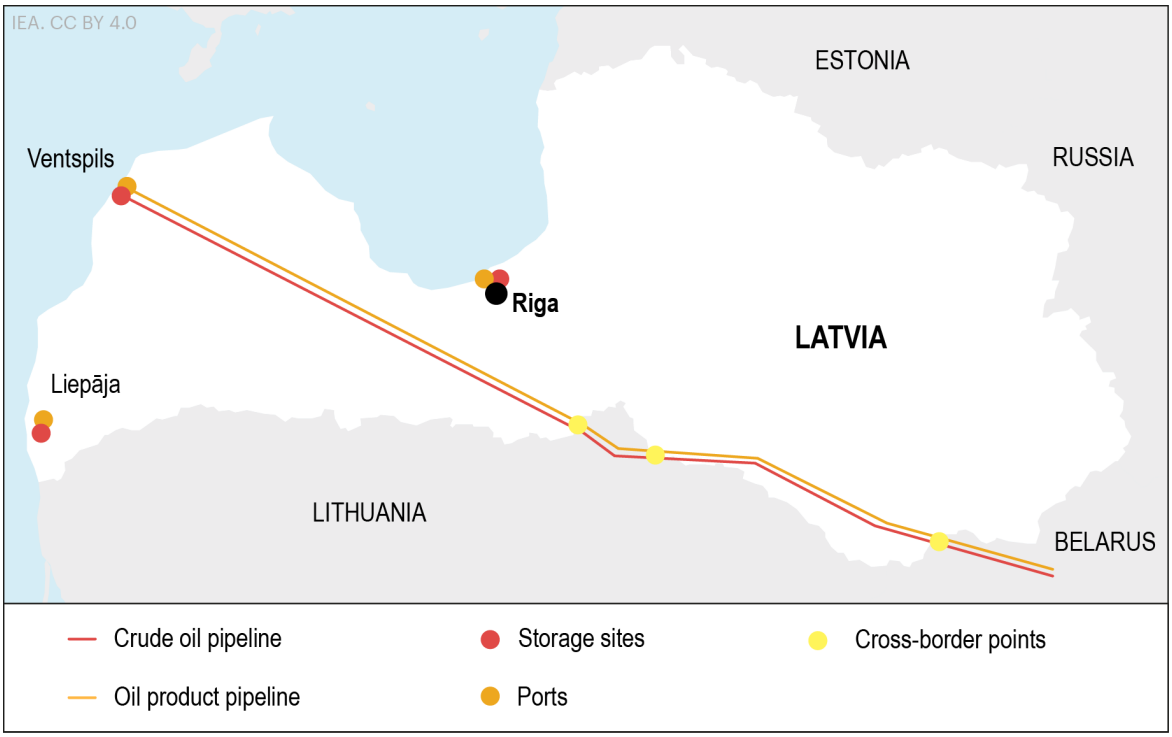
Latvia has a network of pipelines for transporting crude oil and refined products from ports to inland terminals and neighbouring countries (Figure 8.4).

Latvia has three main points of oil imports: Riga, Ventspils and Liepāja.

The Polotsk-Ventspils pipeline runs from the Polotsk refinery in Belarus to the Ventspils port in Latvia. There are two pipelines in the Ventspils direction: a crude oil pipeline and an oil products (diesel fuel) pipeline. The maximum capacity of the crude oil pipeline is 13-14 million tonnes (Mt), while the diesel fuel pipeline's annual capacity is 8 Mt per year. The Mažeiķi-Polotsk pipeline runs from the Polotsk refinery in Belarus through Latvia to the Mažeikiai Refinery and Butinge Terminal in Lithuania. This pipeline can transport crude oil toward Lithuania and has a capacity of 16 Mt. Given a winding down of imports from Russia and Belarus over the past two decades, these pipelines have not been used since 2012.

In total, Latvia has 21 above-ground oil and oil product terminals, located in Riga, Ventspils and Liepāja. The largest of the terminals is in Ventspils, which has a capacity of almost 1 Mt. The second- and third-largest terminals are in Riga, with capacities of 195 256 tonnes and 165 835 tonnes, respectively. The largest terminal in Liepāja is seventh on the list, with a total capacity of 41 136 tonnes.

Figure 8.4 Latvia's oil infrastructure



IEA. CC BY 4.0.

Note: The pipelines shown on the map are no longer in use since 2012.

Oil market structure

Latvia has a free market approach to its oil sector and is not regulated by the state, beyond some taxes and fees. The sector is privately owned and fully open to competition.

As of 1 January 2023, there were 88 licences for fuel retailing, with 600 operating locations declared in them.

Policies and measures in the oil sector

The Latvian government has introduced a range of measures to reduce the country's dependence on imported oil and promote the use of renewable energy sources. These measures include investment in renewable energy infrastructure as well as the promotion of energy efficiency measures in buildings and transport (see Chapters 3 and 4). However, the government expects the energy transition to take time, and for oil to likely remain an important part of the Latvian energy mix for the foreseeable future.

Though Latvia's NECP aims to move away from fossil fuel consumption, the government has not put in place strict measures to facilitate reduced use of oil and oil products, beyond the excise tax set on oil products.

During the last quarter of 2022 and first quarter of 2023, when the government put in place a mechanism to protect households from energy price increases, a small portion was dedicated to assisting households that use oil for heating. Beyond this, there no other governmental subsidies and none are planned for the future.

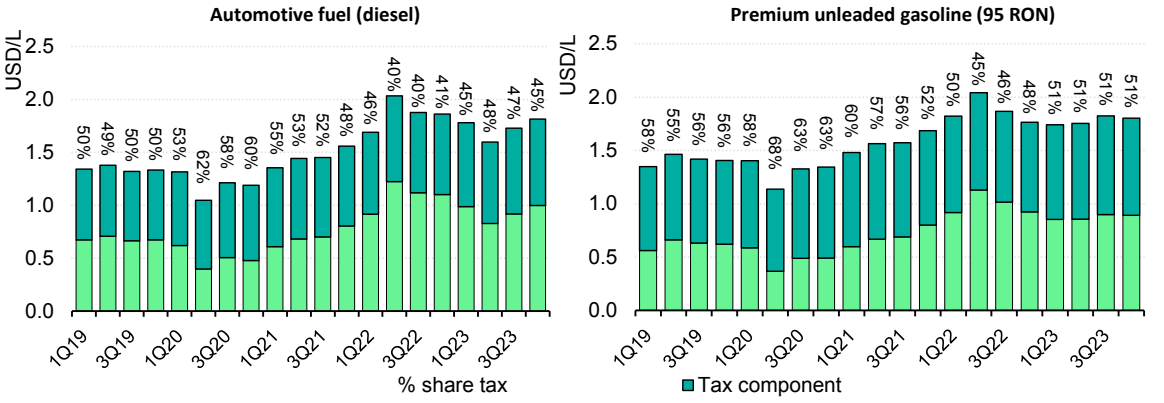
Prices and taxes

Latvia's automotive diesel prices reached their lowest level since 2019 at USD 1.04 per litre (L) during 2Q 2020, due to the impact of Covid-19 lockdowns and travel restrictions. Automotive diesel prices, which started to increase in the post-pandemic recovery phase, peaked at 2.03 USD/L in the second quarter of 2022, due to the inflationary impact of Russia's war on Ukraine (Figure 8.5). Fixed excise duties (0.414 EUR/L in 2021) and VAT (21%) have played a balancing role on prices, both during the Covid-19 pandemic and after Russia's invasion of Ukraine.

Latvia's unleaded gasoline price has followed a similar trend. After reaching its lowest level at the outbreak of the Covid-19 pandemic (1.13 USD/L), it peaked in the second quarter of 2022 (2.04 USD/L) at the beginning of the war. Fixed excise duties (0.509 EUR/L in 2021) combined with a 21% VAT rate has hindered further price increases, as the share of taxation decreases with increasing pre-tax prices. Although prices have started to decline again in 2023, they have not returned to pre-war levels for both fuels yet.

Some exemptions apply to excise duties apply, such as for diesel used in agricultural products and diesel imported from non-EU countries for own consumption. Excise tax reductions apply for oil products used in industrial uses and for heating.

Figure 8.5 Fuel prices by quarter in Latvia, 2019-2023



Source: IEA (2023), Energy Prices (database).

Upstream

There is no significant domestic oil production in Latvia. Five licences are currently in force for the exploration and production of hydrocarbons, two of which are offshore and three onshore. Starting in 2020, the process of licensing has been taken over by the State Construction Control Bureau of Latvia. None of the five active licences have resulted in significant oil production; Latvia remains fully reliant on imports to meet its oil needs.

There has been speculation for over 20 years about potential oil reserves in the Baltic Sea. US-based company Linden Energy, which has been analysing the region for larger oil reserves, recently came to the same conclusion. Nonetheless, previous attempts by other companies to initiate oil production projects in the region were unsuccessful. Latvia remains sceptical about the prospects of oil production projects.

Oil security

Latvia's Ministry of Economics is responsible for issues related to the oil crisis, as well as the maintenance and monitoring of oil reserves.

Latvia's domestic oil market is fully dependent on imports of refined products. In the case of an oil supply disruption, the country's supply of oil would be heavily impacted, potentially leading to shortages.

Given limited options for increasing domestic production, Latvia's main option to keep its oil market afloat is to use national oil product emergency reserves, which were created to respond to such risks.

Emergency reserves of oil products are created in accordance with the requirements of EU Directive 2009/119/EC, which have been transposed into Latvia's Energy Law. Since 2020, the functions of the Central Stockholding Entity have been performed by the State Construction Control Bureau. The functions of the Central Stockholding Entity include the obligation to purchase and administer the service of creating emergency reserves in a specified amount and to ensure the supply of oil products during energy crises.

Every year, the Bureau organises procurement and purchases of emergency oil stocks from economic operators selected through procurement. Emergency stocks are currently maintained in the form of "tickets".

Latvia is currently working on a new regulation that would change crucial aspects of the oil stockholding regime as well as responses and responsibilities in the case of an oil crisis. The government is moving away from its current emergency stockholding system – based on tickets – to incrementally owning 100% of stockholding on its national territory by the end of 2028. Nonetheless, some

flexibility should be maintained regarding the share of stocks to be held outside of Latvia while the new system is being implemented (to limit exposure to oil price volatility while holding the appropriate amounts of stocks).

Latvia plans to extend the responsibilities of ensuring the purchase, maintenance and replacement of state-owned emergency oil reserves to Possessor Ltd, the company owned by the Ministry of Economics. Possessor is a capital company entrusted with the delegated state administration tasks of privatising state property and selling state capital shares. Based on a drafted law, Possessor will take over responsibilities from the State Control Bureau of Latvia in January 2024.

Assessment

Latvia has a fully liberalised oil market. There is no domestic oil production nor refinery in Latvia. The country, therefore, relies exclusively on oil imports for its domestic consumption.

Latvia has overall robust means to trade oil through shipping, as well as its ample storage capacity in oil terminals. Latvia has three main ports – located in Riga, Ventspils and Liepāja – which offer the possibility to handle up to 40 Mt of oil products each year. About 7 Mt of oil products can be stored in the country.

The IEA commends Latvia for the measures it undertook to balance oil imports since the February 2023 EU ban on refined petroleum products from Russia. Currently, Latvia relies predominantly on Lithuania and Finland for its oil imports. Lithuania's Mažeikiai refinery, which is owned by the Polish company PKN Orlen, and Neste's refineries in Finland, all declared that they were no longer getting crude from Russia. Indeed, PKN Orlen's refinery replaced its Russian volumes by crude oil sourced from Saudi Arabia and Neste announced sourcing North Sea crude from Norway or the United Kingdom.

However, LPG – which can be used in Latvia for heating, transport or as a petrochemical feedstock – is exempt from Western sanctions. About 90% of LPG imports in Latvia continue to come from Russia – with the remainder coming mostly from Lithuania.

Beyond diversifying oil import sources, Latvia should also prioritise measures to lower oil consumption more broadly, notably in the transport sector, which accounted for 75.7% of its oil demand in 2022. Within transport, road transport makes up the largest share of demand (85%), with diesel being the biggest fuel source. Latvia has already begun to put in place policies to lower energy consumption in the transport sector, including incentives for EVs, ambitious plans to overhaul public transport and a new rail project connecting the Baltic states

(see Chapter 3). The IEA urges Latvia to ramp up and accelerate these efforts, which will achieve the dual objectives of lowering GHG emissions and improving energy security.

Latvia is in the process of changing its oil stockholding system to shift the entirety of stocks onto national territory. The objective to improve the country's emergency oil stockholding scheme and the choice of Possessor to take on this responsibility are welcome developments. The role of Possessor in the emergency response structure should be formalised and its access to all necessary data and information sources should be ensured.

Possessor should also carry out a full assessment of the current status of available storage capacity, supply and export infrastructure to evaluate its appropriateness for use in the emergency oil stockholding system in the years to come. As much of this infrastructure dates from the time of the Soviet Union, there is a need to assess the current condition and utilisation rates of various storage tanks and pipelines to ensure that this ageing infrastructure does not come with environmental risks. Where needed, the government should steer companies toward decommissioning old and unused infrastructure.

Recommendations

The government of Latvia should:

- Pursue efforts to further diversify oil import sources, including liquefied petroleum gas.
- Maintain flexibility throughout the transition period to the new oil stockholding system regarding the shares of stocks held outside of Latvia.
- Conduct a thorough audit of the country's oil infrastructure to guarantee market access to strategic stocks during an energy emergency, and take steps, where necessary, to ensure ageing infrastructure is either maintained or decommissioned in a responsible way.

Annexes

Acknowledgements

The IEA review team visited Riga on 18-25 September 2023 and met with government officials and public and private sector stakeholders across the energy sector. This report is based on information from these meetings, the review team's assessment of Latvia's energy policy and detailed research undertaken by the IEA. The members of the review team were Aad van Bohemen (Netherlands, team leader), Brooke Perkins (Australia), Ilija Jovančević (European Commission), Rasmus Zink Sørensen (Denmark), Iulia Dolganova (Germany), Tiina Saksman Harb (Sweden), Lina Švėgždaitė (Lithuania), Yano Moussavi (United Kingdom), as well as Divya Reddy, Jason Elliott and Ilias Atigui from the IEA.

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Abbreviations and acronyms

CCUS	carbon capture, utilisation and storage
DSO	distribution system operator
ESCO	energy service contract
ESR	Effort Sharing Regulation
ETS	Emissions Trading Scheme
EU	European Union
EUR	euro
EV	electric vehicle
FEC	final energy consumption
GDP	gross domestic product
GHG	greenhouse gas
IEA	International Energy Agency
LNG	liquefied natural gas
LPG	liquefied petroleum gas
LULUCF	land use, land-use change and forestry
NECP	National Energy and Climate Plan
PEC	primary energy consumption
PUC	Public Utilities Commission
PV	photovoltaic
R&I	research and innovation
RD&I	research, development and innovation
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
TES	total energy supply
TFEC	total final energy consumption
TSO	transmission system operator
UGS	underground gas storage
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States dollar
VAT	value-added tax

Units of measures

GWh	gigawatt hour
kb/d	thousand barrels per day
kWh	kilowatt hour

kV	kilovolt
L	litre
Mt	million tonnes
PJ	petajoule
Mt CO_2-eq	million tonnes of carbon dioxide equivalent
MW	megawatt
MWh	megawatt hour
TWh	terawatt hour

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Latvia 2024

Energy Policy Review

Government action plays a pivotal role in ensuring secure and sustainable energy transitions and combatting the climate crisis. Energy policy is critical not just for the energy sector but also for meeting environmental, economic and social goals. Governments need to respond to their country's specific needs, adapt to regional contexts and help address global challenges. In this context, the International Energy Agency (IEA) conducts Energy Policy Reviews to support governments in developing more impactful energy and climate policies.

This *Energy Policy Review* was prepared in partnership between the Government of Latvia and the IEA. It draws on the IEA's extensive knowledge and the inputs of expert peers from IEA member countries to assess Latvia's most pressing energy sector challenges and provide recommendations on how to address them, backed by international best practices. The report also highlights areas where Latvia's leadership can serve as an example in promoting secure clean energy transitions. It also promotes the exchange of best practices among countries to foster learning, build consensus and strengthen political will for a sustainable and affordable clean energy future.