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~ **Federal Ministry**

Climate action, environment, energy, mobility, innovation and technology

Integrated National Energy and Climate Plan for Austria

Period 2021-2030

Update pursuant to Article 14 of Regulation (EU) 2018/1999 of the European Parliament and of the Council on the Governance of the Energy Union and Climate Action

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Part 1

SECTION A: NATIONAL PLAN

1 OVERVIEW AND PROCESS OF DEVELOPMENT OF THE PLAN

Introduction

In December 2019, the Austrian Federal Government submitted an integrated national energy and climate plan (NECP) to the European Commission in accordance with the Regulation on the Governance of the Energy Union and Climate Action. This plan was assessed by the Commission, together with the plans of all other Member States, which was published on 14 October 2020.¹

In its government programme for the period from 2020 to 2024, the Federal Government, which has been in office since January 2020, has committed itself to achieving 'climate neutrality' for Austria by 2040 and has since taken significant steps to implement the 2019 NECP. Particularly noteworthy in this context is the decision-making of a Renewables Expansion Act (ERG), the creation of a KlimatiAustria for the use of public transport, a record budget to promote climate action or the introduction of a carbon price from October 2022 with a rebate on a climate bonus for households. Other measures are under preparation and/or parliamentary discussions.

The coronavirus pandemic has posed new and unprecedented challenges to society and economy in Austria and Europe. As part of the economic support measures resulting from the pandemic, public financial resources for the transformation of the energy and transport system have been significantly increased and new tools, such as industrial transformation, have been created. To support the post-crisis recovery and implement structural adjustments towards a sustainable and climate-neutral future, Austria has put a clear focus on energy and climate measures in its 2020-2026 recovery and resilience plan. 46 % of the total of EUR 4.5 billion is spent on climate action. Austria thus goes well beyond the minimum target of 37 % under the Recovery and Resilience Facility. The planned measures are guided by the country-specific recommendations addressed to Austria in the context of the European Semester in recent years and the objectives of the Recovery and Resilience Facility. At the same time, this will implement sub-sectors of the government's programme

¹Commission STAFF WORKING DOCUMENT – Assessment of the final national energy and climate plan of Austria, SWD(2020) 919 final, 14.10.2020

for the period 2020 to 2024.

Since February 2022, Europe has been facing unprecedented challenges in energy policy. Following a sharp rise in energy prices due to global demand, Russia's war of aggression against Ukraine has created a new geopolitical situation, highlighting Europe's strong dependence on Russia for the supply of fossil fuels, in particular natural gas.

Austria's updated NECP is therefore based on the following main guidelines:

- Increased ambition for energy transition and climate action: Alignment with the new objectives of the EU Climate Law, the Fit for 55 package and RePowerEU, as well as the national 2040 climate neutrality target in the sectors listed in Annex 1 of the Climate Change Act;
- Accelerating greenhouse gas reductions by 2030, as well as significantly increasing energy consumption reductions and accelerating the deployment of renewable energy;
- Increase the resilience and reliability of the energy system, including in light of the impacts of climate change;
- Increase energy security in the context of the phase-out of Russian energy imports, in particular through the expansion of renewable energy sources;
- Additional focus on reducing non-CO₂GHG emissions (in particular methane) and targeted forest management and care measures to increase growth and resilience and maintain productive capacity, with the aim of increasing carbon capture and storage and adapting forest stock to climate change;
- Carbon storage, both in agriculture and forestry (including wood products) and through technical sinks;
- The inclusion of all social groups ('leaving no one behind') as well as regions that are structurally heavily affected by the transition towards climate neutrality;
- Alignment with the European Research Framework Programme, inter alia with the aim of strengthening the European and Austrian business location.

The adjustment of Austria's NECP is profound compared to 2019 due to the new conditions and challenges. Certain basic principles (e.g. non-nuclear transformation) as well as targets such as 100 % renewable electricity (national bi-directional) by 2030 or the fastest possible transition to zero-emission mobility, which retains it, while the necessary increased pace of transformation sometimes requires rapid policy adjustments. Austria's transformation requires, firstly, a cost-effective mix of regulatory, budgetary and tax policies and, secondly, increased impact orientation and responsibility of the various stakeholders in order to

enable social inclusion, to maintain and improve innovation and competitiveness. This also includes economically effective temporary accompanying measures (e.g. support) to mitigate negative impacts.

For the purposes of Article 2.1.c of the Paris Agreement, public budgets are the main sources of financing climate and energy-related measures together with businesses and households. For example, sustainable public finances create the space for manoeuvre needed to develop strategic options to meet the climate and energy targets. A prerequisite for this is different, - budgetary and fiscal policies, on the one hand, and climate and energy policies of others, to be considered in an integrated way. In this context, it is also important to minimise the risk for public budgets due to failure to act misdirected or delayed (costs of inaction or misalignment), as these undermine the objective of a permanent reduction in government debt.

1.1 Summary

1.1.1 Political, economic, environmental, and social context of the plan

Energy and environmental context

Since the adoption of the NECPs at the end of 2019, key policy frameworks in the European and international context have changed. The focus is on increasing European ambitions (Fit for 55) in the context of the worsening climate crisis. In addition, Ukraine has been facing heightened risks to energy security since the beginning of Russia's war of aggression and the sometimes sharp rise in energy prices. These influence parameters require a fundamental reassessment of both European and Austrian energy and climate policies.

Domestic energy production is fundamentally characterised by low reserves of fossil fuels and the high level of renewable energy use. Biomass currently accounts for the largest share of national renewable energy sources, accounting for around 55 %. Hydropower and other renewable energy already cover around 87 % of total domestic electricity generation in 2023. Fossil energy sources need to be imported to a very high degree. The rate of self-contribution for fossil fuels in 2022 was only 5.1 % in Austria. Austria was dependent on imports of natural gas at the beginning of the current crisis (February/March 2022). Unilateral dependency decreased significantly in the subsequent quarters, but increased again towards the end of 2023; therefore, a clear and lasting trend cannot yet be deduced. The challenge is now to replace Russian gas in full as soon as possible. This would require a diversification of import sources and the substitution of fossil-based gases with renewable gases (including hydrogen) and a significant reduction in gas consumption, e.g. by switching to climate-friendly heating systems. There are also major changes in the supply of liquid fossil fuels, which will have a serious impact on the energy system, linked to the increasing switch from internal combustion engines to road mobility electricity, as well as the phasing out of oil in the heat market. These developments are also in line with the long-term need to create a decarbonised and resilient energy system and the climate neutrality objective.

The environmental situation in Austria can be described as good in terms of essential parameters such as water quality, air quality, renewable energy resources or the high proportion of agricultural land managed in an environmentally sound manner in Europe and sustainable forest management.

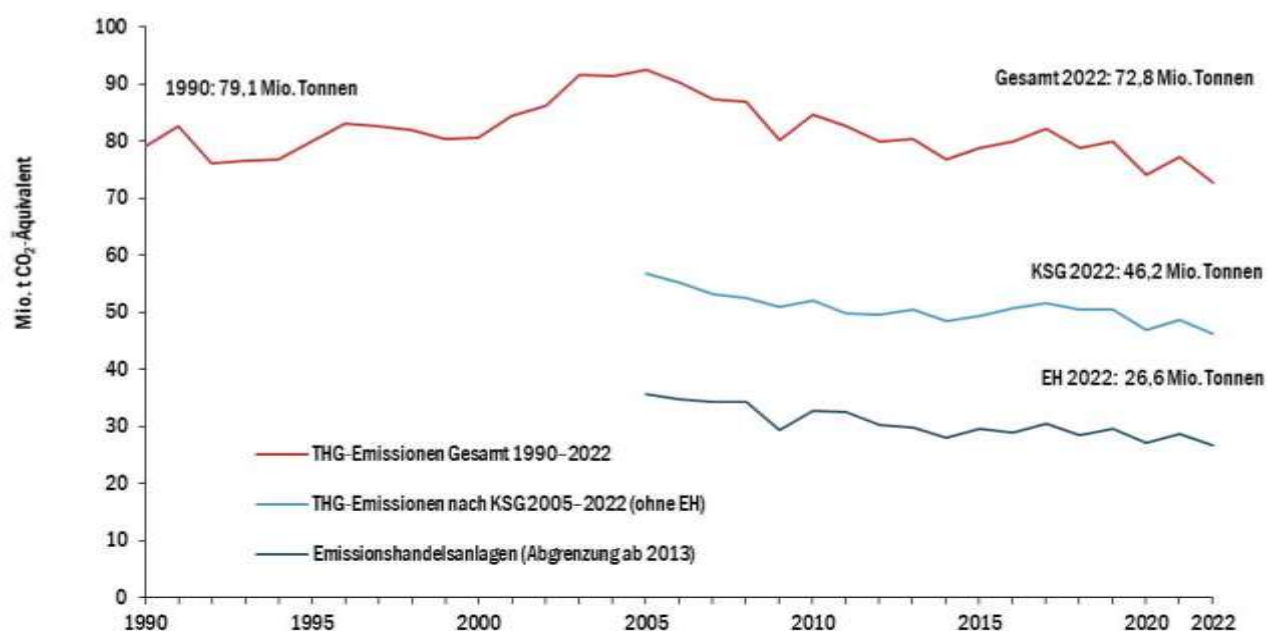
Austria's outstanding position in environmental and energy technologies should also be

highlighted. In particular, innovative renewable energy technologies (biomass, photovoltaics, wind, heat pumps) have shown high growth rates in the last Jahren, especially since 2021. These are driven by strong domestic demand and high export shares.²

Austria's greenhouse gas (GHG) emissions were slightly sunk between 1990 and 2022. Progress in individual sectors (e.g. buildings, waste management, land, energy supply) has been hampered, in particular, by a sharp increase in emissions in the mobility sector, which, in addition to the increased mileage in individual peri-urban transport, is due to the high growth in road freight transport, including transit, and the export of fuel to vehicle tanks due to price and structural factors. Since 2005, however, there has been a generally slightly decreasing trend in emissions, which is broadly equally distributed between the Emissions Trading System (ETS) and the Effort Sharing Regulation (ESR) sectors (see Figure 1).

² Innovative energy technologies in Austria, market development 2022, BMK 2023, <https://nachhaltigwirtschaften.at/de/publikationen/schriftenreihe-2023-36-marktentwicklung-energy-technologies.php>

Figure 1: Evolution of GHG emissions 1990 to 2022 (excluding LULUCF)

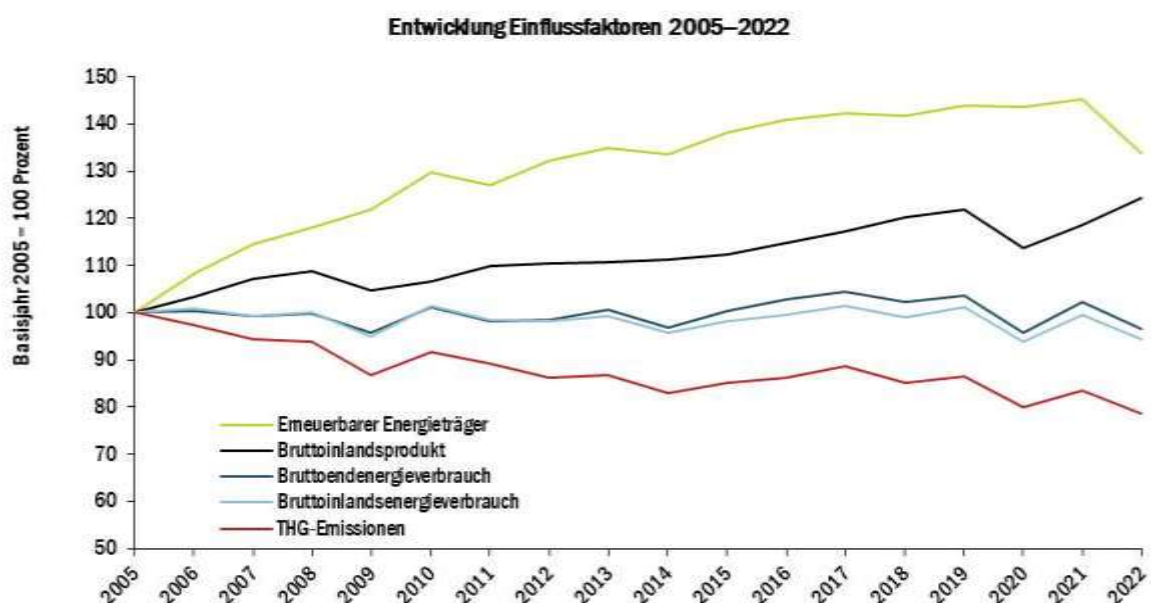


Source: Federal Environment Agency 2024

Looking at developments in GHG emissions, renewable energy and energyefficiency in the context of economic developments since 2005 (Figure 2), Austria has made progress in all three areas. The most successful way was to increase the supply of renewable energy,³while primary energy consumption could only be stabilised. Both energyconsumption and GHG emissions show a relative decoupling with GDP developments over the whole period; in the last reporting year 2022, a marked absolute decoupling between GHG emissions and energy needs, on the onehand, and GDP development on the other hand, was achieved. In the decade up to 2030, further efforts are needed to ensure target-compliant development in all three sectors (GHG emissions, energy efficiency, renewable energy).

³In particular, the decrease in renewable energy applications in 2022 is linked to the first-ever required sustainability certification for solid biomass.

Figure 2: Evolution of GHG emissions, renewable energy (defined in Renewables Directive (EU) 2018/2001), primary energy consumption, gross final energy consumption and gross domestic product (real) 2005-2022 (indexed, 2005=100 %)



Source: Federal Environment Agency 2023, BMK 2024

Beyond the climate assessment, Austria has other environmental areas with potential for sequencing, such as the development of transport, especially between agglomerations and periphery or along transit routes, with associated emissions. This will be addressed through targeted investments in the development of public transport and freight rail transport. The use of landscapes and land is particularly critical in many regions, partly associated with biodiversity losses, on the one hand through the expansion of residential and commercial areas, on the one hand, through the development of infrastructure on the other. In addition to economic developments, changes in individual housing entitlements, migration and mobility, as well as under-utilisation of local and supra-local spatial planning tools, contribute to this trend.

Socio-economic context

Austria's level of prosperity and social stability are above average, including by comparison with Europe.

The potentially negative social consequences of the energy price crisis must be addressed by means of effective measures. The Austrian Federal Government and the Länder have therefore taken a wide range of initiatives since spring 2022 to effectively mitigate the impact on households and the economy of the sharp rise in energy prices. However, these emergency measures will need to be followed in the coming years by effective and effective steps to

diversify, improve and decarbonise the energy system in the long term.

Since the beginning of 1990, the population in Austria has increased by almost 20 % from 7.64 million to 9.16 million inhabitants (1 January 2024). Population growth is mainly concentrated in metropolitan areas, while peripheral rural regions show some negative population trends, which in turn reflect structural economic trends.

Austria is a high-industrial country with energy-intensive, raw material-oriented and highly innovative technology companies. While foreign trade always has a slight current account deficit, the value of energy-intensive products tends to export more goods than imported. Trade in fossil fuels, which is highly dependent on imports, is an important one. In the high-tech sectors, the relationship between exports and imports has recently been broadly balanced.⁴ The transformation towards sustainability and climate resilience will bring about significant structural changes, especially in certain regions. This will be addressed through targeted measures and investments in the Austrian Just Transition Plan (JTP).

Another very important economic standpoint is tourism. There is a clear need for winter tourism in the context of climate change, but it opens up opportunities for regional shifts and diversification strategies.

Climate change as an additional risk

The natural resource base and subsequently essential sectors of the Austrian economy are exposed to significant risks due to the effects of climate change. Long-term trends such as temperature development and rainfall distribution and extreme weather events already have a significant impact on agriculture and forestry. Hydropower generation can also potentially be severely affected by changes in waterflow. In addition, extreme weather events have the potential to cause significant damage to energy production facilities and network infrastructure. There are thus direct links between climate change and the energy Union's target dimensions, in particular in terms of decarbonisation and security of supply. The NECP is therefore drawn up and implemented in close consultation with the Austrian Strategy for Adaptation to Climate Change.

⁴Austria's external trade results, January to September 2022, Provisional results, Austrian Chamber of Commerce, December 2022

1.1.2 Strategy relating to the five dimensions of the Energy Union

The Austrian Federal Government consistently pursues a strategy aimed at achieving by 2030 the European Union's objectives in the areas of GHG emission reduction, renewable energy and energy efficiency within the meaning of the EU Climate Law, the Packages 'Fit for 55' (with RePowerEU additions). In addition, the Government's programme for the period 2020-2024 sets the policy objective of achieving climate neutrality by 2040⁵, 10 years ahead of the legal target for the European Union and its Member States.

In line with these new objectives, Austria's long-term strategy is to be revised with the involvement of ministries, Länder and other stakeholders. The focus is on achieving the objective of climate neutrality in Austria by 2040.

The European Union aims to end its dependence on imports of gas, oil and coal from Russia as soon as possible (European Council conclusions of 24-25 March 2022). The phase-out of fossil gas, which was imported by far the majority of Russia in Austria, needs to be significantly accelerated and the diversification of gas supply sources must be promoted. At the same time, the Austrian Federal Government is pursuing consistent objectives for the complete phase-out of fossil fuels in the medium to long term. With the expansion of imported fossil fuels, Austria can avoid a significant financial outflow in the future and thus significantly increase domestic value added.

At the same time, measures should be taken to cover energy and mobility needs. Long-term decarbonisation must therefore be used to the best possible extent as a coherent response to geopolitical changes and in the spirit of the eco-social market economy – thus economically, environmentally and socially – and in implementing the 2030 Agenda and its 17 Sustainable Development Goals (SDGs). The implementation of the long-term objectives must be designed in such a way that it leads to an economically, environmentally and socially successful model of a resource-efficient and resilient economy. To this end, all relevant arrangements need to be made in the perspective of 2030, avoiding stranded costs or lock-in effects and path dependencies. At the same time, it is important to ensure that the transformation is carried out in accordance with the objective of sustainable, orderly public budgets and on the basis of the impact orientation of the use of resources.

A key pillar of the long-term transition towards climate neutrality and resilience is the focus

⁵The climate neutrality objective is not further defined in the government programme; in the NECP, the target includes the total GHG emissions of the sectors outside the EU Emissions Trading System (non-ETS) and offsetting remaining emissions by natural and technical GHG sinks.

areas (objectives and measures) within the research, innovation and competitiveness target dimension (see relevant sections in Chapters 1, 2 and 3) to be integrated with other target dimensions of the NECP. The implementation of the transition in a competitive environment also requires an education and training system focused on the sympathetic challenges of the future, as well as targeted labour market governance measures, which include specific support for regions that are particularly and structurally affected by the effects of the transition (Just Transition Regions, see below).

Strengthening education, training and active labour market policies for a just transition

A long-term and just transition to climate neutrality and resilience requires timely labour market governance, especially in the context of skills shortages in key areas.

Since spring 2022, the Environmental Foundation, initiated by the social partners of the Austrian Trade Unions (ÖGB) and Wirtschaftskammer Österreich (WKÖ), has been promoting education and training, including in the fields of renewable energies and environmental-engineering. In particular, low-skilled people and those with no longer usable qualifications are expected to complete training courses within 24 months and other than proper apprenticeships that meet the environmental objectives set out in the current government programme. Over the next three years, up to 1000 job seekers are to be retrained or retrained.

In addition, further active labour market policy measures are being taken by the Federal Ministry of Labour and Economy (BMAW) in order to be able to meet, at least in part, labour and specialists in the energy transition. In 2022, around 8100 people were supported by the Labour Market Service (AMS), above all through training measures, but also through employment measures such as the integration allowance.

Under the 'Fit – Women in Crafts and Techniques' programme, Moti will have four years of training in the field of crafts and technology. Apprenticeships with a degree and school-based training can be promoted, with the exception of the University of Applied Sciences of Veau. Interested women with at least compulsory education are prepared for training and advised and trained during the programme's participation. Professions in the field of environmental education are also possible.

A nationwide skills offensive in the area of public transport, which is very important for achieving the climate objectives, is under preparation. The aim of this initiative, jointly set up by the BMAW and the Federal Ministry of Climate Protection (BMK), is to recruit unemployed persons suitable for rail and bus transport and to provide them with the (pre-)qualifications necessary to establish an employment relationship and to assist the transport undertakings

concerned in implementing the development of staff as possible to secure employment. As currently planned, a total budget of up to EUR 10 million is foreseen for this project.

The list of training courses that can be supported by the specialist grant contains many environmental-related occupations, e.g. in construction technology (such as renovation technology) and electrotechnik (e.g. focus on sustainable energy management). In July 2023, this list was again supplemented by other environmental professions. In 2022, around 2240 people in technical training received the grant for specialists. From 2023, the new training list will also significantly increase the environmental/ecology segment.

Vocational Training Act (BAG) and apprenticeships in accordance with the BAG

Professional profiles in the training regulations are reviewed every five years for accumulation (systematic analyses of teaching professions pursuant to Section 1a(5) BAG). The job-descriptions are constantly being developed, and the needs of the economic sector in question are decisive. The Just Transition Action Plan will also be taken into account accordingly.

BMK JUST Transition Action Plan Education and Training

The BMK⁶ launched a just transition process with stakeholders from politics, business, academia and civil society in December 2020. There is a joint debate on the economic, social and labour market challenges that need to be addressed in order to achieve a transformation towards a resilient, climate-neutral and green economy and economy. The Working Group on Education and Training, co-chaired by the Chamber of Labour and AMS, discusses the demand for skilled energy and the necessary professional requirements and skills for future climate jobs. It is essential to identify the economy that is relevant for the transformation in two ways. This is done on the basis of science-based analyses and

Involvement of stakeholders in the fields of research, business and labour representation. As part of the Just Transition process, appropriate measures have been developed to strengthen education and training.

The Just Transition Action Plan on Education and Training⁷ identifies concrete measures to

⁶This process within Austria is not directly related to the JTP under the European JTF Regulation (see section below).

⁷ https://www.bmk.gv.at/themen/klima_umwelt/nachhaltigkeit/green_jobs/just-transition.html

make these changes fair to all stakeholders.

Austria's JUST Transition Plan under the JTF Regulation

The Just Transition Fund (JTF) is a new feature of EU cohesion policy 2021-2027. The JTF is the first of three pillars of the Just Transition Mechanism (JTM) under the European Green Deal, which aims to achieve a fair and just transition towards climate neutrality by 2050. To this end, it will support and drive a sustainable structural change towards climate neutrality in regions most affected by the transition to a climate neutral economy, improving the competitiveness of the local economy and employment.

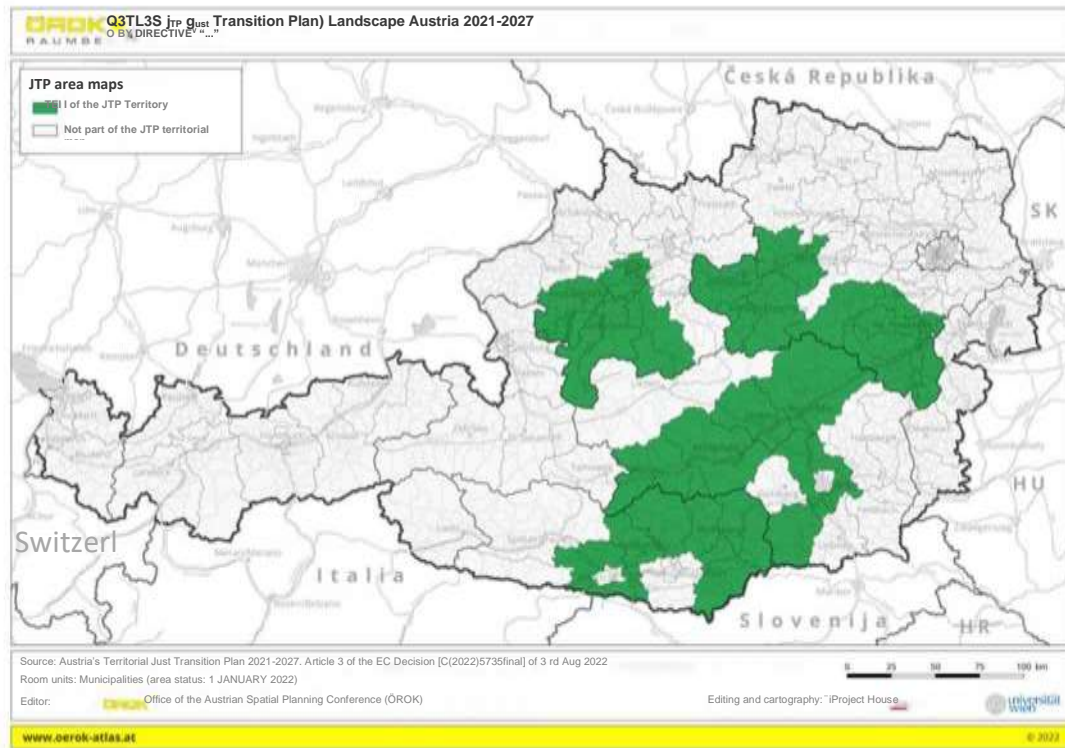
Across the EU, a total of EUR 17.5 billion of EU funding is planned to be invested in the most affected territories between 2021 and 2027, of which Austria has a share of around EUR 135 million under the JTF. In order to use these JTF resources, Regulation (EU) 2021/1056 of 24 June 2021 provides for the establishment of so-called 'Territorial Just Transition Plans' (TJTP).

The Austrian JTP was drawn up in the framework of the Austrian Spatial Planning Conference (ÖROK) with the involvement of the relevant partner organisations and was formally approved by the European Commission on 3 August 2022 in accordance with Article 3 of Implementing Decision [C(2022)5735 final].

The Austrian JTP foresees indicator-based areas in Carinthia, Lower Austria, Upper Austria and Styria as the 'Austrian JTP region' for JTF support. This JTP region, due to its GHG emission-intensive business structure, is subject to the greatest adaptation pressure in the transition towards a climate-neutral economy and has the highest potential for competitive-competitiveness and the labour market. The Austrian JTP area map 2021 to 2027 is shown on the map in Figure 3.

The objective of decarbonisation presents the JTP region and its companies with a envisioned-transformation and diversification phase. Large-scale investment is necessary to remain competitive and to secure or create employment. Therefore, the JTM will proactively support the JTP region in developing its economy in line with the Green Deal objectives.

Figure 3: JTP – Landscape Austria 2021 to 2027



The JTF, as a key instrument in this context, aims to ensure that the transition to a climate-neutral economy is just. The specific objective of the JTF is to ‘enable regional governments and people to address the social, economic and environmental impacts of the transition to a climate-neutral economy’.

The implementation of the JTF in Austria is a separate priority in the EU—
Programmes

- ‘Investment for jobs and growth’, Austria 2021-2027, European Regional Development Fund (ERDF) & JTF (‘IBW-ERDF/JTF 2021-2027’);
- “European Social Fund (ESF+) Programme Employment & JTF Austria 20212027”.

The JTF support shall focus on the identified JTP region and shall target the following actions:

- Investment for employment and sustainability;
- Supporting R & D, demo and innovation projects to address a transition to low- and zero-emission technologies and solutions;
- Skills development and skills development to accompany the labour market.

1.1.3 Summary table of key objectives, policies and NECCP measures

Table 1: Key objectives and areas of action of the NECCP

1. Dimension – Decarbonisation

1.1. GHG emissions

<i>Legally defined objectives</i>	<i>Legally defined measures</i>
<ul style="list-style-type: none"> • Reducing GHG emissions in sectors outside the EU ETS by 48 % (excluding ETS flexibility), using ETS flexibility, the target is around minus 46 % by 2030 (compared to 2005)⁸ (ESR) • LULUCF: Increase in netcarbon storage by around 880.000 t CO₂ by 2030 compared to the 2016-2018 base period (LULUCF Regulation) 	<p>Horizontal activities</p> <ul style="list-style-type: none"> • Introduction of national CO₂ pricing from October 2022 for all fossil fuel consumption outside the EU ETS (NEHG) • Transposition of national CO₂ pricing into EU wide ‘ETS-2’ as of 2027 (or 2028) (EU ETS Directive) <p>Mobility</p> <ul style="list-style-type: none"> • Austrian climate ticket (Climate CardG) • Transport service contracts (§ 7 ÖPNRV-G 1999) • ÖBB framework plan in accordance with Section 42 of the Federal Railways Act and other infrastructure investments (e.g.: Private railways via medium-term investment programmes in accordance with the Private Railways Act, regional city railways pursuant to Article 15a of the Federal Constitution (B-VG) and Special Purpose Subsidy Act) • Long-term planning of future public transport infrastructure (‘target network 2040’ pursuant to Section 42(7) of the Federal Railways Act)⁸

⁸ <https://www.bmk.gv.at/themen/verkehrsplanung/ausbauplan/zielnetz.html>

- Promoting active mobility and mobility management⁹
- Support under an e-mobility plan¹⁰
- Support for modal shift of freight to rail¹¹

Buildings and heat

- Statutory phase-out of fossil fuel use in newly constructed buildings (EEC)
- Support for the replacement of fossil fuels with renewable and efficient district heating in space heating (building stock) by means of federal funding instruments (UFG) and funding from the Länder (inter alia: Housing support)
- Support for thermal remediation through federal funding instruments (UFG) and funding from the Länder

⁹The Federal Government promotes measures to implement active mobility widely; and KLIEN mobility management in cooperation with Länder, municipalities and companies

<https://www.klimafonds.gv.at/wp-content/uploads/sites/16/Leitfaden-klimaaktiv-mobil-2024.pdf>

¹⁰The measures include the following federal support programmes: E-mobility support, zero-emission buses and infrastructure and charging infrastructure (EBIN funded through the National Recovery Plan)

¹¹ The continuation and further development of the funding programmes SGV Plus, ATF and IKV, which are also part of the measures of the BMK's Freight Transport Master Plan 2030 (see

<https://www.bmk.gv.at/themen/mobilitaet/transport/gueterverkehr/masterplan.html>)

- Adaptations of construction standards by: the building codes of the Länder and the EU Energy Performance of Buildings Directive EU/2010/31)

Industry

- Funding under the UFG, including funds for Industrial transformation
- Emissions trading systems (EU ETS, NEHG)
- National Recovery and Resilience Plan
- JUST Transition Plan under Regulation (EU) 2021/1056

Agriculture and forestry

- Implementation of the 2023-2027 CAP Strategic Plan; in particular under the Austrian agri-environmental programme (ÖPUL)
- Agricultural investments with: emission-reducing effect (Österr. CAP Strategic Plan 2023 to 2027)
- Nitrates Action Programme Regulation
- Ammonia Reduction Regulation
- Aid offers for agri-PV installations stemming from EAEC
- Special Investment Programme of the Climate and Energy Fund 'Energy self-sufficient farms' from 2022 –

<i>Main objectives of the Federal Government</i>	<i>Main plans of the Federal Government</i>
<ul style="list-style-type: none"> • Climate neutrality by 2040¹² (Government programme) • Reduction of land entitlement grabbing and soil sealing (Government programme) • Objective of reducing the Mineral fertiliser requirements by 20 % (compared to WEM 2 019 in accordance with the 2019 NECP) • For the decarbonisation of the Buildings sector: The Federal Government's objective to: 	<p>Horizontal activities</p> <ul style="list-style-type: none"> • Austria's strategy to adapt to the Climate change (MRB 93/14 2.4.2024) <p><i>Spatial planning (in cooperation with Länder and municipalities)</i></p> <ul style="list-style-type: none"> • Austria's spatial development plan 2030 • ÖROK Recommendation No 56 Area savings, Land management & active soil policy • Implementation of results ECOREK Partnership Energy spatial planning

¹²Includes sectors outside the EU ETS 1

Minimise the burning of heating oil, coal and fossil gas for the supply of heating and cooling in 2040 (Government programme)

- Biomethane production (target: 30 % share of farmyard manure in accordance with the 2019 NECP)

Objectives of portfolio strategies and key reports

Actions from portfolio strategies and key reports

- Mobility: Implementation of the Mobility Master Plan 2030 and its technical¹³ strategies (BMK)

- New mobility services and digital services Driving Transformation (BMK)
- Action Plan on Digital Transformation in Mobility (AP-DTM) (BMK)
- Danube Action Programme 2030 (BMK)
- FTI Aviation 2040+ (BMK) strategy
- FTI Mobility Strategy (BMK)
- Aviation Strategy 2040+ (BMK)
- Masterplan Gehen 2030 (BMK)
- Freight Master Plan 2030 (BMK)
- People-mobility sharing strategy (BMK)
- Immediate programme: Renewable energy in the Mobility (BMK) Implementation of Just Transition Action Plan on Professional Training (BMK)
- Forest Strategy (BML)

1. Dimension: Decarbonisation

1.2. Renewable energy

Legally defined objectives

Legally defined measures

- Increasing the share of renewables Energy on Gross final energy consumption in Austria to at least 57 % by 2030 (leading the estimation of the

- EAEC, and building on it Investment Grant Regulations
- Implementation of RED III (EU Directive (EU) 2023/2413)

¹³ <https://www.bmk.gv.at/themen/mobilitaet/mobilitaetsmasterplan/fachstrategien.html>

<p>Austria's national share based on ANNEX II of Regulation (EU) 2018/1999) according to a binding EU overall target of 42.5 % adjusted in RED III)</p> <ul style="list-style-type: none"> Electricity consumption by 2030 by: domestic renewable sources cover (national balance sheet) (EAG) Speeding up network deployment; and Reinforcement of electricity grid capacity (ÖNIP according to EAEC) 	<ul style="list-style-type: none"> EU Emergency Regulation establishing a framework to speed up deployment renewable energy (EU Regulation 2022/2577) Environmental Impact Assessment Act pursuant to BGBl. I No 26/2023 Dialogue between the Federal Government and the of the EAEC) Support for a PV offensive (funding from: EAEC, UFG and KLIEN) Support to decarbonise district heating (UFG) CAP 2023-2027: EAFRD funds for the development of Biomass district heat Preparation of the "Integrated Austrian Network Infrastructure Plan" (EAG) Hydrogen Promotion Act (WFöG)
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<i>Main objectives of the Federal Government</i>	<i>Main plans of the Federal Government</i>
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<ul style="list-style-type: none"> At least 9.75 % of renewable gas by 2030 (EGG at Basis of the Government bill (EGG (251/ME)) Acceleration areas at least for: PV and wind turbines 	<ul style="list-style-type: none"> Preparation of the Renewable Gas Act (EGG) based on Government bill (MRB 88/11, 21.2.2024) Renewable expansion-acceleration law (MRB 43a/16, 11.1.2023)
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<i>Objectives of portfolio strategies; and main reports</i>	<i>Measures taken from portfolio strategies and key Reports</i>
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<ul style="list-style-type: none"> 1 GW of electrolysis capacity by 2030 to Production of renewable hydrogen (BMK & BMAW) Replacement of at least 80 % of consumption fossil-based hydrogen in energy-intensive industry through climate-neutral¹⁴ hydrogen by 2030 (BMK & BMAW) 	<ul style="list-style-type: none"> Implementation of Hydrogen Strategy (BMK & BMAW)
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¹⁴Net-zero hydrogen, here and below, is to be understood in the sense of the 'Hydrogen Strategy' for Austria: This includes, in addition to renewable hydrogen, hydrogen produced from natural gas, once technology matures, by means of full CO₂capture ('blue hydrogen') or pyrolysis ('turmeric hydrogen'). For a usable building block on the way to Being climate-neutral and in order not to lose its value for use in climate-neutral processes, such as in industry, in the case of hydrogen from natural gas, it is important to ensure that CO₂capture takes place without

greenhouse gas releases and that all CO₂ emissions along the production, transport and processing chains are excluded. It should be noted that 'Pinker Hydrogen' from nuclear energy and 'blue hydrogen', where nuclear carbon capture takes place, are not sustainable and are therefore not included in this category.

2. Energy efficiency dimension

<i>Legally defined objectives</i>	<i>Legally defined measures</i>
<ul style="list-style-type: none"> • Final energy commitment of max. 904 PJ¹⁵ in calendar year 2030 (920 PJ in calendar year 2030 according to EEffG) • Cumulative saving obligation at least 717 PJ¹⁷ 2021-2030 by strategic measures (650 PJ 2021-2030 in accordance with the EEffG) • Energy savings obligation in the Federal building stock cumulatively up to 2030 of 390 TJ (EEffG) • Other (national) Energy savings obligation for the Federal Government and the BIG in the building stock owned by BIG and used by a federal body cumulatively by 2030, amounting to 930 TJ (EEffG). 	<ul style="list-style-type: none"> • Increased support for Energy efficiency measures by 2030 (UFG) • Increased support under a Thermal renovation plan Building renovation by 2030 (UFG) • Thermal remediation requirements and/or Contracting measures, heating optimisation, switch to renewable energy sources, etc. in the Federal building stock, BIG or if used by a federal office under the EEffG • Support under an e-Mobility Plan (including via KLIEN)
<i>Main objectives of the Federal Government</i>	<i>Main plans of the Federal Government</i>
	<ul style="list-style-type: none"> • The creation of public investment; and Funding for infrastructure to meet the quality objectives of the 'Constructional Guidelines of the Federal Government' (MRB 48/10, 17.8.2017)

¹⁵pending national implementation of EEDIII

¹⁶pending national implementation of EEDIII

3. Dimension
Energy security

<i>Legally defined objectives</i>	<i>Legally defined measures</i>
<ul style="list-style-type: none"> • Diversification of gas import routes to Austria and development of alternative sources of supply (GDG) • Replacement of Russian gas (GDG) as soon as possible • Strategic evolution/adaptation of national electricity, gas and hydrogen infrastructure 	<ul style="list-style-type: none"> • Measures to ensure security of supply in the short term in the context of the energy crisis (amendments to the GWG, Energy Steering Act, Gas Diversification Act)
<i>Main objectives of the Federal Government</i>	<i>Main plans of the Federal Government</i>
<ul style="list-style-type: none"> • Ensuring the Security of supply for Austria through energy infrastructure development (MRB 90/9, 6.3.2024) <p>Achieving the objectives of the Austrian Hydrogen Strategy and supporting the</p> <ul style="list-style-type: none"> • Production uptake of renewable hydrogen in Austria (MRB 98/18, 15.5.2024) 	<ul style="list-style-type: none"> • In order to ensure that the WAG Part-Loop project is implemented as soon as possible, the Ministry of Finance makes funds available from the budget for the expansion of the West-East route via its own federal law (MRB 90/9, 6.3.2024). <p>Deep geothermal energy: The potential of the heat stored in the soil is to be exploited to the best possible extent in Austria and thus further developed. In addition to the support introduced in the Climate Fund, the Federal Government is therefore planning to present legislative or amending drafts of the relevant legal bases in order to exploit the full potential of deep geothermal energy. (MRB 90/9, 6.3.2024)</p> <ul style="list-style-type: none"> • Hydrogen Promotion Act (WFöG) Funding for the operation of electrolysis plants for renewable hydrogen production (MRB 98/18, 15.5.2024)
<i>Objectives of portfolio strategies and key reports</i>	<i>Actions from portfolio strategies and key reports</i>
<ul style="list-style-type: none"> • Creating import opportunities for net-zero hydrogen;¹⁷ and 	<ul style="list-style-type: none"> • Electricity Security Strategy (BMK)

¹⁷As defined in the Hydrogen Strategy for Austria

- Development of an appropriate hydrogen infrastructure (Hydrogen Strategy, BMK & BMAW)
- Optimal use of all domestic renewable sustainable energy resources, with a particular focus on independence from international supply chains (e.g. import dependency of PV modules and batteries), while respecting the LULUCF objective
- Developing import opportunities and building European and international Cooperation Partnerships for Net-Zero Hydrogen (BMK & BMAW)
- Roadmap to a Hydrogen Backbone (BMK & BMAW)

4. Dimension Internal energy market

Legally defined objectives

- Obstacles to the cross-border trade with Remove electricity (Electricity Regulation (2019/943))

Legally defined measures

- Short-term measures to combat the energy crisis (energy crisis contribution electricity and fossil fuels, measures to reduce electricity consumption by 5 % during peak hours, electricity cost subsidy law, grid cost subsidy, energy cost compensation, etc.).
- Targeted support instruments for households at risk of poverty (e.g. 'Clean Heating for All', 'Climate-fitted Buildings', 'Housing Energy') (UFG)
- Advantages under the Federal Government Energy Efficiency Act, BGBl. 74/2014, as amended by BGBl. 59/2023

Main objectives of the Federal Government

- Creation of appropriate Framework conditions for Overcoming the energy crisis by on-going review and adapting the measures put in place

Main plans of the Federal Government

MRB 90/9, 6.3.2024

Objectives of portfolio strategies and key reports

- Flexibility in the area of Energy supply and

Actions from portfolio strategies and key reports

- Increased use of new market roles (energy communities, active customers) new

- | | |
|--|---|
| <p>Consumption through storage and smart grid management (BMK)</p> <ul style="list-style-type: none"> • Reduce energy poverty; and Empowering consumers' rights (BMK) | <p>Flexibilities and higher Legal certainty for customers but also energy companies through the planned Electricity Industry Act (EIWG), which provides for the current electricity industry and Organisational Act (EIWOG 2010) is intended to replace</p> <ul style="list-style-type: none"> • Strengthening social and housing market specific Supporting instruments in the fight against Energy poverty (final) |
|--|---|
-

5. Research, innovation and competitiveness dimension

Main objectives of the Federal Government

- Cost-effective targeting of the total research and funding portfolios of green and digital transformation objectives (FTI Pact 2024-2026)

Main plans of the Federal Government

- **Mission-oriented focus in the Areas:** Climate neutral city, energy transition, circular economy and production, mobility transition (FTI Pact 2024-2026)
 - **In the context of the Transformation Plan:** FTI Industrial Transformation Initiative (KLIEN)
-

Overview of the current political situation

1.2.1 National energy system, Union energy system and policy context of the NECCP

International and geopolitical context

The Paris Agreement on climate change has not only started to phase out fossil fuels, but a global transformation of energy systems, the economy and society. The imperative nature of this transformation is supported by the Intergovernmental Panel on Climate Change (IPCC) special report on the implications of a 1.5 °C global temperature increase and the differences between a 2 °C increase.

At the Dubai Climate Change Conference (COP28, 2023), the UAE Consensus Parties adopted. This consensus includes, for the first time, a wording that sets out the need for a just, orderly and balanced shift away from all fossil fuels in the energy systems in this critical decade in order to achieve net-zero emissions by 2050, in line with science. Similarly, the Consensus highlights a new, specific target to triple renewable energy and double energy efficiency by 2030 and reiterates the outcome of COP26 (Glasgow) on phasing-down of unabated coal power and phase-out of inefficient fossil fuel subsidies. In addition, states are encouraged to accelerate action to curb non-CO₂GHG emissions, in particular methane emissions by 2030.

The transformation of the global and pan-European energy system and the decarbonisation of the economy and society are essential, also in the context of the current energy supply situation. The situation on European energy markets was already tense before Russia's aggression against Ukraine, in breach of international law, and this has further aggravated. The price issue is accompanied by a question of availability, which poses challenges in maintaining energy security. In order to end dependence on Russian fossil fuels and secure long-term security of care, it is necessary to move forward alongside the diversification of energy in port, the phase-out of fossil supply chains and the transformation of the energy system towards climate neutrality, such as energy savings and the accelerated deployment of renewables.

Austria's contributions to international climate finance

Austria supports programmes and projects relevant to climate change globally in developing countries. The support is provided either directly (bilateral) or via international finance

institutions (multilateral) and represents an Austrian contribution to international climate finance. The basis for this commitment is the Öster-rich strategy on international climate finance, the three-year programme of Eastern Chile's development policy and the Federal Ministry of Finance (BMF) strategic guidance for international financial institutions.

Austria's contributions to international climate finance are composed of various public and private sources and financial instruments. In addition to non-reimbursable public grants, other financial instruments, such as public loans, equity and guarantees, are generally recognised.

The trend in Austrian contributions for the years 2018 to 2021 compared with the 2010-2012 'starting period' (EUR 40 million per year) shows a generally increasing trend in benefits in the sense of a 'scaling up'. Fluctuations in individual years are mainly due to the rhythm of bilateral agreements (commitments) and multilateral capital increases. Around 57 % of bilateral contributions in 2021 were also gender-relevant.

Table 2: Evolution of Austria's contribution to international climate finance, 2018-2022

Sources/types of finance based on pledges	Final in EUR million in 2018	2019 final in EUR million	Final in EUR million in 2020	Final 2 021 in EUR million	Final 2 022 in EUR million
Bilateral grants	43,24	46,00	52,32	63,22	62,39
Multilateral grants	55,88	124,38	109,43	112,70	116,93
Sources/types of finance based on pledges	Final in EUR million in 2018	2019 final in EUR million	Final in EUR million in 2020	Final 2 021 in EUR million	Final 2 022 in EUR million
Total grants	99,12	170,38	161,75	175,92	179,32
Other financial instruments	140,35	162,44	96,19	72,69	226,73
Total public climate finance	239,47	332,82	257,94	248,61	406,05
Private climate finance mobilised	88,71	13,59	2,32	51,92	88,82
Total Austrian contribution	328,18	346,41	260,26	300,53	494,87

European context

The European Commission presented the European Green Deal in 2019. This has provided an important planning basis to make the Union climate neutral by 2050, decouple economic growth from resource use, leaving no one behind (neither person nor region).

The EU Climate Law, directly building on the Green Deal, legally enshrining the targets to reduce GHG emissions by at least 55 % net by 2030 compared to 1990 and to achieve climate neutrality by 2050, entered into force in mid-2021. This provided the basis for the 'Fit for 55' package, which set out detailed policy-making frameworks and key detailed objectives.

In response to Russia's war of aggression against Ukraine, the issue of energy security and energy system resilience is high on the political agenda. Therefore, in line with the REPowerEU plan, the ambition of the energy efficiency and renewable energy targets has been further increased and financial and administrative frameworks have been put in place for the implementation of resulting short- to medium-term investments.

The main objectives of the EU's 2030 climate and energy policy (Fit for 55) include:

- Reducing GHG emissions by at least 55 % net compared to 1990, broken down by sector:
 - EU ETS: minus 62 % compared to 2005
 - ESR: minus 40 % compared to 2005
 - Land Use, Land Use Change and Forestry: Storage of at least 310 MtCO₂ (2030);
- Increase the share of renewable energy sources in gross final energy consumption to 42.5 % mandatory (+ 2.5 % indicative) in accordance with the revision of the Renewable Energy Directive (RED III);
- Overall energy efficiency target of 11.7 % compared to the projections of the 2020 Reference Scenario under the recast Energy Efficiency Directive (EED III). This corresponds to a 38 % reduction in final energy consumption and 40.5 % in primary energy consumption compared to the 2007 Reference Scenario projections for 2030;
- Sustainable energy taxation (Energy Tax Directive, ETD): Linking the taxation of motor fuels, heating fuels and electricity to their environmental and climate impacts.

In addition to the NECP, Member States are also required to prepare and submit a long-term strategy (LTS 2050) in line with the Paris Agreement by 1 January 2020 under the Governance Regulation. If necessary, these plans shall be updated by Member States by 2025. Austria responds to this request by updating the long-term strategy submitted to the European Commission at the end of 2019.

Similarly, in response to the energy crisis, the European Scientific Advisory Board on Climate Change has assessed different types of possible countermeasures and¹⁹ developed eight recommendations for EU decision-makers on how to tackle both the energy crisis and the climate crisis at the same time.

¹⁹ <https://www.eea.europa.eu/about-us/climate-advisory-board/recommendations-to-eu-and-member/view>

Table 3: Recommendations of the European Scientific Advisory Board

Recommendations of the Academic Committee	Address in the following chapter
Tackling the energy crisis at its root: Reduce demand, increase clean energy supply	See in particular Chapters 2.1 and 3.1, 3.3, 3.4 and 3.4.
Save energy by increasing efficiency; and Behavioural change	See in particular Chapters 3.1 and 3.4.
At least double the deployment rate for renewable energy	See in particular Chapters 2.1 and 3.1.
Drive electrification to improve efficiency and move away from fossil fuels	See in particular Chapters 2.1 and 3.1.
Provide direct income support to low-income households	See in particular Chapter 3.1.
Ensure that efforts to diversify gas supply are compatible with the long-term transition towards climate neutrality	See in particular Chapter 3.3.
Ensure a sustainable supply and use of biomass while minimising pressure on food production and biodiversity	See in particular Chapters 2.1, 2.2 and 3.1.
No investment in new coal and oil infrastructure	See in particular Chapters 2.1, 2.2, 2.3, 3.1 and 3.5.

In the context of the European Semester, the coordination of EU Member States’ fiscal and economic policies, the Council issued country-specific recommendations to the Republic of Austria on 12 June 2022.²⁰ The recommendations are in part directly linked to the target dimensions of the Governance Regulation and are therefore also taken into account in the present NECP.

Austrian context

The current government programme includes the objective of achieving climate neutrality by 2040 in the field of climate policy²¹. This means that, by that time, every effort must be made to achieve the energy transition in order to rapidly and efficiently reduce particular GHG emissions

²⁰ Council Recommendation of 12 July 2022 on the 2022 National Reform Programme of Austria and establishing a

Council Opinion on the 2022 Stability Programme of Austria, OJ C 334, 1.9.2022, p. 162

²¹ in the NECP, the 2040 climate neutrality objective includes the total GHG emissions of the sectors outside the EU Emissions Trading System (non-ETS) and offsetting remaining emissions by natural and technical GHG sinks.

from the use of fossil raw materials. To this end, further efforts need to be made to increase carbon storage so that the remaining unavoidable emissions are compensated by natural or technological sinks.

The Russian war of aggression against Ukraine and its consequences call for a fundamental reassessment of Austria's energy policy, in particular as regards the security of energy supply. In the short term, in the field of natural gas supply, this requires diversification of supply routes before gradually reducing and replacing the use of natural gas in energy supply with renewable energy sources and developing the necessary infrastructure, including hydrogen infrastructure.

Exemplary role of public authorities

The government programme for the period 2020 to 2024 enshrines the role of the public hand. In its resolution of 26 March 2021, the Austrian Nationalrat decided that a strategy with a concrete timeline for climate-neutral administration by 2040 would be drawn up with binding climate directives. At the climate conference in Sharm el Sheikh (COP 27, 2022), Austria jointly committed itself with 18 other countries to submit a plan by the next climate conference (COP 28, end of 2023) setting out the path of public administration towards climate neutrality (presentation by the BMK and the BMF to the Council of Ministers 79/22 of 28 November 2023).

The following steps are therefore under preparation:

- Preparation of a roadmap for achieving climate neutrality of the central bodies of the federal administration, with targets for mobility, buildings, public

Procurement and waste management. Steady progress is ensured through periodic monitoring.

- Certification of all federal ministries' central offices under the Eco Management and Audit Scheme (EMAS).
- Prioritising the set of criteria for sustainable procurement (naBe) in public procurement, in particular in relation to building materials from renewable raw materials, and making use of the innovation procurement (IPP) toolbox in the case of public procurement, where possible, with innovation needs and/or potential.
- Defining and implementing measures for greening mobility, improving energy efficiency, boosting renewable energy, raising awareness and communication.

The Länder's climate and energy strategies

In recent years, the Austrian Länder have defined their own climate and energy targets in their strategic planning documents, in addition to the federal targets and plans. These are in principle in line with the general government targets, although not all Länder have yet adapted to the new targets under the Fit for 55 climate and energy package. Due to the sometimes indivisible target definitions (e.g. with regard to energy efficiency or with regard to the client's maturity), there is no need to compare the Länder's targets in the previous document.

At both technical and political level, the Federal Government and the Länder have regular exchanges of views on energy and climate policy issues, for example via the National Climate Change Committee under the Climate Protection Act (KSG) and in the context of the political conferences of energy and climate protection officers of the Länder. In addition, the Financial Equalisation Act 2024 (FAG 2024) lays down financial provisions in the event of non-achievement of the ESR targets.

1.2.2 Current policies and measures related to the five dimensions of the Energy Union

The policies and measures listed in this section relating to the five target dimensions should be understood as currently existing measures in the sense of the definition of the With Existing Measures (WEM) model-based energy and GHG emissions scenario. This category removes those policies and measures that were implemented or have had an impact by the end of 2021. On the other hand, those measures that have taken effect from 2022 or are in the planning stage with a realistic chance of implementation will be allocated to the With Additional Measures (WAM) scenario. WAM measures are covered in more detail in Chapter 3 of this plan.

Objective dimension 1: Decarbonisation – greenhouse gas emissions

The main focus of the measures up to 2030 is to increase the share of renewable energy and improve energy efficiency in the main polluter sectors (notably transport, buildings, non-ETS industry), as well as avoiding non-CO₂ GHG emissions in agriculture (reduction of methane and nitrous gas emissions through climate-friendly management practices, especially in fertilisation management, soil management and livestock farming), waste management (digestion of methane emissions from landfills) and F-gases. Key measures are laid down in European law, such as EED III, the Building Energy Efficiency Directive (EPBD) or RED III.

The current measures described below already provide important contributions to limiting GHG emissions, but, according to current knowledge, are not sufficient to meet Austria's 2030 target.

This requires more detailed measures, which are discussed in detail in Chapter 3.

Mobility

In principle, the objective of reducing GHG emissions for Austria from the ESR is also the guiding principle for the transport sector. GHG emissions from transport increased by almost 50 % between 1990 and 2022 according to the GHG inventory of the Federal Environment Agency. This is due to a variety of reasons: in addition to the sharp increase in domestic mileage, the export of fuels in vehicle tanks is essential to this.

Has contributed to development. GHG emissions from road freight transport (heavy and light commercial vehicles, including fuel exports) have increased by 93.5 % between 1990 and 2022, while those from road passenger transport increased by 32.7 %. Just under two thirds (61 %) of GHG emissions from road transport in 2022. In both segments, increased transport performance is the strongest driver, followed by fuel exports in the vehicle tank. The short-term decrease in GHG emissions due to the COVID-19 pandemic in 2020 was partially compensated in 2021. There is a slightly decreasing trend in the perspective of 2030.

An international study²² on the empirical assessment of transport measures in terms of their actual impact on reducing GHG emissions showed for Austria that there has been no structural break or decrease in recent decades. According to the study authors, Austria was unable to achieve a real reduction in GHG because the effects of Austria's measures were more than offset by contrasting trends. An example of this is the comparatively favourable fuel prices at Austrian petrol stations compared with the EU and in particular with neighbouring countries such as Italy and Germany.

Measures to reduce GHG emissions in the transport sector are based on different levels. At federal level, emphasis is placed on inter-regional infrastructure development, the drawing up of strategic reference plans, transport-related taxation and financing issues in the context of financial compensation between local authorities (allocation of tax revenue to Länder and municipalities), the Länder and municipalities are primarily responsible for attractive offers in regional and municipal public transport, town and country planning, walking and cycling infrastructure, such as parking space management or parking regulations.

Successful action in transport so far includes:

- Continuous development of public transport, in particular record investments on the ÖBB rail network for passenger and freight transport, continuation of U-rail expansion in

²² Article in nature energy: Attributeing agnostically detected large reductions in road CO₂ emissions to policy mixes, 2022; <https://www.nature.com/articles/s41560-022-01095-6>

Vienna and a significant increase in funds for private railway development, for the first time federal funds for urban railways, record budgets for public service transport orders for expansion of supply;

- Introduction of the Austrian climate ticket and regionalised offers;
- Promotion of cycling, promotion of walking and mobility management (climate-active mobile), development of active mobility infrastructure, including:
Fast wheel connections;
- E-Mobility Plan with the new BMK support programmes for zero-emission vehicles (ENIN) and buses (EBIN), including infrastructure, 75 % toll bonus for zero-emission vehicles above 3.5 tonnes;
- Comprehensive favourable tax treatment of zero-emission mobility (in particular e-mobility)
and incentives for the use of public transport;
- Greening, inter alia, the right to purchase property for motor vehicles, the flight tax, the standard consumption tax (NoVA) and the motor-related insurance tax (passenger cars) and motor vehicle tax;
- Implementation of Intelligent Transport Systems (ITS) in the area of digital services, traffic management and traffic information;
- Comprehensive packages of measures for a modal shift to rail freight, in particular combined transport²⁴;
- Use of biofuels;
- Greening of the aviation levy through the 2020 Economic Recovery Act for
To switch ultra-short-haul flights of less than 350 km EUR 30 per ticket to more climate-friendly routes (in particular train) as an incentive for short distances.

Buildings

GHG emissions in the buildings sector (residential, private and public services buildings) have decreased by about one third since 2005. This has been supported by different measures, in particular the switch from oil and gas-fired heating systems to renewable energy sources and district heating systems, the thermal renovation of existing buildings from particularly problematic building age classes (1950s to 1980s), successively increasing construction requirements for new construction and increasingly also for renovations.

²³ BMK funding offers e-mobility: <https://www.klimafonds.gv.at/call/emob-betriebe2022/>
<https://www.klimafonds.gv.at/call/emob-private2022/>
<https://www.ffg.at/EBIN>
<https://www.ffg.at/ENIN>

²⁴ <https://www.bmk.gv.at/themen/mobilitaet/transport/kombiverkehr/foerderung.html>

Over the past 10 years, significant momentum has been created through federal and provincial funding instruments. An agreement between the Federal Government and the Länder pursuant to Article 15a of the Federal Constitutional Law laid down high energy standards for housing support (mainly for social purposes), which go beyond the building legal standards. The energy-relevant measures in the field of housing support (renovation and construction of new buildings) resulted in a cumulative saving of around 3.3 million tonnes of CO₂ between 2009 and 2021.²⁵ The Federal Government (together with the Länder) offers support not only for private households or residential property owners for renovation (renovation check) but also for businesses (commercially used buildings) in addition to the housing support provided by the Länder as part of the renovation campaign (through environmental support in Germany). In this way, significant volumes of buildings have been realised in recent years, or conversions from heating systems to renewable energy and district heating and cooling. The report pursuant to Article 16 of the Agreement pursuant to Article 15a B-VG on measures in the building sector shows that the support under the Sa nierungsoffensive resulted in a calculated CO₂ reduction of around 1 million tonnes of CO₂ cumulatively between 2009 and 2022.²⁶ It is not possible to simply sum up the effects of federal and regional funding, as the instruments can be used in some cases in an overlapping way.

The 2022 eco-social tax reform has brought into effect measures in the area of buildings, which are further addressed in chapter 3.1 (including CO₂ price; fiscal incentives for remedial measures; Impact in the WAM scenario).

The amendments to building law were made in response to the EU legal requirements of the Energy Performance of Buildings Directive. On the basis of the EPBD, minimum requirements are set for so-called zero-emission buildings (NEGs). In doing so, the NEGs shall have their energy by either:

- renewable energy sources produced on-site or near it;
- on a Renewable Energy Community;
- an efficient district heating system; or
- from carbon-free sources

source. The aim is to ensure that GHG emissions can be kept at a low level, despite the significant growth of construction volume as a result of population growth, increasing specific residential areas and growing comfort needs. There are also minimum standards for the renovation of buildings in the case of major renovations. For new operational buildings in

²⁵Data base: Notifications by the Länder under the Agreement

²⁶Source: Greenhouse gas reduction measures in Austria's buildings sector 2009 to 2022, BMK 2024, pp. 43/44

excess of the low-energy standard, there is support from domestic environmental support (UFI).

District heating expansion

For the expansion and decarbonisation of district heating, the following measures have been implemented:

- Under the Environmental Promotion Act (UFG), operators who apply for support for the development of climate-friendly district heating and cooling networks (biogenic share 50 to 80 %) are required to submit a transition plan (decarbonisation pathway).
- It shows how to achieve 60 % renewable energy by 2030 and 80 % by 2035 for existing distribution networks, including waste heat.
- Under the UFG, district heating installations using renewable energy are supported with financial resources from the Federal Government, the Länder and the EU.

Agriculture, land use, land use change and forestry

In the agriculture sector, GHG emissions were reduced by 16.2 % between 1990 and 2021. In the first instance, the reductions should be attributed to the declining cattle population and lower amounts of nitrogen applied to agricultural soils. The agriculture sector includes non-fossil GHG emissions from livestock and grassland farming, as well as from arable construction activities and fossil GHG emissions from the use of agricultural and forestry machinery, in line with the sectoral breakdown of the SPA. Climate-relevant carbon build-up or removals are accounted for in the LULUCF sector. LULUCF CO₂ emissions and sinks are caused by changes in carbon stocks in biomass, including deadwood and soils. It also includes methane emissions from organic soil drainage and forest fires, as well as nitrous oxide emissions from soils and forest fires. In the LULUCF sector, net carbon storage decreased by around 15 % between 1990 and 2021 to around 10.4 million tonnes of CO₂, with net carbon storage subject to strong annual fluctuations and even net emissions in the LULUCF sector in individual years, such as 2018 and 2019.

The key instrument for agriculture with regard to climate action is the Common Agricultural Policy (CAP), which determines a wide range of other objectives, such as biodiversity, soil and water protection, animal welfare measures and measures to strengthen competitiveness. As the negotiations on the new programme and the multiannual financial framework at European level were more lengthy than initially planned, 2021 and 2022 were defined as transitional years during which the programme of the Vorperiode (2014-2020) was continued. The implementation of the 2023-2027 CAP Strategic Plan (CSP) started on 1 January 2023.

The forestry sector is of great importance to Austria. Decades of multifunctional forest management have already enabled very large biomass stocks to be built up and the forest's

storage function massively increased. In addition, the continuous increase in sustainable wood and biomass harvesting has made it possible to achieve a very high share of renewable energy sources in the national electricity and heat production system, which contributes significantly to the high share of renewable energy sources in Austria. By increasing the recycling of wood and thus contributing to the substitution effects, the forestry sector and the forestry sector make a major contribution to climate change mitigation. This holistic management method is in line with IPCC recommendations, according to which the concept of sustainable forest management is the most important contribution of the land use sector to climate change mitigation in the medium to long term.

In recent years, climate change adaptation measures to protect and stabilise terrestrial carbon pools and maintain ecosystem services (maintenance of productive arable land, grassland and forest, increased soil loss reduction, protection against natural hazards, etc.) and eco-systemic carbon storage and sequestration are gradually gaining importance. The revision of the LULUCF Regulation requires a further build-up of the pre-carbon rates.

Measures are also intended to help build up a forest stock that is as stable as possible and adapted to climate change, with a focus on strengthening resilience to disturbances. This also increases the stability of the carbon stock and, in the long term, carbon sequestration and storage in the forest.

The necessary ecosystem transformation can have an impact on short-term and ultra-long-term carbon storage capacity in the land use sector, which could run counter to the objective of further developing the carbon sink in the land use sector. The BMK updated the Climate Change Adaptation Strategy (NAS 3.0), which was adopted by the Council of Ministers in April 2024.

The key instruments for implementing climate-friendly forestry are the legal requirements of the Forestry Act, as well as the objectives of the relevant federal government strategies and at the level of the relevant ministries, such as the Austrian Forest Strategy 2020+, the Biodiversity Strategy, the Austrian Strategy for Adaptation to Climate Change, the Bioeconomy Strategy and the Circular Economy Strategy. In addition, existing support, e.g. through the Forest Fund and forestry support under the Rural Development Programme, is added.

Waste management and F-gases

The trend of GHG emissions in the waste sector has decreased significantly since 1990, despite increased trapping levels (2021: minus 51 % compared to 1990, including waste incineration). Successful measures with proven emission reductions include, in particular, a ban on landfilling untreated municipal waste, installing landfill gas collections, material recovery measures and the

predominant thermal treatment of residual waste in modern waste incineration plants, which also serve to generate energy (electricity and heat). Due to the planned increased recycling of biogenic waste, the use of aerobic recovery and its energy production will become more important.

The main existing measures in the area of waste management are:

- Waste prevention – food waste prevention strategy (BMK);
 - Preparing for re-use – Extension of extension projects the useful life (e.g. RE-USE projects);
 - Aerobic treatment of biogenic waste – covering surface implementation of the requirements of the Directive on the state of the art in composting,
 - Aerobic treatment of biogenic waste – introduction and implementation of standards for IPPC compost plants in accordance with the BREF document;
 - Anaerobic treatment of biogenic waste – increasing the economic viability of converting biogas to biomethane,
-
- Landfilling – Consistent implementation of the 2008 Landfill Regulation as regards the reduction of residual emissions, in particular by reviewing gas collection systems, irrigation and in-situ stabilisation;
 - Implementation of the EU Single-Use Plastics Directive (Directive of the European Parliament and of the Council on the reduction of the impact of certain plastic products on the environment);
 - Increase the recycled content of municipal waste, in particular for plastic packaging waste, in line with the EU waste package;
 - Waste prevention – advice to the general public on individual and home garden composting;
 - A ban on the placing on the market of plastic carrier bags;
 - Obligation to transport waste with a total weight of more than 10 tonnes by rail of 300 (200, 100) km or more, or means of transport with equivalent or lower pollutant and GHG emission potential (fuel cell, electric motor) and to set up and operate an electronic platform to ask railway undertakings.

Regulatory requirements for the sustainable restriction of the use of fluorinated gases harmful to climate change (F-gases) are laid down in the 2009 Fluorinated Greenhouse Gas Act, which is supplemented and adapted by Regulation (EU) No 517/2014.

Austrian transposition takes place in particular through enforcement measures within the framework of indirect federal administration:

- In cooperation with the customs authorities: Fight against illicit trade in F-gases and F-gase-filled equipment to ensure compliance with the EU quota system.
- In the building area: Reduction of cooling demand in summer (thermal refurbishment and efficient new building standards); see also section 3.2.
- In terms of promotion policy, the early phase-out of F-gases with high global warming potential (GWP), e.g. in refrigeration and air-conditioning systems, is supported by domestic environmental support.

It is ensured (e.g. by contacting business associations of refrigeration and air conditioning technology and information on novel refrigerants) that knowledge of alternative refrigerants and the work with such refrigerants is available in Austrian businesses or the persons employed there.

Objective dimension 1: Decarbonisation – renewable energy

The share of renewable energy in gross final energy consumption was 33.8 % in Austria in 2022. Since 2005, the share has increased by 9.4 % from 24.4 %.

Historically, Austria has the two main renewable sources of hydropower and biogenic fuels. These renewable energy sources account for the largest share of domestic primary energy production, with hydropower tending to decline slightly and the share of biomass increasing²⁷. Other renewable energy sources, in particular the use of flux heat by heat pumps and the extraction of primary energy from wind and photovoltaics, are also increasing to a large extent continuously and significantly.

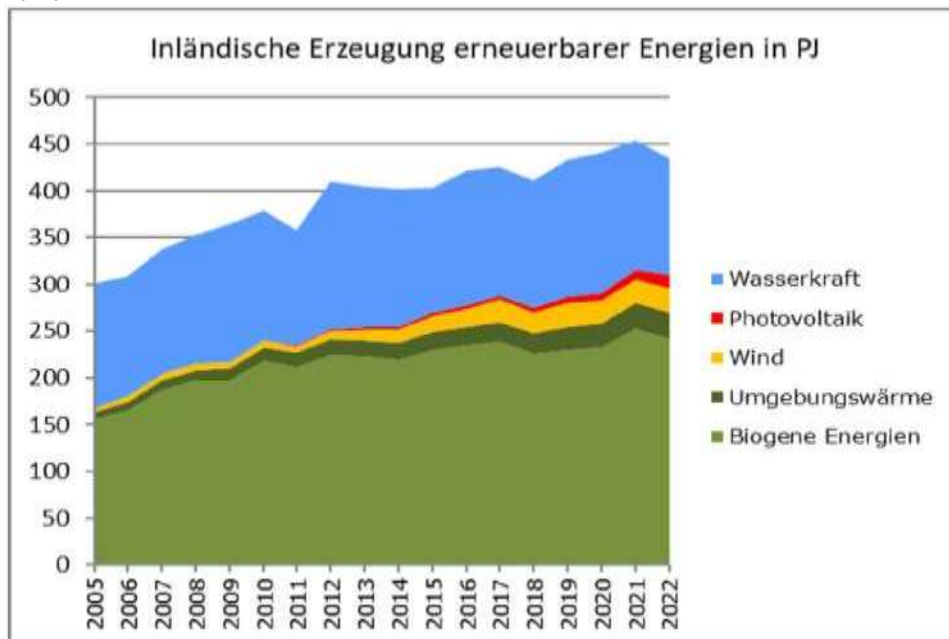
The share of electricity produced from renewable sources in total electricity consumption (calculated according to RED II) has increased significantly by just over 12 % points since 2005.

The share of eligible renewable energy in heating and cooling increased from 22.8 % to 30.6 % in 2005 and 2022, i.e. by around 8 %.

In the transport sector, the share of eligible renewable energy increased from 5.1 % to 10.1 % between 2005 and 2022.

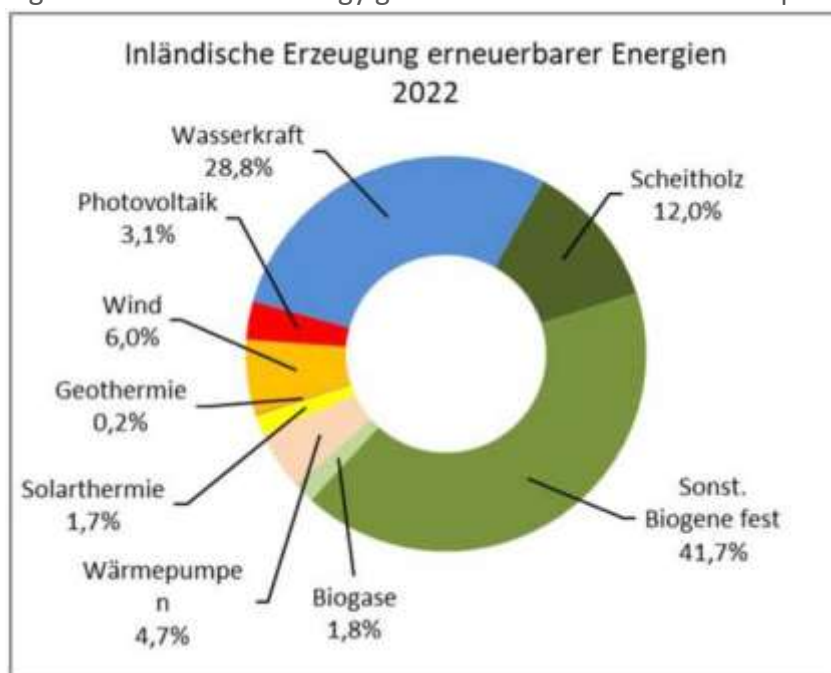
²⁷Energy in Austria. Facts, figures. 2022

Figure 4: Production structure of renewable energy in Austria 2005-2022 in Petajoules (PJ)



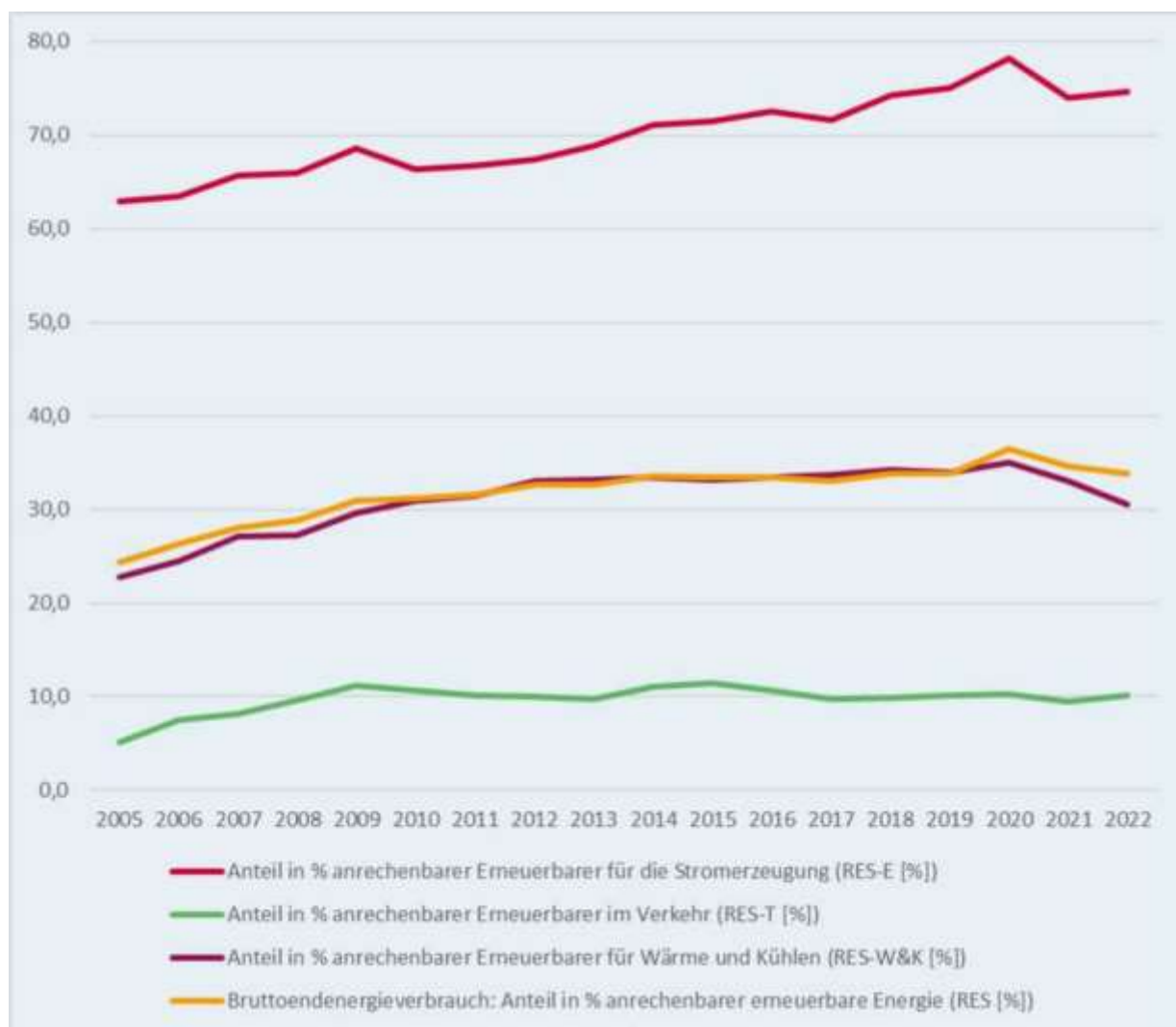
Source: Statistik Austria

Figure 5: Renewable energy generation structure 2022 as a percentage



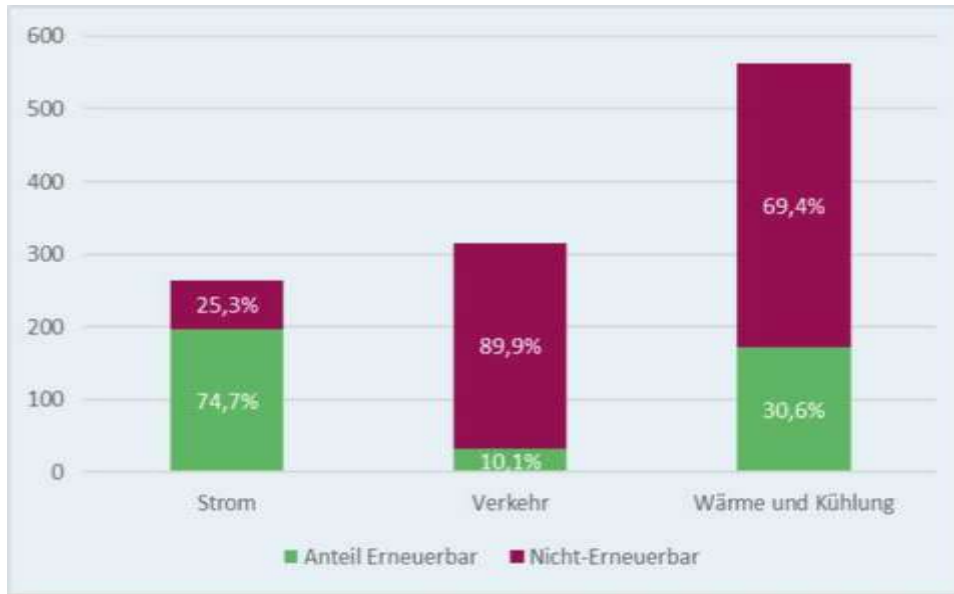
Source: Statistik Austria

Chart 6: Share of renewable energy sources in gross final energy consumption between 2005 and 2022, calculated according to Eurostat Shares Methodology in %



Source: Statistik Austria, BMK

Figure 7: Percentage of renewable energy sources per sector according to Eurostat Shares methodology and PJ, 2022



Source: Statistik Austria, BMK

Current decarbonisation policies and measures – renewable energy

To increase the production of energy from renewable sources, Austria is putting in place a number of different measures in the fields of electricity generation, renewable gases, transport and heating/cooling.

a) Electricity:

Austria has set a target of 100 % (national balance sheet) of 100 % of total electricity consumption from renewable energy sources by 2030. According to the EAEC, additional renewable electricity is to be generated compared to 202 027 TWh of electricity. The necessary impetus is mainly provided through various funding instruments, advisory programmes, measures to speed up permit granting procedures and spatial planning activities.

Illustrative overview of current measures:

- The EAEC adopted in 2021 to support installations for the production of electricity from renewable sources (solar, wind, water and biomass) through the granting of investment grants and market premiums. In total, up to EUR 1 billion per year will be allocated to the development of renewable energy. In addition, simplifications were made in the Electricity Industry and Organisations Act (EIWOG) concerning access to the network for small-scale energy production installations, uniform rules on access to the grid and transparency obligations on network capacity.
- Various support programmes of the Climate and Energy Fund (KLI.EN) for photovoltaics and domestic environmental support (UFI) for electricity generation in insularity and support for high-efficiency biomass combined heat and power plants, as well as for installations for the production of wood gas for self-consumption.

- Advisory programmes, e.g. the coordination body for renewable energy communities and energy advisory bodies at the level of the federal states, co-financing of company advisory programmes by the UFI, small hydropower advisory programme under the Climate and Energy Fund.
- At the level of the Länder, various funding is available in the field of photovoltaics, sectoral spatial plans are drawn up, regulatory regulations and ongoing improvements are implemented in permit-granting procedures.
- Self-generated and self-consumed electricity from (all) renewable energy sources is exempt from the electricity levy. There are also extensive tax advantages in relation to the construction and use of photovoltaic installations.

Further measures enabling the achievement of the 100 % renewable energy target to cover domestic electricity consumption are described in Chapter 3.

b) Renewable gases

The EAEC implemented measures to support renewable gases:

- Enable network operators to operate electrolysers to support the electricity system and sector integration in EIWOG.
- Take over the connection costs of renewable gas production facilities of network operators.
- Exemption from network charges for the extraction of gas from the gas network for the purpose of blending with hydrogen and subsequent re-feeding into the network.
- Exemption of electrolysers from all electricity-side end-users: fees and surcharges for the market uptake of decarbonised processes.
- Establishing a guarantee of origin scheme for renewable gases.
- Tax treatment of renewable gas in the field of natural gas levy. Other measures are in planning and/or implementation (see Chapter 3).

c) Transport

In the transport sector, Austria is pursuing the objective of the Renewable Energy Directive (RED II) to achieve a 14 % share of renewable energy in 2030. In addition, a variety of measures in the mobility sector are also effective in this direction.

d) Heating and cooling

In the field of heating and cooling, various support programmes of the UFI provided impetus to the increased use of renewable energy sources such as ambient and deep heating, thermal solar energy and biomass at federal and provincial level.

In 2021, the support for the Heating and Cooling Enhancement Act (WKLG) was transferred to the UFG. Therefore, the expansion of district heating and

District cooling systems with a share of between 50 % and 80 % of renewable energy sources are supported in environmental support. The support shall be conditional upon the submission of a decarbonisation plan setting out the achievement of the targets. The additional measures taken in this area from 2022 onwards are described in Chapter 3.1.2.

- e) Support for renewable energy through domestic environmental support (UFI) and the Climate and Energy Fund (KLI.EN):

The UFI funding programmes have been in place for 30 years and for 15 years of KLI.EN: CLI.EN programmes: KLI.EN aims to close the funding gap between research and broad implementation. Therefore, both innovative projects through tenders and technology sectors (e.g. storage) will be supported. In addition, societal innovations will also be financed, such as climate model regions or an energy community liaison point.

- UFI: — Continued at approximately EUR 150 million per year from 2023 to 2026, which corresponds in total to a maximum present value of approximately EUR 600 million. The UFI does not finance exclusively climate action, but in recent years around 90 % of the budget has been used for climate protection (each 50 % energy efficiency measures and renewable energy). The main target group of UFIs is establishments.

Objective dimension 2: Energy efficiency

The Energy Efficiency Directive 2012/27/EU (EED I) was transposed in Austria in 2014 by, inter alia, the Federal Energy Efficiency Act, BGBl. I No 72/2014. Austria has set itself the goal of increasing energy efficiency and not exceeding the final energy consumer of 1.050 Petajoules (PJ) in 2020. The target of 1.050 PJ was just missed. Without the restrictions of the coronavirus crisis, it is estimated that final energy consumption in 2020 would have been around 1.140 PJ. For the years 2014-2020, cumulative end-use energy savings amounting to a total of 504 PJ were reported by energy suppliers and public bodies of the Federal Government and the Länder. This overachieved the then general government target of 310 PJ.

Austria has transposed EED II, together with amendments to the heating and cooling billing setzes (HeizKG), the EIWOG and the Gaswirtschaftsgesetz 2011 (GWG 2011), in particular through a comprehensive amendment of the national Federal Energy Efficiency Act in 2023 (EEffG). The contents of the Energy Efficiency Act include:

- Final energy consumption target 920 PJ relative to a standard year by 2030.
- Cumulative end-use energy savings of 650 PJ by 2030.
- National implementation of the indicative contribution to the European Union's headline targets on energy efficiency and climate neutrality in Austria (non-EH) in 2040
- Energy efficiency measures implemented under the UFI for individuals, businesses,

associations and municipalities. This will be done by providing an additional EUR 190 million per year (from 2023) until 2030. The new EEEffG provides a framework for a swift implementation of additional measures for businesses and households and provides additional resources. The law also serves to implement EU-law requirements and savings obligations. In order to represent cumulative savings of 250 PJ, the corresponding energy and EU-law savings will be triggered by additional policy measures by 2030.

- Strategic measures (including housing, energy and environmental support from the Länder, UFI) to promote energy efficiency measures.
- Strengthening the “energy efficiency first” principle; Preparation of a federal/Länder strategy by the end of 2024.
- Strengthening innovative and energy efficient technologies.
- Establishing a level playing field and quality standards for energy services.
- Broaden the range of beneficiaries to support low-income and low-energy households; Coordinating body to tackle energy poverty.
- Regularising the catalogue of eligible energy efficiency measures from the point of view of effectiveness and limiting the eligibility of fossil fuels in order to avoid negative lock-in effects.
- Reduction of minimum disclosures and standardised reporting for energy audits and recognised management systems.
- Strengthening the role of the Federal Government by way of example, in particular by expanding the competences of energy experts.
- Establish rules for remotely readable individual meters for heating, cooling and domestic hot water (individual metering).

Objective dimension 3: Security of energy supply

Approximately 30 % of the source of primary energy sources in Austria comes from infrequent-production, which is characterised by a high share of renewable energy sources. Energy imports contribute to around 70 % of total energy production, mainly importing oil and fossil gas. In 2022, total energy imports increased by just over 22 %. In particular, imports of natural gas increased sharply (with a sharp decrease in final consumption of natural gas); electricity imports have also increased. The external dependence of Austria’s energy supply, as measured by net import volumes, increased significantly to 74.5 % in 2022. Austria consumed on average 96 terawatt-hours (TWh) of natural gas per year in 2018-2022, with natural gas consumption of around 87 TWh in 2022 and only around 76 TWh in 2023. In 2022 and 2023, around 8 % of

Austria's gas consumption was covered by domestic production²⁸. The rest is imported. In 2012, around 20 % of Austrian gas consumption was still covered by domestic production.

A large proportion of imports come from Russia. However, it is working consistently and at all levels to increase the resilience of gas supplies and to phase out Russian gas imports.

Gas storage capacity in Austria has more than doubled since the beginning of this decade, from 40.6 TWh in 2011 to 97.97 TWh currently. The favourable geological framework in Austria is essential for this positive development for competition and security of supply. This means that storage capacity is slightly higher than the annual consumption of natural gas in Austria.

While oil consumption shows a downward trend in the long term, the share of oil in gross inland consumption (currently 35.0 %) remains the highest of all energy sources. The oil purchased in 2022 came from 11 different supplier countries, with no oil imported from Russia since February 2022. Total stocks of oil and products stood at around 3.2 million tonnes at the end of 2022, of which around 76 % was accounted for by mandatory emergency reserves. At that time, the mandatory emergency reserves (PNRs) had not yet been fully replenished following the numerous PNR releases in summer 2022, due to the incident at the OMV refinery in Schwechat. The mandatory emergency reserves cover 25 % of net imports in the previous year and are slightly above the obligations of the International Energy Agency's International Energy Programme and the Directive requiring Member States to maintain minimum stocks of crude oil and/or petroleum products (Council Directive 2009/119/EC of 14 September 2009) to maintain 90 days of average net imports in the previous year.

Austria has already taken many measures in the past to increase security. Thus, the increased use of domestic renewable energy sources will accompany all measures to increase security of supply and, together with flexibility mechanisms and storage, will continue to serve as a basis for domestic energy supply in the future. For those energy sources whose demand can only be met by imports because of the lack of sufficient domestic availability, the risk of supply shortages must be spread by diversifying supply countries as widely as possible.

The already existing national legal framework or plans to ensure the security of energy supply in Austria include:

- Energy Steering Act 2012 (EnLG 2012): Steering measures to prevent an imminent threat or remedy a disruption to Austria's energy supply that has already occurred.
- Oil Stockholding Act 2012 (EBG 2012): obliges importers to maintain mandatory emergency

²⁸Source: E-Control 2023

reserves equivalent to 25 % of their net imports in the previous year;

- GWG 2011: contains, inter alia, rules on the Strategic Gas Reserve, the supply standard, the circle of protected customers, etc.
- Establishment of a risk-preparedness plan in the electricity sector, a preventive and emergency plan in the gas sector and an emergency plan in the oil sector;

Further measures to enable and support security of supply are described in Chapter 3.

Objective dimension 4: Internal energy market

Electricity market

Austria, as an energy hub in the middle of Europe, is strongly involved in international market development and is closely linked to its neighbouring countries. It is also part of the Central European Capacity Calculation Region (Capacity Calculation Region; (CCR) CORE. Capacity calculation regions are, in accordance with Article 2 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (CACM), the geographical areas in which a coordinated capacity calculation of cross-zonal electricity capacity is carried out. The CORE region consists of the borders between the borders of the following EU Member States: Austria, Belgium, Croatia, Czech Republic, France, Germany, Hungary, Luxembourg, the Netherlands, Poland, Romania, Slovakia and Slovenia. Austria is therefore an important transit country for electricity due to its central geographical situation and, in this capacity, is responsible for the reliable settlement of cross-border energy flows.

The Network Development Plan (NEP) is a legal obligation for transmission system operators. Austrian Power Grid AG (APG) prepares an annual network development plan, which is to be approved by the regulator E-Control. The NEP contains a list of investments already decided upon and projects to be implemented within the next three years. In addition, the NEP shows the network planning for the next 10 years, taking into account developments in the energy sector.

Gas market

Austria is a key player in the European gas network and is a leading gas transit country. This role is fundamentally changing due to the Russian aggression against Ukraine in February 2022. In future, Austria is expected to play an important role as an infrastructure hub and transit country in an emerging European water market. Plans for hydrogen infrastructure in Austria (hydrogen start network) are mainly based on the repurposing of existing natural gas pipelines.

These are embedded in pan-European considerations and in the development of EU ropaedic-import corridors. In the natural gas sector, Austria is divided into three market areas: East, Tyrol and Vorarlberg. However, only the eastern market area has remote control. The market areas of Tyrol and Vorarlberg are not connected with each other or with the market area of East, they receive their gas supplies via the German transmission system. The Gas Industry Act and the gas market model introduced in 2013 implemented an entry/exit system, extended the balance group system also at transmission level, and created a virtual trading point for the settlement of all gas transactions.

Coordinated network development plan

Austrian Gas Grid Management AG, as market area manager, is responsible for drawing up a KNEP every two years, in consultation with the transmission system operators (Gas Connect Austria GmbH and Trans Austria Gasleitung GmbH), which is approved by the regulatory authority E-Control.

Long-term and integrated planning (LFP)

Austrian Gas Grid Management AG, as distribution area manager, also has the task of drawing up the LFP for the Austrian distribution area every two years. This is approved by the regulatory authority E-Control Austria. The objective of the long-term planning is to ensure transport capacity in the distribution area both for the supply of end-consumers and for the transport requirements of storage companies and their customers and producers of earth and biogas.

Energy prices

In addition to supply, energy prices are of key importance for Austria's economy, as well as for households. The years from 2021 onwards were affected by price increases, in particular gas and electricity prices. This development is not limited to Austria and the European Union, but is a global phenomenon.

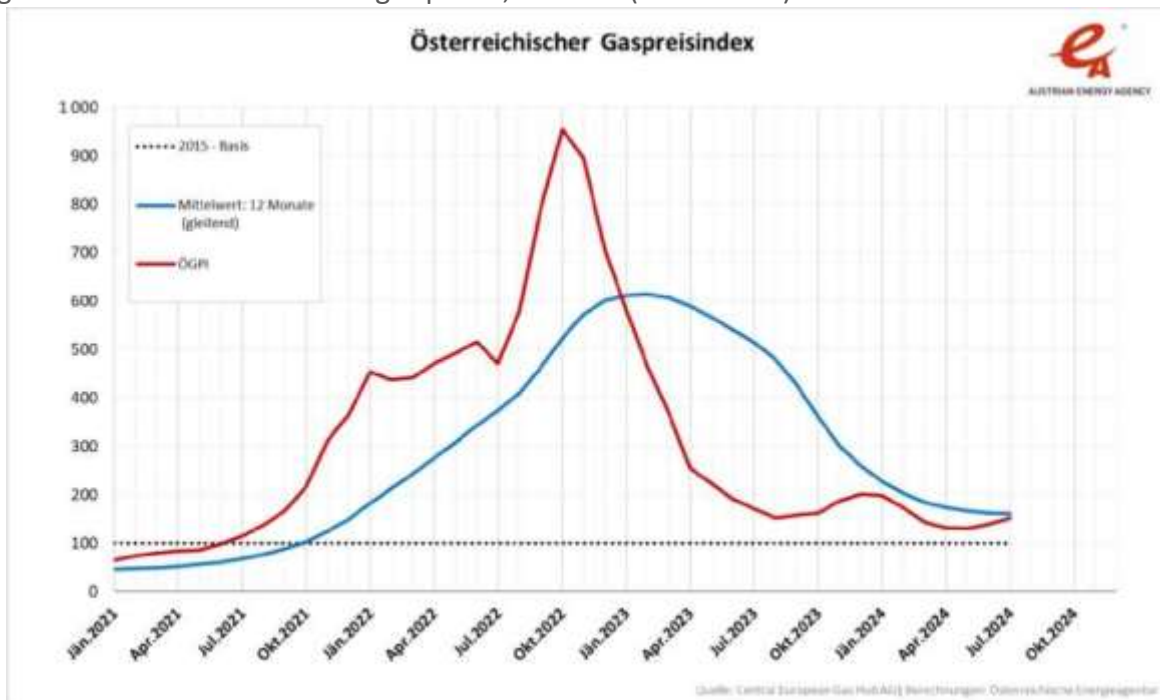
In particular, developments in wholesale electricity prices as of autumn 2021 were influenced by the economic recovery following the most difficult phase of the COVID-19 pandemic and exacerbated uncertainties in the assessment of future developments, in particular as regards the gas supply situation. The result was an exceptional price explosion on European power exchanges. If electricity prices in Austria were still around EUR 200/MWh with delivery period in 2022, before the start of the war in Ukraine, they have risen briefly to over EUR 800/MWh within a few weeks. This dramatic price was also reflected in the significantly higher electricity prices for final consumers, which the Federal Government met with comprehensive relief measures. In parallel, work has been carried out at European level to improve the common-internal market for electricity in order to speed up the development of renewable energy,

maintain security of supply and further protect households from price volatility, price spikes and market manipulation in the future. From the end of the year 2022/2023, wholesale electricity and natural gas prices decreased significantly, with the majority of household customers taking effect delayed.

Figure 8: Evolution of Austrian electricity prices, indexed (2010 = 100)



Figure 9: Evolution of Austrian gas prices, indexed (2015 = 100)



Objective dimension 5: Research, development and competitiveness

Research and technology development play a key role in global decarbonisation and are key elements of the fundamental transformation of the energy and economic system. Based on innovation successes already achieved, Austria still has great potential to develop and

implement innovative technologies and solutions richly. The following strategic objectives are in place:

- Putting energy research and innovation at the heart of addressing societal challenges (mission orientation);
- Market transfer of research results; and Push for technology development through targeted actions (impact-orientation);
- Increase the presence of Austrian research institutes and innovative companies at global level (transnational RTI collaborations);
- Establish Austria as a technology leader in energy-related fields and increase international competitiveness.

The future alignment of energy research and innovation with these guidelines is based on an inclusive perspective based on a systemic approach. The system integration of the growing abundance of existing technologies and removals in terms of overall concepts is important, as is the development and development of technologies and components. The Government-Programme enshrines a technology-open research initiative aimed at achieving technology leadership through mission-oriented R & D for specific energy challenges, as well as through large-scale testing of technologies and solutions in real driving technology, as well as stimulating development and implementation. For example, the Austrian Forest Fund implements research into the production and application of green gases and biofuels from sustainable biomass and biogenic residues. In the period 2023 to 2030, building on lessons learned, the formats will be further developed accordingly. In addition to the research focus on energy transition, more emphasis will also be placed on the mobility transition, circular economy and production, as well as on the misappropriation of climate neutral cities. The Federal Government's transformation plan will be reinforced in the area of investment through an FTI initiative on climate-neutral industry and specific transfor funding for research.

1.2.3 Key issues of cross-border relevance

Due to its geographical situation (central European landlocked country, mostly alpine), Austria has certain specific features, some of which have cross-border effects on the energy and transport systems.

Major trans-European transit routes – both north-south and west-east – pass through Austrian territory, putting strong pressure on the transport infrastructure. This has negative side effects, in particular with regard to air pollution and noise pollution. In addition, significant quantities of fuel are refuelled by cross-border transport companies in Austria and consumed for a good part in neighbouring countries. To a large extent, this effect is also due to the fact that diesel fuel is

cheaper in Austria than in most neighbouring countries. This leads to a significant increase in domestic GHG emissions, as IPCC emissions are accounted for on a domestic basis. However, fuel exports have been somewhat constrained by CO₂ pricing since October 2022 (see Chapter 3.1.1).

In the electricity sector too, Austria has close links with its neighbours. The electricity-interconnection level ('interconnectivity target') is already well above the 15 % target for 2030 (see also Chapter 2.4.1.1). In order to meet the ambitious objective of Regulation (EU) 2019/943 on the internal market for electricity (the Electricity Market Regulation), which entered into force on 5 June 2019, to make at least 70 % of the available transmission capacity available for cross-border electricity lines available for energy trading without thereby affecting the security of the system, Austria adopted an action plan to that effect, after consulting the measures sent and involving neighbouring Member States and national stakeholders. It describes in detail how the allocation of cross-zonal capacity can be increased annually to the extent that the 70 % target, as required by the Regulation, is met by 2025 at the latest. In 2024, the procurement rate for cross-border electricity already stood at 49.4 %

Tackling the current energy crisis is not only a national, but also a pan-European task. In addition to the cooperation in the European institutions, Austria is in close contact with neighbouring countries in this regard.

For more information, see point 1.2.2 Security of supply and market integration.

1.2.4 Administrative structure of implementing national energy and climate policies

Austria is a federal state. Via the federal constitution, legislative competence across the various sectors is shared between the Federal Government and the provinces. In some cases, there are also mixed competences. For example, in many areas (including energy law) there is the principle of basic federal legislation and implementation legislation in the Länder. The so-called 'indirect federal administration', in which tasks are 'delivered' by enforcement bodies of the Länder under the responsibility of the Federal Government, also ensures a strong 'federalisation' in the task structures.

Climate policy is a classic cross-cutting issue in Austria, in particular as regards the allocation of responsibilities for climate policy-making to reduce greenhouse gas emissions and to adapt to climate change. The BMK plays a central coordinating role in climate policy. In this sense, strategic processes are developed by the BMK (where appropriate together with other

ministries). The BMK also assumes responsibility for reporting on climate matters to the UNFCCC Secretariat and to the European Union.

The main responsibilities for the implementation of measures lie with federal ministries. The BMK has key responsibilities in the areas of energy, EU ETS, reverse/mobility, waste and circular economy, chemicals policy, innovation and technology. The Federal Ministry of Labour (BMK) also largely shapes the Federal Government's climate and energy-related support and incentives. The Federal Ministry of Finance (BMF) plays a key role in fiscal measures. The BMF's responsibilities in relation to climate protection relate in particular to²⁹green budgeting, measures for eco-social tax reform (including National CO₂ pricing and EU ETS 2 in cooperation with the BMK) and counterproductive incentives and support processes. The Federal Ministry of Agriculture, Forestry, Regions and Water Management (BML) plays a key role in agricultural, forestry and water management issues. The BML also has the competences for forestry, including protection against natural hazards and the associated measures. Central responsibilities also lie with the federal authorities, towns and municipalities (in particular buildings, small combustion plants, town and country planning, local land use, public transport, parking management). Some of whom share the competences of the Federal Government, but also with the Länder (e.g. waste management, parts of energy and transport policies, including public transport at city and federal state level, agriculture).

Not least as a consequence of the high diversification of competences in climate policy matters, a law on climate change was created in 2011. A revision of the Act for the period 2021 to 2030 is foreseen in the Government's programme. The aim of the KSG is to coordinate Austrian climate policy in accordance with international legal and EU law requirements. To this end, a National Climate Protection Committee has been established by law, in which, in addition to the federal ministries of competence, the nine federal states, the social partners (associations of employers and workers), the political parties represented in the Nationalrat (Parliament) and business groups and environmental NGOs are represented. The National Climate Committee meets at least once a year.

A key function of the PSG is to ensure a process to develop climate action and to set greenhouse gas emission ceilings (trajectories) in accordance with European legislation. The GHG emission ceilings for the period 2013 to 2020 were allocated to polluter sectors and laid down in the PSG. The Federal Minister responsible for climate change submits an annual report to the National Council and the National Climate Change Committee on the progress towards compliance with the emission ceilings.

²⁹ For an overview of the topics, see <https://www.bmf.at/themen/klimapolitik.html>

In the field of energy, 'Energie-Control Austria' (E-Control) was set up in 2001 to carry out regulatory tasks in the electricity and natural gas sectors and was transformed in 2011 into a public-law institution with its own legal personality (E-Control Act).

In view of the need to increase the share of renewable energy, the federal legislative framework for the energy transition has been set, both in terms of support and new market roles such as energy communities and the connection of generation facilities to and access to the grid (determinations in the ElWOG).

With regard to the approval of installations and the designation of areas, the Länder are given verbatim in the implementation of the relevant implementing laws. Any procedural acceleration and simplification of approvals and the provision of additional expansion areas for wind power and photovoltaics are mentioned here only by way of example.

In its role as national coordinator, ÖROK plays an important role in the key climate and energy issue of spatial planning. The Austrian Spatial Development Concept (ÖREK 2030), co-sponsored by the Federal Government, the Länder, 30 cities and municipalities, was developed from the perspective of the spatial impact of climate change mitigation, climate neutrality and adaptation to climate change. It contains a large number of specific orders for action which, in Austria's federal system, can only be implemented through wide cooperation between all levels of action participating in the Austrian Conference on Spatial Planning (federal government, Länder, towns, municipalities, economic and social partnership).

1.3 Consultation and involvement of national and Union bodies and their outcome

1.3.1 Involvement of the national parliament

The political parties represented in the National Council of the Austrian Parliaments are involved via the National Climate Protection Committee (KSG). In addition, political parties were involved in the public consultation on the update of the NECP between 5 July and 30 August 2023. No comments were received from the political parties.

1.3.2 Involvement of local and regional authorities

The Länder and the Association of Municipalities and Cities are involved through the National

³⁰ <https://www.oerek2030.at/>

Climate Protection Committee. In addition, the Länder and the two associations of local authorities were involved in the public consultation on the update of the NECP. A separate consultation was also carried out with the Länder in February/March 2023 (in my tandem with the federal ministries). All the Länder and the Association of Cities and Municipalities have submitted their positions.

1.3.3 Consultation of stakeholders, including social partners, and cooperation with civil society and the public

The involvement of key stakeholders and the social partners (Wirtschaftskammer, Chamber of Labour, Chamber of Agriculture, Österreichischer Gewerkschaftsbund) is followed by the National Climate Change Committee. This includes (inter alia) the interests of the economy (industry and energy) as well as environmental NGOs and academia. In addition, these institutions, as well as civil society, including academic institutions, were also involved in the public consultation on the update of the NECP. A large number of opinions have been issued, reflecting a very broad spectrum of views on all aspects of the plan.

Citizens' Climate Council

The National Council adopted Resolution 160/E XXVII. GP of 26 March 2021 asked the Federal-Government to further advance the ambitions on the path towards climate neutrality and to implement a number of measures based on the climate ambition.

These measures include the establishment of a Climate Council. According to the Resolution of the Nationalrat, the Climate Council is to be established as a “participatory process to discuss and develop concrete proposals for the necessary climate action towards climate neutrality in 2040”.

The Climate Council is a kind of ‘mini Austria’. It is made up of 100 people who have had their main residence in Austria for at least five years, are at least 16 years old and reflect the cross-section of society in terms of gender, age, position and place of residence. The selection was randomly recorded by Statistik Austria. This will ensure that participants are represented out of the shifting groups in a balanced way for the population as a whole. Citizens were encouraged by academics in various disciplines, who tended to bring the current state of research.

The members of the Climate Council have³¹ developed extensive recommendations on how to

³¹ <https://klimarat.org/dokumentation/empfehlungen/>

achieve the objective of climate neutrality by 2040. These recommendations were handed over to the Federal Government in July 2022 and fed into the update of the NECP. The BMK has responded in writing to the recommendations of the Climate Council. Climate change was taken into account but was not at the heart of the Climate Council.

1.3.4 Consultations of other Member States

Austria participated in consultations with Slovenia, Hungary, Italy, Croatia, Slovakia and the Czech Republic.

1.3.5 Iterative process with the European Commission

Austria's final first NECP was sent to the European Commission on 18. December 2019. The Commission's recommendations on the draft Austrian NECP have been largely met.

Nevertheless, in its final assessment of the Member States' plans, the Commission highlighted individual shortcomings in the Austrian plan. These concerned in particular:

- Decarbonisation – GHG emissions: Target achievement gap; lack of presentation of the use of flexibilities;
- Energy efficiency: low level of ambition; Target presented as a range; lack of information in the structure of Annex III to the Governance Regulation;
- Energy security: there are no concrete targets to diversify oil and gas supply;
- Energy subsidies. lack of list of fossil fuel subsidies; lack of measures and plans to reduce such subsidies;
- JUST Transition and Energy Poverty: lack of description of concrete measures.

In December 2022, the European Commission published guidelines for the preparation of NECPs by Member States. The recommendations contained therein have been largely taken into account in the preparation of this plan, in particular with regard to the increased target level and the energy and social challenges resulting from the current energy supply crisis.

1.4 Regional cooperation in drawing up the plan

1.4.1 Elements subject to joint or coordinated planning with other Member States

Regional cooperation with neighbouring countries

At the invitation of Slovenia, Austria participated in a regional cooperation event on 20 February 2024. In addition to Slovenia, Italy, Croatia, Hungary and the European Commission were involved. Another regional cooperation took place online with Slovakia and the Czech Republic on 26 April 2024. Cooperation with Germany was focused on the Pentalateral Energy Forum (see below).

Use of existing fora for regional cooperation

Austria is part of the Pentalateral Energy Forum (Belgium, the Netherlands, Luxembourg, Germany, France, Austria, Switzerland; Penta) for regional cooperation in Central and Western Europe to improve electricity market integration and security. Already as part of the preparation of the first NECP 2019, the PENTA Member States prepared a 'Political Declaration of the Pentalateral Energy Forum on Integrated National Energy and Climate Plans', signed by the Energy Ministers of all PENTA Member States during the Ministerial Meeting in March 2019. A dedicated body within the PENTA for long-term NECP cooperation was also set up and decided to draft a common chapter for the NECP. This was signed by the Energy Ministers at the PENTA Ministerial Meeting in June 2019. The steps taken to implement the common chapter were submitted jointly to the European Commission as part of the biennial progress reports.

To update the NECP, PENTA Member States have prepared a new common chapter (see below).

Austria also participates in two macro-regional strategies, the EU Strategy for the Danube Region (EUSDR) and the EU Strategy for the Alpine Region (EUSALP). Both strategies support the joint and coordinated development and planning of strategic

Initiatives addressing functional challenges. Climate action and climate-right transformation of the energy sector are of crucial importance in both strategies and are also suitable for the

coordination of the NECPs as cooperation platforms. For example, the EUSALP has the Green Hydrogen Initiative, which puts Alpenstaaten in a pioneering position in the production and use of this form of energy.

Under the Alpine Convention, in April 2019 the ministers of the Alpine States adopted the Alpine Climate Target System 2050 with a view to achieving climate-neutral and climate-resilient Alps. In December 2020, the Climate Action Plan 2.0 was adopted, which sets out short- and medium-term implementation pathways to achieve these targets.

Cities and urban regions are a key lever for climate and energy policy objectives, given their density and population share. The intergovernmental process at EU level of the Urban Agenda for the EU (UAEU) connects cities, municipalities, regions and Member States in thematic partnerships to develop actions and action plans.

1.4.2 Taking into account the results of regional cooperation in the NECP

Common Chapter of the Pentalateral Energy Forum

Pentalateral Energy Forum – Regional Energy Cooperation Platform

The Pentalateral Energy Forum is a voluntary regional association between Belgium, France, Germany, Luxembourg, the Netherlands, which has been in place since 2005, and with Austria since 2011. This will cover more than 40 % of the EU population and more than 50 % of electricity generation in the EU. Switzerland has been a permanent observer since 2011 and actively participates in technical work and decision-making. In close cooperation with the European Commission (on invitation), the Pentalateral Energy Forum promotes cooperation between all relevant parties to contribute to a reliable, decarbonised and efficient electricity system based on integrated and well-functioning markets. As the electricity sector plays a crucial role in decarbonising our

By 2050 at the latest, the Penta countries aim to further increase the share of renewable energy and fully decarbonise their electricity system as soon as possible and ideally by 2035.

Cooperation is led by energy policy ministers, who regularly exchange views. The follow-up of the activities will be ensured by the Penta coordinators under the guidance of the respective Directors-General of the Penta countries. The work

programme is implemented by ministries, transmission system operators (TSOs), distribution system operators (DSOs), regulators and market participants, which meet regularly in four thematic support groups. In order for each Support Group to achieve its objectives, exchanges between and within the support groups are strongly encouraged and coordinated at the level of the Penta Coordinator. Support groups also cooperate with other international fora, such as North Seas Energy Cooperation (NSEC).

With the progressive transition to a decarbonised energy system, the penta countries are increasingly intertwined. Regional cooperation is becoming increasingly important to address emerging challenges. The Pentalateral Energy Forum is well placed to address these challenges, such as security of supply, market integration, energy efficiency and decarbonisation. Over the past two decades, the Penta countries have moved from a purely national perspective to energy markets to a regional approach. The Penta countries are therefore in an ideal position to continue contributing to the energy transition in the future.

Security of supply

Security of supply has been a key issue since the establishment of the Pentalateral Energy Forum. Since then, countries have worked closely together to promote security of supply, solidarity and confidence building and to prevent, anticipate and manage electricity crises. Regional resource adequacy assessments (adequacy assessments), joint crisis exercises and a common framework for the EU Regulation 2019/941 on risk-preparedness in the electricity sector have reached important milestones.

The work on security of supply is organised in a dedicated support group divided into two main work streams: Resource adequacy assessments and risk preparedness. Further work is planned within these two areas and within different interfaces.

Resource Adequacy Assessments

To assess resource adequacy, PENTA countries work with the European Resource Adequacy Assessment (Seasonal Outlooks) carried out by ENTSO-E to improve targeting and added value for PENTA countries. Complementary sensitivity analyses, with a particular focus on the PENTA region, can be carried out by PENTA TSOs on the basis of their extensive knowledge. Regional specificities and cross-border interdependencies are taken into account. Other topics for future regional

cooperation include:

- The link between national energy system planning, the implementation of the TEN-E Regulation and the rapid transformation of the European energy system;
- The role of Demand Side Responses (DSR) and other flexible resources to ensure the security of the systems;
- Methodological improvements in resource adequacy assessments;
- The need to increase network capacity and optimise the existing network;
- Analysis of critical situations and possible countermeasures.

Risk-preparedness

In terms of risk preparedness, regional cooperation in the PENTAreion will be promoted to prevent, anticipate and manage electricity crises – in the spirit of solidarity and confidence building. In doing so, the

Requirements for a competitive internal electricity market and the operational security procedures of transmission system operators are fully taken into account. The PENTA countries shall seek effective cooperation between all relevant bodies involved in crisis management, as well as between the European, regional and national levels. In this sense, the work will focus on the implementation of the 1st. A Memorandum of Understanding on risk-preparedness in the electricity sector was signed on December 2021, in particular:

- Analysis and evaluation of regional measures, including the necessary technical, legal and financial arrangements for implementation;
- Organisation of regional exercises;
- Revise the relevant regional electricity crisis scenarios for the PENTA region in close coordination with ENTSO-E and the Commission regarding the applicable methodologies;
- Should an electricity crisis occur within the PENTA region, the agreed framework will apply.

Interface between resource adequacy assessment and risk preparedness

In addition, PENTA countries are working on the interface between resource adequacy assessments and risk preparedness. A first step was taken with the PENTA study

“Methodical Improvements in Resource Adequacy Assessment”, which looked at differences and overlaps. The PENTA Forum aims to close the existing gap between long-term analysis and short-term operational planning, technical and political decision-making, as well as between countries. In particular, it will support the further development of analytical tools and procedures for information exchange and decision-making. It closely involves ministries, transmission system operators (TSOs), distribution system operators (DSOs), regulatory authorities as well as ACER, ENTSO-E, EU DSO and regional security centres in the PENTA region (Coreso and TSCNET).

Market integration

The Pentalateral Energy Forum has decades of experience in market integration issues. In this respect, Penta has led to major changes in the energy policy landscape and has, for example, implemented important milestones, such as the introduction of flow-based market coupling first in the PENTA region and finally in a larger part of continental Europe.

Promoting future-proof market design

In recent years, PENTA’s work on market integration has expanded, both in terms of focus and the issues addressed. PENTA Ministers have put hydrogen on the national and European agendas as a key element for system and market integration. The newly created Support Group 4 (SG4) actively contributes to the development of an integrated EU hydrogen market.

The Pentalateral Energy Forum will also contribute to the integration of renewable energy and the development of a future decarbonised electricity system in which integrated markets play a key role. To this end, the two “Vision 2050” and “Flexibility” studies under Support Group 3 (SG3) for the future electricity system have been commissioned. These studies will serve as a basis for future work under PENTA.

The Vision 2050 study compares national decarbonisation scenarios and proposes building blocks for a common political vision on a future electricity system. These building blocks describe the components necessary for the efficient development of a future electricity system. This work will continue through the preparation of a political declaration setting out a common vision for the future integrated energy system.

To this end, PENTA countries recognise the need for future-proof market design and actively exchange views on possible improvements and implementation of electricity

market regulation.

At the same time, it is important to identify areas where further action is needed. Based on their past experience, PENTA countries will work together to highlight welfare gains resulting from an integrated and market-oriented approach, including on possible policy issues. The exchange of technical know-how and the organisation of projects contributing to the practical implementation of energy policy in the region will continue.

Flexibility

The Flexibility study provides additional insights into the current and future level of development of flexibilities in the region. It outlines the need for flexibility and the sources of flexibility for the years 2030/2040/2050 created by the integration of renewable energy sources. The study also shows that cooperation between countries creates significant synergies and can reduce the overall need for flexibility. The report contains important recommendations to promote flexibility across the region and possible measures to improve the flexibility of market participants. Therefore, PENTA countries will:

- exchange views on the harmonisation of non-standard products such as network congestion management (e.g. redispatching and topological measures);
- discuss how to facilitate the flexible behaviour of market participants to balance the energy system through wholesale markets and secure and stable operation of electricity networks;
- monitor the evolution of the technical requirements for additional electricity demand (e.g. heat pumps and other flexibility sources) to ensure interoperability so that additional electricity demand is truly flexible;
- work together on the implementation of the flexibility provisions in upcoming EU legislation, such as the Electricity Market Reform and the Network Code on Demand Management. Wherever possible, PENTA countries will seek to take into account the flexibility needs of regions when designing national policies.

Energy efficiency

The Pentalateral Energy Forum recognises the importance of improved energy efficiency to reduce dependence on fossil fuels and address the challenges of the energy transition. In this respect, both the importance of energy saving and the

flexibility of electricity demand are emphasised. PENTA countries exchanged views on the implementation of the electricity demand reduction commitment enshrined in EU legislation in winter 2022/2023.

PENTA countries will continue their cooperation by strengthening the active exchange of information on the implementation of the revised Energy Efficiency Directive and on best practices in the field of energy saving.

Decarbonisation

As explained above and building on the work done so far on Vision 2050, the PENTA countries continue to work on a common political vision for a decarbonised electricity system to be implemented as soon as possible and ideally by 2035. To this end, cooperation includes accelerating the deployment of renewable energy and the increased importance of flexibility towards a fully decarbonised electricity system, while maintaining security of supply. Enhanced regional cooperation will be sought in order to exploit synergies and achieve efficiency gains. The added value of such enhanced cooperation will be analysed in particular in terms of renewable energy integration, grid planning, connection of offshore to onshore facilities (in cooperation with North Seas Energy Cooperation) and wider issues with cross-border implications arising from the transition to a decarbonised electricity system.

Hydrogen

In 2020, a dedicated Hydrogen Support Group (SG4) was established, which will drive PENTA's hydrogen activities and close cooperation. SG4 focuses on regulatory and market developments regarding hydrogen deployment in PENTA countries, taking into account national, European and international frameworks. To this end, PENTA countries are exchanging and developing common positions on future market design and hydrogen deployment developments. This is done on the basis of the political declaration signed in 2020 on the role of hydrogen in decarbonising the European energy system and taking into account current developments, such as REPowerEU and the International Energy Agency's A 10-Point Plan to Reduce the European Union's Reliance on Russian Natural Gas. The SG4 focuses on developments in hydrogen certification, the emerging hydrogen infrastructure in the PENTA region, as well as the necessary steps to develop cross-border interconnectors. It also analyses progress in the implementation of the respective national hydrogen strategies, with a view to developing regulatory frameworks, support mechanisms, investments, as well as

hydrogen supply, demand and trade developments.

2 NATIONAL OBJECTIVES AND TARGETS

2.1 Objective dimension 1: Decarbonisation

2.1.1 Greenhouse gas emissions and removals

2.1.1.1 Austria's objective under the Effort Sharing Regulation

In line with the ESR³²'s target for binding annual greenhouse gas emission reductions by Member States for the period from 2021 to 2030, Austria aims to reduce its GHG emissions in non-ETS sectors by 48 % by 2030 compared to 2005. A trajectory in accordance with the ESR shall be observed for each year of the period 2021 to 2030. If Austria avails itself of the so-called ETS flexibility under Article 6 of the ESR, the target can be reduced by a maximum of 2 percentage points (applicable for each year of the target period). Under Article 5 of the ESR, Austria may make transfers of emission allocations with one or more EU Member States in order to comply with its obligations.

With a view to updating the NECP, the BMK has prepared new model-based energy and GHG emission scenarios by the Federal Environment Agency.³³ In addition to the WEM and WAM scenarios, a transition scenario has been prepared, reflecting a wide-ranging political and socio-economic transformation towards Austria's 2040 climate neutrality target. The transition scenario is not based on a political decision on the necessary measures.

Greenhouse gas emissions in the 'With Existing Measures' scenario

In 2022, Austria's GHG emissions outside the EU ETS were around 46.2 Mt_{CO₂equivalent}. The 2030 target (without taking into account ETS flexibility) is around 29.6 Mt CO₂equivalent, which means a reduction requirement of around

36 % compared to 2022. The WEM scenario (2024) shows a reduction in GHG emissions of around 40.0 Mt CO₂ equivalent by 2030, which is about a 30 % reduction compared to 2005 and represents a significant improvement compared to the WEM 2019 scenario (based on 2019 NECP), in particular due to measures implemented in the meantime. The modelling is based on macroeconomic (essentially price) and demographic assumptions, which were agreed with the European

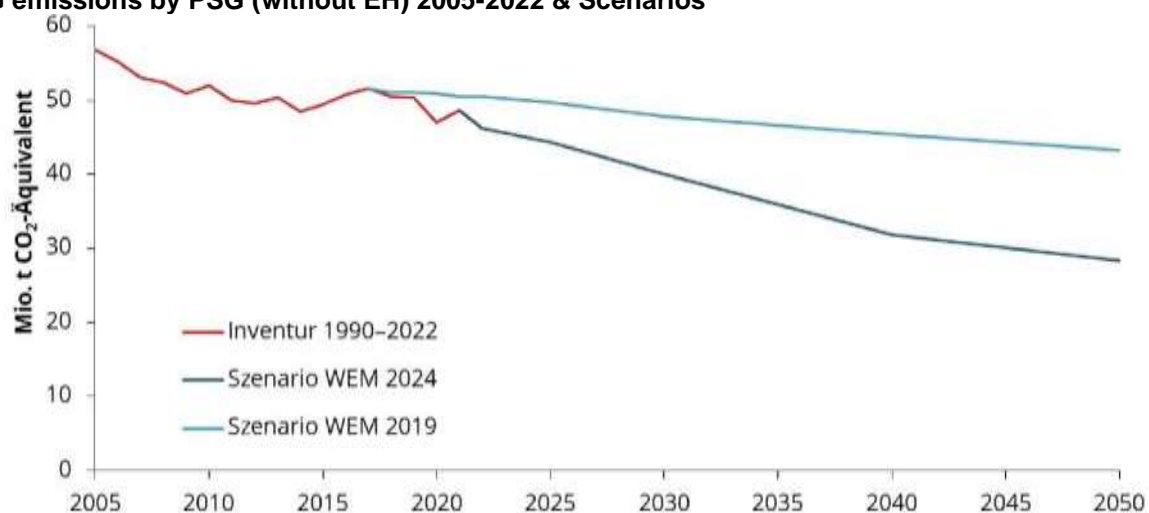
³²OJ L 111, 26.4.2023, p. 1

³³[Final report to be completed]

Commission’s recommendations in this regard and with domestic stakeholders (seeTa belle 4). The evolution of GDP from the scenarios corresponds to a pre-defined assumption in the WEM, derived from recent economic forecasts; in the WAM scenario, the variation in GDP results from the economic effects induced by the additional health insurancemeasures.

Figure 10: WEM 2024 scenario compared to WEM 2 019 in sectors outside the EU ETS

GHG emissions by PSG (without EH) 2005-2022 & Scenarios



Source: Federal Environment Agency 2024

Table 4: Macroeconomic and demographic parameters of the WEM and WAM scenarios

Scenario	Parameters	2020	2022	2030	2040
WHO/WAM	International oil price [Euro2020/boe]	37	88	88	93
WHO/WAM	International natural gas price [Euro2020/GJ]	3.1	33,2	11,3	11,3
WHO/WAM	International coal price [Euro2020/t coal]	38	74	76	81
WHO/WAM	Population [million]	8.92	9,01	9.25	9.47
WHO	Co ₂ - EU ETS price [Euro2020/t CO ₂]	24	73	80	85
WHO	Co ₂ price non-ETS [Euro2020/t CO ₂]	—	—	—	—
WAM	Co ₂ - EU ETS price [Euro2020/t CO ₂]	24	73	140	200
WAM	National CO ₂ price/EU ETS-2 [Euro2020/t CO ₂]		30	100	150

Sources: Statistik Austria 2021, main variant; EU Commission recommendations; own assumptions for the Federal Environmental Agency

BOE: Barrel oil equivalent; EUR 1 = US\$ 1.2

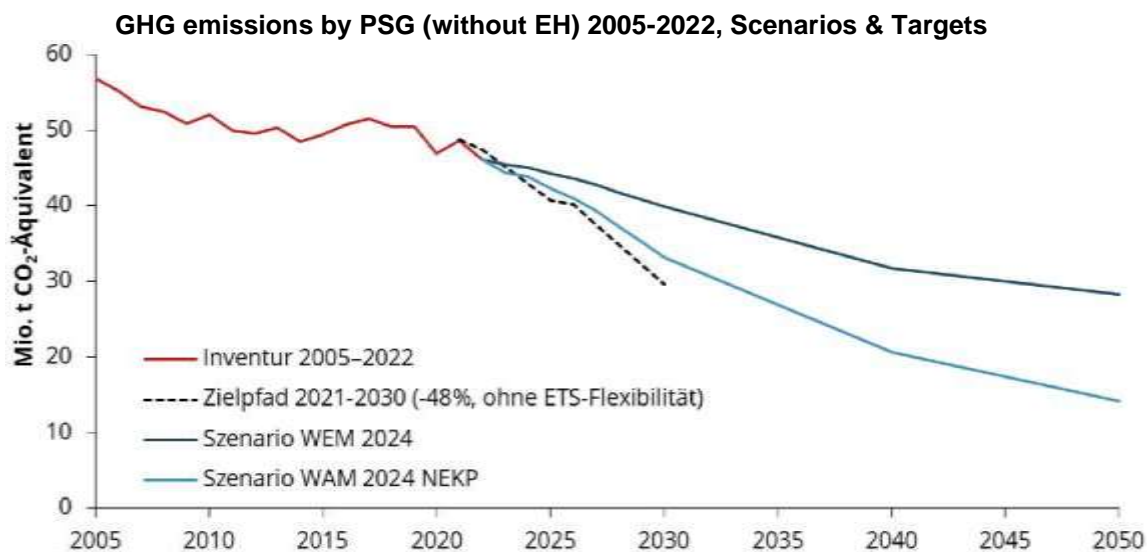
Greenhouse gas emissions in the With Additional Measures scenario

The scenario (WAM) shows the model-based impact of the measures presented in Chapter 3 on GHG emissions, energy consumption and the economy (employment and value creation). The detailed results of this scenario are presented in Section 5.

For the sectors subject to the ESR, the applied Modelle has a reduction in greenhouse gas emissions of 33.2 Mt CO₂ equivalent by 2030. This represents a 42 % reduction compared to 2005. The implementation of CCS projects and the elimination of counter-productive interferences will bring about an additional potential of 2.5 Mt CO₂ equivalent in 2030 in the ESR (equivalent to a reduction of 46 % compared to 2005).

The remaining gap of 2 percentage points to the 2030 target (-48 % compared to 2005) is to be closed by using the so-called ETS flexibility under Article 6 of the Effort Sharing Regulation.

Figure 11: Results of the WEM and WAM scenarios outside the EU ETS in relation to the 2030 ESR trajectory



Source: Federal Environment Agency 2024

Key areas of action to achieve the objectives

All sectors outside the current scope of the EU ETS will contribute to the achievement of the objectives. The reductions in the respective non-ETS sectors are to be achieved through measures in Austria, thus constituting an important step towards the 2040 climate neutrality objective.

The principles of 'emission reduction first' and 'energy efficiency first' have absolute precedence. Nevertheless, the appropriate flexibility should be allowed from the ESR if necessary.

In any event, the use of emission Allowances from other EU Member States is only necessary if national measures do not achieve sufficient effect to meet the ESR targets. It is therefore a tool for the ex-post correction of exceedances of permitted emission ceilings.

Flexibility should always be designed ex-ante as a complementary “last resort” measure, which is only used if it is necessary to bridge the time needed for national measures to achieve the desired emission reduction effect.

A significant share of GHG emissions is generated by the combustion of fossil fuels. Increasing energy efficiency and switching to renewable energy sources are therefore the main levers to reduce GHG-emissions. Consistency in GHG emission reductions, the expansion of renewable energies and increased energy efficiency is therefore essential for achieving the objectives. However, such contributions to the achievement of the objectives must also come from non-energy sectors (agriculture, forestry, waste management, F-gases).

Transport is currently the most emitting sector, accounting for around 45 % of total emissions (outside ETS). Austria’s strategic approach to achieving low-emission mobility is the principle of avoiding (not necessarily requiring transport), shifting (to efficient modes of transport) and improving (the technologies that are legislated). This is a path compatible with the objective of zero-emission mobility enshrined in the Government Programme and positioning Austria as a frontrunner in electromobility and public transport development.

There is also great potential for mitigation in the buildings sector. Thermal renovation, which provides an important economic boost to the domestic industry, the abandonment of fossil fuels in new construction and the switch to renewable energy sources and high-efficiency district heating in the building stock provide essential contributions to the GHG emission reduction.

The energy and industry sector (excluding installations in the ETS) shows a broadly stable emissions trend over the period 2005-2021. The push for energy efficiency measures and the widest possible shift towards renewable energy carriers or electricity-based processes must trigger an increase in investment (including by increasing the CO₂ price) in order to achieve a substantial reduction in GHG emissions.

In the area of agricultural production, there is also a need for sustainable emission reduction. GHG emission reductions can be achieved in particular through measures in the animal sector (fertiliser management, feeding strategies, husbandry systems), soil management (humus build-up and stabilisation/C storage, erosion control) and by halting permanent grassland, productive arable land and wetlands. In order to achieve the climate and energy targets, measures will also be needed

to increase the production and use of renewable energy (agricultural biogas plants, waste heat-supply, renewable fuels, biomass plants, engine conversion, AGRI-photovol-taik) and to increase operational energy efficiency. Successful implementation of reduction measures in practice also presupposes the continuation of awareness-raising measures (further training, information,-demonstration, advice).

In the area of spatial planning, the Federal Government, the Länder, cities and municipalities have agreed to align their objectives and principles with the fight against climate change. The Austrian Spatial Planning Plan 2030 therefore sets out, inter alia, the following targets for the area:

- Careful use of spatial resources in order to reduce fossil mobility needs through compact settlement structures, attract public transport and maintain a high absorption capacity for CO₂ soil;
- Improvements in mobility for key sectors, but also, overall, more climate-friendly transport chains and related infrastructure;
- Promote energy space planning; in particular, the release and release of suitable rooms is being addressed. This is done with a focus on the climate crisis and the ever-increasing multifunctional use of free spaces. The potential use of energy in buildings shall be taken into account;
- Soil sealing and land use must be significantly reduced in the near future and space and settlement structures must be developed in a resource-efficient, climate-friendly and resilient manner.

The constant and enormous loss of soil in Austria (currently around 11.3 ha per day – the government programme 2020-2024 keeps a trajectory to reduce land use) requires increased protection of productive arable and grassland areas through spatial planning measures, but also, as supported by the bioeconomy strategy, more efficient use of source streams, including biogenic residues from agriculture and forestry, such as regional circular models. Cross-sectoral services provided by agriculture and forestry by increasing the supply of renewable raw materials must provide an economic and environmental benefit to the sector.

In waste management and F-gases, EU legislation (e.g. F-gas regulation) and domestic measures (implementation of the circular economy package) aim to reduce GHG emissions and meet the targets.

2.1.1.2 Austria's obligations under the Land Use Regulation

Agriculture and forestry in Austria are not only an important sector in providing renewable raw

materials and renewable energy sources (and their waste products), but also the most important sector for carbon storage and thus achieving climate neutrality. In this context, forests have an important role to play in the global climate system and the long-term goals of the Paris Agreement. With the revision of the LULUCF Regulation as part of the Fit For 55 package, there is now a more-comprehensive integration of emissions and carbon storage from agriculture and forestry into the EU's 2030 climate targets. For the purposes of accounting for 2021-2025, different modalities have been laid down.

The emissions balance for the period 2005-2009 is used as a basis for the accounting of agricultural land (arable land and grassland), but also land used for other uses, such as settlement areas, infrastructure, etc.

A reference level is used for the managed forest, which is determined on the basis of forest management 2000-2009.

From 2026 onwards, a linear trajectory for Austria will be set,³⁴ leading to an increase of around 880.000 tonnes of CO₂ in the LULUCF sector by 2030 compared to 2016-2018.

If, on the basis of the respective accounting rules, there is a positive balance for the entire land use sector, credits for Austria of 250.000 tonnes of CO₂ p.a. can be taken into account for the achievement of the national Effort Sharing target if these are needed. On the other hand, if the balance is negative, this leads to an increase in the Effort sharing target.

One challenge for action in this sector is both to maintain the productive activity and to continuously develop the climate-efficient timber, in particular in the forestry sector, while respecting the basic principles of sustainable forest management and optimising the interaction between growth, use and stock in terms of GHG. Measures should also help build up a carbon pool in forests that is as stable as possible and adapted to climate change, with a focus on strengthening resilience to disturbances.

An evaluation of the framework conditions and objectives for the energy use of sustainable domestic woody biomass will be carried out. In this context, mention should be made of the cascading principle, which can make an important contribution to the resource-efficient use of wood and biomass, taking into account the potential for recovery of the respective wood types and departments. In parallel, therefore, an evaluation and improvement of the framework conditions for increasing the long-lived material use of sustainable indigenous wood resources will be proposed to

³⁴Based on the 2020 greenhouse gas inventory submitted for the preparation of the proposal for the LULUCF Regulation, a target of 5.65 Mt CO₂ for 2030 was proposed for Austria.

optimise the substitution of raw materials and materials with higher life-cycle GHG emissions. These evaluations shall be carried out in line with the LULUCF objectives.

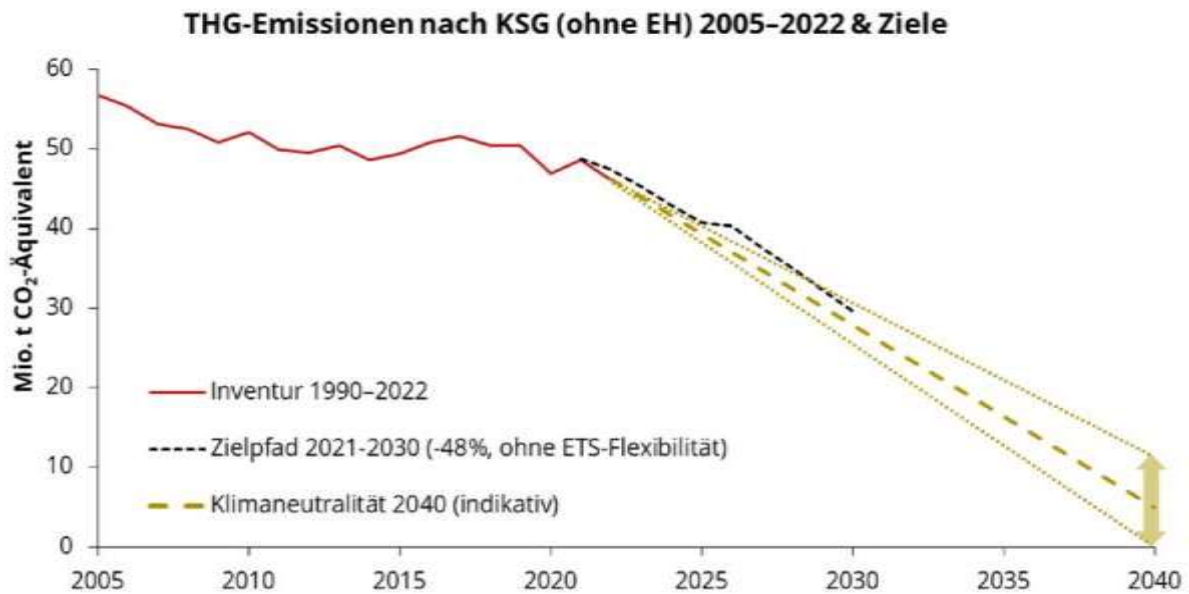
2.1.1.3 Further national targets and targets in line with the Paris Agreement and the long-term strategy, as well as in relation to any sector-specific targets and adaptation targets

Long-term climate neutrality objective

Austria aims to achieve climate neutrality by 2040. This policy objective applies to sectors outside the ETS, as the rights and obligations of stationary industrial and energy installations under Union law are taken into account in the scope of the EU ETS.

As regards the non-ETS stationary sectors, Figure 12 shows that the target of -48 % by 2030 compared to 2005 is within a target for achieving climate neutrality by 2040.

Figure 12: Evolution of GHG emissions 2005-2021 and trajectory 2021-2030 (non-ETS) and climate neutrality outlook 2040

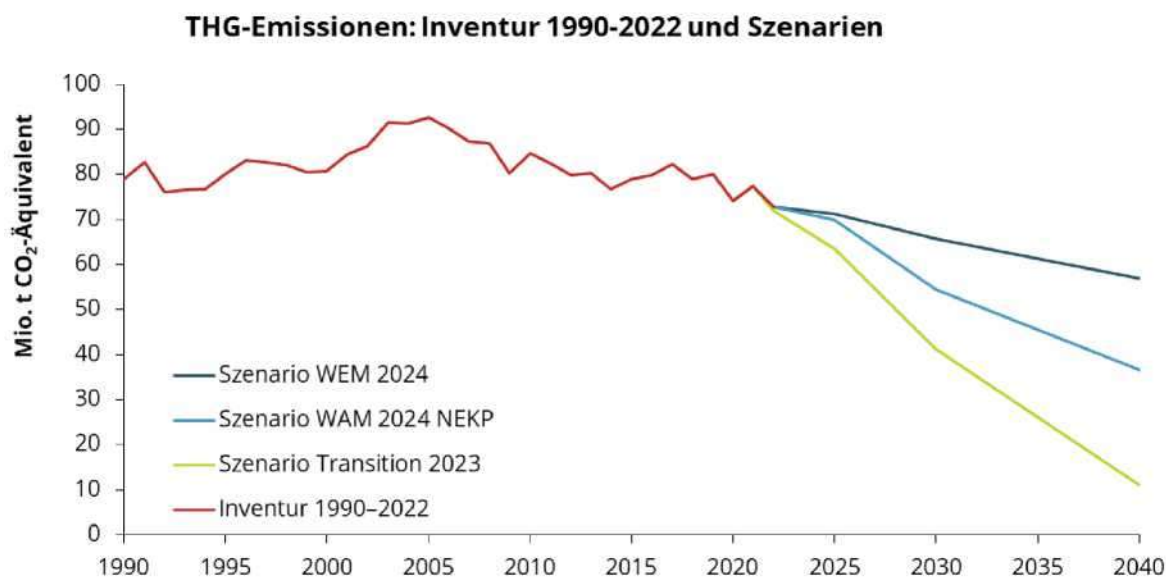


Source: Federal Environment Agency, BMK 2024

In the energy and GHG scenarios prepared by the Federal Environment Agency together with knowledgepartner institutions, a 'Transition' scenario analysed³⁵ the possibilities for achieving climate neutrality by 2040. The results suggest that even within a relatively short period of almost 20 years, it is possible to phase out the use of fossil fuels in the non-EH energy consumption sectors – in particular mobility, buildings and services – using the technologies available or expected today on the market, although significant investment will be required. Energy supply (electricity, power-connected heat) can also gradually be switched to renewable systems, if significant efforts and investments are made, inter alia, with regard to seasonal fuel technologies. The total remaining GHG emissions in 2040 are around 11 million tonnes of CO₂ equivalent (total, ETS and non-ETS) according to the outcome of the Transition scenario and decrease only marginally in the following years. The measures supported in the transition scenario are not technically correlated, but basic metrics have been coordinated with stakeholders in a project advisory board.

³⁵ <https://www.umweltbundesamt.at/fileadmin/site/publikationen/rep0880.pdf>

Figure 13: Total GHG emission trend 1990-2022 and scenario Transition to 2040 compared to WEM and WAM



Source: Federal Environment Agency 2024

Carbon storage targets

The pathway to national climate neutrality (non-ETS sectors) follows a clear priority in terms of GHG emission avoidance. All sectors must reduce their GHG emissions as much as possible. This can be achieved by reducing energy consumption, e.g. by means of efficiency measures or savings, and by switching to sustainable renewable energy sources. In addition, ecosystem resilience and carbon storage needs to be strengthened. However, these sectors are hard to abate and cannot fully avoid their GHG emissions. This concerns in particular fugitive GHG emission sources in agriculture (methane and nitrous gas), as well as point sources in industry (in particular process misuse) and waste management. The aim is to capture non-avoidable GHG emissions from point sources and permanently reused or geologically stored. GHG emissions from smaller unavoidable sources, on the other hand, would have to be compensated by negative emissions (Carbon Dioxide Removal – CDR), such as through ecosystem carbon storage or technical solutions (Negative Emission Technologies – NETs) such as other Bioenergy Carbon Capture and Storage (BECCS) in order to achieve climate neutrality on balance.

Climate neutrality strategies therefore also require concrete strategies on long-term carbon storage. Despite significant natural uncertainties, which are to a large extent linked to the direct consequences of climate change, Austria will strengthen the targets for carbon storage in natural sinks and implement them in line with the LULUCF targets for 2030. It is not possible to quantify the storage potential in natural carbon sinks by 2040 in the context of the update of the NECP, as new scenario results will not be available until the end of 2024.

In today's view, the unavoidable GHG emissions from those sectors that will be generated by the

natural processes and partly energetic must follow the path of technological capture and geological storage and/or utilisation. However, in line with the “mitigation and energy efficiency first” principle, these technologies can only be considered once all possible emission reduction and energy efficiency measures have been exhausted. In line with the provisions of the Austrian Carbon Management Strategy (CMS), this³⁶ concerns the hard to abate sectors. The residual fossil and geogenic CO₂ emissions in the Industry range from 4.4 Mt to 12.1 Mt CO₂ equivalent per year in 2040 according to the CMS. These CO₂ emissions from large industrial point sources must be either permanently geologically stored or used for permanent CCU applications to achieve climate neutrality, or be demonstrably compensated by technical or natural sinks. In addition, under common scenarios, 1-2 Mt of CO₂ emissions from the burning of sustainable biomass could occur annually in 2040 in the hard to abate sector. There is a potential for negative emissions if these CO₂ quantities of biogenic origin are removed from the flue gas stream, transported and geologically stored or used on a permanent basis. Interactions between biomass use and natural sink performance (LUCF sector) should also be considered in the spirit of a comprehensive GHG balance.

The legal framework to be established as a result of the lifting of the geological CO₂ storage ban is based on the conditional hard to abate definitions laid down in the Austrian Carbon Management Strategy and its derived scope for CCUS activities and for greenhouse gas offsetting by natural and technical sinks.

In the field of ‘Industry’, the Scientific Advisory Board on Austria’s CMS used the following definition of ‘hard to abate’:

‘The amount of CO₂ generated by the process shall be considered unavoidable in so far as its removal cannot be avoided despite the optimisation of the production process or product. Those quantities of CO₂ shall be considered unavoidable as part of the transformation to a climate-neutral commodity industry where no alternative processes and alternative products or resources are available for the same use case or where their potential is limited.’;

Conditionality arises in particular from the time-changing availability of substitutes and alternatives:

“The availability of alternative options is changing over time and will be scaled up through continuous R & D, as well as societal development, so that nowadays CO₂ emissions considered unavoidable may be avoidable in the future in a more developed environment.”

Sectors and processes for which GHG emissions cannot be prevented in the medium to long term in

³⁶Austrian Carbon Management Strategy (CMS), published at:
<https://www.bundeskanzleramt.gv.at/medien/ministerraete/ministerraete-seit-dezember-2021/103a-mr-26-jun.html>

accordance with the definitions set out above are considered to be suitable in principle for CCUS or CDR. In the 'Industry' sector, this includes, in particular, the process in the sectors of stone and earth, glass (including cement, lime) and the metallurgical industry and, in addition, some remaining energy emissions from refinery plants and waste incineration. Technical CDR is considered useful, for example, in the case of biogenic thermal power plants and in the paper and pulp industry. In particular, non-energy emissions from agriculture, waste management (without incineration) and F-gases are considered as 'hard to abate'. These emissions are to be offset by natural or technical CDRs.

Key objectives for adaptation to climate change

The Paris Agreement puts adaptation on an equal footing with climate change mitigation. Austria has been pursuing this two-pillar principle approach in climate policy for years and was among the first EU countries to link a strategic approach to climate change adaptation with a comprehensive action plan for implementation.

Unlike climate change mitigation, where there is a clear GHG emission reduction target, a long-term target for adaptation to the consequences of climate change is not numerically measurable and can only be defined: to reduce the vulnerability of natural, social and economic systems, to maintain or increase their adaptability and to make the most of new opportunities that could arise. These basic principles are enshrined in the Austrian Strategy for Adaptation to Climate Change, which has been providing strategic guidance since 2012 as a federal framework for further guidance. Adaptation measures must not have social and environmental disadvantages, but should minimise the risks to democracy, health, security and social justice. The strategy sets out recommendations for action in the various fields of activity that have been developed as part of large-scale participation processes. In line with the precautionary principle, it provides a basis for decision-making for anticipatory action in all relevant planning and decision-making processes with regard to future climate impacts and promotes successful implementation. Good adaptation practice also shows that it is guided by the principles of sustainability.

In line with the requirements of the 2021 EU Adaptation Strategy, emphasis will be placed on the importance of the systemic nature of adaptation measures. The aim is to integrate and mainstream adaptation aspects at all policy levels and in all relevant areas.

In this sense, it must be ensured, in principle, that all projects decided upon do not only meet the requirements of the current framework conditions, but also take account of the conditions in the future, which will change significantly at different levels as a result of the consequences of the change. This also applies to strategic targets and plans such as the present NECPs (mainstreaming).

The action plan of the Austrian strategy on adaptation to climate change contains detailed

recommendations for action in 14 areas of action, which also play a significant role in the successful implementation of the NECP:

- Agriculture;
- Forestry;
- Water management and management;
- Tourism;
- Energy – focus on electricity;
- Construction and housing;
- Protection against natural hazards;
- Disaster management;
- Health;
- Ecosystems/biodiversity;
- Transport infrastructure and selected mobility aspects;
- Spatial planning;
- Economy/industry/trade;
- City – urban open and green spaces.

2.1.2 Renewable energy

2.1.2.1 Austria's share of renewable energy by 2030 and indicative target trajectory from 2021 to 2030

In 2020, the share of renewable energy was 36.5 %, which made it possible to achieve significantly the then EU target of at least 34 % of the climate and energy package. In 2021, the share of renewable energy sources was 34.6 % and 33.8 % in 2022 (only certified biomass (> 20 MWth) and biogas (> 2 MWth) plants have been counted since then due to a change in RED II calculation method). As a result of the amendment of the Renewed CED and the increase of the overall EU-wide target to 42.5 % (+ 2.5 percentage points voluntary) share of renewable energy in gross final energy consumption, it will be necessary for Austria to increase the national target from 46-50 % (NECP 2019) to at least 57 % by 2030 in order to act in line with the new European targets. In the WAM scenario, Austria has a share of renewable energy in gross final energy consumption of 56.8 % in 2030. The measure 'Removal of counterproductive foulings' also reduces fossil energy consumption, so an increase in the share of renewable energy sources in the target area is expected to reach at least 57 %.

Table 5: Indicative trajectory for renewable energy, NECP 2019, new NECP and With Additional Measures scenario (2024)

Present number Situation	Indicative target trajectory					Objective
	2020	2022	2022	2025	2027	2030
(Share of renewable energy in gross final energy consumption)						
Target for AT: 2 020 min. 34 %			at least 18 % Improvement 2020-2030	at least 43 % Improvement 2020-2030		at least 65 % improvement 2020-2030
NECP 2019 (EU target 32 %)	36.5 %	33.837 %	36.2 – 36.9 %	39,2 – 40.9 %	41.8 – 44.4 %	46-50 %
NECP new, compliant with (EU target 42.5 %)	36.5 %	33.8 %		38.1 %	43.9 %	49.0 %
WAM 2024	33.8 %		40.6 %		46.0 %	56.8 %

2.1.2.2 Estimated trajectories for the sector-specific share of renewable energy in gross final consumption of energy in the period 2021-2030 in the electricity, heating and cooling and transport sectors

a) Electricity

Austria has set itself the target of 100 % (national balance-sheet) of total electricity consumption from renewable energy sources domestically by 2030. This objective is enshrined in the EAEC. In the WAM scenario, Austria's total electricity demand in 2030 is:

89 TWh. As a result of the switch to more efficient technologies and the increased use of hydrogen, electricity needs to be increased by 2030 compared to previous scenarios. Overall, the 2030 WAM scenario generates 91 TWh of renewable electricity by further mobilising the realisable potential. As a result, the target of 100 % national electricity demand from renewable sources by 2030 will be met. In 2020, the 56 TWh of electricity generated from renewable sources³⁷. The WAM scenario thus generates an additional 35 TWh of renewable electricity compared to 2020 (current EAG trajectory + 27 TWh). The addition is divided as follows: 17 TWh of photovoltaics, 12 TWh wind, 5 TWh hydropower and 1 TWh biomass. Full achievement of the objectives is achievable on the basis of the measures depicted in the WAM scenario. The feasible potential for the additional generation of

³⁷Calculation based on revised RED II calculation method. Only more certified installations for biomass (> 20 MWth) or biogas (> 2 MWth) are counted.

³⁸Statistik Austria, calculation EUROSTAT SHARES methodology

electricity from renewable energy sources is approximately 32 to 46 TWh by 2030, according to the Federal Environment Agency for the Austrian Integrated Network Infrastructure Plan (ÖNIP).

Table 6: Renewable electricity generation under the WAM scenario (2024)

	Renewable electricity generation 2020	Renewable electricity generation 2030 [WAM]	Electricity demand 2030 [WAM]	Quantitative effects 2030 increase compared to 2020
EAEC objective: 100 % from renewable Energy sources	56 TWh	91 TWh	89 TWh	+ 35 TWh

Electricity exchanges in the European single market will continue to play an important role. Austria's objective is therefore to achieve a balanced balance of imported and exported electricity and to meet the demand from renewable energy domestically.

b) Renewable gases

According to the government proposal for the Renewable Gas Act, the sale of renewable gas on the Austrian gas market is to be increased to 9.75 % or at least 7.5 TWh by 2030. This will be ensured by introducing an annual renewable gas quota for gas suppliers. The trajectory for the period from 2031 to 2040 shall be set by regulation, with the level of the quota to be set so that from 1 January 2035 onwards, at least 15 TWh of the volumes of gas sold to final consumers are covered each year by renewable gases.

The quota model increases the share of domestically produced new gases, thus reducing import dependency and increasing security of supply. As such, the Renewable Gas Act makes an important contribution to the decarbonisation of the gas market.

To support the development of a targeted and sustainable hydrogen market in Austria, the Austrian Hydrogen Strategy (BMK & BMAW) set a target of at least 1 gigawatt of electrolysis capacity to produce renewable blue hydrogen by 2030. Hydrogen will make an important contribution to decarbonisation, security of supply and reducing dependence on fossil energy imports in the future. Priority and efficient use is essential. According to Austria's hydrogen strategy, hydrogen will play an important role mainly for selected applications in industry (e.g. in the iron and steel industry or in the chemical industry) and in certain areas of mobility (especially in the heavy economy), where electrification alone will not be sufficient. According to the Hydrogen Strategy, Austria should be able to replace at least 80 % of fossil-based hydrogen consumption in energy-intensive industry by 2030 with climate-neutral hydrogen.

Similarly, a targeted hydrogen-compatible and proportional infrastructure will be developed. In particular, the existing gas infrastructure will be converted into dedicated hydrogen infrastructure.

c) Transport

RED II sets a minimum target of 14 % renewable energy by 2030. RED III now also offers the opportunity to set an energy target of 29 % for the year.

Set an optional greenhouse gas reduction target of 14.5 % by 2030 for fuel converters. Austria has already set a GHG reduction target of 13 % in 2030 at the beginning of 2023, with the contribution of electricity for e-mobility and renewable fuels of non-biological origin such as water and e-fuels to be counted four times. This 13 % GHG target ensured the achievement of the RED II target for a new 14 % share based on energy content.

Work is currently under way to implement RED III, which will in any case lead to an increase in the existing targets in the 2012 Fuel Regulation.

d) Heating and cooling

With the objective of climate neutrality by 2040 (non-EH sectors), the Federal Government has committed itself to the gradual decarbonisation of heat supply. This means that renewable forms of energy and quality-assured district heating will be used to supply thermal energy to buildings by 2040.

In order to avoid the installation of other fossil-fuelled heating systems, connections for oil and coal in new construction have been prohibited since 2020³⁹. The Federal Act on Renewable Heat Provision in New Buildings (EWG) extended the ban on the installation of new buildings to all fossil heating systems. Connection to district heating in new construction is only permitted if it meets the criteria of quality-assured district heating. This means, inter alia, that it is either subject to the official rules laid down in the 1992 Price Law or to a fixed price adjustment scheme and is derived from at least 80 % of energy from renewable energy sources, heat from high-efficiency cogeneration plants, waste heat or a combination thereof. If the 80 % share is not yet reached, a decarbonisation plan shall be provided to ensure that it is achieved by 2035.

A shift from existing fossil heating systems to climate-friendly systems will be achieved by means of appropriately developed and optimised incentive instruments. For this purpose, the relevant federal funding is adapted in terms of content and designed with an improved incentive effect and extended

³⁹Ban completely applies to solid and liquid fossil fuels in new construction; the installation of natural gas heating systems is still possible subject to conditions in most Länder (alternative testing, combination with solar systems).

in budgetary terms to the extent necessary. Additional funding will be made available for low-income households, so that the transition to heating becomes affordable and thus implemented in cash. The aim is to encourage a shift to climate-friendly space heating or hot water. Consequently, as a replacement system, remote metering systems can be connected if they are 'quality guaranteed' (see above).

EU objective:

- Red III – Mandate: on average + 0.8 % points per year 2021-2025, + 1.1 % points per year 2026-2030; in addition, national indicative top-ups (for AT: 1.0 % points 2021-2025; 0.7 % points 2026-2030). It also sets a national target for 2030 to determine the share of renewable energy in final energy consumption in buildings, in line with the EU-wide target of at least 49 % by 2030;
- Current 2021: 35.5 % of renewables in heating and cooling in Austria;
- Minimum energy performance requirements for new buildings and existing buildings under the recast of the EU EPBD;
- Mandatory installation of suitable solar energy equipment under the EPBD recast.

Although renewable energy is already very important, the heat market still depends heavily on imported fossil fuels.

To reduce this dependency, biomass, solar thermal and ambient heat (including geothermal) will be further developed by 2030, both as in-building heating and as district heating. In addition, the existing contribution from thermal waste recovery, industrial waste heat and waste heat from renewable-fired combined heat and power plants (CHP) is to be maintained or promoted. The details will be set out in a National Heating Strategy in liaison with the regions and in consultation with numerous other stakeholders.

WAM trajectory:

The sector-specific expansion of renewable energy is not a separate trajectory, but shows the model-based development path based on the assumptions made in the WAM scenario.

Table 7: Sectorial shares of energy from renewable sources measured in gross final energy consumption (model-based development paths under WAM scenario)

Estimated share of renewable energy in gross final energy consumption per sector

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Electricity	78 %	74 %	75 %	78 %	81 %	84 %	89 %	92 %	97 %	99 %	103 %
Heat/cooling	34.8 %	33.0 %	30.6 %	36.6 %	37.4 %	39.6 %	41.6 %	44.5 %	47.0 %	50.3 %	53.7 %
Transport⁴⁰	9.3 %	9.5 %	10.1 %	13.5 %	16.2 %	18.4 %	21.5 %	25.0 %	31.4 %	36.7 %	43.1 %
Total energy consumption	36.4 %	34.6 %	33.8 %	37.0 %	38.5 %	40.6 %	43.1 %	46.0 %	49.6 %	52.9 %	56.8 %

Source: Federal Environment Agency 2024

The shares are calculated without the effect of the measure 'Removal of counterproductive-förderungen'.

2.1.2.3 Expected trajectories by renewable energy technologies that the Member State intends to use to achieve the overall and sectorial trajectories in the renewable energy sector from 2021 to 2030, indicating the expected total gross final energy consumption per technology and sector in Mtoe and the total planned installed capacity (disaggregated by new capacity and repowering) per technology and sector in MW

The technology-specific expansion of renewable energies is not a separate trajectory, but shows the model-based development path based on the assumptions made in the WAM scenario.

Table 8: Expected trajectories by renewable energy technologies (according to WAM scenario)

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Technology	in terawatt hours (TWh)									
Solid biomass (including biogenic waste and alkalis and district heating)	57	55	55	57	59	60	62	63	65	66
Biomass liquid	5	5	6	6	6	6	6	8	8	9
Ambient heat including geothermal energy	7	8	5	6	7	8	9	10	13	15
Hydropower	39	35	41	42	43	45	45	47	47	47
Wind	7	7	9	11	12	13	14	16	17	19
Photovoltaics	3	4	5	6	8	10	12	15	17	19

⁴⁰Taking into account permissible multipliers under Article 27 of (RED III)

Electricity from biomass	4	5	5	5	5	5	5	6	6	6
Geothermal current	0	0	0	0	0	0	0	0	0	0
Hydrogen	0	0	0	0	0	0	0	1	2	2
Biomethane/synth. Methane/biogas	2	2	2	1	1	1	2	3	4	5
Conversion input Electricity for _{H2}	0	0	0	0	0	0	-1	-2	-3	-5
Total	121	124	128	134	141	148	155	163	170	178

Source: Federal Environment Agency 2024

2.1.2.4 Expected trajectories for bioenergy demand (disaggregated by heat, electricity and transport) and bioenergy supply (by raw materials and origin, domestic production/imports)

Table 9: Expected trajectories of bioenergy demand (according to WAM scenario)

Biomass demand	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
in terawatt hours (TWh)										
Heat	38	37	35	34	35	36	37	38	39	39
Electricity	23	23	25	27	28	28	29	30	31	32
Transport	5	5	6	6	6	6	6	8	8	9

Source: Federal Environment Agency 2024

A differentiation between raw materials and sources of supply cannot be made due to the lack of available results from the WAM scenario.

2.1.2.5 Other national development paths and objectives, where available

No further development paths and targets are currently available.

2.2 Objective dimension 2: Energy efficiency

2.2.1 Austria's indicative national contribution to the EU energy efficiency target, including an indicative trajectory 2021-2030, cumulative savings 2021-2030 pursuant to Directive 2012/27/EU as amended by Directive (EU) 2018/2002, hereinafter EED II and Directive (EU) 2023/1791, hereinafter EED III

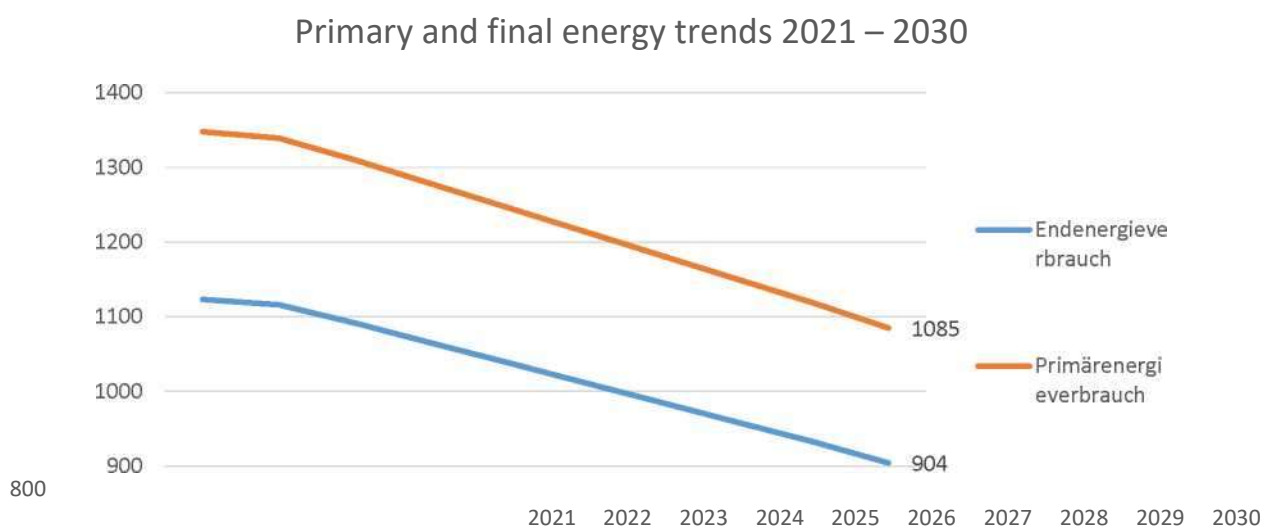
Energy efficiency measures are among the most economically advantageous ways of avoiding greenhouse gas emissions and are also at the forefront of energy efficiency first as the guiding principle of the Energy Union. Attention should be paid to the sometimes long business payback periods, which may make it more difficult to implement energy efficiency measures. Key measures, such as switching to electricity raw mobility and increasing the rate of renovation, are associated with energy efficiency gains without loss of wealth (for e-mobility by a factor of 3).

While the current WAM scenario shows efficiency gains compared to the WEM scenario, particularly in the longer term, in the transport and buildings sectors, the measures and assumptions submitted do not yet achieve sufficient reductions in energy consumption by 2030.

In order to support the energy transition and associated national, Union-wide and global climate protection, the EEEffG (Federal Energy Efficiency Act, BGBl. I No 72/2014, as last amended by BGBl. I No 59/2023) sets out an essential contribution to achieving national climate neutrality by 2040. Energy efficiency shall be improved in such a way that a linear trajectory is met by calendar year 2030, starting from the initial figure in calendar year 2021, corresponding to the average final energy consumption of the calendar years 2017, 2018 and 2019, and does not exceed the target value of 920 petajoules related to a standard year in the calendar year 2030. In particular, the legislative package provides for an absolute energy value and a cumulative end-use energy savings obligation for the period from 1 January 2021 to 31. December 2030. The aim is to achieve end-use energy savings and, as a result, to reduce energy consumption. Under the Fit for 55 package, the EED's recast was negotiated. The final version now includes a new 2030 energy efficiency target of 11.7 % compared to the 2020 Reference Scenario projections. On the basis of new bases of 'EED III', a purely mathematical target is obtained by:

In 2 030.894 PJ for final energy consumption and 1 073 PJ for primary energy consumption, - using a factor of 1.2. As the ambitions of the EU Member States are not sufficient to meet the binding Union headline target for final energy consumption in 2030, a corrected contribution for final energy consumption for 2030 was submitted by the European Commission to the Member States on 6 March 2024. For Austria, the updated value for final energy consumption is 904 PJ. This value should therefore be taken into account in a future national implementation of EED III.

Figure 14: Indicative trajectory for primary and final energy consumption, PJ in accordance with EED III



Source: BMK 2024

Figure 14 shows the primary and final energy cycle from 2021 to 2030 in accordance with EED III in absolute terms, this corresponds to a primary energy consumption of 1.085 PJ and a final energy consumption of 904 PJ in 2030. Primary energy consumption was calculated by a factor of 1.2.

Figure 15: Cumulative savings 2021-2030 pursuant to Article 7 of Directive 2012/27/EU as amended by Directive (EU) 2018/2002



Source: BMK 2024

Figure 15 shows the cumulative savings from 2021 to 2030 under EED II. The calculation shall be based on the average annual final energy consumption over the most recent three-year period prior to 1 January 2019 of 1.131 PJ. Austria has set a national target of 650 PJ in the EEffG. This objective is achieved through strategic measures under Article 7b of the EED II. As measures start in very different years, there are different new savings per annum. The minimum average savings over the period are 1.05 %.

Article 7 of the EED II is implemented through strategic measures (Article 7b). Proportions for achieving the objectives were set during the national legislative process.

With the future national implementation of EED III, the savings target must be set at at least 717 PJ.

The average over the most recent three-year period prior to 1 January 2019 shall be 1 131 PJ. The calculation is based on the final energy balance of Statistik Austria.

Table 10: Final energy consumption 2016-2018

Year	2016	2017	2018	Ø
Final energy consumption PJ	1126,02	1141,83	1125,98	1131,28

The annual specific saving rate under Article 8(10) of the EED III depends in principle on national implementation. In relation to the required savings in 2024 – 2030, i.e. at least 472 PJ, this will have to be at least 1.49 % per annum.

2.2.2 Indicative milestones (2030, 2040 and 2050) under the long-term renovation strategy, including savings and area to be renovated

In accordance with Article 2a(2) of the EPBD, each Member State is to establish in its long-term renovation strategy a roadmap with measures and domestically defined measurable progress indicators with a view to achieving the Union’s long-term energy and climate objectives, ensuring a highly energy efficient and decarbonised national building stock and facilitating the cost-effective transformation of existing buildings into nearly zero-energy buildings. The roadmap shall set out indicative steps for 2030, 2040 and 2050, as well as a description of how they contribute to achieving the Union’s energy efficiency targets set out in the EED.

In accordance with Article 46(1) of the Regulation on the Governance of the Energy Union and Climate Action, the renovation strategy drawn up in the field of competence of the Länder was transmitted to the European Commission. The long-term renovation strategy of the Länder comprises the milestones shown in Table 11 and Figure 16 and indicators.

Table 11: LTRS milestones in the buildings sector (in kt of GHG emissions)

	MIN	Mean	MAX
	kt CO ₂ equivalent		
2030	6.000	5.600	5.200
2040	4.700	3.900	3.500
2050	3.700	2.600	1.900
TO BE ACHIEVED BY 2050		2.600	

Source: OIB LTRS April 2020

Figure 16: GHG milestones (in 1 000 tonnes = kt CO₂equivalent) in accordance with OIB LTRS April 2020; Changes for coal, heating oil, district heating, heat pump, electricity, biomass and solar heat and natural gas as a residual value for the development of the energy mix expected by the Länder



Source: OIB LTRS April 2020

2.2.3 Other national contributions (long-term, sectoral) where applicable

Under Article 4(4) of the Governance Regulation, read in conjunction with Article 5(6) of the EED, the conditioned gross floor area of central government buildings that do not meet the minimum overall efficiency requirements or the required annual energy savings for the period 2021-2030 are to be declared. When calculating the energy savings target, account shall be taken of the fact that the energy savings targeted by energy efficiency measures must correspond to a renovation rate of 3 % of the conditioned gross base areas.

These values were collected for the 2014-2020 commitment period at the time and updated for the new 2021-2030 period. At the end of 2020, a gross base area of 765.125 m² of central government was collected and covered by the savings obligation. The derived energy saving amounts to around 108 GWh for the period from 2021 to 2030.⁴¹

In accordance with Article 5(5) of the EED III, the total final energy consumption of all public assets of the Federal Government, the Länder and the cities with more than 50000 inhabitants in the 2021 base year was initially estimated or collected:

Table 12: The total final energy consumption of all public bodies of the Federal Government, the Länder and the cities with more than 50000 inhabitants in the 2021 base year in accordance with Article 5(5) of the EED III

	Federal Government	Federal states	Cities	Total	Total
Sector	MWh	MWh	MWh	MWh	GWh
Energy consumption buildings: Administration, schools, etc.	913.501,00	2.715.959,26	517.579,62	4.147.039,88	4.147,04
Energy consumption processes: Street lighting, water supply, waste area		173.326,35	127.259,79	300.586,14	300,59
Energy consumption of vehicle fleet	120.533,56	156.903,87	99.094,92	376.532,35	376,53

⁴¹Note: Due to the expanded definition of 'public body' in EED III, the energy savings target derived from the 3 % renovation rate of buildings owned by public bodies was re-established for the Federal Government for the period 2025 to 2030. Länder, towns and municipalities, which have also opted for the alternative approach, also carried out surveys or estimates thereof (Article 6 of the EED III). Additional surveys are currently ongoing for the general end-use energy savings obligation of public sector bodies in Article 5 of the EED III (1.9 %).

Total		1.034.034,56	3.046.189,48	734.934,32	4.824.158,36	4.824,16
Annual reduction:	1.9 %:	91.65 GWh				

The overall annual reduction of 1.9 % of total final consumption of all public bodies is thus estimated at 91.65 GWh.

The following measures to reduce total final energy consumption are planned by public bodies:

- Thermal renovations;
- Area reduction (including through sale);
- Optimisation of domestic engineering;
- Reduction of room temperatures;
- Retrofitting to LED bulbs;
- Energy management (including measures to change behaviour in the use of buildings);
- Monitoring of energy consumption
- Training of building occupants on energy-efficient behaviour and resource conscious use;
- Vehicle fleet: gradual switch to e-vehicles

2.3 Objective dimension 3: Security of energy supply

2.3.1 National objectives with regard to diversifying energy sources and supply from third countries in order to increase the resilience of regional and national energy systems

In order to maintain the high level of security of supply in Austria, current import dependencies – in particular dependence on Russian gas – will be exchanged through trust-based partnerships. Security of supply can only be ensured by not turning into new risky dependencies. This also requires more resilient supply chains and secure availability of raw materials, qualified personnel and technical components.

The Federal Government therefore pursues the following objectives:

- Diversification of gas import routes to Austria/development of alternative sources of

supply implemented in the Gas Diversification Act 2022 (GDG 2022);

- Building resilient supply chains for energy imports;
- strategic evolution/adaptation of national electricity, gas and hydrogen infrastructure;
- Prevention in the area of security of supply through further measures (Electricity Security Strategy, Risk Preparedness Plan Electricity, Emergency Plan Gas, Preventive Gas Action Plan, National Gas Risk Assessment);
- Create import opportunities for renewable hydrogen and develop appropriate hydrogen infrastructure.

2.3.2 Where applicable, national objectives with regard to reducing energy import dependency from third countries, for the purpose of increasing the resilience of regional and national energy systems

While the share of indigenous renewable energy in the electricity sector is already higher than the European average, energy supply as a whole is still largely based on imported fossil fuels. The high share of fossil energy has a number of negative effects, particularly in times of high fossil energy prices: coal, oil and

The vast majority of imports of natural gas are required. The aim is therefore to reduce import-dependent effects. Dependence in all sectors is to be exchanged, in particular, against indigenous renewable energy sources.

The following objectives have already been achieved:

- Reduce gas consumption by at least 15 % from 1 April 2023 to 31 March 2024 compared to the average gas consumption in the period from 1 April 2017 to 31 March 2022 (EU Emergency Regulation (EU) 2022/1369);
- Phase-out of fossil fuels into new buildings (EEC); No installation of new-built heating systems that can be fuelled with fossil fuels, as well as a ban on connection to non-quality-guaranteed district heating;
- Attractive incentives to phase out fossil fuels in the building stock.

The Federal Government also pursues the following objectives:

- Efficient and careful use of energy (e.g. implementation EED III);
- Further diversification of gas supply sources (supported inter alia by the Gas Diversification Act);
- 100 % (national balance sheet) electricity from renewable energy sources by 2030 (this The aim is also laid down in the EAEC);
- Increase the sales of renewable gas on the Austrian gas market to at least 7.5 TWh by 2030 (Government proposal on the EGG);
- Build 1 GW of electrolysis capacity to produce renewable hydrogen by 2030 (Austrian Hydrogen Strategy);
- 90 % filling of Austrian gas storage facilities by 1 November 2023 and subsequent years (Commission Implementing Regulation (EU) 2022/2301) on the basis of the EU Gas Storage Regulation).

2.3.3 National objectives with regard to increasing the flexibility of the national energy system, in particular by means of deploying domestic energy sources, demand response and energy storage

In the electricity system in particular, security of supply is essential, which in the light of recent developments – the energy crisis, etc. — more than clear. The aim here is to ensure that measures that are necessary in the short term do not show lock-in effects and are therefore temporary. In any case, the highest priority must be given to future-proof measures with positive effects on climate change mitigation and adaptation. The path towards climate neutrality and resilience must not create unnecessary hurdles or invest in stranded assets to avoid high, non-necessary additional costs.

Additional objectives (see point 2.3.3):

- Increase investments in storage infrastructure and transmission and distribution networks;
- Adaptation of energy infrastructure to integrate renewable energy sources;
- Electricity system flexibility through grid optimisation and adaptation/extension;
- Indicative target to reduce electricity consumption from 1 August 2022 to 31 March 2023 by 10 % in 2023, in line with Council Regulation (EU) 2022/1854 of 6 October 2022 on an emergency intervention to address high energy prices;
- Reduction of electricity consumption during peak hours of 1. December 2022 to 31 March 2023 by 5 % in line with Council Regulation (EU) 2022/1854 of 6 October 2022 on an emergency intervention to address high energy prices.

2.4 Objective dimension 4: Internal energy market

2.4.1 Electricity interconnectivity

2.4.1.1 The level of electricity interconnection that the Member State aims to achieve by 2030, taking into account the 2030 electricity interconnection target of at least 15 %;

In 2021, the ratio of nominal transmission capacity to installed generation capacity was 38.2 %, the ratio of nominal transmission capacity to peak load was 262.8 % and the ratio of nominal transmission capacity to the total renewable generation capacity was 46.7 %, already well above the respective 2030 targets at European level. The current high level of electricity interconnection allows efficient transmission of electricity within and across national borders. Congestion in the transmission system is managed efficiently and there are direct network connections between Austria and almost all neighbouring countries, only between Austria and Slovakia are not directly interconnected. Therefore, Austria does not set any further explicit interconnectivity target for 2030. However, the high level of electricity interconnection above 15 % is to be maintained in view of the need to upgrade the grid infrastructure. Austria's central position in the middle of Europe places Austria in front of the ground for transitflows. The Austrian electricity grid must be able to absorb and transport high and increasing electricity generation from solar and wind power.

2.4.2 Development of energy transmission infrastructure

2.4.2.1 Central projects for electricity transmission and Gas transmission infrastructure and any modernisation projects necessary to achieve the objectives and targets under the five dimensions of the Energy Union Strategy

- To speed up, reduce red tape and simplify authorisation procedures in line with citizens' rights and relevant EU requirements;
- Simplify the permit-granting process for renewable installations in order to promote the roll-out of renewables.

Projects of Common Interest (PCI):

Austria is actively involved at EU level in the process of identifying PCIs (Projects of Common Interest), Projects of Common Interest, and PMI (Projects of Mutual Interest), projects of mutual interest with third countries. On 28 November 2023, the latest, 6. Total PCI list, i.e. 1. List according to the over-bound TEN-E Regulation (Regulation on guidelines for trans-European energy infrastructure (EU) 2022/869). There are currently seven projects in the electricity sector for Austria, two projects in the field of hydrogen and one project in the field of smart electricity grids on the list.⁴² The list was published in the Official Journal of the EU as a Commission Delegated Regulation on 8 April 2024.

2.4.2.2 Where applicable, main infrastructure projects envisaged other than Projects of Common Interest (PCIs)

Key projects in the Network Development Plan (NEP) 2023:

The Network Development Plan (NEP) 2023 of the APG sets out the planned network development projects for the next 10 years and sets out in detail the background to each project. In addition to large pipeline projects, the projects include major renewals and upgrades of the existing network (in the pipeline and substation area). The NEP also contains numerous extensions and new buildings ('green field') of substations to increase the connection of distribution networks, power plants and industrial customers.

In addition to the PCI projects, the following projects are of particular importance (for example: For an overview see NEP 2023):

- Carinthia network room (NEP 11-14)

The project will reinforce the transmission grid in the south of Austria, close the planned 380 kV ring and thus further strengthen the transport axes from the renewables in eastern Austria to the pumped storage plants in the south and west. The cross-border lines to neighbouring transmission system operators are also largely connected to the 380 kV ring. The ring-closure can create the necessary flexibilities for the security of supply and grid integration of renewables, as well as powerful load centres. The closure of the 380 kV ring will significantly increase security of supply in Carinthia, East Tyrol and Austria as a whole.

- Burgenland Nord – Sarasdorf/Great Space South-East Vienna (NEP 23-3) The project aims to connect renewable production from wind power and PV in

⁴² Link to list: [https://eur-lex.europa.eu/legal-content/DE/TXT/PDF/?uri=PI_COM:C\(2023\)7930](https://eur-lex.europa.eu/legal-content/DE/TXT/PDF/?uri=PI_COM:C(2023)7930)

Burgenland, Brucker Becken and Großraum Wien to high-performance 380 kV network nodes and the 380 kV ring. To this end, a 380 kV line between Parndorf – Sarasdorf and the area south of Vienna will be planned and a 380 kV cable pilot line is being planned.

- Upper Austria Central Region (NEP 11-11)
In the framework of the 220 kV connection for Central Upper Austria, the load increases and injections of renewable energy associated with the growth of the Linz Metropolitan Area can be served, and security of supply is significantly improved by creating the necessary conditions for 110 kV sub-network. In addition, the project also provides voestalpine AG's 220 kV connectivity to enable the electricity feed-in with green electricity needed to decarbonise the steel processes.
- Reschenpass Project (NEP 11-12)
In order to increase cross-border capacity to Italy, a new 220 kV cable connection and the 380/220 kV Nauders UW, including power flow control transformers, were set up. The project was successfully launched in December 2023.
- General renewals and reinforcements of lines and substations
In the NEP 2023, Chapter 4.2, there are numerous projects on general renewals of lines and substations, which are necessary both for age and for maintaining the performance of the existing network. It also modernises the transmission system and adapts it to the current energy environment, such as the massive increase in renewable inputs and higher volatility.
- New construction of additional substations and extensions of existing substations (NEP Chapter 4.3) which serve, on the one hand, to connect the distribution networks directly. This can, inter alia, feed into the transmission grid the local surplus of generated capacity associated with the further development of renewable energy, to cover load increases and to enable sub-grids. In combination with the pipeline projects mentioned above, this will allow renewable production to be transported to those locations in the grid where the electricity is needed. On the other hand, some substation extensions serve to directly connect power plants such as pumped storage plants and large industrial customers (e.g. voestalpine AG, OMV), whose electricity needs will be massively increased by decarbonisation in the coming years.

The projects included in the 2023 Network Development Plan are therefore a prerequisite for increasing the scale-up of renewables and the decarbonisation of industrial sites. As a result, the NEP projects, in combination with the additional electricity transport demand corridors identified in the Austrian Net z Infrastrukturplan, give the chance to achieve the climate and energy targets set out in this document.

Central projects 'gas pipeline', including 'hydrogen pipeline' in KNEP 2022 and long-term and integrated planning (LFiP 2022):

- WAG Part-Loop:
- In order to implement the necessary diversification of the Austrian gas supply away from Russian gas, additional capacity needs to be created to increase imports of gas from non-Russian sources. The complete closure of the WAG loop is a key development project in order to allow Austria to carry out a large part of its imports via transport routes in Germany. The implementation project for the first stage of upgrading ("WAG Part-Loop"; Extension of the section between Oberkappel and Bad Leonfelden with a parallel line of 40 km length) has already been approved by the regulator in the current KNEP. This makes it possible to increase the transport capacity from Germany at the border interconnection points Oberkappel and Überackern together by around 30 % or 27 TWh per year. H₂ Collector East for renewable gas:
 - Pipeline from Zurndorf (Burgenland) via Schwechat, Mannswörth to Simmering (Vienna) for the injection of renewable hydrogen

2.4.3 Market integration

2.4.3.1 National objectives related to other aspects of the internal energy market such as increasing system flexibility, in particular related to the promotion of competitively determined electricity prices in line with relevant sectoral law, market integration and coupling, aimed at increasing the tradeable capacity of existing interconnectors, smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment, and real-time price signals, including a time frame for when the objectives shall be met

The European Union has a highly integrated internal market for electricity where the available transmission infrastructure is used efficiently through the cooperation of power exchanges and transmission system operators. However, recent developments in the energy markets showed a lack of responsiveness of the system to changing framework conditions, as demonstrated by the explosion of energy prices. Similarly, in order to overcome the current energy crisis, it is necessary to create appropriate framework conditions at national level, including by implementing EU legislation.

Therefore, the following objectives are set:

- Functioning, cross-border and liquid wholesale markets and price zones to generate valid price signals across all tradable timeframes and support energy efficiency and the

use of renewable energy sources: The design of the common market for electricity ensures that trade is transparent and aimed at optimising welfare while producing reliable results that ensure high security of supply, investment incentives in renewable technologies and affordable prices. Vulnerabilities in exceptional situations, such as the achievement of extreme inframarginal profits by some producers, can be addressed, if necessary, by temporary exceptional measures.

- Further develop network charges so that they remain in line with EU law and that new players in the electricity market are duly taken into account.
- Allow flexibility, in terms of energy supply, consumption through storage and smart grid management.
- Remove barriers to cross-border trade in electricity: The use of cross-border transmission infrastructure in the electricity sector will be increased through infrastructure and administrative measures to also increase price convergence between bidding zones within the EU.
- Protecting end customers from extreme market developments through strengthened legal positions and greater opportunities for small and community energy exchanges.

2.4.3.2 National objectives (where available) on non-discriminatory access for renewable energy, demand response and storage, including an indicative time frame for when the objectives are to be met

See point 2.4.3.1. In addition, no specific objectives are foreseen.

2.4.3.3 National targets (if any) to ensure that consumers participate in the energy system and the benefits of self-generation from new technologies, such as smart meters

Smart metre roll-out

The switch from counting points to new digital measuring devices and equipping all houses with smart meters should take place as soon as possible. The target of 95 % rollout rate by the end of 2022, originally set out in the Intelligent Measuring Instruments Deployment Regulation (IME Regulation), was postponed to the end of 2024 by the 2022 amendment to the IME Regulation. An intermediate target of 40 % was set at the end of 2022. By 2030, the widespread deployment of smart meters should have reaped the benefits of the digitalisation of the energy system and significantly contribute to more efficient use of energy, optimise energy consumption and grid use and generate cost benefits.

Increased use of new market roles (energy communities, active customers) end - customers should have easy and low-threshold access to the opportunities for small-scale energy exchanges through new market roles such as energy communities, agregators or self-consumption functions. Direct use of regionally generated renewable energy should also be possible if structural conditions prevent the construction of a corresponding generation facility (e.g. obtaining PV electricity from neighbouring countries).

2.4.3.4 National objectives with regard to ensuring electricity system adequacy, as well as for the flexibility of the energy system with regard to renewable energy production, including a time frame for when the objectives are to be met

See targets in points 2.4.2.1 and 2.4.3.1. In addition, no specific objectives are foreseen.

2.4.3.5 National objectives (if any) to protect energy consumers and to improve competition among energy trading companies

Concerning household customers:

- To prevent climate action from jeopardising the affordability of housing and energy;
- Consumer confidence in energy markets is central. Consumers should therefore be protected and empowered;
- Decoupling of end-customer prices from the volatility of the wholesale market.

Examples: Improving transparency and improving customers' rights, in particular in the framework conditions for basic contractual rights in the supply of heating, cooling and domestic hot water; Ensure the quality of energy service providers for households; prosecute unfair and deceptive practices in law; Dataprotection and security; Measures to promote accessibility of e-Ladestations and measures to increase competition in the e-Ladeinfrastrukturmarkt; Ensuring framework conditions that also make household customers attractive in the energy market as an active customer.

2.4.4 National objectives to prevent energy poverty (including a time frame for implementation), where applicable

The prevention and alleviation of energy poverty is a key objective of the Austrian Federal Government and the Länder. This means that all population groups can meet their basic

energy needs at a reasonable cost. High energy consumption costs are at risk, especially for low-income households.

Energy poverty is a multidimensional problem, resulting from a combination of several factors that may affect households. On the one hand, low incomes cover the cost of living or at risk of poverty, and on the other hand there are (too) high costs for household energy due to high prices and high energy consumption due to poor energy efficiency (in particular building stock, but also household appliances, etc.). In this respect, the debate on energy poverty in the context of the massive increases in household energy prices since 2022 is particularly relevant, as both real disposable incomes have fallen to meet energy costs for many households and at the same time prices of household energy have risen sharply. At the same time, opportunities for individual adaptation to climate change, such as cooling or switching to secondary residences, are significantly more difficult or impossible for poor and vulnerable households.

Due to multidimensionality, there are different indicators that can be used to measure energy poverty, each focusing on a specific dimension of the problem. A good overview of the state of play of the discussion in Austria and suggestions for indicators to be used can be found in Statistik Austria's recent study 'Dimensions⁴³ of energy poverty in Austria 2021/22', commissioned by the E-Control Regulation Authority in 2022, on which the following comments are based.

The context of the above-mentioned problems of income poverty and high household energy prices leads to two basic approaches: on the one hand, a household can spend a particularly high proportion of household income on energy in order to meet energy needs (and thus refrain from spending in other areas), on the other hand, it is possible to forgo the necessary expenditure on energy and consume less energy than necessary or desired.

This results in two different dimensions of energy poverty, with associated indicators: On the one hand, households which at the same time have low household income or are at risk of poverty, with particularly high energy costs. On the other hand, households which at the same time have low household income or are at risk of poverty and have particularly low energy costs because they can be expected to involuntarily forego part of the energy consumption that would be necessary or desirable.

There is little overlap between the two groups, as those who do not consume energy in

⁴³Statistik Austria (eds.) (2022), Report 'Dimensions of energy poverty in Austria 2021/22. Indicator overview and detailed consideration.' 54fb4644-6f76-de2a-3f6d-26fd35a1c6f8 (e-control.at)

order to save costs will not be higher than average costs and, conversely, those who have higher than average costs are precisely those who do not pay for other expenditure in favour of energy. Based on data from the microcensus Energie from 2021/2022 and the 2022 EU-SILC survey, which includes 2021 data on men, Statistik Austria proposes eight different indicators, which include the two dimensions mentioned above and allow a comprehensive presentation of the phenomenon in Austria. The definitions set out in (1) and (4) are proposed as the main definitions:

Table 13: Indicators to measure energy poverty

Measuring energy poverty	Low energy – high costs	Low energy – Heating inoperable
Energy poverty Indicators	Data source: MZ Energy and EU-SILC	
	(1) Households with higher than average spending on energy on housing (> 140 % of the median, equivalised) and low household income (at risk of poverty)	
	(2) Households with one Share of energy costs above 10 % of household income	
	(3) Households with energy costs above 15 % of household income	
		Data source: EU-SILC
		(4) Households unable to keep home adequately warm
		(5) Households unable to keep home adequately warm and with low household income (Risk of poverty)
		Data source: MZ Energy and EU-SILC (6) households with particularly low relative energy costs (energy cost share &4 %) and low household income (at risk of poverty)
	(7) Households with particularly low absolute energy expenditure (&50 % of the median) and low household income (Risk of poverty)	
	Data source: EU-SILC	
	(8) Households with arrears on non-residential housing costs such as electricity and heating	

Source: Statistik Austria (eds.): Dimensions of energy poverty in Austria 2021/22. Overview of indicators and detailed consideration. Vienna, 2024; P. 9.

Statistik Austria calculates the following data subjects:

- Energy poverty as defined (1) affects 143.100 and 146.300 households, or between 3.3 % and 3.6 % of all households (depending on the data base (microcensus or EU-

SILC)). These households have higher than average spending on energy, with particularly low incomes (defined as the at-risk-of-poverty).

- Energy poverty as defined (2) affects between 664.560 and 351.000 households, i.e. between 16.5 % and 8.6 % of all households. These households have an energy cost share of more than 10 % of household income.
- Energy poverty as defined (3) affects 273.730 and 154.000 households, i.e. 6.8 % to 3.8 %. These households have an energy cost share of more than 15 % of household income.
- According to EU-SILC 2022, energy poverty as defined (4) affects 129.500 households or 3.2 % of all households. These households claim to be unable to keep their home adequately warm for financial reasons. The quarterly survey 'How's now' has been carried out by Statistik Austria since the end of 2021 shows a rapid increase in the number of households affected. In Q4 2022, 12.1 % of all households were affected, almost one in eight households. This was 7.5 % in Q4 2023. This is still more than 300.000 households, as defined (5), despite a slight decrease in previous quarters. The data base is subject to great uncertainty due to the low number of cases affected in the EU-SILC sample and the indicator is therefore inadequate. It is estimated that 37.000 households or 1 % of all households are affected according to EU-SILC 2022. These are households who at the same time state that they are unable to keep their home adequately warm for financial reasons and have particularly low incomes (defined as at-risk-of-poverty).
- According to EU-SILC 2022, energy poverty as defined (6) affects 145.300 households or 3.6 % of all households. These are households which, at the same time, have particularly low energy expenditure, relative to their income, and have particularly low incomes (defined as the risk of poverty).
- According to EU-SILC 2022, energy poverty as defined (7) affects 176.400 households or 4.3 % of all households. These are households that at the same time have particularly low energy expenditure (less than half of the expenditure of an average household) and have a particularly low income (defined as the risk of poverty).
- With regard to energy poverty as defined (8), due to the low number of cases affected in the EU-SILC sample, the data base is highly uncertain and the indicator is therefore inadequate. It is estimated that 99.800 households are affected, or 2.5 % of all households, according to EU-SILC 2022. These are households with arrears on non-residential housing costs, such as electricity or heating.

In order to operationalise the two dimensions, the study recommends the use of the two Indikaas defined (1) – households at risk of poverty with high energy costs – and (4) households that cannot keep their home adequately warm. This means that in 2021/2022 a total of 134.100 and 146.300 houses (3.3 % and 3.6 % according to definition (1)) and 129.500 households (3.2 %) in 2022 were affected by energy poverty according to Defini

tion(4). There is little overlap between these two groups.

In general, as described at the beginning of the chapter, low-impact households are particularly affected by energy poverty. In addition, the following groups are above average affected by both dimensions of energy poverty (high costs and heat cannot afford): People with low education (highest compulsory school leaving); Single-person households; People living in small dwellings, older buildings and rents, as well as older people (of energy poverty as defined (1) (high cost) especially people over 75 years of age; energy poverty as defined (4) (not able to afford heating) in particular persons aged 55-74). In addition, energy poverty as defined (4) (not able to afford heating) lives in multi-party houses rather than in the non-energy comparator group.

According to the 2021/2022 microcensus Energy, the equivalised energy costs of energy poor households as defined (1) (high costs) are much higher than those of non-energy-poor households (around 85 %; the very high costs are already included in the definition). On the other hand, the equi-valised energy costs of low-energy households as defined (4), who cannot afford to keep the home adequately warm, are roughly the same as those of the non-energy comparator group according to EU-SILC 2022.

Looking at energy costs relative to income, low-cost households with high costs, as defined (1), spend 24 % of their total income on energy, while non-energy-poor households spend only 4.9 % of their income on energy. However, energy-poor households as defined (4) who cannot afford to keep home adequately warm also account for a larger share of their income on energy than the non-energy comparator group (4.8 % vs 3.5 % according to EU-SILC).

A detailed breakdown of energy consumption and the energy sources used by low-energy households is available in Statistik Austria's study exclusively according to Definition (1), as the necessary data from the 2021/2022 microcensus Energy can be used here.

Energy-poor households with high costs thus have high consumption especially in the heating category (of the energy consumption categories heating, hot water, cooking and other) and is 42 % higher than that of non-energy-poor households. The consumption in the 'Other' category is slightly higher at 9 % than that of non-energy-poor households. However, consumption in the hot water categories is 20 % lower than non-energy households and consumption in the cooking category by 6 %. Energy-poor households consumed around 20.620 kWh for heating purposes in the 2021/2022 heating season, while non-energy-poor households consumed 14.510 kWh in the same period. However, for hot water, energy-poor households needed 2.340 kWh less energy than non-low-energy households at 2.910 kWh.

Looking at the energy mix of households, it can be seen that, at high costs, energy-poor houses use heating oil and district heat to a greater extent. The use of electricity is also slightly above average, while it is slightly below average that of firewood and natural gas. On the other hand, pellets, wood chips, solar or heat pumps are almost rarely used by low-energy homes.

For concrete implementation steps to avoid energy poverty, see Kapitel 3.4.4.

2.5 Objective dimension 5: Research, innovation and competitiveness

2.5.1 National strategies and financial objectives (public and private, where available) relating to research and innovation in the energy sector

Mission-oriented business and public RTI activities aim to promote the development and testing of innovative solutions and transformative approaches together with research institutions and stakeholders. Achieving climate neutrality by 2040 and achieving the green and digital transitions, while strengthening resilience and sovereignty, requires research, technology development and integration, as well as system innovation, including the development of evidence-based bases to shape the institutional framework (including regulation, norms, standards, incentives). With the involvement of the relevant stakeholders of women and civil society throughout the innovation cycle, the intensive four-fold development of solutions that promise rapid and broad impact (*speed and scale*) is needed. A high transformative potential can be re-aligned through continuous monitoring with appropriate impact indicators at all impact levels (technology development and system integration, organisation and transformation).

Four FTI missions that want to implement the essential themes for a climate neutral future are at the heart of the action logic. The four missions are energy, mobility transition, circular economy and climate neutral city. To this end, pact and evaluation plans have been⁴⁴ developed, which, on the basis of existing national and EU ropean objectives, show concrete impact chains in the specific mission and identify the specific RTI needs in the relevant policy areas.

The objectives described therein are set out below:

Research mission on energy transition

In particular, research, technology and innovation for the energy transition should contribute directly to the achievement of the objectives of the NECP through overarching objectives:

1. Successful energy transition in Austria

The aim is to advance interdisciplinary and intersectoral development of technology-based solutions to transform Austria's energy and economic system towards climate

⁴⁴In the form of impact and evaluation plans

neutrality. Austria's energy transition is to be accelerated and targeted. Existing gaps will be identified and innovation promoted throughout the innovation cycle. A key element is transformative RTI initiatives, such as promoting high-technology readiness level (TRL) experimentation in regulatory sandboxes (e.g.: "Energy.Free area") and flagship regions.

2. Successful Austrian actors in global value-added cycles

The innovation capacity and competence of Austrian FTI actors to contribute to the energy transition should be increased. Austrian actors should benefit from the energy transformation and participate in international value-added cycles.

Support for R & D and demonstration of technologies and solutions will be made available to meet the needs of key stakeholders. It also aims to reach, inform and activate as many RTI actors as possible at national and international level for the energy transition.

3. Building skills for the future and designing the implementation of existing technology options beyond the current situation

Strategic competence for future developments in the field of energy innovation in research, business and administration will be further developed and will contribute to Europe's technological sovereignty.

High-quality research by research institutes, young researchers and staff in central government departments for the energy transition will be supported. By developing and promoting R & T

Human resources infrastructure as well as cooperation between FTI institutions, as well as building strategic knowledge for the future.

Research mission Circular Economy & Production – Objectives:

- A major reduction in resource extraction and use (resource conservation);
- Zero waste;
- Prevention of pollution by pollutants (zero pollution);
- Reducing GHG emissions (climate action);
- Strengthen/build circular value added/jobs in Austria;
- Boosting the bioeconomy and circular economy in production;
- Broaden the business base for a green transition;
- Keep companies highly relevant to SDGs in Austria;

- In addition, an FTI initiative on climate neutral industry is being developed and implemented as part of the Federal Government's Transformation Plan.

Research Mission Mobility Transition

Through the FTI Mobility Strategy 2030, the BMK45 is pursuing the mission to take the necessary steps for innovation and development to achieve a sustainable, climate neutral and inclusive mobility system in 2040. The aim is to contribute directly to the achievement of the objectives of the 2030 Mobility Master Plan⁴⁶ to prevent, facilitate and improve traffic. The FTI mobility strategy puts a strong focus on system solutions in four beds:

- Cities: making urban mobility climate neutral;
- Regions: mobilise and sustainably connect rural areas;
- Digitalisation: Create infrastructure, mobility and logistics services in an efficient and climate-friendly manner;
- Technology: develop environmentally friendly transport technologies.

Mission Climate-Neutral City

Funding and research activities in this area are closely linked to the 5 missions developed by the European Commission, in particular the EU Climate-Neutral and Smart Cities mission, and focus in particular on two objectives:

1. System innovations in Austrian pioneering cities 2030 to contribute to the implementation of climate neutrality in practice
 - Establish implementation partnerships with pioneering cities and support participation in the European Cities Mission;
 - Develop or further develop tailor-made FTI offers and capacities;
 - Building strategic intelligence and operational competence, supporting national/European learning and transfer processes.
2. System transformation in all Austrian cities and municipalities by activating, empowering and (re)designing
 - Broad mobilisation of research, business, administration, politics and civil society to change action and decision-making practices in municipalities of different sizes;
 - Promoting knowledge transfer, scalability and replicability of solutions;

⁴⁵Mobility FTI strategy ([mobilitaetderzukunft.at](https://www.mobilitaetderzukunft.at))

⁴⁶Mobility Master Plan 2030 – Reorientation of the Mobility Sector

(<https://www.bmk.gv.at/themen/mobilitaet/mobilitaetsmasterplan/mmp2030.html>)

- Promoting systemic learning and further development of the Innovation ecosystem.

Mission Climate Change Adaptation

The national implementation of the EU Mission on Adaptation to Climate Change supports regions and municipalities in their efforts to adapt to the consequences of climate change and strengthen their resilience. In particular, the mission is linked to the Climate Neutral City Mission and contributes to the implementation of the EU Adaptation Strategy and the Austrian Strategy for Adaptation to Custom Change. At national level, the following research priorities will be stepped up:

- Provision of basic knowledge, including in the field of climate change risk assessment, and further development of methods for measuring Risk factors (hazard, exposure and vulnerability; including resilience capacities such as adaptation and response)
- Practical research to adapt to the effects of climate change and prevent maladaptation
- Promoting adaptation to climate change through the development, research and implementation of nature-based solutions (NbS).

2.5.2 National 2050 strategies for the promotion of ‘clean energy technologies’, where available

The immense task of making the decarbonisation agenda both technically feasible and economically viable and socially acceptable requires long-term policy for research, technology and innovation.

The Austrian “Energy Research and Innovation Strategy 2050” is an important basis and has been further developed into the missions described above. It aims to seize the economic opportunities of the transformation of the energy system, to boost energy research and innovation as key enablers of the gradual decarbonisation development of the energy system, thereby making Austria a key contribution to a clean, secure and affordable energy future. The direction of energy research and innovation described therein is characterised by an inclusive, systemic approach. In addition to technological changes, potential and methods will be explored with a view to a socially and environmentally acceptable transition to sustainable energy use.

The Federal Environment Agency, as the national emissions monitoring body, regularly produces GHG scenarios for Austria. In the coming years, work is expected to focus more on creating a positive vision for Austria in 2040. Many questions are open here, from the concrete technologies of the future to the necessary institutions, procedural accelerations and implementation periods, to socio-economic implications, interactions between climate protection, biodiversity, the circular economy and zero pollution. A key issue is also the transformational research and the challenge of building a solid knowledge of transformation.

Many questions also arise with regard to climate change, from concrete implications for energy delivery, infrastructure, security of supply, etc., to (ecosystem-based simulated) solutions. These aspects need to be taken into account in a vision for 2050.

2.5.3 National objectives on competitiveness, where available

Technology development and smart system solutions should aim to stimulate demand for technology in the Austrian and European home markets, to strengthen the competitiveness of Austrian manufacturing companies for world-wide exports and to promote their anchoring in global value chains. The adaptation of the market and regulatory framework, as well as the changes in the roles and interactions of stakeholders: they are inextricably linked and require multidimensional innovation strategies. In further funding programmes, such adaptations are tested in real-world operations (e.g.: 'Energy. Free.space', regulatory sandboxes) as well as fundamentals and an evidence-based knowledge base. An inclusive, interdisciplinary approach is needed in all priorities. The promotion activities rely more on the involvement of all actors relevant in the value chain.

The planned measures to develop and implement an integrated energy system based on the extraction, storage and sharing of renewable energy from decentralised generation are also expected to have a positive impact on Austria's added value and energy price levels.

3 POLICIES AND MEASURES

The following section sets out the main policies and measures necessary to achieve the objectives of the Energy Union. These measures are planned and already being implemented and are included in the WAM scenario.

It is essential that 2030 targets and measures are consistent with the 2040 and 2050 trajectories, in particular to avoid lock-in effects and to enable adequate or flexible transition solutions, for example by building future-proof infrastructure. Austria's long-term strategy⁴⁷ under the Regulation on the Governance of the Energy Union and Climate Action, which was submitted to the European Commission at the end of 2019, is currently being substantially updated in line with Austria's 2040 climate neutrality objective.

Note:

The following sections describe in detail the main additional measures currently being planned or already being implemented to achieve the 2030 greenhouse gas targets, the renewable energy share targets and increase energy efficiency. The modelling results for the WAM scenario show that the objectives set out in Chapter 2 can be largely achieved with the modelled measures (THG, renewable energy). The measures modelled in the WAM scenario and the measures and strategies discussed subsequently do not constitute decisions of the Federal Government alone, but also include assumptions and strategies of individual or several departments.⁴⁸

Under Article 5 of the Effort Sharing Regulation, in order to comply with its obligations under the Regulation, the Republic of Austria may, if necessary, also make transfers of emission allocations with one or more EU Member States.

⁴⁷For more information on the long-term strategy:

https://www.bmk.gv.at/themen/klima_umwelt/klimaschutz/aktives-trade/lts2050.html#:~:text=One%20Strategy%2C%20The%20net%20Comprehensive%3 %96conomie%2 C%20Social%20and%20 %C3 %96cology%20Invoice.

⁴⁸See Table 1 for a clear presentation of the legal nature of each measure and strategy or chapters 4 and 5 for a detailed summary of the results of the WEM and WAM scenarios.

3.1 Dimension 1: Decarbonisation

3.1.1 Greenhouse gas emissions and carbon sequestration

3.1.1.1 Policies and measures to achieve the objectives of the Effort Sharing and Land Use Regulation (taking into account all key sectors, with prospects for long-term targets under the Paris Agreement)

CO₂– price for non-ETS sectors

In April 2022, the Federal Act on National Emission Allowance Trading (NEHG 2022) entered into force. For the first time in Austria, this legal basis imposes a price on CO₂ emissions resulting from the use of fossil fuels, in so far as it relates to consumption outside the existing EU ETS. The CO₂ price includes in particular the sectors of buildings, road transport, industry and commerce (non-ETS) and fossil fuel consumption in agriculture.

CO₂ price (fixed price phase)

- ab. 01/10/2022 EUR 30 per tonne;
- from 01/01/2023 EUR 35⁴⁹ per tonne;
- from 1.1.2024 EUR 45 per tonne;

The CO₂ price is collected through the tax administration in addition to existing excise duties (mineral oil tax, natural gas levy, coal levy). In the event of significant energy changes in the price of the heating and fuel concerned, the increase may be temporarily limited to 50 % or increased by 50 % from one stage to the next. With the introduction of the market phase in line with the extension of the EU Emissions Trading System (=ETS-2) from 2027 onwards, CO₂ emission allowances will be traded freely on the market, with a strict cap on emissions laid down in EU law.

(*cap & trade*). 100 % emission allowances are placed on the market through auctions (no free allocation). Austria plans to make use of the possibility offered by the Directive to include all fossil fuel and power consumption in the future ETS-2 (in any case with narrowly defined exemptions according to excise duty).

From Austria's point of view, the inclusion of all fossil fuel consumption in the emissions trading system will provide an opportunity to achieve deep emission reductions, leading to

a phase-out of fossil fuels as far as possible in the longer term, whereby the instrument can ensure planning certainty on the one hand and wide flexibility for market participants on the other.

However, social considerations relating to the affordability of energy for final consumers are also taken into account in the implementation of the instrument. This is why the CO₂ price will be paid back directly to all those involved in the CO₂ price in the form of a regional climate bonus.

This is accompanied by regulatory measures (e.g. phasing out fossil fuels in the heating sector; CO₂ fleet targets in transport) as well as policy initiatives to finance vulnerable or vulnerable households at risk of poverty, possible investments in alternative heating systems or forms of mobility (see section 3.4.4, Energy poverty).

Under the Eco-Social Tax Reform Act 2022, BGBl. I No 10/2022 (contrary to the NEHG 2022), both comprehensive tax relief measures (e.g. the income tax rate, raising the family bonus plus) and specific compensations for CO₂ pricing (in particular the regional climate bonus) were concluded.

Carbon Management

The Austrian Carbon Management Strategy (CMS) adopted by the Federal Government on 26 June 2024⁵⁰ sets out options for action and necessary reform steps towards cost-effective carbon management for hard-to-avoidable residues in Austria. Against this background, the CMS is also a bridge between climate and budgetary policies and addresses – in a step-by-step approach – questions of organisational and financial feasibility and the necessary (legislative) framework conditions.

The Carbon Management Strategy includes an action plan with measures:

Part 1: Establishment of the basic legal framework

- Lifting the ban on geological storage of CO₂ in Austria and establishing the necessary legal framework for geological storage of CO₂ in Austria
- Evaluation and adaptation of the legal situation of pipeline-linked CO₂ transport
- Further legal (accompanying) measures and reform steps along the whole CCUS/CDR technical chain
- Improving international cooperation and coordination and further developing the technical basis and the legal, economic and political framework

Part 2: (Infrastructure) recovery and (action) implementation

- Creation of a science-based, holistic, scenario-based, time-differentiated planning basis for the national and cross-border ramp-up of the necessary CCUS/tCDR infrastructure and its operation
- Establish a legal framework to implement minimum capture, transport and storage targets for CO₂ and carbon removal targets for technical sinks and ensure storage capacity abroad (European)
- Establishing the legal and organisational framework to promote and incentivise research and development activities for CCUS/TCDR
- Establishing the legal, financial and organisational framework to promote and incentivise (industrial) lead, pilot, demonstration and regulatory sandbox projects or feasibility studies for CCUS/TCDR
- Building an effective and efficient administrative and administrative structure
- Establish the legal, financial and organisational framework to actively initiate and

⁵⁰ <https://www.bundestkanzleramt.gv.at/medien/ministerraete/ministerraete-seit-dezember-2021/103a-mr-26-jun.html>

promote individual pilot/lead projects as part of a coordinated ups of CCUS/TCDR infrastructure.

- Increase the acceptance of CCUS/TCDR by developing proactive publicity activities to provide broad information about the safety, use and necessity of CCUS/TCDR in Austria

Part 3: (Measure) implementation of natural sinks – Reference to land use measures in the NECP (see below)

Mobility

Meeting the climate targets in the transport sector is a particular challenge, so the government programme⁵¹ enshrines the establishment of the 2030 Mobility Master Plan for Austria, which sets out the road to climate neutrality in 2040. The MobilityMasterplan 2030 (BMK strategy) provides the strategic framework to target Austria's rich mobility sector towards environmental, economic and social objectives.

The measures described in this chapter are not yet sufficient to achieve the objectives of the 2030 Mobility Master Plan. To date, the following measures and policies have been planned and in preparation for implementation:

Strengthening public transport

In particular, the following issues are essential for the success and attractiveness of public transport:

Well-developed infrastructure is the basis for public transport. In particular, the infrastructure structure should ensure sufficient capacity, attractive travel times and a good development of passenger potential. In addition, it is important to ensure that the various transport systems are well managed (foregrounds, bike & ride, sharing services, etc.). Austria already has a particularly dense, efficient and modern rail network, which is the backbone of public transport. The attractiveness of railway undertakings to invest in renewable technologies will be achieved, in particular, through measures in the field of best practice (exemption from the electricity levy for self-generated and self-needed green traction current). This tax exemption promotes future-oriented green investments by railway undertakings in order to create, in the long term, a more comprehensive phase-out of fossil

⁵¹ <https://www.bmk.gv.at/themen/mobilitaet/mobilitaetsmasterplan/mmp2030.html>

self-generation and a greater incentive to switch to more environmentally sound rail transport. An increase in public transport (in particular rail transport) can also lead to a modal shift or reduction in air traffic and/or motor vehicle traffic.

- In the short to medium term: In the coming years, major investments are planned for the further development of the railway network operated by ÖBB-Infrastruktur AG, private railways and regional city railways,⁵² including additional measures, particularly in urban areas, which will have a particular impact on climate change. The expansion of investment as foreseen in the government's programme must now be implemented in a consistent manner.
- Long term: The long-term strategy for developing the rail network in Austria is the target network. The 2025+ target network, which has already been largely implemented, is currently valid. The BMK, together with ÖBB-Infrastruktur AG and SCHIG mbH, has drawn up a technical draft for the 2040 target network. The aim is to prepare the necessary investments at an early stage, with a focus on the 2030s, and thus to better link it with transport policy objectives. A decision on the 2040 target network is envisaged in 2024.
- Furthermore, a strong focus is placed on the further development of self-generation at ÖBB with regard to energy independence and further electrification as part of the ÖBB electrification strategy.
- In the context of climate partnerships, the Federal Government's (co-)financing of infrastructure upgrades in line with the Court of Auditors' recommendation on this issue will be⁵³ more demanded for accompanying regional authorities' transport policy measures to increase the effectiveness of the measures.

An attractive and responsive transport service is ordered by the Federal Government and the local authorities on the basis of the 1999 Local and Regional Transport Act from transport undertakings. The predictions for an attractive transport offer are particularly good comfort for driving (accessibility, air conditioning, etc.), appropriate intervals and short travel rows. The following improvements are planned:

- Additional orders in the framework of service contracts for the extension of local rail

⁵² ÖBB framework plan: https://www.bmk.gv.at/themen/verkehrsplanung/ausbauplan/plan_oebb.html, Investment Plan Private Railways

<https://www.bmk.gv.at/themen/verkehr/eisenbahn/foerderungen/privatbahnen.html> and Regional Town Railways

<https://www.bmk.gv.at/themen/verkehr/eisenbahn/foerderungen/regionalstadtbahnen.html>

⁵³

https://www.rechnungshof.gv.at/rh/home/news/news/news_3/Strassenbahnprojekte_Graz_Innsbruck_Linz.html#

passenger transport services with the Länder, e.g. in order to make the most of the potential of new and improved infrastructure (tact compaction, extension of operating hours, extension of weekend services, extension of space available and implementation of improved timetables when new infrastructure is put into operation).

- Additional orders under the long-distance transport service contract (e.g. compaction, day-to-day trains, direct access to tourist regions).
- Use of new local transport trains to increase acceleration and speed, increase seating and improve quality.
- Use of new and comfortable long-distance trains for day and night traffic, improved cross-border cooperation in planning, organisation and financing to enable optimisation of international rail travel (inter alia intensive involvement at European level to create the necessary framework conditions for more international long-distance and night train connections (Capacity Regulation Consultation, TimeTableRedesign project, International Rail Passenger Platform).
- Increasing the density of stops in residential areas and expanding and expanding public demand transport services.
- Continuous development of scheduled bus services (at Länder/municipality level). ClimateTicket regional funding to support supply expansion.
- Use the digital transformation to attract and facilitate access to publicly available transport services (e.g. improving digital information).

In setting tariffs, the combination of annual fixed costs and the cost of a cumbersome journey of the various modes of transport for users is central. For this reason, the Federal Transport Policy aims to allow the use of a holistic public transport offer at an attractive basic price. With the introduction of the Austrian climate ticket, there is an attractive option that is affordable in an international comparison and makes public transport easily accessible throughout Austria. Already now (as at April 2024), more than 280.000 people are in possession of a climateTicket Austria (climate-Ticket Ö) to use all public transport in Austria. Simulation-based expectations were more than doubled. This offer is complemented by the regional climate tickets of the Länder and transport associations. This has also been accompanied by improved transport supply. The BMK provides the Länder with more than EUR 200 million per year. On this basis, further measures have already been implemented:

- Tariff benefits (e.g. free climate ticket Ö for participants in the Voluntary Social Year and the Environmental Year, one-off free climate ticket on the occasion of the 18th Birthday), and
- distributional improvement of the climateTicket Ö (e.g. digital display of the ticket),

and

- Implementation of the 2nd Stage of the Regional ClimateTicket reform to reduce the burden on Commuters, including accompanying regional supply extensions and improvements.

The following other actions are planned:

- Pilot trials will test the gradual integration of publicly available demand traffic, sharing services and near-mobility services into the climate ticket performance portfolio. Implementation takes place in the area of design of the Länder and transport associations.

New mobility services (sharing, public on-demand and passenger transport)

Public transport mobility, combined with sharing systems, public transport on demand (ÖZB) or passenger transport strengthens the overall transport system through more efficient use of resources and energy-efficient forms of mobility. The diverse, service-oriented and responsive mobility offers can lead to a rethink of new mobility behaviour for users. Sharing saves not only journeys and vehicles, but also infrastructure (e.g. parking areas, garages).

The aim is to create a universally accessible (liable, safe and barrier-free) mobility offer in urban, suburban and rural areas (e.g. public-access transport, sharing, passenger mobility services, tourist mobility services). The comprehensive implementation of integrated mobility services will be made possible through the implementation of the following measures:

- Sharing strategy⁵⁴ (institutionalising an organisational framework (cooperation processes, dialogue formats, etc.), create legal frameworks (e.g. implementation of car-sharing in transport law, etc.), examine innovative and sustainable financing instruments.
- Passenger Action Package (check and adapt legal framework: Definition, raise the professionalism limit, raise passenger rates in the travel fee regulation, set communication campaign, minimum standards, etc.).
- Enshrine 'collective passenger transport' by car or bus in the occasional transport law with a view to strengthening public transport on demand.
- The roll-out of multimodal mobility hubs for different contexts (ÖV stations, housing, business mobility, etc.) and the creation of associated planning tools for local and regional authorities (e.g. SAMM project).

⁵⁴ https://www.bmk.gv.at/themen/mobilitaet/alternative_verkehrskonzepte/sharing_strategie.html

- To make passengers more attractive, in particular to increase the average occupancy rate at work by increasing the official mileage allowance for the traveller;
- Creation of an attractive station-based car-sharing service at municipal level (one car-sharing vehicle per 1500 inhabitants).

Multimodal mobility hubs act as hubs in urban, urban and rural areas. These offer increased transfer quality, improved passenger information systems, parking spaces for sharing services and increased visibility of alternative mobility services, as well as charging facilities for e-vehicles and pick-up terminals for online orders.⁵⁵

Active mobility

Active forms of mobility, which means in particular walking and cycling, are the most energy-efficient, climate-friendly, resource-efficient, healthy and safest modes of transport, and thus the most sustainable forms of mobility.

Active mobility plays an important role as a feeder to public transport and is ideal on short distances, especially in towns and municipalities, because it is flexible behind the journey and, above all, by bike, often at the destination faster than the car. In addition, pedestrians and cyclists strengthen the local economy and local suppliers.⁵⁶

The existing Masterplan Gehen, together with the Länder and cities and municipalities, was further developed into the Gehen 2030 Master Plan in order to boost funding in Austria.

Around 40 % of car journeys are shorter than five kilometres, i.e. at wheel distance. With the implementation of the Government's programme, federal support for the development of the Rad infrastructure has been massively increased and, in addition to the development of fast cycle connections, new priorities have been put on the development of urban and regional cycling networks. The Bund-Länder-Gemeinden Agreement on Cycling at the 2022 Cycling Summit laid the basis for enhanced cooperation between the Federal Government, Länder, cities and municipalities to increase the share of cycling in the modal split to 13 % by 2030. In order to achieve the targets, the Federal Government and the Länder jointly identified an investment requirement of EUR 7 billion by 2030 (Cycling target network 2030). The Austrian Master Plan for Cycling will be further developed in consultation with the Länder and cities and municipalities into the 'Masterplan Cycling 2030'. The awareness of this

⁵⁵ <https://www.klimafonds.gv.at/themen/mobilitaetswende/serviceseiten/nachhaltige-mobilitaet-in-der-Practices/Projects> from the call for tender sustainable mobility in der-practice

2020/transformation process system for site assessment-for-the-selection of multimodal mobilitaets node

⁵⁶ See e.g. Purchasing power study Innsbruck 2022: <https://www.ibkinfo.at/studie-mobilitaet-kaufkraft-2022>

'Austria radelt' educational campaign specifically motivates various target groups to cycling.

- Consistent implementation of the Gehen 2030 Master Plan⁵⁷ and the 2015-2025 Cycling Master Plan⁵⁸ and the measures listed therein⁵⁹, as well as the Federal-Länder Convention on the Promotion of Cycling;
- Increased cycling support, development of cycling infrastructure and regional cycling networks at federal level (climate-active mobil), investment plan to promote cycling at Länder and municipal level;
- The establishment or development of safe and narrow comprehensive infrastructure and the development of parallel cycling infrastructure between the centres of settlements;
- Establishment of a programme of action on cycling for children;
- Development of foot transport support, e.g. through increased information and awareness-raising, and development of walking infrastructure at federal, regional and municipal level;
- Promoting multimodal sustainable forms of mobility (bike & Ride, bike sharing) and organisational and planning frameworks in local and urban spatial planning for active mobility;
- Stepping up research and development in the field of cycling and walking, for example, through toolkits for the transformation of public mobility spaces in Austria (see flagship project Transformator:in);
- Evidence-based reinforcement of sector coupling health and mobility to enhance synergies between climate action and health promotion (WG Sector coupling Health and Mobility with research and implementation from both sectors, Foundation Professor of Active Mobility);
- Further development of the legal framework to facilitate active mobility.

Mobility management

The mobility transition requires integrated approaches to pool actions, create synergies, avoid counterproductive effects and support actors in changing behaviour. Mobility management combines actions from different sectors and supports the introduction and use of new and environmentally friendly technologies. Awareness-raising about means of transport, mobility and consumption habits, physical activity and health can make a sympathetic contribution to the increased use of public transport and active mobility, as well as to the overall acceptance of the mobility transition. All Austrian companies, cities, municipalities and regions, tourism and leisure businesses and regions, as well as other relevant actors: in the mobility system, to motivate and support their implementation to

57 https://www.bmk.gv.at/themen/mobilitaet/fuss_radverkehr/publikationen/masterplangehen.html

58 https://www.bmk.gv.at/themen/mobilitaet/fuss_radverkehr/publikationen/masterplanradfahren.html

59 https://www.klimaaktiv.at/mobilitaet/radfahren/masterplan_RF_2025.html

implement zero-emission sustainable mobility solutions as part of mobility management.

- Comprehensive expansion of climate-active mobile advisory and mobility management support programmes for businesses, cities, municipalities, associations, tourism and leisure, education and youth institutions;
- Create an improved legal framework for mobility management;
- Strengthening research on solutions and implementation tools for mobility management (see Research Project ActNow);
- Improved framework conditions at country and community level, uptake of multimodal GHG emission saving solutions and regulations, such as the parking obligation;
- Develop the National Action Plan on Children and Youth Mobility 2030.
- Improving the tax and tax framework conditions for Promoting climate-friendly mobility measures (e.g. mobility budgets, job wheels and job tickets for workers).

Fleet efficiency – energy transition in road transport

Direct electrification of cars, buses and rail is the most efficient form of decarbonisation in the strategy area of ‘improvement of transport’ (see avoidance-shift improvements in the Mobility Master Plan 2030). The roll-out of the vehicle and the comprehensive expansion of the infrastructure take place in parallel and need to be further resolved. In addition, support programmes for zero-emission vehicles and infrastructure will also accelerate the uptake of hydrogen fuel cell technology.

- Compliance with the current EU CO₂ fleet targets for cars, light and heavy duty vehicles and buses⁶⁰;
- Further develop the e-Mobility Plan, in particular the new BMK funding programmes for ENIN and EBIN inclusive infrastructure and further development towards EBIN II as of 2025⁶¹;
- New funding focus on charging infrastructure for underserved areas (Ladin⁶²) and consideration of extension to HGV charging infrastructure (Ladin II);
- Planning, design and implementation of an Austrian platform for smart integration of electromobility into electricity grids – electricity grids for electric mobility (Stele)
— Process and platform for structured, iterative coordination of electricity grid development needs, together with the energy industry, network operators and

⁶⁰Regulation (EU) 2019/631 setting CO₂ emission performance standards for new passenger cars and for new light commercial vehicles. Regulation (EU) 2019/1242 setting CO₂ emission performance standards for new heavy-duty vehicles

⁶¹[EBIN – zero-emission buses and infrastructure 2. Invitation to tender | FFG](#)

⁶²[Ladin – charging infrastructure | FFG](#)

users (lorry infrastructure development as main drivers)

- Further⁶³ develop and evaluate motorways and express roads finance AG (ASFINAG) development strategy and ASFINAG Climate and Environmental Protection Programme, and the amendment of the Federal Roads Act to enable the roll-out of charging infrastructure on the whole high-level road network (closure of protected zones);
- Continuation of the Austrian Automotive Transformation Platform⁶⁴;
- Implement the immediate 'Renewable Energy in Mobility'⁶⁵ programme, including ambitious infrastructure development on the high-level road network for cars, trucks and buses;
- Improve the framework conditions for electric road systems;
- National policy framework under Regulation (EU) 2023/1804 on the deployment of alternative fuels infrastructure (AFIR Regulation);
- Amendment to the 2012 Fuel Regulation, including the follow-up process for the timely and ambitious implementation of the RED III Directive
 - Consideration of the adoption of a legislative framework for the implementation of the RED III targets, including the entire transport sector (road, rail, aviation, shipping)
 - Implement a consistent pathway towards achieving the overall renewable target of the RED III Directive with harmonised targets for the entire transport sector (road, rail, aviation, shipping), taking into account the need to exceed the minimum RED III targets in the transport sector;
- Toll tariff regulation (Tolling heavy vehicles on the A+S network according to CO₂ emissions)
 - Setting the toll rates for vehicles above 3.5 tonnes technically permissible maximum laden mass as part of the distance-based toll in relation to CO₂ emissions by charging the external costs related to CO₂ emissions;
- Planning certainty for keepers: for zero-emission vehicles in terms of 75 % toll, tariff bonus above 3.5 tonnes;
- Taxi & Car-Sharing 2025: Enshrine the use of zero-emission newly registered vehicles in traffic law;
- Examining the pre-evaluation of e-taxis in parking spaces and the installation of e-charging points at taxi stands;
- Examine the further development of the existing Right to Plug rule with regard to housing law, including an evaluation of the existing scheme;
- Making it possible to include operating costs for car-sharing/car-bikes/alternative

63 ASFI-allg-0129_asfinag-climate and environmental protection programme_f39l_online_v2_low.pdf

64 <https://aatp.at/>

65 <https://infothek.bmk.gv.at/laden-so-einfach-wie-tanken-sofortprogramm-beschleunigt-ausbau-der-e-mobilitaet/>

mobility offers in Section 28 of the 2002 Housing Ownership Act (WEG);

- Establishment of a control centre for electromobility;
- Greening of the commuter: systematic analysis and re-assessment of model proposals, taking into account infrastructure improvements;
- Conceptual considerations on the taxation of service scales in relation to property;
- Periodic evaluation of the design of the vehicle registration tax (standard consumption tax) in terms of environmental steering effect (adaptation to changing framework conditions);
- Austria's ambitious position in the discussion on fleet renewal in farms;
- Process to establish zero emission zones and prepare the legal basis in cooperation with local and regional authorities.

Freight transport by rail

Rail freight transport (SGV) is a key element for a sustainable Austrian and European freight transport system through its systemic benefits (mass capacity, environmental performance, transport safety, energy efficiency, resilience). In addition to punctuality, reliability and predictability, the average speed of freight transport by rail is to increase further, particularly in the international SGV. Combined with economic and energy efficiency, rail is expected to become a central part of climate-neutral supply chains by 2040 and rail-based transport will be increased to 32 % of total transport (in tonne-kilometre terms) by 2030.

- “Crossing borders”: Facilitating cross-border SGA and interoperability/quality improvement of cross-border SMR/construction site coordination and timely information on construction and conservation measures on rail infrastructure;
- Organisational measures (implementation of TimeTableRedesign at European level, national measures and persuasion at European level for more structured capacity allocation) as well as targeted infrastructure upgrades (e.g. overhaul tracks) to improve the parallel capacity of freight and passenger transport;
- Continuation of the promotion of rail freight transport, i.e. continuation of support for the provision of rail freight transport services in the forms of production of single wagons, unaccompanied combined transport or rolling rural road;66 67

(66a) Single Wagon (EWW) means the carriage by rail of one or more laden rail vehicles for the carriage of goods, other than in the form of whole trains.

(b) Unaccompanied Combined Transport (UKV) means that transport technique:

- where there is no transshipment of the transported good itself, but involves transshipment of the intermodal transport unit (ITE) (e.g. container, swap body, semi-trailer, mobile or ACTScontainer),
- the majority of the distance travelled is handled by rail and the road lead and follow-up is kept as short as possible, and
- the ITE are not accompanied by a driver.

(c) Rolling road (RoLa) denotes the carriage of heavy goods vehicles on trains using low-floor wagons with a continuous load area, whereby the trucks are running on or shut down from the train themselves.

67 <https://www.bmk.gv.at/themen/verkehr/eisenbahn/foerderungen/sgv.html>

- In addition, in the period from 1 January 2023 to 31 March 2023, infrastructure charging support amounting to 50 % for manipulated rail freight transport, i.e. a 50 % reduction in rail tolls, and continuing to increase infrastructure charging for manipulated rail freight transport to 100 % from 1 April 2023 and in 2024, i.e. a 100 % reduction in rail tolls for railway undertakings;
- Accompany the roll-out of the digital automatic coupling;
- Continuation and extension of the connection and terminal support programme⁶⁸;
- Continuation and development of the investment support programme for combined transport of goods (ICP)⁶⁹;
- Complementary communication measures from the Freight Master Plan⁷⁰ to increase the modal split of the rail (supply of a shift coache, list of connecting lines, digital funding map);
- Regulatory framework and incentivising the roll-out of climate-neutral urban logistics.

Logistics

Logistics is regarded as a link between economic agents on the one hand and transport modes in freight transport on the other, and must therefore be regarded as a key factor in ensuring an efficient and decarbonised supply of goods, information and resources to Bevölkerung and the economy.

- Continuation and development of the⁷¹ BMK's existing logistics support;
- Reducing energy and land use in supply chains and logistic areas;
- Digitalisation of supply chains (electronic freight transport information)⁷²;
- Training and skills campaign in logistics adapted to the needs of decarbonised and digitalised logistics support for measures to achieve sustainable urban logistics (SULP).

Aviation

- Aviation is an important component of Austria's macroeconomic development. However, it faces a tension between ecology, economics and social aspects. The fight against climate change requires decarbonising the aviation sector and reducing its further climate-relevant emissions/effects.
- The Aviation Strategy 2040+: Climate-friendly and forward-looking aviation – An

⁶⁸<https://www.bmk.gv.at/themen/mobilitaet/transport/gueterverkehr/kombiverkehr/foerderung/atf.html>

⁶⁹<https://www.bmk.gv.at/themen/mobilitaet/transport/gueterverkehr/kombiverkehr/foerderung/ikv.html>

⁷⁰<https://www.bmk.gv.at/themen/mobilitaet/transport/gueterverkehr/masterplan.html>

⁷¹ <https://www.bmk.gv.at/themen/mobilitaet/transport/gueterverkehrslogistik/foerderung.html>

⁷² https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/1393-Electronic-documents-for-freight-transport_en

implementation strategy under the Mobility Master Plan published in 2022 defines strategic objectives and measures in areas such as climate and environmental protection, integration of aviation into the overall system (intermodality), location competitiveness, post-COVID-19 recovery, employment and social standards, digitalisation, technological transformation and drones.

- Roadmap for the roll-out of Sustainable Aviation Fuels (SAFs) in and from Austria: As a key measure to decarbonise aviation, the Aviation Strategy 2040+ defines the increased use of SAF in Austria. The SAF Roadmap, which is planned to be published in the first half of 2024, sets out the key actions to this end. In addition to providing incentives and stimuli for the SAF high, the focus is on ensuring the availability and sustainability of SAF, ensuring cost-effectiveness and competitiveness in the aviation sector, as well as political dialogue and stakeholder participation. The increase in SAF use can also mitigate non-CO₂ effects.
- Close cooperation with partners at national and international level to reduce non-CO₂ effects. Set up a monitoring, reporting and verification system for non-CO₂ emissions under the EU ETS.
- Improve data exchange between aircraft operators and air traffic control, better prediction of areas with high condensation.

Shipping

Freight transport on the Danube waterway is due to its systemic benefits (mass capacity, environmental performance, road safety, energy efficiency; Resilience) an important element for a sustainable Austrian and European transport system. At the same time, the Danube River Region performs important other functions: At the same time, the Danube is a waterway, energy, recreational space and life for flora and fauna. These uses need to be reconciled in the best possible way, while at the same time strengthening the Danube transport mode. Shipping is competitive, environmentally friendly and sustainable in order to strengthen its position in the overall transport system. For this reason, a separate sectoral programme was drawn up by the BMK, with the involvement of the shipping sector and environmental organisations, in the form of the Danube 2030 Action Programme. This programme is in line with the Masterplan 2030 Mobility and the Freight Transport Master Plan 2030.

- Implementation of the Danube Action Programme 2030⁷⁵:

⁷³ https://www.bmk.gv.at/themen/verkehr/luftfahrt/publikationen/lfs_2040.html

⁷⁴ https://www.bmk.gv.at/dam/jcr:ea56f660-1bf7-4a6a-bcbf-6e95bb2cc728/BMK_SAF_Roadmap_UA.pdf

⁷⁵

<https://www.viadonau.org/fileadmin/content/viadonau/01Newsroom/Dokumente/2023/Aktionsprogramm>

- Equipping Danube ports with shore-side electrical energy supply infrastructure for river cruise ships and freight vessels: equipping private and public Danube lakes with shore-side electricity will make Danube navigation more environmentally friendly and, in addition to reducing emissions, will also reduce noise pollution from commercial shipping. The first shore-side electricity plants could already be built in early 2023, and in the coming years they are to be gradually expanded on the Austrian Danube.
- Development of public infrastructure for alternative fuels in inland waterway transport: inland waterway transport, like aviation, will, in the short term, depend on largely conventional forms of propulsion. Alternative fuels can play an important role in this respect in the coming years in order to further reduce CO₂ emissions from the Danube shipping sector. To this end, appropriate infrastructure for these alternative fuels needs to be made available, including industry.
- Promoting the modal shift of freight transport from road to Danube waterway: An aid programme for inland waterway transport services is intended to increase shift effects, in particular from high & Heavy transport from the road to the Danube waterway (NB: such transport cannot take place by rail). The aim is to reduce the burden of: Road transport system and reduce emissions and other external costs (noise, congestion) in the overall transport system.
- Transport of alternative energy sources/fuels on the Danube.

Digital transformation in mobility

The dynamic developments and the associated potential in the field of digital technologies and services need to be exploited in order to make a significant contribution to the achievement of climate objectives in mobility. The Digital Transformation in Mobility Action Plan (AP-DTM)⁷⁶ defines the main measures of digitalisation in mobility in Austria for the coming years. The focus is on road transport and its interfaces with other modes of transport, as this is the main lever to achieve climate policy objectives. Better networking between-transport providers and mobility opportunities is a key building block.

The following thematic priorities need to be implemented:

- Implementation of the Digital Transformation in Mobility Action Plan;
- Digital collection, provision and publication of traffic regulations to enable, for example, active access or low-emission zone management, adapted to the specific environmental situation;

[_Donau_2030_BMK_viadonau.pdf](#)

⁷⁶ http://www.bmk.gv.at/themen/mobilitaet/alternative_verkehrskonzepte/telematik_ivs.html

- Improving the digital fitness of legislation to ensure the legal positive effects of the digital transformation on the environment and the efficiency of the mobility system (digital check for legal matters);
- Strengthen impact measurement in experimentation with innovative solutions to enable rapid learning of potentials for the environment;
- Design of a national mobility data space to make existing data widely available to both public and private actors, thus enabling mobility opportunities to be improved;
- Use of mobility-related data to monitor changes in mobility through evidence and, where necessary, adapt them to mobility offers;
- Cross-sectoral coordination in the field of digital transformation (e.g. mobility, tourism, energy) in order to identify synergies and potentials and thereby set targeted digitalisation priorities;
- Transforming mode-specific traffic management into multimodal integrated traffic management in order to attract the use of climate-friendly transport modes and thereby increase their use and acceptance;
- Benefits of the digital transformation for climate and environmentally friendly traffic management, such as low-emission zone management or efficient parking management;
- Taking advantage of current developments in the field of automation and connected driving to contribute to a more efficient and environmentally friendly driving mode;
- Strengthen cooperation between mobility service providers, both public and private, to promote and facilitate information and access to sustainable mobility opportunities. This includes the definition of profiles for data and service interfaces (e.g. for integrated mobility services);
- Promoting the available digital mobility services in order to widely disseminate knowledge about and access to existing mobility services and to increase the acceptance of these services among the population;
- Building and ensuring the technical expertise of mobility providers to enable the successful implementation of the digital transformation.

The implementation is monitored by ITS Austria⁷⁷, which deals with the potential for design in the digital transformation. Close cooperation between the Federal Government, the Länder, municipalities, operators, research institutes and public actors is a priority. The study commissioned by the BMK on decoupling economic growth and freight transport-development in Austria in 2040 also⁷⁸ appears to offer great opportunities for the digitalisation of production and logistics to contribute to decoupling and thus to traffic

⁷⁷ <https://www.austriatech.at/de/its-austria/>

⁷⁸ https://www.bmk.gv.at/dam/jcr:b809bed6-7bbd-4fde-b7ee-93ea1b982731/HeC_Infras_Deppel_Report_UA.pdf

avoidance. In this way, an important contribution to climate action can be made.

Research, technology and innovation, including experimentation spaces

Research, Technology and Innovation (RTI) provides foundations, tools and comprehensions to create new solutions for climate-neutral and affordable mobility. Through the FTI mobility transition, the entire funding portfolio should therefore contribute to achieving a climate-neutral mobility system by 2040.

- Implementation of the FTI strategy⁷⁹ and the mobility agenda⁸⁰;
- The promotion of RTI solutions for traffic avoidance, modal shift and improvement;
- Provide a legal basis for experimentation spaces as test rooms for innovation and regulation to gain experience with new innovation and technologies in real-life conditions;
- Promote mobility labs (urban and regional) as research infrastructures and test environments to create a collaborative framework for putting innovation into practice;
- Building alliances and implementation partnerships and through European and international positioning.

Further enshrining climate protection in the transport sector

The substantive laws on transport are being revised in order to allow for the statutory conditions for taking into account climate protection aspects both in authorisation procedures and in individual mobility.

Actions of Länder and municipalities & cooperation

The measures set out above to reduce GHG emissions in the transport sector are at different levels. Regions, cities and municipalities have the opportunity to create essential framework conditions for avoiding and thus climate-friendly mobility through sustainable regional, regional, urban and transport planning. In implementing measures, it is primarily the promotion of regional and local public transport services, a sustainable one.

Spatial planning, development of walking and cycling infrastructure, and sustainable transport services (e.g. parking management, parking regulations) and mobility measures.

For many measures, cooperation and coordination between the Federal Government, Länder and municipalities is essential for successful implementation.

⁷⁹Mobility FTI strategy ([mobilitaetderzukunft.at](https://www.mobilitaetderzukunft.at))

⁸⁰FTI Mobility Agenda 2026 ([mobilitaetderZukunft.at](https://www.mobilitaetderzukunft.at))

- Climate partnerships under the Mobility Master Plan 2030;
- Develop public-public cooperation.

Spatial planning, local transport planning, urban perspective

Mobility is strongly influenced by the structure of the space: The distribution of people's staging points and the transport infrastructure influence the length of routes and the choice of traffic or the necessary traffic costs in terms of (motorised) routes. Regions, cities and municipalities, through sustainable land, regional, urban and transport planning, have the opportunity to create key framework conditions for avoiding and thus climate-friendly mobility, while adapting to the consequences of climate change:

- Forward-looking forms of traffic calm;
- Promoting sustainable urban mobility and logistics plans (SUMP/SULP);
- To better enshrine (fuel) traffic avoidance principles in town and country planning;
- Further and more comprehensive use of the 81 public transport infrastructure classes as a basis for decision-making to prioritise settlement and site developments in the sense of energy-efficient spatial planning and infrastructure development.

Cities have a particular role to play in this transformation. On the one hand, the conditions for public transport and publicly accessible mobility are favourable through the best, rather compact space structures. On the other hand, they are particularly dependent on cooperation with the Federal Government and the Länder. Particularly important aspects in this context are:

- Adaptation of building regulations on wheel parking infrastructure, parking guidelines for private motorised transport, as well as the Parkometer laws with a view to decarbonising transport;
- Adaptation of framework conditions and targets for decarbonised Mobility infrastructure in the field of supra-urban and local spatial planning (in particular in the field of thematic spatial planning, in the field of local development concept and, more generally, by land-use and development planning);
- Broaden the scope for action under civil law to implement the climate and energy targets for municipalities by securing and extending the scope of urban planning contracts within the framework of the Land Spatial Planning Acts⁸²;

⁸¹The ÖV quality classes are a uniform model throughout Austria for the spatial representation of the development quality of sites and areas by means of public transport.

⁸²Position paper of Austrian cities on urban planning contracts; produced by Univ.-Prof. Dr.

Verena Madner, Dr Stefan Mayr, LL.M. and Lisa-Maria Grob, LL.M., Research Institute for Urban Management

- Reform of housing support (funding should also be made available for renovating the stock, as well as for the construction of mobility nodes and sharing systems in the residential property);
- Linking the development of settlements to ÖV quality classes or transmission-connected heat supply;

Buildings and heat

Emissions fell by 5.5 million tonnes of CO₂equivalent between 1990 and 2022, with stronger reductions, especially since 2005. However, new housing construction and service buildings have increased over the past decade due to population growth, increased specific living space and increased comfort. At the same time, the remediation assets have stabilised at low levels. Additional measures are now planned to return to a continuous reduction trend. Important cornerstones are the federal government programme, a heating strategy and the strategies of the Länder. Concrete measures and instruments are discussed between the Federal Government and Länder as part of a 'heat strategy'.

The objective of decarbonising heating systems will be pursued by extending the existing ban on the installation of central oil or coal installations in new construction to all fossil fuel heating systems. The prohibition does not include heat supply systems operated with renewable gas, provided that it is supplied from its own generating installations or via a direct pipeline from the generating installation. The EEC was adopted in February 2024. Existing support systems will be expanded and attractive for the transition of existing fossil heating systems. The necessary legal bases for the first phase until 2027 (or for low-income houses until 2030) have been adopted.

The strengthened European law objectives of the revision of Directive 2024/1275 (EU on the energy performance of buildings) call for a further increase in the energy efficiency of buildings.

The following focus areas are foreseen for the building sector:

and Governance, WU Vienna, Austria

https://www.staedtebund.gv.at/fileadmin/USERDATA/themenfelder/Raum-_and_Regional_planning/position_paper_staedtebauliche_Vertraege_2020_Optimised.pdf

Construction of new buildings

- As a result of available and marketable technologies, buildings constructed after 2020 are largely free from the use of fossil fuels for the provision of space heating, hot water and cooling. In addition, for example, component activation, active use of hot water storage tanks and the use of buildings as storage facilities for load balancing and load flexibility.
- With the entry into force of the EEC, the Oil Boilers Ban Act – ÖKEVG 2019 will be replaced, which means that the construction of all fossil-based installations (gas, oil, coal) for the supply of heat is prohibited.
- Increasing energy efficiency in new construction: Since 2020, the thermal quality of new buildings must be cost-optimal. The legal basis is the EPBD, which must be transposed into national law in the building codes of the Länder.

Replacing fossil fuels with renewable and efficient district heating (in particular renewables)

The transition of existing fossil heating systems to climate-friendly heating systems is to be achieved by means of an extended support system, both in terms of budget and content. To this end, existing public funding will be attractive and budgeted.

Operational and municipal heating switches can be supported by the regular UFI, which according to the UFG 2023 to 2027 will continue with a total of EUR 751 million.

As part of the 'Renovation Plan', in addition to the support for thermal measures for businesses, municipal institutions or private households, a total of EUR 2.445 billion is to be made available for heating switches in private households between 2023 and 2027. In addition, an additional EUR 1 billion will be allocated to heating switches between 2024 and 2026, as well as EUR 2 024 200 million for thermal renovation. The implementation of these measures among low-income households will be supported by an additional EUR 1.6 billion by 2030. The aim is to allow the group of the lowest-income third of Austrian households to fully cover the costs of the measures up to a technology-specific cap. An updated quantitative evaluation of the effects of this extension will be carried out prior to the submission of the final NECP as part of the revision of the WAM scenario.

- In federal public buildings (owned and occupied), subject to technical feasibility, space heating and hot water should be produced by district heating or renewable energy sources by the end of the calendar year 2027 at the latest;
- Replacement of fossil gas
 - The natural gas network is no longer to be developed for heating/hot water

purposes; the connections for heating and hot water could be compacted in areas where district heating is not available;

- An extension of the already existing ban on the installation of central oil or coal installations in new construction to cover all heating systems that can be fuelled with fossil fuels (EEC);
 - Heat supply systems using renewable gases supplied from its own generating installations and directly from the generating installation (EEC) are also permitted;
 - To achieve climate neutrality, fossil gas will gradually be replaced by renewable gas in the gas grid. Renewable gases are to be used as a priority in the hard to abate sectors;

 - Areas with quality-assured district heating or the expansion areas for quality-assured district heating should be identified as soon as possible and be publicly available.
- CO₂ pricing
 - The 2022 National Emissions Trading Act also provides a significant boost to the phase-out of fossil fuels in buildings;
 - This will be transferred to an EU-wide emissions trading system (ETS-2) as of 2027 (or 2028 in case of high energy prices).

Thermal energy renovation

As building conditioning is one of the important segments for achieving climate neutrality in sectors outside the ETS by 2040, the Government Programme sets out the increase of the renovation rate towards the 3 % target. This will be implemented in particular by:

- Long-term federal funding offensive coordinated with the Länder;
- Further development of housing support in order to align with climate change objectives, with particular regard to aspects relevant to spatial planning, such as adaptation before new construction, indoor development, land recycling, building density, neighbourhood qualities, ÖV development, etc.; and the use of organic building materials based on renewable raw materials;
- According to the government programme of the Federal Government, the introduction of a socially acceptable renovation requirement is planned:
 - fast recouperment measures such as insulation of the upper floor
 - accompanied by subsidised consultations and specific funding offers
 - with derogations and thresholds
- Exemplary role of public authorities in thermal renovation: 3 % renovation rate,

binding guidelines for green renovation⁸³;

- Increase renovation quality and thereby rapidly reduce consumption and save costs for households, in particular by:
 - Drawing up a comprehensive renovation concept for each planned major renovation measure (e.g. EPC) with the aim of ensuring meaningful renovation sequences and maximising the reduction of consumption at minimum costs and adapting the support to the required implementation.
 - Implementation of the guidelines for eco-friendly renovations; Continuation of the funding priority for environmentally beneficial renovations; Support bonus for building materials from renewable raw materials.

In addition, the Federal Government and the Länder are developing a joint heat strategy with the aim of decarbonising heat supply by 2040. For this purpose, there is a common mandate in the form of a mandate decided by the provincial governors. It will jointly develop instruments and accompanying measures to facilitate thermal renovations and the use of renewable energy sources in residential matters as part of an overall approach.

The Länder are responsible for implementing the EU Energy Performance of Buildings Directive. The Federal Government's remit is to implement the renovation obligations for federal buildings.

Accompanying measures

- Adaptations and rapid implementation of the main OIB Directives: The Österreichische Institut für Bautechnik (OIB) aims to implement the Energy Performance of Buildings Directive in a harmonised manner. This sets out, inter alia, requirements for new buildings and existing buildings undergoing major renovations. These OIB guidelines can be adopted by the Länder in their building codes. The timely adaptations of OIB-RL 6 'Calculation of the cost-optimal level of requirements' and OIB-RL 6 'Energy saving and heat protection' and complementary standards and codes of conduct support the continuous decarbonisation of the building sector.
- This will be accompanied by information and awareness-raising activities and consultations (independent, promoted and public); the energy performance certificate will be upgraded in quality; data on building stock and technologies for conditioning

⁸³ For more information, see the presentation of the Council of Ministers on 29.11.2023 at: <https://www.bundestkanzleramt.gv.at/bundestkanzleramt/die-Federal-Government/Ministry-of-Ministers/Ministry-of-Ministers'-minutes-xxvii-2021-3/bp-79-29-nov.html>

buildings will be collected in a structured manner (e.g. building and housing registers).
A broad-based approach

Communication campaign will allow for targeted knowledge transfer, e.g. through model buildings that make different construction concepts and technologies researchable and liveable.

- In the area of housing law (in particular the Housing Ownership Act, the Tenancy Law Act), possible legal barriers to renovations, heating exchange and the installation of solar installations (thermal and PV) and e-charging stations, among other things, should be identified and removed.
- Measures for spatial planning, urban development and energy planning are included in the transport sections and horizontal fields of action.
- Aspects of building culture, as indicated inter alia in the Federal State's Building Culture Guidelines, should be taken into account.
- Examination of targeted support for accompanying services and smaller investment measures (hydraulic reconciliation, heating check, renovation timetables/overall refurbishment plans, improvements in heat distribution and distribution, etc.).
- A targeted qualification for architects, planners and Craftsmen are needed to create sufficient quantitative and qualitative capacity to implement the measures required.

Measures to adapt to climate change in buildings and heat

The building sector faces particular challenges related to climate change. On the one hand, rising average temperatures during winter and transition periods will result in reduced heating demand in Gebäu. On the other hand, overheating of buildings during the summer months is a growing problem, especially in the densely built urban settlements. In order to counter rising energy consumption by drastically increasing cooling of buildings using traditional technical solutions, targeted measures must be taken both in new construction and in the building stock.

In order to ensure the quality of housing in buildings and in the surrounding environment, the adaptation strategy envisages the following measures:

- Implementation of structural measures in both new construction and renovation to ensure thermal comfort;

- The use of passive and active cooling with alternative, energy-efficient and resource-efficient technologies;
- Improving the climate of urban spaces, in particular taking into account micro/meso-climatic conditions in urban and free space planning;
- Implementation of construction measures on buildings to protect against extreme weather events;
- Increasing water retention – avoiding local flooding through building-related measures;
- Adaptation of construction and standards to climate change;
- Examination and, where appropriate, further development of funding instruments for the purpose of:
 - Consideration of climate change aspects in new construction and renovation;
 - Research on adaptation to the effects of climate change in construction and housing;
 - Pilot projects “Climate-adapted architecture”;
 - Outreach and awareness-raising on climate change adaptation;
 - Education and training on adaptation to climate change

Industry

Direct GHG emissions in industry are caused by both energy demand and process-related emissions. A large part of GHG emissions in this sector are subject to the European ETS, so a clear distinction between ETS and non-ETS measures is often neither useful nor possible. In contrast to other sectors, the structures, requirements and looms in the industry are diverse. For example, they lead from the use of water material in the hard-to-abate processes, to the decoupling of waste heat (including low temperature waste heat) in district heating networks, to the material use of captured CO₂ process emissions. Decarbonisation of industry can therefore only be achieved through a multidimensional approach. Actions whose direct impact contributes to the decarbonisation dimension of industry are mostly concentrated in the areas of:

- It increases efficiency.
- Renewables;
- Security of energy supply;
- Research, innovation and competitiveness.

The revision of the Emissions Trading Directive, as part of the Fit-for-55 package, made significant adjustments to the existing EU ETS. For example, a much faster reduction of the cap is foreseen by 2030. Free allocation of emission allowances for those sectors at risk of carbon leakage which are affected by the Carbon Border Adjustment Mechanism (CBAM) from 2026 onwards on the import side by 2034.

For industrial installations currently not covered by the EU ETS, a national carbon price has been applied since October 2022. In the context of the extension of the European Emissions Trading System to other sectors (ETS-2), a transition from the national on-board emission allowance trading system to the European system is planned from 2027 (or 2028).

For accompanying areas of action, the circular economy, the development of sustainable infrastructure, CCU/S, authorisation procedures, and the demand for green products can be used as a proxy. However, substantial financial resources are needed to enable the decarbonisation of industry/production, which is provided by Austria as part of the following support.

Domestic environmental support scheme

The UFI is one of Austria's key support instruments for climate and environmental investments. Until 2026, EUR 620.5 million will be available for this support instrument for investments under Section 23 of the UFG. Through its funding guidelines, it also offers investment grants for pilot and demonstration plants for the realisation of facilities that allow eco-innovation to be tested for the first time and on a large scale in real use. Renewable heat and energy efficiency are already important priorities for support under the UFI.

National Recovery and Resilience Plan

The Climate and Energy Fund's Economic Transformation Programme is anchored in the National Recovery and Resilience Plan (RRP). A budget of EUR 100 million will be available until 2026. The "Transforming the Economy" programme focuses on transformative, emission-reducing measures of the economy that make a significant contribution to the reduction of greenhouse gas emissions. They are measures leading to an efficient use of energy, a switch to renewable energy sources or any other reduction in GHG emissions in as much as possible. Installations subject to the ETS also have the right to apply, which set new levels in the respective sectors and fall below the sector-specific benchmarks.

National support instrument for industrial transformation

The decarbonisation of energy-intensive manufacturing companies requires heavy investment costs and often involves increased operating costs. By 2030, a total of EUR 2.975 billion will be available for industrial transformation under the UFG. The aim is to support companies in their efforts to bring climate-friendly technologies onto the market in Austria and thus to prevent greenhouse gas emissions from, inter alia, direct combustion of

fossil fuels or from dust-related production processes. The target groups of these instructions are set out in Annex I to the UFG.

This instrument is intended to enable co-financing under European funding programmes (e.g. EU Innovation Fund, LIFE) to increase the chances of successful Austrian projects at EU level and to attract EU funding to Austria, excluding double funding.

‘Climate-neutral industry Austria’ dialogue process

Austria’s energy-intensive industry is in the pipeline of transformation processes in the coming years. The BMK has therefore launched a long-term dialogue process together with eleven representatives of the most emission- and energy-intensive industrial companies and the Industrial Association. As a first step, a common understanding of the energy-intensive industry road to a climate neutral Austria was created as part of an intensive, participatory process with the participating industry companies.

The ‘Climate-neutral Industry Austria’ dialogue process is intended to ensure a common understanding and exchange in the long term. This will be done through continuous and ad hoc exchange formats.

The aim is to continuously discuss the necessary framework conditions for decarbonisation in the national and European contexts, and concrete action plans for the innovative transformation.

JUST Transition Plan

The JTF is the first of three pillars of the JTM under the European Green Deal. From 2021 to 2027, around EUR 135 million of JTF resources are planned to be used in Austria to support and drive a sustainable structural change towards climate neutrality in the regions most affected by the transition to a climate neutral economy. The plan describes the transition process towards a climate-neutral economy and the most affected territories. It also assesses the impact of the transition and presents the expected contribution of JTF support and the type of operations planned. Synergies, complementarities and the partnership principle will also be implemented. Details of the Austrian Just Transition Plan are provided in Chapter 1.1.2.

Agriculture

The current measures in the agriculture sector with climate and energy implications are based on the possibilities offered by the first and second pillars of the CAP and from the other national objectives set out in federal and federal agricultural law. The GSP 2023-2027 is the main rural development programme. The key element of Austria's agricultural policy is to support a competitive, resilient, environmentally and resource-efficient, land-based agriculture based on family farms.

For the agriculture sector, the GSP is the most important lever to implement climate-relevant measures. Compared to the previous funding period (2014-2020), national climate and environmental ambitions have been further increased. The GSP covers both the first and second pillars of the CAP, both of which contribute to the prevention and reduction of emissions and the maintenance and enhancement of carbon sinks.

Around 52 % (approximately EUR 4.5 billion) of Austria's total GSP funding is programmed as climate-related. It should be noted that climate-relevant activities in the non-agricultural sector (e.g. forestry, renewable energy, development of rural areas) are also supported. As the EU's organic flagship country (around 26 % organically farmed area), the organic action programme for climate policy is also decisive in Austria: With the implementation of the planned proposals for measures in the 2023+ Austrian Organic Action Programme, the organic share is to be made possible from 30 % by 2027 and to further increase it to 35 % by 2030, taking into account the evolution of demand.

One of the most significant new elements of the GSP is an increased environmental and climate ambition ('green architecture'), the introduction of new 'eco-schemes' under the first Pillar, as well as a stronger focus on ambitious goals and impacts. With the so-called 'extended conditionality', which must be complied with for all farms, the basic environmental and climate requirements are already essential for farmers. This instrument addresses various objectives, such as erosion control, maintenance of permanent grassland or protection of designated wetlands and peatlands. The standards for good agricultural and environmental quality (GAEC) linked to direct payments thus make important contributions to climate change mitigation.

The Austrian agri-environmental programme (ÖPUL) remains the central instrument of the national GSP scheme for emission avoidance/reduction and carbon production in agriculture. The new ÖPUL 2023 includes the eco-schemes of the 1st Pillar and agri-environment-climate measures (including animal welfare) and payments for Natura 2000 areas and the 2nd Water Framework Directive Pillar and includes under other measures:

- The eco-schemes offered for the first time under the 1st Funded pillar (direct payments) are linked to the climate objective of the GSP. These support measures include ‘greening of arable land – catch crops’, ‘greening of arable land – Immergreen system’, ‘Erosion protection for wine, fruit and hops’ and ‘Animal welfare – grazing’ and are implemented under the ÖPUL agri-environmental programme. Through as long and comprehensive soil cover as long as possible, the aim is to ensure comprehensive humus build-up, humus conservation and erosion protection, and by increasing grazing and grazing time, emissions reductions in livestock farming are promoted.
- Fertiliser reductions or adaptations to fertiliser management are implemented in various ÖPUL measures, in particular the measures ‘organic farming’, ‘restriction of yield-increasing inputs’, ‘near-soil application of liquid farm manure and manure separation’ and ‘preventive groundwater protection – arable land’.
- Measures such as ‘organic farming’, ‘environmentally sound and biodiversity-friendly management (UBB)’, ‘erosion protection of arable land’ or ‘hunting and soil protection on ploughable grassland’ make an important contribution to maintaining or optimising agricultural carbon pools. In addition, the ‘Heuwirtschaft’ measure supports the maintenance of traditional grassland use and thus contributes to the maintenance of permanent grassland. The nature conservation measures (“nature protection” and “result-oriented management”) can make a positive contribution to carbon storage through tailored management of wet habitats.
- In the interests of the circular economy, the ÖPUL also promotes nitrogen-reduced feeding and genetically modified organisms (GMOs)-free protein feed from European origin for pig farming. By means of differentiated premiums in the ‘organic farming’ and ‘restriction of yield-increasing inputs’ measures, lower livestock stocking densities are increasingly promoted in order to reduce the level of fertilisation and to strengthen more extensive livestock farming.
- Various ÖPUL measures set out relevant training obligations, including a focus on fertilisation planning, nitrogen/emission-reduced feeding or humus building.

In the context of the 2nd The Pillar will also offer other climate-relevant interventions with a relevant role:

- **Agricultural investment:** As part of agricultural investment support, a wide range of items are offered, which have an emission-reducing effect.
 - For example, the ground-level slurry excavation technology (traw shoe, drag hose, injector) is supported.
 - An important aspect is also the support for emission-reducing designs of livestock buildings and/or operational installations, such as covering or triangling of solid

manure stores, pig houses with functional areas, sloping floor stands and partial slatted floors with underfloor removal, mobile slab cleaners, etc. In the new design of the special guidelines on investment support applicable for the 2023-2027 funding period, new animal husbandry leaflets were integrated for housing support. DRAUS has the following fact sheets: Factsheet on 'Standards for particularly animal-friendly rearing and NH₃ reduction for increased funding', 'Promotion standards for livestock farming and NH₃ reduction'. Based on recent research, emission-reducing measures were planned both for the basic funding standard and for particularly animal-friendly farming. The funding notes will continue to be developed in the light of the state of science and will be considered as a technical basis for effective funding content.

- Investment support will also support the phase-out of fossil-fuelled machinery, electrification and alternative propulsion as part of agricultural investment support, with positive effects in terms of fossil emissions (energy sector accounting).
- **Education and advice:** Many climate-relevant measures are management measures and decisions (e.g. regular cleaning of open-air runs, consideration of weather conditions in the application of fertilisers, implementation of optimised, nitrogen-reduced fertiliser management, implementation of nitrogen-reduced feeding strategies, application of emission-reducing feed additives, but also the choice of climate-fit design of farm buildings or the purchase of low-emission equipment and machinery). The basic prerequisite for the implementation of meaningful measures is to provide farmers with appropriate knowledge. This is promoted under the GSP on the provision of education and advice. For example, the Federal Ministry of Agriculture and Forestry is currently working on the specific preparation of thematic calls in the context of the 'farm and forestry advisory system'. This will include calls for climate change adaptation, renewable raw materials, renewable energy, environment, climate protection and energy efficiency.
 - Other GSP interventions also contribute to climate change mitigation through a specific focus on calls for tender or selection criteria. These include, in addition to education and advice, EIP-AGRI: (European Innovation Partnership for Agricultural Productivity and Sustainability), LEADER⁸⁴ and Cooperation.
- In the non-agricultural sector, the GSP supports investments in the production and use of renewable energy and the implementation of climate and energy projects at local

⁸⁴Leader is a European Union programme of measures that have supported modelled innovative actions in rural areas since 1991.

level.

Under the GSP 2023-2027, a stronger focus of EU agricultural policy towards environment and climate policy frameworks has been implemented. Article 120 of the CAP Strategic Plan Regulation ensured that, in the event of a change in climate- and environment-relevant EU legislation (Annex XIII of the GSP Regulation), the national strategy plans are subject to an assessment and, where appropriate, to an amendment. This change must be made within six months of the legislative amendment.

Other important additional measures in the field of agriculture include:

- **Nitrates Action Programme Regulation:** With the amendment of nitrates The implementation of new provisions of the Action Programme Regulation is mandatory as of 1 January 2023. Additional fertiliser ceilings and records and the determination of the nitrogen balance must be implemented at regional level. The restrictions on autumn fertilisation, yield plausibility checks, a shortened time limit for incorporation and increased monitoring are laid down throughout the country.
- **Ammonia Reduction Regulation:** The new ammonia reduction regulation also entered into force on 1 January 2023. Here too, provisions on fertiliser management have been adopted:
 - Incorporation of fertilisers on agricultural land without land cover within 4 hours of application;
 - Restriction of urea application;
 - Covering of storage facilities (liquid manure and digestate) from 240 m³ on farm from 1.1.2028.

An amendment to the Regulation was adopted in July 2024, which, with adjustments to the coverage and incorporation obligation, would have a slightly higher emission reduction potential.

- **National Digitalisation Action Programme:** The Digitalisation Action Programme aims, inter alia, at boosting smart farming measures. The

Farmers should in future receive more support to implement precision farming technologies. These are intended to contribute, inter alia, to reducing nitrogen surpluses and increasing nitrogen efficiency (increasing fertiliser efficiency by 5 %). The BML action programme is currently under preparation.

Apart from national laws and support measures, further instruments will be launched to continue this trend. For example, the EU Sustainable Carbon Cycles initiative, which aims to develop incentives for quantified carbon storage capacity in line with climate neutrality in

2050 (Carbon Removal VO). Austria will contribute intensively and constructively to the further discussions on the file.

Renewable Energy Interface

- Agriculture has various interfaces with renewable energy and makes an important contribution to the energy transition.
- The sector serves as a supplier of important agricultural substrates, such as farmyard manure, residues and waste, for biomethane production. If farm manure is fermented in relevant installations, not only fossil energy can be substituted, but also GHG emissions from manure storage can be reduced. The aim is to ensure that the resulting digestate is then applied to a large extent close to the ground. For this reason, digestate was also included as part of CAP support. Austria's ambitious target (NEKP 2019) is to increase the proportion of national manure fermented in biogas to 30 %. The EAEC provided appropriate incentives to boost national biomethane production and injection. In the context of biomethane production, the work on the Network Infrastructure Plan (BMK), where the local location of possible agricultural sources related to gas network infrastructure was also relevant in order to better exploit the potential in the future. The following objectives are relevant for the development of biomethane production: —Maintenance and maintenance of existing agricultural biogas plants:
 - Support for small biogas installations as a supply unit for on-farm electrical energy;
 - Boost the construction of biogas plants for the recovery of previously unused biogenic waste and residues from agriculture, business and industry;
 - Expansion or reconfiguration of installations and the gas network to ensure biogas injection, regional approaches to economic processing and the injection of biogas into the natural gas network;
 - Step up the conversion of electricity-generating plants towards the processing and injection of biomethane.
- However, the AGRI-PV also plays an increasingly important role, with a good dual use of agricultural land – both for the production of agricultural products and for electricity. In Austria, the EAEC or the Investment Grants Regulation on electricity provides appropriate incentives to boost AGRI-PV.
- In addition to production, the increased use of renewable energy within the agricultural sector plays a crucial role. Fossil fuel used in agriculture is to be progressively replaced by renewable energy by 2030 (NECP 2019), while maintaining an economically and environmentally sustainable environment. In addition to the relevant funding items in the investment measure of the GSP, advisory support also plays an important role in this regard. In order to boost energy independence, the

special investment programme 'Energy self-sufficient farms', worth EUR 100 million, was launched in 2023. The aim is to increase security of supply in the agricultural and forestry sectors by optimising the use of energy through efficiency and demand management measures, improving farm self-sufficiency with renewable energy, switching to renewable raw materials and strengthening crisis security.

The following relevant objectives, already envisaged in the 2019 NECP, which are to be supported mainly, but not exclusively, by GSP measures, are:

- The need for mineral fertilisers is to be reduced by 20 % by 2030 compared to the use included in the 'with existing measures' scenario (WEM 2019);
- Increase in the share of national farm manure fermented in biogas plants to 30 % in 2030.

Land use, land-use change and forestry

With the adoption of the LULUCF Regulation, emissions and/or coal storage from the land use sector will be counted for the first time from 2021 and, under certain restrictions, offset against national efficiency sharing targets.

The measures effective in the LULUCF sector aim to meet the 2030 targets for Austria set out in Article 4 of the LULUCF Regulation.

In the forestry sector, the main reasons for this are the following:

- Measure 1: Continuous development of climate-efficient timber harvesting, respecting the basic principles of sustainable forest management and GHG-related optimisation of the interaction between growth, use and stock (cross-reference to measures 2 and 5);
 - Action 1a: Optimising support relevant to wood use, including their interplay (forest support under the Common Agricultural Policy, forest funds, etc.) in terms of effectiveness of measures which, inter alia, support sustainable wood use for material purposes,⁸⁵ strengthen cascading use and increase carbon storage in wood products;
 - Action 1b: Drawing up a guideline on soil-friendly wood harvesting by the Technical Advisory Council on Soil Fertility, with the aim of stabilising or increasing carbon stock in forest soils.

⁸⁵within the limits of the possibilities for recovery of the relevant wood species and ranges

- Action 2: Targeted forest management and care measures to increase growth and resilience and maintain productive capacity by promoting rapid reforestation after calamities or final use, the timely rejuvenation of old stocks, measures to increase the stocking of loomed stocks, adapting wild stocks to reduce the impact of wild game and securing or producing balanced forest vegetation conditions, with the aim of increasing carbon capture and storage and promoting the adaptation of forest stocks to climate change. This is also in line with the demands of the Citizens' Climate Council (promote increasing CO₂ sequestration and making tree planting compulsory in public spaces) and also the recommendations for action of the Austrian strategy on adaptation to climate change.
- Action 3: Focus support relevant for forest management and maintenance (forest support under the Common Agricultural Policy, forest funds, etc.) on measures that accelerate and ensure regeneration, increase growth and increase the stockpiling of shattered stands that increase carbon capture and storage, resilience, and the protective function of forest stands.
- Action 4: Expansion of forest area as a matter of priority in regions with low forest capacity, where environmentally, economically and socially acceptable, in line with the Austrian Forest Strategy 2020+, in particular strategic objective 3 on action area 1.
- Measure 5: Building up a carbon pool in biomass that is as stable as possible and adapted to climate change, while respecting the basic principles of sustainable forest management, and by building and maintaining humus in forest soil by selecting tree species and soil-friendly technology, taking into account local conditions, taking into account the effects of climate change on the soil carbon cycle, and taking into account storage or substitution effects. Attention should be paid to strengthening resilience to (climate change) disturbances in order to maintain and increase carbon storage in forest stands;
 - Action 5a: Preparation of national data for the presentation of emissions from catastrophic events (Article 3(1)(9) of the LULUCF Regulation) in accordance with the reporting requirements of the LULUCF Regulation;
 - Action 5b: Preparedness measures to prevent catastrophic events, such as under the Forest Fund (Measure 5: Mechanical decay and other preventive forest protection measures, measure 6: Forest fire prevention measures) and the forest fire action programme;
 - Measure 5c: Implementation of the 'Forest protects us!' action programme (protective forest);
 - Action 5d: Development of climate-fitter forests, such as under measure 2 of the Forest Fund;
 - Action 5e: Remediation measures to minimise the impact of catastrophic events, such as under the Forest Fund (Measure 1:

Reforestation and care measures after adverse events, measure 3: Compensation for loss of value caused by bark beetle damage, Measure 4: Construction of wet and dry storage facilities for damaged wood, measure 5: Mechanical decay and other preventive forest protection measures, measure 6: Forest fire prevention measures) and the forest fire action programme;

- Action 5f: Implement the recommendations for action of the Austrian strategy on adaptation to climate change, in particular in the field of agriculture and forestry;
- Measure 5 g: Synergies with the measures of the Austrian Forest Strategy 2020+, in particular strategic objectives 6 on action area 1
- Action 6: Evaluate and improve the framework conditions for increasing the long-lived material use of sustainable indigenous wood resources to optimise the substitution of raw materials and materials with higher life-cycle GHG emissions in line with LULUCF targets (including waste wood recycling). This includes improved life-cycle assessment of construction works and measures to extend the lifetime and recyclability of timber products;
 - Action 6a: Implementation of the areas of action of the Bioeconomy Strategy, in particular to increase added value through new uses, including greater use of by-products;
 - Action 6b: Austrian Wood Initiative, such as under measure 9 of the Forest Fund;
 - Action 6c: Synergies with the actions of the 2020+ Forest Strategy, in particular strategic objective 2 on action area 1.
- Action 7: Evaluation of the framework conditions and targets for the energy use of domestic woody biomass in line with the LULUCF target (Article 29 (7a) Renewables Directive) and the other *Fit for 55* targets and policies and targets for Austria, in particular nature protection and biodiversity and taking into account air pollution requirements. In this context, reference should also be made⁸⁶ to the cascading principle, which can make an important contribution to the resource-efficient use of wood and biomass. (Cross-reference to the renewable energy chapter);
 - Action 7a: Synergies with the actions of the 2020+ Forest Strategy, in particular strategic objective 2 on action 1;
 - Action 7b: Implementation of the revision of the Renewables Directive, in particular in the area of sustainability criteria and criteria for GHG savings (Article 29):
 - An overall assessment and assessment of the domestic application of forest biomass for energy purposes by 2030, in line with the criteria of Article 29 of the Renewables Directive; and
 - Ensure consistency between the energy use of forest biomass and the national target of the LULUCF Regulation for 2026-2029 for Austria in accordance with

⁸⁶within the limits of the possibilities for recovery of the relevant wood species and ranges

Article 29 (7a) and (7b) of the Renewables Directive.

- Action 8: Maintain or restore state-of-the-art forest bogs and wetlands, taking into account water availability to maintain/increase their carbon stocks or reduce GHG emissions from them and boost research;
 - Action 8a: Synergies with the actions of the 2020+ Forest Strategy, in particular strategic objective 7 on action area 1.
- Action 9: Implement the actions of the Biodiversity Strategy, in particular measures on ecosystem restoration, primarily drained organic soils, disturbed peatlands and other carbon-rich ecosystems, land use reduction, protection of all ecologically valuable habitats.
- Action 10: Evaluation of awareness-raising programmes and research on wood and biomass, e.g. as part of the climate change mitigation initiative, as well as of the Forest Fund and the continuation or creation of particularly GHG-reducing instruments.
- Action 11: Prepare for and accompany the content of the EU initiative on sustainable carbon cycles, with the aim of incentivising additional carbon storage services in line with climate neutrality 2050. The potential for additional carbon storage in Austria, e.g. for the carbon farming activities referred to in the draft Carbon Removal Ordinance, is to be assessed. Results should be available no later than 2026. This also responds to one of the demands of the Citizens' Climate Council (creating the basis for building humus).

An evaluation of the most climate-efficient forest management measures and optimal technologies to achieve the LULUCF targets will be carried out on the basis of recognised-scientific knowledge such as the CareForNetZero project *and* ongoing forestfund projects.

This project will accompany the implementation of measures 1, 2 and 5, etc.

The main measures in the area of agriculture are aimed at maintaining and optimising agricultural carbon pools (see sub-chapter 'Agriculture').

Another important measure is to halt the use of land in order to maximise the LULUCF potential (e.g. by designating agricultural priority areas or precautionary areas as is already taking place in some Länder⁸⁷).

Climate change adaptation measures in agriculture and forestry

Agriculture and forestry are particularly exposed to challenges related to climate change. In

⁸⁷[Preventive areas | Tyrol Chamber of Agriculture \(lko.at\); Freedom | Province of Tyrol](#)

many cases, there is a strong link between emission reduction and climate adaptation measures, which means that the implementation of the National Energy and Climate Plan must be carried out in accordance with the recommendations for action taken in the context of the Austrian Strategy for Adaptation to Climate Change. Sustainable, resource-efficient and climate-friendly (agricultural) production and the preservation and improvement of the environmental performance of agriculture should be ensured in the event of changing climatic conditions. Management adapted to climatic changes can preserve the multifunctional effects of the forest. The Austrian adaptation strategy provides for follow-up measures for the agriculture and forestry sector:

Agriculture:

- Sustainable soil development and soil fertility, structure and stability;
- Increased establishment and promotion of water-saving irrigation systems and improvements in irrigation planning;
- Breeding and targeted use of water-saving, heat-tolerant plants (species/varieties) in the interests of regionally adapted management;
- Adaptation of fertiliser management to seasonal weather patterns;
- Provide scientific evidence on possible new diseases and harmful organisms in agriculture;
- Environmentally sound and sustainable use of plant protection products;
- Checking the suitability of the site due to changing climatic conditions and making recommendations for the selection of a crop adapted to the site;
- Risk minimisation and development and development of risk-spreading tools;
- Integrated landscape management to safeguard soils and improve agroecology, including the preservation and maintenance of landscape features;
- Maintaining existing alpine pastures and revitalising abandoned alpine pastures;
- Optimisation of the glasshouse culture in terms of energy, water and cooling supply plans;
- Promoting animal welfare and animal health in changing climatic conditions;
- Consideration of future requirements for the air conditioning of poultry houses due to increasing thermal stress;
- Optimising the adaptation and control strategy for new diseases and pests.

Forestry:

- Adapting tree species and origin choices, including targeted promotion of diversity (diversity) through appropriate silvicultural management and rejuvenation of ageing populations;
- Soil-friendly management;

- Reduction of damage to wildlife;
- Development of an advisory concept for: Forest owners with regard to adaptation forests to climate change;
- Adapt and improve disruption and calamity management;
- Establishing preventive measures in view of the possible increase in forest fires;
- Forest Immission Control – Integrated Forest Inventory and Immission Monitoring;
- Development of adapted and innovative wood processing techniques, taking into account possible changes in wood quality and tree species.

Waste management

At present, both global and Austrian consumption of resources and waste are increasing unabated, with waste generated from hub materials showing the largest increase and waste generation without excavated materials has been rather stable in recent years. The extraction and processing of resources tends to lead to high greenhouse gas emissions and enormous pressures on the world. Keeping resource consumption within the planetary boundaries is a matter of urgency, moving away from the current linear economic system.

Industrial recovery of raw materials from waste will be encouraged to reduce dependence on particularly valuable raw materials and the emissions of gases that are harmful to the climate resulting from the extraction of primary raw materials. The simultaneous use of the energy contained in the waste in the form of electricity and heat also makes it possible to make the best possible use of energy fractions of the waste and thus reduce primary energy demand.

A circular economy focuses on reducing resource use and preventing and reducing waste. Circular economy means using renewable and/or recyclable materials, upgrading product design in terms of reproducibility and recyclability, directing consumption towards shared/reliable use, and ultimately focusing on recovering the materials during disposal. The value of products and materials in the economy must be maintained for as long as possible. The whole life-cycle assessment of products is a key factor in this respect. The arc ranges from design, production, maintenance, repair, re-use, remanufacturing to waste management. This systemic approach can ensure that resource-efficient production processes and consumption patterns definitely reduce the burden on the environment.

The main actions in the area of waste management are:

- Use already sealed surfaces to generate energy and avoid further soil sealing:**

The planned amendment to the Landfill Regulation aims to create the legal possibility of re-use in closed landfills, e.g. for photovoltaics. This means that less green spaces are (partially) sealed.
- Make reparability of products mandatory:**

Mandatory reparability of products is under preparation at EU level. The EU Regulation on eco-design for sustainable products is currently being negotiated. This Regulation will include mandatory requirements for manufacturers to make products more durable, repairable and upgradable. This includes better access to spare parts, retrofitting and repairs. In addition, reference is made to the 'Right-to-Repair' initiative (Proposal for a Directive on common rules promoting the repair of goods). EU legislation will be directly applicable in Austria. As part of the current Ecodesign Directive, requirements on reparability, spare parts availability, software updates and the availability of instructions are already set for energy-related products as far as is reasonable and possible. In order to promote repair and extend the lifetime of electrical and electronic devices, a national repair bonus was introduced by the BMK in April 2022. The use of the bon was made as easy as possible for citizens through a dedicated website to download a bonnet and information about nearby Be able to obtain repair possibilities. The funding ranges from 50 % to a maximum of EUR 200 per device and may be claimed several times.
- No destruction of new goods:**

The EU Ecodesign Regulation (EU) 2024/1781, which has been in force since 18.7.2024, established a disclosure obligation. Thus, from the 2024 financial year onwards, the nature, quantity and reason for the destruction of products would have to be published by economic operators. Details and format for disclosure of information under the EU Ecodesign Regulation are set by implementing act at EU level. As of 19 July 2026, the destruction of unsold consumer products belonging to the product groups clothing, clothing accessories and footwear shall be prohibited. Further prohibitions may be adopted by means of delegated acts in the future.
- Introduce or expand refill stations in supermarkets/drogeries:**

The 2023 waste prevention programme includes a corresponding measure in the 'Plastics & Packaging' field to boost unpackagedsystems or filling systems. In terms of funding and research, reference is made to the RTI initiative "Circular Economy", which supports innovative R & D projects. One of the objectives of the programme is to increase the use of products. A funded project on refill stations is currently under way. Another measure is the promotion of collection and recovery systems (SVS) in the food retail sector to install take-back systems.
- Reduction of plastic packaging waste:**

The 2021 amendment to the Waste Management Act implementing the EU Circular Economy Package establishes a reusable quota for beverage packaging and a deposit scheme for single-use plastic beverage bottles and beverage cans. The re-use rates shall be met from 2024 and the single-use pup shall apply from 2025. In addition, the Waste Management Act sets a general reduction target for single-use plastic packaging of 20 % by 2025 (compared to 2018). Corresponding support for large sorting plants is financed from the Austrian recovery and resilience plan as part of environmental support in Germany.

- **Reduce embedded emissions, promote circular economy, recycling of building materials:**

A (high) recycling rate for building residues is already set at EU level. It is over-achieved by Austria (recycling rate > 80 %). It has also been mandatory in Austria since 2015 for the detection of harmful and digestive substances prior to demolition. Approaches to the REUSE of components as well as to conservation and rehabilitation as a whole are in place, but it is still necessary to strengthen measures to promote these activities.

Other planned actions include:

- Landfill bans on individual recoverable waste groups (rock granules, plasterboard, artificial mineral fibres, track ballast, return chipping, concrete demolition, etc.) will enter into force in 2024 and 2026;
- The circular economy strategy includes a priority for action on circular construction;
- Recycling in the construction sector also plays a significant role in the FTI focus on the circular economy of the BMK. Research and innovation projects on recycling in the construction sector will be supported. The target groups are:
Infrastructure managers in the following thematic areas: Buildings, municipal utilities and disposal systems, etc. The objective is for RTI measures to reduce domestic material consumption (target value -25 % by 2030) and contribute to a more sustainable domestic material consumption (target value of 7 tonnes per capita per year by 2050)⁸⁸.

Fluorinated gases

Since April 2022, the revision of the European F-gas Regulation (EU) No 517/2014 has taken place, which includes a 2030 reduction plan and a phase-out by 2050. The content of the proposal thus makes a significant contribution to reducing greenhouse gas emissions by at

⁸⁸For more information on the Circular Economy Strategy:
https://www.bmk.gv.at/themen/klima_umwelt/abfall/Kreislaufwirtschaft/strategie.html

least 55 % by 2030 and to Europe's climate neutrality by 2050.

The aim of this proposal is to ensure that the share of fluorinated gases is by no means increased, but significantly reduced. Beyond the measures laid down in the EU Regulation, no national measures are required.

Horizontal fields of action

Bioeconomy

Bioeconomy stands for an economic approach to replace fossil resources (raw materials and energy carriers) with renewable raw materials in as much as possible all sectors and applications. This Austrian Bioeconomy Strategy is intended to be an essential cornerstone of the climate and energy strategy and support the decarbonisation of the economy. In total, around 60 areas of action have been identified and already adopted by the Federal Government in the Bioeconomy Strategy.

Use of space and land use

Spatial planning is an important instrument for regulating land use and land use. The Austrian Spatial Planning Conferenz (ÖROK), based at federal level, provides guidance for the Land Spatial Planning Acts of the Länder, which form the framework conditions for spatial planning at municipal level (local development concept or local development plan, land-use planning, zoning). The local development plan, to be revised at 10-year intervals or on important occasions, provides the framework for land-use and development plans and can thus influence land use and energy planning. The requirement is that the Land Spatial Planning Acts (which is already the case) and make the data necessary for planning available as part of their spatial information systems.

Actions required:

- The data base of the spatial information systems of the Länder will be improved to enable energy planning based on renewable energy and at municipal level;
- The revision of local development concepts (or local development plans) will be used to review and, if necessary, adapt local planning in terms of land take-up and energy planning;
- To this end, minimum criteria to be addressed at municipal and regional level are laid down. The aim is to ensure that municipalities in the regional grouping examine their possibilities and identify socially accepted development paths;
- State aid for heating exchange and supply will be based on these local energy planning.

Land use

The use of land resources is an important long-term factor in achieving climate objectives and saving energy resources. In Austria, 11.3 ha of new land is used every day (average of the years 2018 to 2020⁸⁹). New land use for construction, operation and transport areas in many municipalities in Austria will strengthen the fragmentation of the landscape, leading to a high 'land take-up', as the use of land is also referred to as a simplicity. This is still well above the original reduction target of 2.5 ha per day in the Sustainable Development Strategy. This reduction target is also enshrined in the current re-examination programme.

In order to achieve this objective and to reduce soil consumption, the ÖROK developed the 'Soil Strategy for Austria', which is to be adopted politically in 2024.

During the preparation of the strategy, the Federal Environment Agency developed a new and much more precise methodology for collecting soil consumption. A snapshot of the current land use by settlements and traffic areas was thus drawn up (Baseline 2022)⁹⁰. In 2023, the model will be supplemented with areas for leisure, recreation, disposal and disposal, and the proportion of the land used.

Subsequently, target values (area quotas) are to be developed or agreed at Land level through ÖROK and regular monitoring will be established.

Land use must therefore be directed more towards limiting the actual use of land, preventing sealing and ensuring compact urban and industrial development. Local cores also create positive social policy aspects. This area development must be carried out in consultation with the catchment areas of EFA stops and promote the optimal mixing of functions such as housing, work and recreation. Spatial planning helps to reverse the rising trend in road transport and thus the increase in CO₂ emissions in the mobility sector over the past few years.

A major concern for Austria is to reduce or stop urban sprawl. The construction of buildings in existing settlement structures, the proper functioning of the settlement areas and their development by means of public transport are essential for this purpose. Building codes and parking arrangements are other important levers towards climate-friendly mobility. The above-mentioned demands are also consistent with key recommendations for action in the Austrian strategy on climate change, in particular in the area of spatial planning. Syner gien

⁸⁹Federal Environment Agency, 2021

(<https://www.umweltbundesamt.at/umweltthemen/boden/flaecheninanspruchnahme>)

⁹⁰[Link to be inserted later]

should be used here.

Housing support and other investment management tools also need to be used more widely for urban development and energy planning. This is to be seen in the context of negotiations between local and regional authorities, with particular reference to the current negotiations on financial compensation.

Energy spatial planning

Energy spatial planning is an integral part of spatial planning, which deals with the spatial dimension of energy consumption and energy supply. Energy spatial planning in particular enables the implementation of innovative energy concepts focusing on locally available cheap renewable energy, the use of waste heat and integrated mobility systems. Analysis and location of energy consumption, energy storage/transport, energy saving and recovery-potential provide essential insights into their spatial dimensions for climate-friendly planning.

Modern, integrated energy concepts can be used in spatial planning to make use of land use, investment in infrastructure and award of forms such as housing support. It is also important to enshrine energy planning in the land-use laws or building codes of the Bundes Länder, for which there are already successful examples. In some federal states, energy space plans are in place (sectoral or energy sources-specific – so far mainly focus on wind and PV capability/exclusion zones).

Cross-regional coordinated and forward-looking energy planning throughout Austria is a prerequisite for achieving 100 % renewable electricity (national bi-directional) by 2030 and climate neutrality by 2040. In particular, for the energy transition towards an independent, climate-neutral and economic energy supply, the provision of land for renewable energy production installations is of high importance. Forward-looking planning for the necessary development of generation and transport infrastructure (e.g. wind turbines, electricity grids, etc.) in order to reduce conflict with large infrastructure projects and leads to greater public acceptance.

Key measures for the further development of energy planning in Österreich:

- The Renewable Expansion Acceleration Act (EABG), which is in coordination and will include qualitative requirements for energy planning (Council of Ministers Decisions 43a/16 of 11 January 2023 and 90/9 of 6 March 2024);
- The integrated Austrian Network Infrastructure Plan was published in early April 2024

and represents the plan for a coordinated expansion of electricity and gas networks. This will identify the necessary adaptation of energy infrastructure and identify flexibility options for the future energy system;

- The Federal-Länder Dialogue was already created in 2022 as a platform for continuous dialogue between federal and Land administration in achieving the objectives of the EAEC;
- (For details of the measures, see chapter 3.1.2.1);
- In addition, energy planning tools will provide greater impetus for the use of waste heat in the future.

The supply of efficient district heating to buildings and businesses will continue to play an essential role, especially in metropolitan areas. In addition to the application from various renewable energy sources (biomass, othermie, solar thermal, photovoltaic, wind, etc.) and the high-efficiency cogeneration of heat, it is also essential to feed waste heat from production plants. The potential in Austria in this respect is far from being exploited. Geothermal energy should also be taken more into account in support schemes: Due to the high investment costs and the existing risk of finding thermal geothermal energy, this may make it difficult to raise funds, despite the low running costs.

Strengthening local and city centres with high-quality planning and building culture

Multifunctional local and city centres make a major contribution to a city or a place of short distances. They support the reduction of traffic and the walking-on accessibility of key services of general interest or workplaces, and therefore important climate change transformation processes. The (re-)activation of multifunctional city and town centres, including city centres, promotes short distances and thus reduce traffic volumes. They offer an attractive housing environment, are places for social encounters and support 'cultural sustainability'. Their (re-)activation as a multifunctional place of work, shopping, residence and residence should therefore be implemented as a matter of urgency. Competitions and strategic planning are intended to support a high level of urban, architectural and social quality in new, rebuild and built-up buildings and high-quality compaction (and thereby reduce the pressure on land which has not yet been built up). Climate-friendly accessibility and environmentally friendly movement in the room also requires carefully planned and designed open spaces. The distribution of road space is to be improved in the interests of slow traffic and active forms of mobility. High social and built quality as well as sustainability and climate-fitness must be promoted, both for new construction projects and for existing ones.

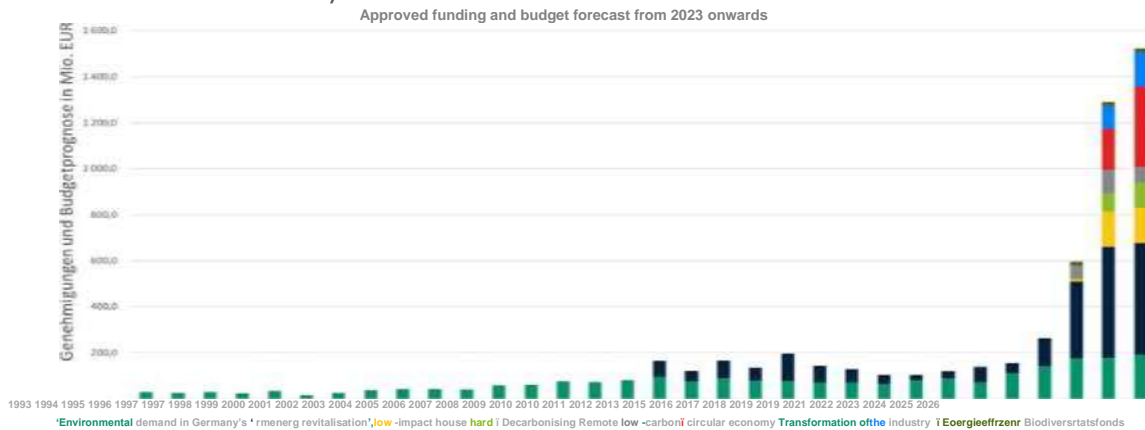
3.1.1.2 Regional cooperation in this area (where relevant)

At the invitation of Slovenia, Austria participated in a regional cooperation event on 20 February 2024. In addition to Slovenia, Italy, Croatia, Hungary and the European Commission were involved. Another regional cooperation took place online with Slovakia and the Czech Republic on 26 April 2024. Cooperation with Germany was focused on the Pentalateral Energy Forum (see Chapter 1).

3.1.1.3 Financing measures (national and EU), where applicable

The most important instrument for promoting climate and energy policy in Austria is environmental support in Germany under the Environmental Promotion Act. The following figure shows the development of funding authorisations since 1993 and the budget estimate up to 2026 on the basis of the Federal Financial Framework Act in force. In particular, since 2022, there has been a significant budgetary expansion of existing funding lines (especially thermal-energy renovation) and the creation of new development initiatives, such as those for low-income households, the transformation of industry, the decarbonisation of district heating and the energy efficiency fund.

Figure 17: Development of environmental support in Germany since 1993 (incl. adopted Continuations until 2026)



Source: BMK

Other relevant support will be provided through the Climate and Energy Fund (under the Climate and Energy Fund Law), with this innovative support instrument primarily serving to bridge research and development and market readiness of new technologies (pilot and demonstration phase).

A more detailed description of the necessary investments and public funding in the field of energy and climate technologies and infrastructure is given in Chapter 5.3.

The measures of the Austrian Recovery and Resilience Plan (ÖARP), financed by NextGeneration EU (under the Recovery and Resilience Facility (RRF)), were submitted to the EC in 2021 and approved in mid-2021. Due to the delays in the drafting of the Operational Agreement, the plan became operational as of 2022. The actions are to be implemented and completed by 2026.

3.1.2 Renewable energy

The development of energy from renewable energy sources is the basis for a competitive, affordable, secure and independent energy future and for achieving climate neutrality by 2040 in sectors outside the EU ETS. The emerging climate crisis, the new geopolitical challenges and the pressing bio-diversity crisis make the urgent need for rapid and nature-friendly expansion even more drastic. In addition to reducing energy consumption (see energy efficiency target dimension), climate neutrality by 2040 means de facto a complete substitution of all fossil fuels used. Accordingly, the 2030 period, and therefore the target horizon of the NECP, is already crucial for the implementation of Austria's contribution in the fight against the climate crisis. In 2022, the share of non-renewable cash sources in gross final energy consumption was still close to two thirds (66.2 %). The scale of the necessary transformation of the energy system is therefore enormous. Decarbonisation often means electrification. As a result, despite an overall decrease in energy demand, the importance of electricity will increase, i.e. consumption in absolute terms and the share of total final consumption will increase. To meet the ambition level, Austria has set targets for increasing the share of renewable energy sources in the electricity sector to 100 % (national balance sheet) and a minimum of 9.75 % (or 7.5 TWh) of renewable gas by 2030.

In addition to the additional measures set out below (WAM), the measures in Chapter 3.2 above all apply. Energy efficiency (example energy savings), 3.3 Security of energy supply (example of integrated Austrian network infrastructure), 3.4. Internal energy market (e.g. energy communities) and 3.5 Research, innovation and competitiveness (e.g. promotion of innovative installations before the market phase) important framework conditions for further increasing the share of renewable energy.

3.1.2.1 Policies and measures to achieve the national contribution to the binding EU 2030 target (including sector- and technology-specific measures, where applicable)

Electricity

The EAEC defines the target of 100 % renewable electricity consumption (national balance sheet) by 2030 (see Chapter 2). The success factors for achieving this objective are the provision of space for production facilities, adequate grid expansion, efficient and rapid authorisation procedures, a stable support and investment regime for new facilities, the training of skilled workers for the energy transition, and constructive exchanges between different levels of government. The following implementation steps are planned:

- Implementation of EU 2023/2413 (RED III) Application of the Emergency Regulation laying down a framework to accelerate the deployment of renewable energy (duration until 31.12.2024);
- Amendment to the Environmental Impact Assessment Act (EIA-G): The amendment implements issues such as priority for energy transition, simplifications for wind power, new rules on procedural efficiency and adjustments resulting from EU infringement procedures relating to the EIA Directive. EABG: The EABG, which is currently in the process of being coordinated, will focus on two main points of content: the introduction of a stand-alone uniform procedural regime for energy transition projects ('one-stop shop'), which will significantly speed up permit-granting procedures, and qualitative requirements for a Energy spatial planning (inter alia to resolve existing conflict areas with land use and nature conservation) and thus implement, inter alia, EU legal requirements from RePowerEU and RED III. In addition, in order to speed up permit-granting procedures, it is necessary to increase the human resources of the authorities and to train staff accordingly. A number of support instruments aim to activate the investments needed for the construction of renewable energy production facilities to increase the production volumes of renewable electricity. Due to the increased demand for electricity, the current additional amounts of 27 TWh by 2030 compared to 2020 on the basis of the WAM scenario are not sufficient to cover 100 % of total electricity consumption in Austria by 2030 (national balance sheet) from renewable sources in accordance with the EAEC target. In order to fill this gap, additional measures need to be set at a high intensity. According to the WAM scenario, reaching the 100 % target would require an increase of 35 TWh of annual electricity production from renewable sources by 2030, based on production in 2020. Under the WAM scenario, this addition could be broken down as follows: 17 TWh on photovoltaics, 12 TWh on wind, 5 TWh on hydropower and 1 TWh on biomass. Full achievement of the objectives is achievable on the basis of the measures depicted in the WAM scenario.
- The expansion of production capacity through photovoltaic installations will be significantly stepped up for the years 2023-2026. The Federal Photovoltaic offensive provides that in EUR 2 023 596 million (EUR 328 million EAEC funds and EUR

268 million additional budget) will be made available for investment support in the field of photovoltaics.⁹¹ For the years 2024-2026, EUR 150 million per year will be allocated to investment support for photovoltaic installations in the Climate and Energy Fund (in addition to the EAEC support). In addition, photovoltaic installations up to 35 kilowatt peaks (kWp) and associated storage facilities, if implemented jointly as part of a project, are exempt from VAT from 1.1.2024 to 31.12.2025. This will provide EUR 620 million in relief in 2024 and 2025.

- The Federal-Länder dialogue created a platform for continuous dialogue and coordination between federal and Land administration. The Federal Government and the Länder are actively working together to achieve the objectives of the EAGS in order to fill the current gaps between the national expansion target and the sum of the expansion targets of the Länder. At the same time, the Federal Government and the Länder can play roles at their levels that facilitate implementation (e.g. vis-à-vis citizens or in permits).
- PV area area: The BMK promotes the creation of an interactive online platform for matching owners of areas suitable for PV with interested parties wishing to construct and/or operate PV installations on these areas. Thanks to this platform and the diverse range of business models (lease, hire purchase, construction) across Austria, land for PV can be mobilised and contribute significantly to achieving the renewable expansion targets and the 1 million roofs programme. Priority should be given to areas already sealed (e.g. roofs, park & ride installations) or landfill sites.
- Municipal Investment Act 2023: Under a new 2023 municipal investment programme for municipalities, the Federal Government will provide a total of EUR 1 billion for 2023 and 2024. Of these, one half is earmarked for energy efficiency measures and the switch to renewable energy sources, and the other half for investment projects based on the criteria of the 2020 Municipal Investment Act. In addition, the municipalities can award a maximum of 5 % of the grants available to them from both EUR 500 million to non-profit, charitable or church organisations to cover their increased energy prices.
- Measures at Länder level: Application of the new requirements regarding the EU Emergency Ordinance, EABG, UVP-G and the development and making available of corresponding areas through e.g. revision/development of sectoral spatial plans.

Renewable gas/hydrogen

Renewable gases, alongside renewable electricity, play a central role in the path towards climate neutrality. However, studies such as “Renewable Gas in Austria 2040”, prepared by

⁹¹Source: 2023: CLI.EN annual programme + CLI.EN RRF funds from Re-Power EU

the Austrian Energy Agency in cooperation with the JKU's Energy Institute, show that the availability of sustainably produced biomethane is limited. Therefore, the use of renewable gases (including renewable water) is the most beneficial for energy and economics in sectors that cannot be electrified. In order for the market to be ramped up with renewable gases, appropriate impetus and, in many cases, uniform rules are needed at European level. This not only serves to protect climate change, but also reduces dependence on fossil gas.

- **Renewable Gas Act (EGG):**

In the case of the EGG currently under parliamentary discussion, a quota would oblige gas suppliers to substitute at least 9.75 % by the end of 2030, but at least 7.5 TWh in total, of the volumes of gas they sell to final consumers this year with renewable gases.

The trajectory for the period 2031 to 2040 shall be set by regulation; the level of the quota shall be set in such a way that, from 1 January 2035, at least 15 TWh of the quantities of gas sold to final consumers are covered each year by renewable gases instruments.

The primary objective of this Federal Act is to significantly increase the sales of nationally produced renewable gas on the Austrian gas market by 2030. Certain requirements have to be met in order to count gas volumes against the substitution obligation. Compliance with the quota shall be demonstrated to the regulatory authority by means of guarantees of origin or green certificates for gas, each bearing a green gas label, as provided for in the EAEC.

- **EAEC Investment Grants Regulation – Renewable gas:**

The EAEC stipulates that the construction or retrofitting of renewable gas plants may, under certain conditions, be supported by investment grants.

- The available funding amounts to EUR 15 million for the conversion of existing biogas plants, EUR 25 million for the construction of biogas plants and EUR 40 million for the construction of new plants for the conversion of electricity into hydrogen or synthetic gas.
- Investment grants may not exceed 65 % of the eligible costs (net) for small enterprises, 55 % for medium-sized enterprises and 45 % for large enterprises. Only costs necessary to achieve environmental protection objectives and costs directly linked to the service supported are eligible.

- **Tax treatment of renewable gas:**

Incentives for the increased use of renewable hydrogen will also be provided at tax level in the area of natural gas levy:

- At European level, the recast of the Energy Taxation Directive (ETD) should also take into account the increased use of hydrogen.

- **Implementation of the hydrogen strategy for Austria:**

The hydrogen strategy of the BMK and BMAW was published in June 2022. It sets out how hydrogen can best contribute to decarbonisation and support the development of a sustainable hydrogen economy. The actions of the Hydrogen Strategy are designed to support hydrogen along the entire value chain, from production to infrastructure to demand, as well as from research to market uptake. The fields of action include the following areas:

- Enable timely market uptake through flagship projects, including:
 - Austria's participation in the International Projects of Common European Interest (IPCEI) in the field of hydrogen with EUR 125 million until 2026;
 - Support for Austrian companies to submit funding under the EU Innovation Fund.
- Promotion and incentives for the production of renewable hydrogen, including:
 - The introduction of a quota for the sale of renewable gases in the gas market;
 - Simplification of construction and operating licensing procedures and land use for the construction and commissioning of hydrogen production facilities and infrastructure;
 - Establishing a national statistical system on hydrogen production and consumption differentiated by type of production and consumption sector;
 - Investment support for electrolysis plants to reach the necessary share of renewable gases by 2030, amounting to EUR 40 million per year.
- Incentivise market-based business models and the targeted deployment of net-zero hydrogen in industry, including:
 - Support for projects for the production and use of renewable hydrogen on industrial sites under the 'Transforming the Economy' support programme until 2026;
 - Support investment and operational costs for transformation processes in energy-intensive industry, including for renewable hydrogen;
 - Establishing training opportunities for hydrogen professionals.
- Build hydrogen infrastructure and create import opportunities:
 - BMK study: 'The role of gas infrastructure in a climate-neutral Austria in 2040', a roadmap for a hydrogen backbone will be developed: This will include adaptations from pure natural gas pipelines to hydrogen pipelines and demand-driven construction of hydrogen pipelines;
 - Identification of locations for efficient production and consumption centres of renewable gases in the context of the Austrian integrated network infrastructure plan (ÖNIP);
 - Developing a concept for developing import opportunities and building European and international cooperation partnerships for the import of net-zero hydrogen;

- Establish an appropriate certification system for net-zero hydrogen.
 - Targeted further development of hydrogen technologies in sub-sectors of mobility (e.g. heavy transport, buses, aviation/SAF), see section 3.1.1. Mobility.
 - Step up research and development in hydrogen, see also actions in section 3.5 Research, innovation and competitiveness.
- **Hydrogen Promotion Act (WFöG):**
In addition to the measures foreseen in the Hydrogen Strategy to support the national production uptake, the WFöG provides for annual production support for renewable hydrogen production in Austria in the form of a fixed premium for the hydrogen produced. The funding will be awarded through participation in the EU Hydrogen Bank, more specifically on the basis of the EU Innovation Fund's competitive auctions in 2024. This auction allows Member States to participate with national funds to finance additional national projects. Austria plans to make available EUR 820 million of national funding, of which a maximum of EUR 400 million in the 2024 auction.
- **National hydrogen platform 'Hydrogen Partnership Austria':**
The National Hydrogen Partnership Austria (HyPA) platform, established in June 2023, promotes regular dialogue and exchange between decision-makers, academia and administration, facilitates their networking, provides an international shop window and communicates on current developments around hydrogen.
- **Service station for renewable gases (SEG):**
The Renewable Gases Service Point was set up as an independent information and advisory body on issues relating to the production and use of renewable gases (biomethane, hydrogen, etc.). It has been available since the beginning of 2023 as a one-stop shop for advice and information, communication, market monitoring and site analysis and is being implemented by the Austrian Energy Agency (AEA). The offer is addressed to stakeholders, producers and suppliers of renewable gases, project developers, financial institutions and the general public. At the same time, it serves as a networking platform for stakeholders from business, finance, administration, public authorities and politics.
- **Industrial transformation support programme (see also Chapter 3.1.1):**
Under the Environmental Promotion Act, up to EUR 20 302.975 billion (starting at 175 million in 2023, then 400 million per year) is available to bring climate-friendly technology to the market and thus sustainably avoid greenhouse gas emissions, in particular from direct combustion of fossil fuels or from industrial production processes. Both investment costs and operating costs can be supported under this instrument. The aim is to contribute to the transformation to a climate-neutral economy while maintaining and strengthening Austria's industrial and economic location.

- **EU Innovation Fund:**

Under the EU Innovation Fund, at least EUR 38 billion will be available for innovative technologies and breakthrough industrial innovation to reduce CO₂ emissions in Europe by 2030. In 2020, the first calls for tenders – one call for projects > EUR 7.5 million per year and a call for projects & EUR 7.5 million CAPEX – were launched. The first calls for tenders have shown a highly competitive environment with little Austrian success, in particular those for projects > EUR 7.5 million CAPEX. Against this background, a national monitoring programme was launched in January 2023 to help Austrian companies submit to the EU Innovation Fund. The European Commission will launch an EU auction platform (tenderer mechanism) at the end of 2023 with a pilot scheme to support the production of renewable hydrogen in the form of a premium per kilogram of hydrogen produced over a period of 10 years, funded by the EU Innovation Fund. Under this platform, Member States have the possibility to participate in the auctions with national funds and thus finance national projects that cannot be financed with EU funds in the context of an EU competition with the national funds made available. Austrian participation in auctions at EU level is under consideration.

- **Large-scale structurally changing industrial decarbonisation projects:**

As part of the Climate and Energy Fund economic transformation support programme, anchored in Austria's recovery and resilience plan, NextGenerationEU and the European Innovation Fund will support forward-looking large-scale industrial decarbonisation projects (see also Section 3.1.1).

Substitution of fossil fuels

The decarbonisation measures in the transport sector are described in detail in Chapter 3.1.1. A key measure is the increased substitution of fossil fuels with renewable energy in the form of electricity for e-vehicles, biofuels and renewable fuels of non-biological origin, such as hydrogen. To this end, the following measures are envisaged:

- Amendment of the 2023 Fuel Ordinance (BGBl. II No 452/2022), including the follow-up process for the timely implementation of the RED III Directive;
- Roadmap for the introduction of SAF in Austria;

In the agricultural and forestry sectors and other off-road fossil fuels, a gradual increase in biofuel blends or pure biopower is being sought. For example, by 2025, all newly acquired standard tractors will be freed for 100 % biofuel, which could lead to around 27.000 tractors being switched to renewable fuel by 2030 (around 7 % of the fleet). At the same time, the levels of incorporation in the fleet can be further increased. The following irritating measures will be examined for this purpose:

- Exemption from mineral oil tax or CO₂ pricing for biogenic fuel;

- Further development and extension of the exchange premium model for end-of-life vehicles —
similar to the replacement premium model for boilers – new vehicles suitable for agriculture and forestry on B100,
- Further develop a bonus model for investments (construction, upgrade, renewal) in biofuel-ready service and farm refuelling stations;
- Information campaigns for farmers and provision of extensive information to specialised workshops.

Heat/cool (detailed description in chapter 3.1.1)

The heating/cool decarbonisation measures are described in detail in chapter 3.1.1.1. The key measures are the renovation of buildings and the transition to climate-friendly heating and cooling systems.

- New legislation extends the existing ban on the installation of central oil or coal heating systems to all fossil heating systems.
- Instead of regulatory requirements, extended and optimised support should be made available for the climate-friendly conversion of existing fossil heating systems, with the aim of providing a sufficient incentive to achieve the objectives.
- The supply of quality-assured district heating, especially in urban centres, is a key building block for sustainable heating in Austria. To this end, the primary energy use of heating plants must be gradually switched to renewable energy sources. The decarbonisation of district heating is to be achieved through the integration of the following renewable heat sources/producers: Geothermal, heat pumps to use low-temperature waste heat, solid biomass, waste heat, solar thermal, heat from energy waste recycling, heat from renewable gas. This is to be ensured through a decarbonisation pathway to be presented for support for the expansion of district heating infrastructure. This should show that at least 60 % of renewable energy (including waste heat or heat from cogeneration plants, etc.) is to be supplied by 2030 and at least 80 % by 2035 (Heating and cooling pipeline expansion Act, WKLG, §4(1a)).

Incentives for the development of renewable energy

Domestic environmental support scheme

As part of domestic environmental support, several additional instructions were created or adapted in 2022 to meet the national energy efficiency and renewable energy targets:

- On the one hand, various funding programmes at federal level have been re-established, better funded or budgeted in the long term. In particular:
 - Domestic environmental support: for businesses, associations and municipalities. To date, an annual commitment framework of EUR 150 million has been set up to support business and municipal climate protection projects. With the continuation at this level until 2026, a total of EUR 600 million is available for the period 2023-2026. In addition, environmental support is a co-financing instrument for EU funds (ERDF/EAFRD) for operational and municipal energy efficiency measures and investments in renewable heat in particular for biomass supply.
 - Expansion of local and district heating (for farms): This support is intended to increase climate-friendly district heating with EUR 30 million per year by 2030 and to decarbonise district heating with a budget of EUR 48 million in 2023. In the following years, EUR 78.9 million, 60 million and EUR 65 million will be available. This separate support channel includes the continuation and increase of the measures of the Heating and Cooling Expansion Act in the context of the promotion of the environment in Germany.
 - Special support for Austria's recovery and resilience plan: COVID special support from Next Generation EU funds will be implemented as part of domestic environmental support through various measures up to 2025, including: Climate-fitted buildings for vulnerable people with EUR 50 million for non-profit organisations, associations and religious institutions (list of BMF beneficiary organisations) and municipalities. This will support up to 100 % thermal renovations of buildings of low-income people. Transforming the economy for large companies and ETS installations. EUR 100 million are included in the national recovery and resilience plan. The calls for tenders are organised by the Climate Fund.
 - Renovation plan, including boiler replacement extraction 'oil and gas': for private individuals, businesses, associations and municipalities. This measure is being implemented in Germany as part of environmental support and now initiates more than 40.000 boilers per year. The renovation plan promotes the transition to climate-friendly heating in residential buildings and the thermal renovation of buildings (business, residential buildings, municipalities). EUR 2.445 billion is now available for the period 2023 to 2027. In addition, a further EUR 1 billion will be allocated to heating switches between 2024 and 2026.
 - Support volumes for low-income households: for boiler replacement and thermal

renovation. Since January 2022, the exchange of boilers in low-income households has been supported by up to 100 % together with the Länder. A total of EUR 1.6 billion will be available by 2030.

Climate and Energy Fund

The annual programme of the Climate and Energy Fund (target groups: Private individuals, businesses, associations and municipalities) consists of the annual budget and additional special budgets that will be implemented. The regular budget of the Climate and Energy Fund is EUR 151.9 million per year.

The Federal Financial Framework Act for the Climate and Energy Fund allocates a further EUR 250 million in 2022 to 2026, with a split of EUR 30-55-55-55-55 million for an investment offer in the expansion of renewable energy and storage. This also includes measures for municipalities to implement concrete projects. In addition, by 2026, the Climate and Energy Fund will realise additional potential in this plant, in particular in the fields of photovoltaics, geothermal energy, energy from waste water and innovative renewable energy storage.

Funding will also be provided to tackle energy poverty by promoting the exchange of whiteware in low-income households through the Climate and Energy Fund – see also details in Section 3.4.4 (Energy poverty). In total, EUR 120 million is available for this support action between 2022 and 2026 to support affected households through individual energy efficiency advice, to identify inefficient whiteware and to promote an energy-saving device to reduce household costs and energy consumption.

Climate change adaptation measures in the field of energy supply

Climate change impacts (e.g. extreme weather events, changes in rainfall distribution, damage to infrastructure, etc.) directly affect the supply and demand of energy. Energy provision is facing new challenges posed by climate change in various areas. For example, the production of hydropower as a result of climate change will be significantly affected by long-term low water levels. In the future, energy demand is expected to decrease slightly in winter, but in return the demand for electricity for cooling purposes will increase in summer. Low water levels may lead to conflicts of use over the water resource. Measures must therefore be taken as a whole in order to counter a possible high degree of vulnerability.

In general, especially in the energy supply sector, the impact of adaptation and protection measures is very closely linked, and the many synergies must be exploited to the fullest extent. It is precisely with an increasing share of renewable energy sources that security of supply can be ensured more easily if measures to reduce energy consumption are more

effective.

As an overarching objective in the energy supply sector, the Austrian adaptation strategy sets out to increase the climate resilience of the energy system through a systemic overall assessment, reducing energy consumption, increasing energy efficiency, diversifying and decarbonising energy sources, and using technology like decentralisation. Ensuring energy supply has a high value.

The adaptation strategy enshrines the following actions:

- Optimisation of network infrastructure;
- Promoting decentralised energy production and injections;
- Increased research on energy storage opportunities;
- Stabilising the transport and distribution network through appropriate climate-adapted system planning;
- Optimising the interaction between generation (from various sources) and consumption in the energy supply system in the event of changing supply and demand;
- Taking into account the impact of climate change in energy decisions and research activities, e.g. with a view to further diversifying energy supply;
- Reducing internal loads to avoid summer overheating in buildings by reducing electricity consumption and increasing energy end-use efficiency;
- Taking into account the impact of climate change on energy demand and supply in energy strategies;

3.1.2.2 Regional cooperation in this area (where relevant) and, optionally, estimate the excess production of renewable energy that can be transferred to other Member States.

At the invitation of Slovenia, Austria participated in a regional cooperation event on 20 February 2024. In addition to Slovenia, Italy, Croatia, Hungary and the European Commission were involved. Another regional cooperation took place online with Slovakia and the Czech Republic on 26 April 2024. Cooperation with Germany was focused on the Pentalateral Energy Forum (see Chapter 1).

3.1.2.3 Specific measures on possible financial support, including, where applicable, Union support and use of Union funds, promotion of the production and use of energy from renewable sources in the electricity, heating and cooling and transport sectors

EAEC

Funding will continue to be paid on the basis of the count point-based system of renewable flat-rate (as a non-consumption part) and renewable support (as a consumption-dependent part). Similarly, a relief mechanism for low-income households will remain in place. Due to the projected funding surpluses in the coverage of the funding under the 2012 ÖSG and the EAEC investment grants for electricity, neither the contribution nor a flat-rate subsidy were collected in 2022 and 2023.

Federal Photovoltaic offensive:

In 2023, EUR 600 million was made available for investment support for the construction of photovoltaic installations, of which almost EUR 330 million was for installations eligible under the EAEC and EUR 268 million for installations up to 20 kW_{peak} for private persons, which will be allocated from the BMK's budget under the Climate and Energy Fund. Over the period 2024-2026, EUR 150 million of investments per year are available for installations up to 20 kW_{peak} from the Climate and Energy Fund. In addition, from 1 January 2024, VAT for PV installations was reduced to 0 % at a peak of 35 kW.

Investment Plan for the development of renewable energy and storage

Between 2022 and 2026, EUR 250 million will also be made available under the Climate and Energy Fund for the development of renewable energy production and storage.

Municipal Investment Act 2023:

Under a new municipal investment programme for 2023 for municipalities, a total of EUR 1 billion will be made available by the Federal Government for the years 2023 and 2024. Of these, 50 % are exclusively dedicated to climate action.

3.1.2.4 Assessment of support schemes for electricity from renewable sources, if any, to be carried out by the Member States in accordance with Article 6 of the Renewable Energy Directive

[Evaluation report will be prepared by the end of 2024 in accordance with the Renewable Expansion Act (ERG).]

3.1.2.5 Specific measures to improve administrative processes, provide information and training, and conclude power purchase agreements.

See 3.1.2.1 Measures such as the Renewable Expansion Acceleration Act, the Novelle of the Environmental Impact Assessment Act and the implementation of the Just Transition Action Plan to train professionals.

See 3.4.3 Recast Electricity Industry and Organisation Act (EIWOG 2010).

3.1.2.6 Assessment of necessary infrastructure measures for district heating and cooling from renewable energy

The maintenance, expansion and optimisation of existing district heating networks, which are currently supplied partly (in particular in cities) by natural gas, but also from renewable energy sources and waste heat, has been supported by domestic environmental support and support under the Heating and Cooling Management Act (WKLG). Given the importance and number of installations in Austria, this is a priority funding priority for which EU funds from the CAP should continue to be used.

In the coming years, the current natural gas-based heat supply in major cities (in particular Vienna) to climate-neutral forms of energy will be a particular challenge. Existing district heating networks should be gradually switched from the current dominant heat application from natural gas to other energy sources (e.g. geothermal energy). At the same time, a significant proportion of buildings with individual natural gas heating systems will have to be switched to district heating in the future, which will require a major expansion and compaction of the networks.

3.1.2.7 Specific measures on biomass use, where applicable, including resource availability; Sustainable forest management measures

See 3.1.1.1

3.1.3 Other elements of the decarbonisation dimension

3.1.3.1 Measures effective in the EU ETS and assessment of complementarity and effects on the EU ETS, if applicable

Installations subject to the EU ETS can also be supported under the amendment to the UFG and the funding guidelines for domestic environmental support in 2022. The support for the transformation of industry is granted both as investment and operation support. See also Chapter 3.1.1, 'Industry' section.

In autumn 2022, an Electricity Cost Compensation Act (SAG) to the Nationalrat (Nationalrat) was more than medium, allowing for a limited period of one year and in line with the relevant EU State aid guidelines, to partially financially offset CO₂ costs passed on to industrial companies through the price of electricity. This measure will in particular – but not exclusively – benefit companies in the EU ETS (avoiding indirect carbon leakage). The bill was adopted by the Nationalrat in June 2023.

In order to avoid unintended double burdens for industry under the EU ETS and national CO₂ pricing due to the National Emissions Certificate Handelsgesetz (NEHG 2022), which is effective from October 2022, arrangements have been put in place to avoid this double burden by exempting emissions from the obligation to surrender national emission allowances.

3.1.3.2 Measures to achieve other national targets, if applicable

Energy system measures and measures to reduce greenhouse gas emissions can have an impact on emissions of air pollutants.

For five air pollutants, Directive (EU) 2016/2284 on the reduction of national emissions of certain atmospheric pollutants ('NEC Directive') contains obligations to reduce emissions from 2005 to 2020 and 2030 by fixed percentages; this affects sulphur dioxide, nitrogen oxides, non-methane volatile organic compounds, ammonia and particulate matter PM_{2.5}. The following table shows the reduction commitments:

Table 14: Emission reduction commitments under the NEC Directive for Austria

Air pollutant	Reduction from the 2005 reference year from 2020	Reduction from the 2005 reference year from 2030 onwards
Sulphur dioxide (SO ₂)	26 %	41 %
Nitrogen oxides (NO _x)	37 %	69 %
Non-methane volatile organic compounds (NMVOC)	21 %	36 %
Ammonia (NH ₃)	1 %	12 %
Particulate matter (PM _{2.5})	20 %	46 %

In order to meet their emission reduction commitments, Member States had to establish a national air pollution control programme. The national air pollution control programme was adopted by the Federal Government in July 2019 and communicated to the European Commission. Alignment with other commitments, in particular in the field of energy and climate, was an important element in the preparation of the air pollution control programme. It can be clearly inferred from previous model-based scenarios that, taken as a whole, measures to reduce greenhouse gas emissions also have a positive impact on the development of air pollutants. Problems with actual and projected compliance with the reduction commitments only existed for ammonia. With additional measures in the agriculture sector, compliance with the commitments for this pollutant is now expected. The correspondingly actualised air pollution control programme was closed by the Federal Government in March 2024.

3.1.3.3 Low-emission mobility measures (including e-mobility)

See section 3.1.1

3.1.3.4 Measures and timetable for phasing out energy support, in particular fossil fuel subsidies, where applicable

Mapping and analysing the climate and energy targets of counter-measures

From the point of view of the State budget, the mapping and analysis of measures that hinder the impact of climate and energy in the Republic of Austria is a major process step in identifying cost-effective decarbonisation strategies. In accordance with the Federal Green Budgeting method, these measures – subsequently referred to as ‘contra-productive’ – are

defined as follows:⁹²

‘A public measure must be described as a counterproductive/incentive or direct or indirect support/subsidy if its effects counteract compliance with the climate and energy objectives binding under international and EU law and the implementation of the measure

- an increase in GHG emission levels;
- a reduction in the share of renewable energy in gross final energy consumption; and/or
- results in a reduction in energy efficiency. The negative effects on GHG emission levels (now and in subsequent years, including long-term effects) are of particular relevance in this context.

Measures within the meaning of this Federal definition of counter-productivity may include, inter alia, the following support/subsidies or incentives:

- direct subsidies (earmarked grants and loans);
- indirect subsidies (including tax breaks) and other fiscal incentives;
- undrawn guarantees; and
- targeted incentives under state regulation and other regulatory incentives.’

Dealing with counter-productive incentives and incentives is a major tegicaloption for cost-effective compliance with climate objectives.

The Federal Ministry of Finance is responsible for recording and analysing counterproductive measures at national level, including the associated budgetary effects. As part of the data collection required for this purpose, the Federal Ministry of Finance may co-ordinate the relevant specialist departments.⁹³

⁹² See Spending Review Module 1 ‘Analysis of the climate and energy support and incentive landscape’, pp. 23/24. Link: https://www.bmf.gv.at/dam/jcr:1f61679b-3d9f-41d2-8a2e-43da0ccf4007/Spending%20Review%20Modul%201_%20_%20Climate%20and%20Energie.pdf

⁹³This also concerns the deep dives for climate-relevant breakdowns planned as part of the implementation

An annual report on the state of climate counterproductive measures was presented by the Federal Ministry of Finance as part of the Climate and World Advice (KUB) for the Federal Estimates, starting in 2023. These reports can be drawn up using already existing analyses of counter-productive measures, if methodologically understandable. The objective is to achieve a greenhouse gas reduction effect of at least 2 Mt CO₂ equivalent per year by phasing out counter-productive incentives and subsidies towards the 2030 target year. The emission year 2022 is used as the base year. The inter-ministerial process and the progress towards achieving this objective are presented by the Federal Ministry of Finance as part of the KUB.⁹⁴

In order to meet the reduction target for counter-productive incentives and support, the Federal Ministry of Finance will set up an inter-ministerial working group (AG Kontraproduktive) under the auspices of the Federal Ministry of Finance and the cooperation of the BMK and the involvement of other stakeholders concerned.

Table 15: Greenhouse gas emissions (non-ETS sectors) 2005 and 2022 (GHG inventory), 2030 in different scenarios and target under the Effort Sharing Regulation

	2005	2022	2030
in million t CO ₂ equivalent			
Emissions by GHG inventory	56.8	46.2	
Emissions WEM 2024			40.0
Emissions WAM 2024			33,2
Emissions WAM + CCS + removals counterprod. Subsidies			30.7
Objective of Effort Sharing			29,64
Objective Effort Sharing, plus ETS flexibility⁹⁵			30.7

Source: BMK, Federal Environment Agency 2023

of Green Budgeting.

⁹⁴ see https://service.bmf.gv.at/Budget/Budgets/2024/beilagen/Klima-_und_Umweltschutz_2024.pdf

Progress is also available on the BMF's thematic website at:

https://www.bmf.gv.at/themen/klimapolitik/green_Budgeting/kontraproduktive_ma%C3%9Fnahmen.html.

⁹⁵The total ETS flexibility is 11.4 Mt CO₂ equivalent 2021-2030; assuming a (average) even distribution over the individual years, 1.14 Mt CO₂ equivalent was added to the target of 29.64 Mt CO₂ equivalent in 2030.

3.2 Dimension 2: Energy efficiency

3.2.1 Planned measures and programmes to achieve the national energy efficiency contribution of Directive 2012/27/EU as amended by Directive (EU) 2023/1791 (hereinafter EED III), including measures in the area of buildings

Improving energy efficiency, thus requiring a sustainable reduction of energy, is the key lever for achieving long-term climate goals, alongside the use of renewable energy. Austria therefore places particular emphasis on policies and new technologies that can make a significant contribution to energy efficiency improvement. This includes, for example, the continuous improvement of the energy performance of buildings in buildings (increasing the energy efficiency of new buildings and thermally vigorously energetic renovation rate, or a focus on electric mobility in transport). These and other initiatives will be further strengthened in the coming years in order to comply with the Energy Efficiency First principle, the Regulation on the governance system for the Energy Union and the requirements of the final version of EED III and climate change.

Many of the measures to boost energy efficiency have already been described in chapters 3.1.1.1 Mobility and buildings and heat. At this point, areas that are relevant exemplarily are highlighted:

- Implementation of the EEEffG: EED II is largely implemented by a national Federal Energy Efficiency Act. In addition to the energy savings obligation regime, Austria's overarching efficiency objective, the exemplary role of the public sector and rules to combat energy poverty (minimising energy poverty in line with the climate and energy targets) are standardised. The Renewable Heat Act gradually regulates the switch from fossil fuel plants to modern, climate-friendly alternatives.
- The strengthened European law objectives of EED III call for a further increase in energy efficiency.
- Investments in thermal renovation of buildings, high-efficiency domestic engineering and energy management systems in buildings, see also chapter 3.1.1.1 Buildings and Heat.
- Use of commercial and industrial waste heat through spatially differentiated information on existing waste heat potentials and use of the economic waste heat potential from the cost-benefit analyses (Heat Map in implementation of Article 14 of the Energy Efficiency Directive) and funding. Under Article 25(1) of the EED III, Member States are to prepare an assessment of the potential for efficient heating and cooling

and submit it to the Commission as part of the integrated national energy and climate plan (NECP) and its updates in accordance with Regulation (EU) 2018/1999. A related report is available at <https://austrian-heatmap.gv.at/>.

- Federal Renovation Plan: Out of oil and gas! The aim of the support action is to facilitate the transition from fossil-fuel-based space heating to a sustainable heating system for businesses and private individuals; the adjustment of the flat-rate subsidy to inflation should be regularly evaluated.
- 'Clean heating for all' for private 2022: The Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) supports low-income households in the transition from fossil-based space heating to sustainable climate-friendly heating systems.
- Additional energy efficiency measures in the context of domestic environmental support for businesses, public authorities and households amounting to EUR 190 million per year; the first measures from these funds concerned hydraulic matching and small-scale investments in multi-stage housing. Furthermore, funding programmes for hospitals and care facilities were approved in May 2023. Among other things, the reduction of greenhouse gases from anaesthetic gases is also promoted. Other measures include support measures for sports clubs, rescue organisations and cultural businesses, as well as an increase in support for thermal renovation of non-profit building associations.
- Promoting the introduction of an Energy Management System (EnMS) for small and medium-sized enterprises (SMEs) contributes to a systematic increase in energy efficiency, reduces the company's energy costs, CO₂ and other pollutant emissions. The programme will support external consultations, training, EnMS certification and the purchase of energy monitoring tools.
- The new CO₂ pricing created by the National Emission Trading Act 2022 also provides incentives to improve energy efficiency in all sectors that are not covered by the core scope of the EU ETS. In addition, the planned remedial measures have been designed with reinvestment needs, including energy efficiency improvements.
- E-mobility support.

3.2.2 Long-term renovation strategy (residential and service buildings, private and public)

Residential buildings:

In accordance with Article 46(1) of the Regulation on the Governance of the Energy Union

and Climate Action, the renovation strategy drawn up in the field of competence of the Länder was transmitted to the European Commission.

Service building:

In accordance with Article 46(1) of the Regulation on the Governance of the Energy Union and Climate Action, the renovation strategy drawn up in the field of competence of the Länder was transmitted to the European Commission.

Public buildings (federation):

For central government buildings (buildings owned by the Federal Government and the Federal Government), a new energy savings target of approximately 108 GWh for the period from 2021 to 2030 was calculated on the basis of the currently available building data in accordance with Article 5 of EED II (see also additional note in Chapter 2.2.3).⁹⁶

3.2.3 Description of measures to promote: Energy services (e.g. contracting) in the public sector

A significant incentive for savings contracting measures was the savings obligation under Section 16(1) of the Federal Energy Efficiency Act (EEffG, BGBl. I No 72/2014) for federal-buildings (Federal Government is the owner and user). For the 2014-2020 period, 48.2 GWh was achieved. The EEffG cites energy saving contracting, energymanagement measures and renovation measures. These projects are defined in a men's plan. In particular, energy-saving contracting measures have been successful so far, so that the savings achieved provide further incentives for future energy savings contracts. For the period from 2021 to 2030, further savingsobligations (i.e. around 108 GWh) and energy efficiency measures are provided for in the EEffG (Section 50(1) and (2) (BGBl I No 59/2023)) and energy efficiency measures (see also additional note in Chapter 2.2.3).

⁹⁶ For more information, see Ministerial presentation on climate neutral management at: <https://www.bundestkanzleramt.gv.at/bundestkanzleramt/die-Federal-Government/Ministry-of-Ministers/Ministry-of-Ministers'-minutes-xxvii-2021-3/bp-79-29-nov.html>

3.2.4 Other planned measures to achieve the indicative 2030 target

No further action is currently foreseen in this area.

3.2.5 Measures to improve energy efficiency in gas and electricity infrastructure

No concrete measures are foreseen at this stage.

3.2.6 Regional cooperation in this field, where applicable

At the invitation of Slovenia, Austria participated in a regional cooperation event on 20 February 2024. In addition to Slovenia, Italy, Croatia, Hungary and the European Commission were involved. Another regional cooperation took place online with Slovakia and the Czech Republic on 26 April 2024. Cooperation with Germany was focused on the Pentalateral Energy Forum (see Chapter 1).

3.2.7 Financing measures (national and EU)

See Section 3.1.1.3 and Section 5.3.

3.3 Dimension 3: Security of energy supply

3.3.1 Policies and measures to diversify energy supplies (including third countries), reduce import dependency and increase the flexibility of the national energy system, in particular through the development of domestic indigenous energy sources, demand response and energy storage

In order to ensure a high level of security of supply in Austria, the further development of renewable energy sources and the efficient use of energy are particularly important. In addition, short- and medium-term measures are needed to diversify energy supplies and limit energy price increases for local endcustomers. Reducing Russia's dependence on imports of natural gas and further diversifying gas supply sources is an important focus. Imports need appropriate infrastructure at higher-ranking pipelines, storage and handover

points, therefore participation in cross-border infrastructure initiatives (e.g. European Hydrogen Backbone) is of great importance. In this context, the further development of the electricity grid is also relevant to enable the accelerated roll-out of renewables and greater exchanges with neighbouring countries.

The objectives and measures in the area of security of supply fall into three pillars, which must be balanced:

Security of supply:

- Domestic resources rather than dependence on energy imports;
- Resilient supply chains;
- Holistic approaches to the transformation of the energy system.

The Austrian Federal Government is therefore very active in a wide range of areas to prepare new legal framework conditions, to draw up strategies and actions and to initiate the implementation of measures to:

Austria can address the current energy crisis in the best possible way, while setting the path towards meeting the energy and climate targets. At the same time, safety must also be ensured in changing climatic conditions.

Measures to be taken in the context of the energy crisis and the maintenance of security of supply

In the context of the energy crisis caused by Russia's war of aggression against Ukraine, Austria adopted in 2022 a number of effective measures that, on the one hand, ensured the supply of natural gas for the winter of 2022/23 and the future security of care.

Amendments to the Gas Industry Act 2011 (GWG 2011)

- Establishment of a strategic gas reserve on behalf of the Republic of Austria of 20 TWh by 1 November 2022; of which 8.5 TWh from non-Russian origin;
- The number of protected customers and solidarity-protected customers has been extended;
- Provision of balancing power (market maker);
- 'Use it or lose it' for storage capacity, withdrawal of rights of storage undertakings;
- Obligation to connect the Haidach storage facility to the Austrian market area;
- Conclusion of a bilateral agreement between Austria and Germany;

- Extension of the supply standard.

Amendment to the Energy Steering Act 2012 (EnLG 2012)

- Immunisation of quantities of gas stored by final consumers or contracted third parties up to 50 % of their consumption in the previous calendar year, in the case of quantitative control measures;
- New rules on compensation for financial disadvantages caused by steering measures to secure energy supply.

Gas Diversification Act 2022 (GDG 2022)

Support for companies' costs of supplying natural gas from non-Russian sources for sales in Austria.

Other measures:

- Creation of a storage obligation for gas-fired power plants in EIWOG
- Updating the gas and oil emergency plans and drawing up a risk-preparedness plan for electricity in accordance with EU law in order to be best prepared at both national and international level in the event of disruption;
- Holding of mandatory emergency reserves: According to the Oil Stockholding Act 2012, any importer of petroleum products, petroleum products, biofuels or raw materials for direct production of biofuels is obliged to keep at all times 25 % of its previous year's net imports as mandatory emergency reserves;
- Framework conditions and measures to reduce electricity consumption at peak times by 5 % in winter 2022/2023 to lower electricity prices and reduce the consumption of natural gas in gas-fired power plants. The Electricity Consumption Reduction Act (SVRG) was implemented and the tenders were carried out by Austrian Power Grid AG.
- [energy.g.at](https://www.energy.g.at): Information portal on the energy situation in Austria: Metrics, scenarios and answers to questions about energy supply.

Measures effective in the medium and long term

In order to address current and future energy crises in the best possible way and to set the same direction towards meeting the energy and climate targets, in addition to a rapid expansion of renewable energy supplies and the implementation of energy efficiency-measures, it is necessary to reorient import strategies, especially for gas. An EU-wide coordinated approach makes sense in this respect. Nevertheless, national activities are also

being set up. In addition to the short-term diversification of gas supplies (pipeline gas and LNG), the transformation of the entire energy mix towards renewable sources is particularly needed in the medium and long term. The use of energy from Österreich or the common European market for electricity and gas is also at the heart of security of supply.

Reorienting existing and ramping up new import strategies

- Develop a blueprint for developing import opportunities and building European and international cooperation partnerships for net-zero⁹⁷ hydrogen and its derivatives. Imports of net-zero hydrogen will play an important role in the decarbonisation of Austrian industry in the future. To this end, strategic cooperation and partnerships with eligible countries will need to be developed and approaches developed. The aim is to provide strategic support for the development of holistic supply chains for imports to consumption centres in Austria to ensure security of supply and competitiveness of domestic industry.
- Active participation of Austrian companies in the EU Energy Platform.

Renewable energy and more flexibility

- Client support memory: The Climate and Energy Fund supports the use of electricity storage facilities and promotes the construction of electricity storage facilities on existing renewable electricity generation facilities. In 2022, EUR 15 million was made available for this purpose. As part of the implementation of the 2023 annual programme, a total of EUR 50 million will be made available for the further development of the programme with regard to innovative electricity and heat storage.
- Research priorities, funding and other incentives to build flexibility options for the electricity system: Energy efficiency, batteries, thermal storage, pumped storage, load shift/management, demand response, electrolyses, network modernisation and grid expansion
- Prioritising the deployment of renewable gases in hard-to-abate sectors (industry, heavy transport, aviation, electricity and district heating)
- Similarly, measures under dimension 3.1 have an impact. Renewable energy, 3.2 Energy efficiency and 3.4. Internal energy market in this area.

Further develop infrastructure and ensure security of supply in the long term

- **Preparation of the “Austrian Integrated Network Infrastructure Plan”**
Austria is preparing an ‘Integrated Austrian Network Infrastructure Plan’ (ÖNIP). The ÖNIP coordinates the planning of electricity and gas networks with the development of renewable energies. This will identify the necessary adaptation of energy infrastructure at higher-ranking grid level and identify flexibility options for the future energy system.

⁹⁷Definition in the hydrogen strategy for Austria.

The draft ÖNIP was published for consultation on 7 July 2023 and the final plan was published in early April 2024.

- **Development of an electricity security strategy (E-VSS)**

In accordance with Section 88a of the ElWOG 2010, an electricity supply strategy (E-VSS) is being developed to develop concrete measures to ensure and maintain security of supply. These measures and fields of action were developed between October 2022 and May 2023 in numerous working and expert groups with all relevant stakeholders and experts at political level. They help prevent future load shortfalls and increase the resilience of the Austrian electricity system. The long-term maintenance of the high level of security of supply in Austria should be achieved while reducing dependence on fossil fuels. This will be achieved, inter alia, through increased investment in renewable energy and the promotion of energy-efficient technologies. Security of supply can be maintained in the long term, in particular through strategic planning of grid expansion, control of increased consumption through flexibility instruments and efficiency measures, as well as the expansion of renewable and flexible generation capacities. The E-VSS also identifies opportunities for the use of indicators and monitoring processes to assess security of supply. The e-VSS will be updated in a five-year interval.

- **Roadmap to a hydrogen backbone:**

As part of the implementation of Austria's hydrogen strategy, a roadmap for the future-oriented deployment of hydrogen infrastructure in Austria, in particular for a hydrogen start network 2030, will be developed, building on the work of the Austrian Integrated Network Infrastructure Plan (ÖNIP). A future hydrogen network builds mainly on adaptations from existing natural gas pipelines to hydrogen pipelines, complemented by needs-driven new hydrogen pipelines.

- **Creating the necessary legal bases for the adaptation/construction of hydrogen pipelines**

The necessary legal bases for the authorisation, construction and operation of future hydrogen infrastructure will be put in place, notably through national implementation of the EU Gas Market Package. Similarly, the necessary rules of technology for the repurposing of existing methane pipelines into dedicated hydrogen pipelines and the approval of new dedicated hydrogen pipelines will be created in line with the ÖVGW guidelines for methane pipelines.

- **Investments in storage:**

Investments in storage infrastructure adapted to the increased needs and reward storage for system utility.

- **Regular development of the Austrian Strategy for Adaptation to Climate Change and ongoing evaluation of implementation progress**

Since 2012, Austria has had a strategy for adaptation to climate change, which also includes

the activity area 'Energy – Focus Electricity Industry'. The Action Plan identifies vulnerabilities to climate change impacts in critical infrastructure and addresses recommendations for action. Regular progress reports represent the state of implementation and further necessary steps. In addition to the measures referred to in the chapter above, the measures taken from the piteln3.1 above all also apply. Renewable energy and 3.4 Internal energy market further important frameworks for increasing energy security.

3.3.2 Regional cooperation in this area

At the invitation of Slovenia, Austria participated in a regional cooperation event on 20 February 2024. In addition to Slovenia, Italy, Croatia, Hungary and the European Commission were involved. Another regional cooperation took place on line with Slovakia and the Czech Republic on 26 April 2024. Cooperation with Germany was focused on the Pentalateral Energy Forum (see Chapter 1).

3.3.3 Financing measures (national and EU)

Reference is made to Section 5.3.

3.4 Dimension 4: Internal energy market

3.4.1 Electricity infrastructure

3.4.1.1 Policies and measures to achieve interconnectivity of electricity systems, taking into account the interconnectivity objectives at EU level

See related objective. No explicit measures needed.

3.4.1.2 Regional cooperation in this area

At the invitation of Slovenia, Austria participated in a regional cooperation event on 20 February 2024. In addition to Slovenia, Italy, Croatia, Hungary and the European Commission were involved. Another regional cooperation took place online with Slovakia and the Czech Republic on 26 April 2024. Cooperation with Germany was focused on the Pentalateral Energy Forum (see Chapter 1).

3.4.1.3 Financing measures (national and EU), where applicable

Reference is made to Section 5.3.

3.4.2 Energy transmission infrastructure

3.4.2.1 Measures related to elements in 2.4.2, including 'Projects of Common Interest' (PCI)

- **Preparation of the Austrian Integrated Network Infrastructure Plan (ÖNIP)** (see 3.3.1)
- **Speeding up, reducing red tape and simplifying permitting procedures** (see also related measures in chapter 3.1.2 Renewable Energy).

Planning, legal certainty and cutting red tape are crucial to solve investment blockages. This concerns in particular infrastructure projects necessary for the energy transition. Currently, the procedures are too complicated and lengthy. This will slow down the transformation of the energy system and put security of supply at risk in the medium term. The aim is therefore to speed up, reduce red tape and simplify permitting procedures in line with citizens' rights and relevant EU requirements. The aim is to remove barriers and increase investment in the energy system. A number of measures have been put in place to achieve this, such as an amendment to the Environmental Impact Assessment Act (EIA-G) and the development of a Renewables Expansion Act (EABG).

- **Roadmap to a hydrogen backbone** (see also chapter 3.1. Renewable energy):
Develop a roadmap for adapting existing natural gas pipelines to hydrogen pipelines and rebuild new hydrogen pipelines on demand.
- **Create the necessary legal bases for the adaptation/construction of hydrogen pipelines** (see also Chapter 3.3.1).
- **Investments in storage: investments in storage infrastructure adapted to the increased needs and reward storage for system utility.**
- **Statutory provision establishing management rights for district heating projects that are in the overriding public interest:**

In the case of district heating projects which are in the overriding public interest, there is no possibility of establishing pipeline rights by means of a decision if the owner of the property refuses consent. This may lead to additional costs that may result in a cost barrier for connections.

In principle, property interferences are very sensitive and must in any event be treated with due regard for procedural guarantees based on the rule of law, especially since they are:

the fundamental principles of international and constitutional law must necessarily be taken into account in the implementation of the law.

In addition to the measures set out in this chapter, the measures taken from Chapter 3.1 above all apply. Renewable energy and 3.3 Security of energy supply, important framework conditions for the internal energy market.

3.4.2.2 Regional cooperation in this area

At the invitation of Slovenia, Austria participated in a regional cooperation event on 20 February 2024. In addition to Slovenia, Italy, Croatia, Hungary and the European Commission were involved. Another regional cooperation took place on line with Slovakia and the Czech Republic on 26 April 2024. Cooperation with Germany was focused on the Pentilateral Energy Forum (see Chapter 1).

3.4.2.3 Financing measures (national and EU), where applicable

Reference is made to Section 5.3.

3.4.3 Market integration

3.4.3.1 Measures related to elements in section 2.4.3

The gas and energy price crisis, as a result of Russia's aggression against Ukraine, clearly demonstrated the need for large-scale financial relief measures and exceptional and rapid-market interventions in certain situations to ensure the stability and orderly functioning of the common energy markets. It is crucial that such measures are coordinated and used in a foreseeable way in order to avoid any undesirable side-effects that might otherwise arise.

Nevertheless, in order to ensure a more secure electricity supply, it is necessary to rapidly expand renewable energies, ensure exchanges with neighbouring countries and properly modernised networks, as well as a high degree of flexibility in the electricity system.

In order to ease the pressure on inflation in the short term and to preserve the competitiveness of Austrian companies, the following temporary measures have been put in place:

- **Energy crisis contribution electricity:**

Recovery of realised revenues in the wholesale distribution of electricity. For electricity-producing or trading companies, 90 % of the revenue per megawatt hour, which exceeds EUR 140 (until the end of May 2023), is collected. If investments in the energy transition can be proven, this value rises to up to EUR 180. This measure is set at 1. December 2022 entered into force and has until 31 December 2022. December 2023. The schemes were tightened in May 2023, with a cap of EUR 120/MWh from June 2023.

- **Solidarity levy from fossil energy companies:**

If oil and gas companies' profits are more than 20 % higher than the average of the previous years in the past year, they will be retroactively from 1 July 2022 to 31. December 2023 up to 40 per cent.

- **Contribution to the energy crisis for fossil fuels (ECB-F):**

An adjustment allows for a higher levy on profits for energy companies for 2023. The law provides for increasing the tax base for the energy crisis contribution for 2023 to the amount by which the 2023 taxable profit is more than 10 % higher than the average amount (2022: 20 %).

In January 2024, the Federal Government presented a package of measures to strengthen competition and combat energy inflation. It provides for the following measures:

- Extension of the energy crisis contribution electricity and energy crisis contribution fossil fuels (ECB-F) until 31.12.2024.
- The basis of assessment for the ECB-F in calendar year 2024 is to be the amount that exceeds 5 % of the average of the taxable profits of the years 2018-2021 (2023: 10 %). To this end, the possibilities for accounting for investments in renewable energy and energy efficiency should be increased, thereby encouraging them to invest.

- **Adaptation of the Income Tax Act:**

The possibility of claiming the degressive depreciation for wear and tear irrespective of the company's annual accounts is to continue to exist until 1 January 2026 in order to

promote investment in the energy sector for electricity undertakings. The aim is to provide an additional incentive for electricity companies to invest in renewable energy in the current energy crisis and to contribute to the energy transition.

- Framework conditions and measures to reduce electricity consumption by 5 % at peak times in winter 2022/2023 to lower electricity prices and reduce the consumption of natural gas in gas-fired power plants. On the one hand, voluntary measures are intended to reduce or shift consumption. On the other hand, targeted savings are to be made in the business sector through calls for tenders during the relevant periods. The subject of the tenders is the reduction of electricity consumption. It is implemented by means of the Electricity Consumption Reduction Act (SVRG).
- **Electricity cost brake for Austrian households:**
Absorbing the increased cost of basic electricity demand (2.900 kWh per year), valid from 1. December 2022 to end June 2024. Implemented by the Electricity Cost Subsidy Act (SKZG); for households with more than three people, an electricity supplement of EUR 105 per person is paid. Given the fall in wholesale electricity prices, the electricity cost brake will be adapted to new price developments. The upper net energy price threshold (currently 40 cents/kWh) will therefore be reduced to 25 cents/kWh as of 1.7.2024. This serves as an incentive for electricity suppliers to lower prices and stimulate competition in retail tariffs (BKA, 2024).
- **Network cost subsidy for low-income households** who are exempted from renewable support costs on the basis of ORF contribution exemption (at 75 % of the network costs to be offset, limited to EUR 200 per year), also under the Electricity Cost Subsidy Act (SKZG).
- **Amendment to EIWOG to mitigate the increased network loss costs:**
In order to reduce the significantly increased procurement costs of network loss energy for electricity consumers, public authorities support the cost of purchasing network loss energy in 2023 at EUR 186 per MWh.
- **Electricity Cost Compensation Act (2022):**
Support was granted to companies in sectors particularly affected by the increase in electricity prices due to the inclusion of the costs of greenhouse gas emissions from European emissions trading ('indirect CO₂ costs') and exposed to a real risk of carbon leakage for 2022.
- **Enterprise-Energy Cost Subsidy Act (UEZG):**
Support for additional costs for the company's own consumption of fuels, electricity and gas.
- **Energy cost compensation of EUR 150 once per electricity bill** under the Energy Cost Compensation Act 2022 (EKAG 2022).
- **Cancellation of the renewable support contribution** and the renewable flat rate
- **Reduction of the electricity levy and the natural gas levy** to the EU minimum.

- Exemption from electricity tax (train and photovoltaic installations).

However, in the short term, emergency measures to prevent climate neutrality, such as the substitution of natural gas with even more climate-damaging fuel oil, could also be needed to secure energy supply. The important aim here is that these measures do not generate lock-in effects and are therefore temporary. In any case, the highest priority must be given to future-proof measures with positive effects on climate protection. The path towards climate neutrality must not create unnecessary hurdles or invest in stranded assets.

3.4.3.2 Measures to increase the flexibility of the energy system in relation to renewable energy, such as smart grids, aggregation, demand response, storage, distributed generation, deployment planning mechanisms, redispatching and curtailment of generation assets, as well as real-time price signals, including the introduction of intraday coupling and multi-country balancing markets

In the medium to long term, electricity market design is needed to ensure high security of supply, investment incentives in renewable technologies and affordable prices. The EU legal framework and adaptation to the energy sector are implemented through a recast of the Electricity Industry and Organisation Act (ElWOG 2010),⁹⁸ the main elements of which are:

- Introduction of new players into the existing market structure to facilitate the integration of renewable production and the increase of flexibility potential: e.g. new role for electricity end-users, which include the right to generate, consume, store, sell electricity; this alone or by aggregators;
- Redesign network charges and ensure the independence of the regulatory authority so that it can set network charges that allow the achievement of energy and climate targets;
- Facilitate grid connection and access, in particular for renewable energy plants, e.g. mandatory network development plans, including for the distribution system, in order to further enhance the transparency and predictability of network development;
- Regulatory framework for the acquisition of flexibility by network operators to optimise the use of existing network capacities in addition to grid expansion.

⁹⁸Assessment: 12 January 2024 – 23 February 2024.

3.4.3.3 Where applicable, measures enabling non-discriminatory access to renewable forms of energy, demand response, etc.

There are currently no further measures in this regard.

3.4.3.4 Measures to protect consumers, in particular measures against energy poverty, where applicable

See section 3.4.4

3.4.3.5 Description of measures to enable and develop demand response, including measures to support dynamic pricing⁹⁹

As a measure to create a system to reduce gross electricity consumption at peaks, reduce energy prices and minimise fossil fuel consumption, the Federal Act on measures to reduce electricity consumption in peak hours (Electricity Reduction Act – SVRG), BGBl. I 235/2022, was adopted. This transposed part of the EU Electricity Emergency Regulation (Regulation (EU) 2022/1854). The SVRG provides for targeted consumption reductions during so-called peak hours – hours during which electricity consumption cannot be covered by renewable energy. For example, less expensive gas-fired power plants will have to be used to produce electricity, help decouple the electricity price from the price of gas and reduce gas consumption in electricity generation through targeted savings in hours of high gas consumption. The call for tenders to reduce electricity consumption was addressed to flexible consumers (business, business and industry, agregators) who could provide a minimum amount of 2 MWh of possible electricity consumption reduction during 2 hours within peak hours (8:00-12:00 and 17:00-19:00). These savings potential could be submitted as a bid in tenders. If a call was made, the undertaking was reimbursed a financial compensation according to the bid price.

3.4.4 Energy poverty

Energy poverty is a cross-cutting issue, the objective of alleviating energy poverty and promoting the affordability of household energy needs to be taken into account in all

⁹⁹In accordance with Article 15(8) of Directive 2012/27/EU.

planned measures under the NECP.

According to the definition given in section 2.4.4, all measures that either increase the household income of affected households or reduce the cost of energy (either by lowering prices or improving energy efficiency for affected households) contribute to alleviating energy poverty, with a focus on promoting affordability, as energy saving potential in low-energy households is very low compared to Austria's energy consumption, and energy-poor households already often consume less energy than would be necessary or desirable.

All measures taken by the Austrian welfare state can therefore be understood as preventing or alleviating energy poverty.

In Austria, both the Federal Government and the Länder have legal instruments that are directly or indirectly capable of counteracting energy poverty. These include, in particular, the instruments of minimum income protection and housing allowances (subject support), as well as housing support funds, which are allocated for the construction of new housing and also for the renovation of housing. The latter is essentially object-related support, but in many cases they are supplemented by subject-related features (in particular income caps, families).

Overcoming energy poverty in Austria requires effective long-term investment in the building stock, as analysed in Chapter 2.4. This concerns both the building envelope and the heating and water heating systems. Such measures are often associated with high investment costs, which are difficult to cope with from their own resources, especially for households at risk of poverty, especially in view of the fact that climate change also increases the need for cooling. Investment-related moderately small measures can also often have significant effects. To this end, households should be provided with sufficient and easily operational information and financial assistance. In addition to the adaptation of funding, accompanying measures are needed to improve access to independent and public information and advice, as well as to remove organisational barriers for energy poor households.

In response to these recommendations, the Federal Government has taken action since 2022 to support low-income households or, in the context of rising energy costs. The measures listed below will continue in 2024 and, in part, beyond.

Clean heating for all

Since the beginning of 2022, the support action 'Clean Heating for All' has been ongoing. This is granted as an additional area to the basic production by the Federal Government 'Raus aus Öl und Gas' (Raus aus Öl und Gas) and the respective regional extractions. The funding is implemented jointly with the Länder. As a first step, the support rail supports the boiler replacement in the one- and two-family houses and terraced houses with support of up to 100 % for low-income households. This support is technology-specific and combined with intensive energy and heat protection advice. The state's normal energy advice will be increased with federal funds, so that the consultants can also provide advice and submission of support. In many cases, assistance with final billing is also offered. An extension of this support line to multi-storey housing is foreseen following the evaluation of the first phase. In total, EUR 1.6 billion will be available until 2030.

Climate-fitted buildings for vulnerable people

As part of the implementation of Austria's recovery and resilience plan, 100 % of the net costs have been supported by the 'Climate-fitted Buildings for Vulnerable Persons' support measure since 2022. The aim is to contribute to improving the thermal protection of buildings over 20 years old, which are predominantly used to house low-income or vulnerable people. Similarly, the installation of climate-friendly heating (connection to near/district heating, wood heating or heat pump) will be promoted together with thermal renovation or as an individual measure in renovated buildings. Applications may be submitted by non-profit organisations, associations and religious entities listed on the 'List of beneficiaries of donations' of the Federal Ministry of Finance, as well as municipalities which operate or own a building mainly to house a vulnerable or vulnerable person in the context of a charitable/characteristic organisation.

Saving energy in the household

The pilot Household Energy Saving Programme, which started in 2022, follows the objective of providing advice on energy consumption in low-income households and replacing large household appliances such as refrigerator, washing machines, dishwashers, etc. with particularly high energy consumption with low energy consumption appliances ('white goods tax scheme'). To this end, energy-saving advice will be tailored to the needs of households and, if necessary, initiate exchanges. As part of the Federal Government's emergency measures against the EU in January 2022, an additional support measure was

introduced for low-income households to finance the exchange of whiteware (refrigerators, washing machines, etc.). The EUR 15 million from 2022 was increased under the accompanying budget laws to a total of 120 million for the years 2023 to 2026.

Energy housing shield

Since March 2022, WOHN SCHIRM has been supporting tenants who have rent arrears due to COVID-19 pandemic and current inflation rates and are at risk of delogation (based on Covid-19 poverty). In summer 2022, the programme was topped up and extended until the end of 2026 (under the Life-Tungs and Housing Cost Compensation Act – LWA-G). As a result, the range of benefits was extended from January 2023 and since then also includes support-schemes when people are affected or threatened by expensive-related energy cost arrears. The support services complement existing services for the prevention of delogation or energy security provided by the Länder, cities and municipalities (subsidiarity principle). Services include personal advice on switching and saving energy, as well as assistance with the submission of applications from around 129 regional consultation centres in all Länder and the payment of energy cost arrears. A total of EUR 244 million is available, of which EUR 24 million under the Covid-19 Law on poverty, EUR 60 million under the LWA-G and a further EUR 140 million in accordance with the Council of Ministers' decision/removal requests LWA-G. All information on www.wohnschirm.at.

Climate-active

The Climate Action Initiative of the BMK, in its role as a know-how platform, complements current financial offers from public authorities to support households with high energy costs and low incomes in times of energy crisis and inflation. Through multilingual materials, awareness-raising and further training on energy saving, buildings and mobility, climate-active supports investment measures from the BMK and the Climate and Energy Fund, or in part the advisory measures and support measures of the energy housing umbrella in close cooperation with the social media.

Since 2022, Climate Active has provided a free training series for social workers: internal to social energy consultants. It is based on the Klimaaktiv Guide on Social Energy Beratung, prepared in cooperation with social institutions. The aim of social energy advice is to provide information on energy in order to reduce consumption and improve the quality of housing. The training provides basic knowledge of energy saving measures, reading energy bills, financial support on energy, etc. in four modules in order to provide advice to households

experiencing poverty. In the medium term, a new field of occupation can be created, with social, minimal technical and linguistic competences to provide initial energy and climate advice. For technical or more complex questions (e.g. heating system replacement), the energy consultants of the Länder are to be forwarded.

The 'social energy advice' training series or the A course (energy consultants – training under ARGE-EBA) are a prerequisite for on-site advice under the Climate and Energy Fund pilot programme 'Energy saving in the budget: Consultancy and exchange' ("White goods exchange programme"). In addition to the 'Social Energy Advice' training series, climate-actively also offers regular networking meetings for the consultants and, in consultation with the advisory bodies, compiles a package of materials (more language material on energy saving, support overviews, electricity meters, thermal hygrometers, refrigerator cheques, etc.) for advice.

Energy Efficiency Act (EEffG)

The scope of beneficiary households has been expanded in the EEffG: 'Beneficiary households' means low-income or low-energy households that receive special support under the provisions of the EEffG 2023 or any other federal law, such as the UFG; in any event, households which receive a grant under the Telephone Charges Subsidy Act, a fee exemption in accordance with the Telecommunications Code, an exemption under the EAEC, a compensatory supplement under Paragraph 292 of the ASVG, meet the conditions for obtaining funds from the volume of support under the UFG or are subject to insolvency or debt settlement proceedings in accordance with the provisions of the IO for natural persons, for the duration of the debt settlement procedure or the payment period in the restructuring or payment plan or their recovery procedure.

The EEffG also provides that obligated energy suppliers who supply households or beneficiary households must set up an advisory body in such a way that advice on key energy efficiency information, such as energy in particular, needs, savings and costs is ensured by an appropriate contact person and at least an appropriate delegate. Helplines shall make it possible for free telephone contacts at normal business hours and to provide individual counselling services, with particular attention to the needs and opportunities of vulnerable households. Beneficiary households in Austria may involve recognised and appropriate social institutions in Austria or be able to take part in the consultations.

§ 40(2) to (7) EEffG establishes a coordination body to combat energy. The coordinating

body's task is to tackle energy poverty, in particular by: cooperation and networking between representatives of public authorities, public authorities, energy suppliers and recognised social institutions, the development of policies and recommendations to combat energy poverty, and the coordination of action in this field; assistance to help centres, in particular with regard to the professional qualifications of the nominees; the pooling of expertise and research results and relevant national and Union legislation projects; the provision of information to households, energy suppliers, local authorities and relevant institutions or organisations; the publication and publication of relevant studies or opinions and the production of periodic reports. For the purpose of analysing and assessing the provisions on household helplines, the coordinating body may also request the necessary information from, inter alia, the obligated energy supplier. All information can be found on www.kea.gv.at.

In addition, the Federal Government must set appropriate measures in such a way that, in terms of the cumulative end-use energy savings of at least 570 petajoules, the savings must be at least 34 % for households and, in addition, at least 3 % for beneficiary households. The quota is still being evaluated as part of the national transposition of Article 8(3) of the EED III within the open transposition deadline. With regard to the indicators referred to in Article 8(4) of the EED III, the appropriate national indicators are checked within the open implementation period. For indicators on energy poverty, see 2.4.4.

Social Climate Fund

To alleviate the financial burden of carbon pricing due to the inclusion of the buildings and transport sectors in the emissions trading scheme for vulnerable groups, the EU has set up a Social Climate Fund (SCF).¹⁰⁰ It aims, among other things, to help tackle energy poverty and support vulnerable households and micro-enterprises that are heavily affected by carbon pricing in the building sector and lack the means for building renovation. Among other things, the Social Climate Fund can finance measures and investments against energy poverty.

In order to receive funding from the Fund from 2026, Austria has to submit a Social Climate Plan to the Commission by mid-2025, consisting of a coherent package of existing or new national measures and investments. In line with the NECP, Austria intends to remove further measures to combat energy poverty or to further develop existing measures to the target

¹⁰⁰Regulation (EU) 2023/955 of the European Parliament and of the Council of 10 May 2023 establishing a Social Climate Fund and amending Regulation (EU) 2021/1060 (OJ L 130/1, 16.5.2023).

groups of the KSF.

3.5 Dimension 5: Research, innovation and competitiveness

3.5.1 Policies and measures related to research objectives (including 2050 targets for certain clean technologies)

In order to achieve the objectives set out in Chapter 2.5 in the field of FTI, measures will be taken using a portfolio of formats tailored to the nature of the tasks, themes and target groups. The funding agreement for 2024 to 2026 to be agreed with the research funding company FFG provides a total of over EUR 330 million for research, technology and innovation for the above-mentioned mission (Target Dimension 5, Chapter 2.5) climate neutral city, climate change adaptation, energy transition, mobility transition, circular economy and production. The Climate and Energy Fund will allocate an additional EUR 390 million to research, technology, innovation and demonstration for energy research, mobility research, climate change adaptation and climate maturity, including EUR 210 million for the new FTI initiative Climate Neutral Industry (2023-2026) as part of the Federal Government's Transformation Plan. In addition, as part of the 2023-2026 Climate and Transformation Plan, EUR 600 million will be made available for the sustainable transformation of the business location as part of the Federal Ministry of Labour and Economy (through support for research and technology development, site and investment support, and training measures). The Federal Promotional Bank's funding portfolio or the funds invested in the European Space Agency ESA also focus on programmes supporting the green transition. In addition, the British participation in Important Projects of Common European Interest focusing on green hydrogen and batteries, as well as the Austrian lead in European Partnerships such as the Clean Energy Transition Partnership or the Driving Urban Transition Partnership. Austria is also actively participating in the 5 EU missions (Cancer, Climate, Ocean, Cities, Soil) under Horizon Europe. For the preparation of a concrete implementation plan for the missions in Austria, Mission Action Groups', which are jointly led by an FTI and a sectoral portfolio.

Research mission on energy transition

Knowledge and innovation will be developed at the following levels:

- **Technologies and solutions for energy systems:** What technologies, components and

technical system solutions are needed and how can we provide them?

- **Organisation of energy systems:** How do we organise the interaction of different actors (including market and business models, legal and regulatory framework)?
- **Energy system transition:** How will the new solutions feed into the daily life of citizens, municipalities and regions, businesses and infrastructure managers?

To this end, the following four lines of action will be pursued:

Action line 1: Energy Research Programme

An open-technology programme aims to promote the development of transformation technologies and system components for GHG-free energy systems, with broad coverage for OT stakeholders on relevant topics. It focuses on the anchoring of Austrian developers and providers of technology and solutions in the European and global value chains. Topics include, for example, the development, demonstration and validation of technologies and releases for energy transformation and storage, bioenergy, wind and solar power, other mi-, heating and cooling solutions, and system usage charges. It will also promote technology and solutions to adapt to climate change. These topics can be tested in regulatory sand boxes (e.g. energy, free space, regulatory sandboxes).

Action line 2: FTI Focus Initiatives

Focused RTI initiatives promote the development of selected themes or crosscutting issues to ensure timely availability of technologies and solutions. The topics identified so far include, for example, heating and cooling systems (including heat storage), storage, fuels (including green hydrogen) and sector coupling, including Carbon Capture and Utilisation (CCU), efficient energy application and transformation (e.g. green photonics, power electronics), Digital transformation for the energy transition (e.g. artificial intelligence, data-service eco-systems, satellite data systems), energy networks (including DC technologies [DC] and alternative approaches to network pricing), energy supply of key infrastructure.

Action line 3: Mission-driven transformative RTI initiatives

Mission-oriented, transformative R & D initiatives aim to develop solutions to key challenges to accelerate the energy transition in Austria. In particular, systems solutions, the interaction between different sectors, infrastructures, technologies and accumulators (mobility, commerce, industry, agriculture, citizens, etc.) and the interplay of different innovation systems (e.g. regional actors and global start-ups, etc.) are at the core. The active and partly leading role of future needs in co-creation processes will serve as a means of sustainable success. In connection with technological issues, socio-economic and socio-technical issues

will also need to be addressed here. It will also address cross-cutting issues such as the interaction between digital transformation and energy. This action line is characterised by inter-, multi-disciplinary and transdisciplinary access, as well as the intensive monitoring of innovation processes through accompanying measures, such as the mobilisation, networking and qualification of accumulative costs, or the targeted development of a common evidence-based knowledgebase.

For example, in addition to the technical integration of systems and infrastructure, new business models, acceptance processes and usage patterns need to be better prepared and taken into account. To develop integrated energy systems, regulatory sandboxes will therefore be developed to test technological, as well as systemic innovations in the regional context, developing prototypic system solutions for 100 % renewable energy in energy application. It also aims to explore innovative integrations and market models for system integration of renewable energy, storage and energy efficiency technologies and to explore alternative approaches and design options for network charges in the electricity and gas sectors through regulatory sandboxes. As part of the 'Energy.Frei.Space' programme, which started in 2019 to implement the regulatory exemptions from system charges for research and demonstration projects in FTI projects.

Action line 4: Multilateral FTI collaborations

The engagement of Austrian FTI actors in international cooperation should continue to be stepped up to support the positioning of Austrian actors in the global value chains. The 'Clean Energy Transition Partnership' multilateral cooperation, as a successor to ERA-Net Smart Energy Systems, is available here as a key vehicle for advancing technological and systemic energy research under Austrian leadership.

This is also true of Austria's commitment to the Strategic Energy Technology Plan (SET-Plan) and the increased use of the EU programmes Horizon Europe and LIFE to complement Austrian funding in this area. For example, LIFE's clean energy transition sub-programme supports, among other things, the transition to an energy-efficient, renewable-based, climate-neutral and resilient economy by financing coordination and support measures.

The International Energy Agency's (IEA) Technology Collaboration Programs (TCPs) continue to play an essential role in international networking, in particular of the actors involved in research institutions.

Research mission Circular Economy and Production

The Mission Circular Economy and Production aims to promote break-through technologies for industry that use raw materials and energy, significantly reduce emissions and increase raw material and energy dependency at the same output. They are an important prerequisite for decarbonising industrial processes and products, including in the energy-intensive industry. The new products and processes should focus on the highly efficient use of the energy and resources used, where possible, in cascading the energy needs of industrial installations and the conversion of energy from variable renewable energy sources. In this context, issues related to carbon-neutral steelmaking play an important role as processes and products based on bio-based raw materials. In addition, the technological, environmental and regulatory feasibility and upscaling of CCUS value chains (CO₂ removal, CO₂ transport, CO₂ use, CO₂ storage) in Austria, including their concrete climate benefits, will be clarified as part of a life cycle assessment as part of the transformation of industry. The same applies to the uptake and scaling up of negative emission technologies to contribute to the achievement of Austria's climate targets.

Action line 1: FTI Circular Economy Initiative

- Optimising the use of resources (Refuse – Rethink – Reduce);
- Intensification of product use (Reuse – Repair – Refurbish – Remanufacture – Repurpose);
- Closing of material cycles (recycling – recover).

Action line 2: Cross-thematic flagship projects

- Support for applied research in cross-thematic projects (energy, production, digitalisation, mobility, space, etc.)

Action line 3: FTI initiative Climate Neutral Industry (funded by the Transformation Plan)

- Testing technical and non-technological innovations for decarbonising industry in a real-world environment;
- Achieving cross-sectoral climate change effects, taking into account circularity;
- Supporting Austrian industry in structural change.

Action line 4: Multilateral FTI cooperation

- European Technology and Innovation Platforms;

- Horizon Europe;
international and transnational cooperation.

Research Mission Mobility Transition

The mission aims to promote and test technological, social and organisational innovation for climate-neutral and energy-efficient mobility systems. For this purpose, the following measures have been defined:

Action line 1:

National, transnational and European RTI support for climate neutral urban and regional mobility; Digitalisation of transport infrastructure, mobility and logistics services; and climate-neutral (vehicle & propulsion) technologies.

Action line 2: Experimentation rooms:

Mobility laboratories, test environments & research infrastructures.

Action line 3:

Alliances and implementation partnerships, such as platforms, networks, operators, research institutions and mobility policy.

Action line 4: European and international positioning

such as European Technology and Innovation Platforms; Horizon Europe and international and transnational cooperation.

Research mission Climate neutral city

In the Climate-Neutral City Mission, pioneer cities and pioneer towns should be able to meet all their energy needs from renewable sources with the highest efficiency in all areas of final-energy consumption (in terms of mobile and energy) and in appropriate business models. They are an important prerequisite for GHG-neutral cities and urban spaces. Energy from local production becomes more flexible in end-use combined with the use of storage; and Synergies of infrastructure are mostly used locally. In addition to national calls, starting with

‘technologies and innovation for the climate neutral city’, Austria is increasingly engaged in international activities, such as leading the Driving Urban Transition Partnership.

Action line 1: Climate neutral neighbourhoods:

DEMO buildings and quarters (all climate change adaptation in focus – energy efficiency, overheating, water management)

Action line 2: Governance & planning processes for climate neutrality: Prototypic governance for effective climate-neutrality and adaptation measures based on the experience of pioneering cities. The Climate Neutral City Mission (CNS) is embedded in several national, European and international governance structures and processes (coordination groups, platforms, initiatives, projects, etc.) or will be synergically connected, used or even actively initiated by KNS. Buildings, regions and cities will be developed in a climate-neutral and resilient way.

Action line 3: International activities:

Transnational and international innovation networks (e.g. Driving Urban Transitions, IEA, Mission Innovation) will be established in cooperation with the European Commission, Horizon Europe Urban Mission Platform, Ministries and Agencies from other countries.

Action line 4: Climate neutral infrastructure (buildings, green & open spaces) and mobility:

Research will focus on:

- Digital planning, construction and operation for the climate neutral city;
- Technology developments for net-zero buildings and neighbourhoods;
- Building materials, technologies (including circularity);
- System integration and combination: Neighbourhood development/planning, energy technologies and systems in the neighbourhood.

Research mission Climate Change Adaptation

The Austrian Strategy for Adaptation to Climate Change describes the shift to research activities in Austria in Chapter 4.1 ‘Activities at federal level’ and in Chapter 10. Research Current research needs have been maintained in the progress reports of the Austrian strategy on adaptation to climate change and are continuously reflected in calls for proposals for research programmes.

3.5.2 Cooperation with other MS, where applicable, or form of translating the SET-Plan objectives into national policies

For the implementation of the NECPs, European and international cooperation is a complex framework for, on the one hand, to connect Austrian actors and, on the other hand, to pool strengths and develop comprehensive solutions. This is delayed in international initiatives such as the Strategic Energy Technology Plan (SET-Plan), the cooperation programmes of the International Energy Agency or participation in Mission Innovation.

European cooperation in the SET Plan

The Strategic Energy Technology Plan (SET-Plan) is an additional instrument of the European energy technology policy and aims to develop low-carbon, environmentally friendly and socially acceptable technologies and to improve their competitive capacity. The EU, the Member States and the private sector will apply a “public-public-private” approach. Active participation opens up great opportunities for businesses.

From Austria’s point of view, the Dri-Ving Urban Transition Partnership and the Clean Energy Transition Partnership and the Energy Transition Partnership and the Energy Research Calls of the European Framework Programme for Research and Innovation (Horizon Europe) and multilateral research funding cooperation between European countries are a key driver for the implementation of the SET Plan. Synergies with funding instruments such as LIFE EU will also be exploited. In the Steering Group and the ‘Bureau’ of the SET-Plan, Austria is represented by the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and

Technology with nominees from the Innovation and Technology Sections and Climate and Energy. This combination and/or representation of both sections in the SET-Plan will make it possible to better coordinate efforts at research level and those at funding level.

Austria is currently actively participating in selected key actions of the SET Plan with a focus on:

- New technologies and services for customers;
- Resilience and security of energy systems;
- New building materials and technologies for buildings;
- Energy efficiency in industry;
- Framework conditions for the introduction of environmentally friendly and socially

acceptable energy technologies into the market (e.g. regulatory sandboxes).

Transnational cooperation

As more than 80 % of research funding in Europe comes from national and regional research programmes, mainly through national and regional research programmes, national and regional research programmes should be better coordinated and coordinated in order to achieve Europe's major strategic objectives.

The transnational Joint Programming Platform Smart Energy Systems, as well as Joint Programming Initiative Urban Europe, led by Austria, can be used as an example of successful international engagement. The Joint Programming initiatives 'Smart Energy Systems' and 'JPI Urban Europe' were transformed into the Horizon Europe Co-funded Partnerships 'Clean Energy Transition' and 'Driving Urban Transition' from the beginning of 2022. The partnerships cover a large portfolio of technological and systemic research in the field of energy and urban development.

Global initiatives

Joining Mission Innovation in 2018, a global initiative for clean energy, marked a further step towards increased international cooperation and coordinated research and development efforts.

Austrian experts are also active in numerous IEA Technology Collaboration Programmes (IEA Technology Collaboration Programmes) and their bodies, which is another important tool for Austria's global positioning in the field of energy and environmental technologies.

Importer Projects of Common European Interest (IPCEI)

IPCEI Batteries:

In the context of Europe's ambition to build European value chains and production capacities in strategically important areas, Austria participates in the second IPCEI in the battery sector, the IPCEI European Battery Innovation (EuBatIn). A total of 42 companies from 12 Member-States of the European Union (EU) participate in the EuBatIn IPCEI. The private sector invests EUR 9 billion. Member States are disbursing EUR 2.9 billion in aid.

Austria participates in the EuBatIn IPCEI with six companies. The BMK provides aid of up to EUR 45 million to these six companies, all pioneers and key companies in their sectors. The individual projects have started and run between four and eight years. The total volume of investments during the eligibility period is approximately EUR 188 million.

Projects include, for example, the development of sustainable battery components, the development of flexible and automated production processes and the establishment of a battery innovation centre, covering the entire value chain.

IPCEI Hydrogen:

Renewable hydrogen is seen as a key tool for decarbonising industry and partly heavy transport in Europe. Following the pre-notification in summer 2021, the European Commission's state aid approvals of IPCEI Hy2Tech and Hy2Use, respectively, took place in July and September 2022. A total of 64 companies from 16 Member States of the European Union (EU) participate in the IPCEI Hy2Tech and IPCEI Hy2Use. Member States are disbursing EUR 10.6 billion in aid. In total, this will free up private investment of EUR 15.8 billion.

Austria participates with three companies in IPCEI Hy2Tech and two companies in IPCEI Hy2Use. The BMK and BMAW provide aid of up to EUR 125 million to these five companies, which will be made available from the EU Recovery and Resilience Facility. Some of the individual projects have already started and have a total duration of between 10 and 23 years. The total volume of investments over the eligibility period is approximately 400 million euro.

The IPCEI Hy2Tech projects focus on promoting highly innovative projects along the entire value chain – from the development and upscaling of new high-efficiency electrolysis processes and fuel cells, through innovative storage and transport technologies, to the use of water materials in hard-to-electrify areas in the mobility sector (including heavy transport, shipping, aviation).

The IPCEI Hy2Use projects aim to boost the supply of hydrogen and enable the development and first industrial deployment of hydrogen technologies in industrial sectors. In the consortium project of two Austrian submitters, the production of fertilisers based on green hydrogen is being developed for the first time in Austria, melamine and technical nitrogen products.

3.5.3 Financing measures (national and EU), where applicable

Public spending on energy research, development and demonstration projects amounted to EUR 224.1 million in 2021. This represents an increase of EUR 68.9 million compared with the previous year, i.e. 44.4 %, and is by far the highest figure recorded in Austria so far. The analysis shows a concentration of publicly funded energy research in Austria in the fields of energy efficiency, transmission/storage technologies (smart grids) and renewable energy. All identified research missions are budgeted up to and including 2024 (IPCEIs, FTI Climate Neutral Industry Initiative).

SECTION B: ANALYTICAL FOUNDATIONS

4 Current situation and projection “with existing measures” (WEM101)

4.1 Projected evolution of major exogenous factors affecting the energy system and GHG emissions

4.1.1 Macroeconomic forecasts (GDP and population growth)

Austria’s economic development has been highly volatile in recent years due to the pandemic. The 2020 recession was offset the largest share of the following year. The projection is projected to grow between 1.1% and 1.6 % in real terms by 2050.

Following the particularly marked population growth since 1990, growth is expected to flatten by 2050 on the basis of Statistics Austria’s current population projections (main variante). By 2030, a moderate – almost exclusively migration-related – population increase of almost 300.000 inhabitants compared to 2021 (+ 3.2 %). Over the same period, the number of dwellings (main residences) increased by 5 %.

Table 16: Key input parameters (assumptions) in the WEM scenario

	Scenario	2020	2021	2025	2030	2035	2040	2050
GDP [EUR 2 020 billion]	WHO	381	402	439	466	497	533	599
Real GDP growth rate [%]	WHO	−6,5	5,9	1.6	1.1	1.6	1.4	1.1
Population [1 000]	WHO	8917	8961	9114	9251	9360	9470	9626
Housing stock [1 000]	WHO	3982	4008	4112	4207	4295	4380	4497
Heating degree days	WHO	3311	3301	3260	3210	3160	3110	3010
Exchange rate [US\$/euro]	WHO	1.2	1.2	1.2	1.2	1.2	1.2	1.2

Sources: Statistik Austria 2021, main variant; EU Commission recommendations; own assumptions for the Federal Environmental Agency

101In the present WEM scenario, measures adopted or put into effect by 31 December 2 021 are taken into account.

4.1.2 Sectoral changes that can be expected to influence energy system and GHG emissions

Trends in recent years are broadly continuing. However, in the WEM scenario there is a very significant increase in electrification in the mobile sector, especially between 2030 and 2040. The latest developments in the energy markets following the war in Ukraine are not included in the WEM scenario (cut-off date 1.1.2022).

4.1.3 Global energy trends, international fossil energy prices, EU ETS carbon price

The following table shows the price evolution of the main fossil fuels and the CO₂ allowance price, which are mainly based on the European Commission's recommendations on national scenarios (as of April 2022).

Table 17: Main price assumptions in the WEM scenario

	Scenario	2020	2021	2025	2030	2035	2040	2050
International coal price [EUR 2020/GJ]	WHO	1.6	3.7	3.1	3.1	3.1	3,3	3.7
International oil price [EUR 2020/GJ]	WHO	6,4	10.5	15,4	15,4	15,4	16.2	19.7
International price of natural gas [EUR 2020/GJ]	WHO	3.1	15,1	13.2	11,3	11,3	11,3	11,8
CO₂ Certificate price [EUR 2020/t CO₂]	WHO	24,0	54.0	80.0	80.0	82.0	85.0	160.0

4.1.4 Technology cost developments

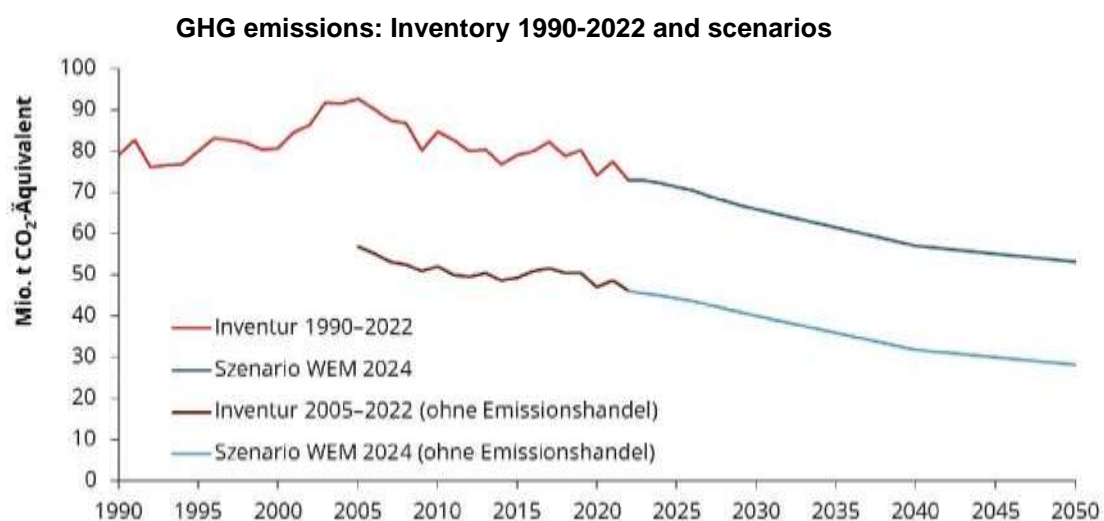
No own studies were carried out on the development of technology costs.

4.2 Decarbonisation dimension

4.2.1 GHG emissions and sequestration

4.2.1.1 Trends in current GHG emissions and sequestration in the EU ETS, Effort Sharing, LULUCF and different energy sectors

Figure 18: GHG emissions inventory and WEM scenario with and without Emissions trading



Source: Federal Environment Agency 2023

Table 18: Total GHG emissions and distinction in EU ETS, Effort Sharing and LULUCF (Mt CO₂ equivalent) in EH delineation from 2013 for the WEM scenario

	1990	2005	2010	2020	2030	2040	2050
Total (excluding LULUCF)	79.1	92.6	84.8	74.0	65.8	57.0	53.1
EU ETS		35,7	32,7	27,0	25.8	25.2	24.8
Effort Sharing		56.8	52.0	47.0	40.0	31,8	28.3
LULUCF	−12,2	−18.4	−19,8	−5,2	−6,0	−4,6	−2.9

Source: Federal Environment Agency 2024;
rounding differences are noted

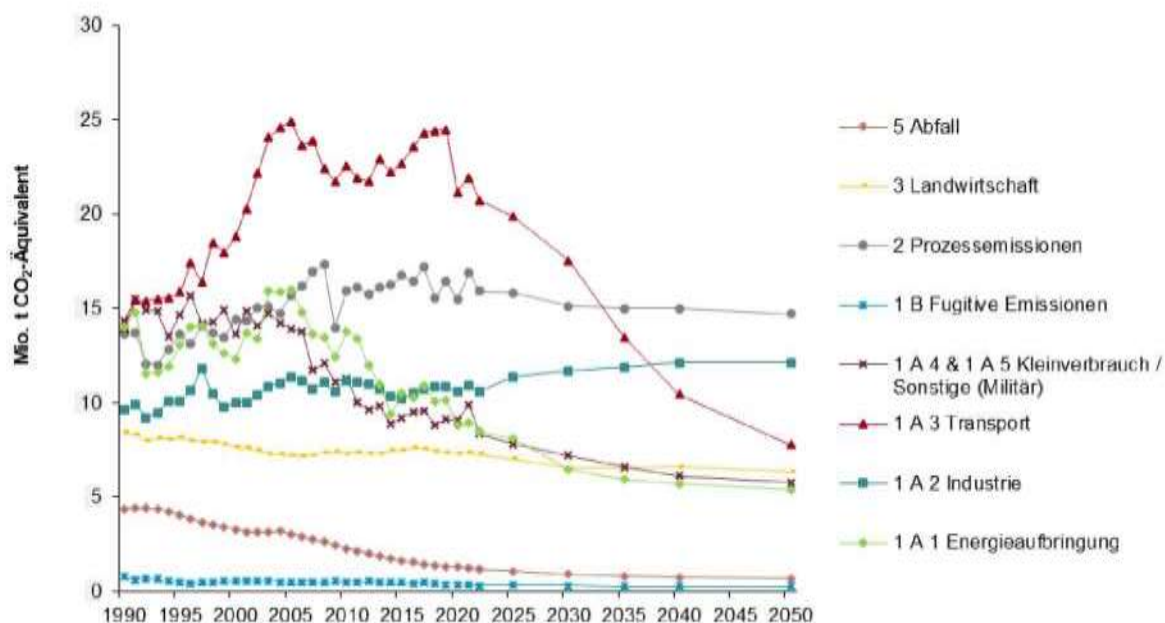
4.2.1.2 Projections of developments per sector with existing national and EU policies and measures until at least 2040 (including for 2030)

Table 19: GHG emissions by CRF sector classification (including emissions trading) in million tonnes of CO₂equivalent

CRF Sector	1990	2005	2010	2020	2030	2040	2050
Total	79.1	92.6	84.8	74.0	65.8	57.0	53.1
Total (incl. LULUCF)	67.4	74,5	65,4	68.2	60.0	52.7	50.6
1 A 1 Energy application	14,0	16.0	13.7	8,8	6,5	5.7	5,4
1 A 2 Industry	9.6	11,4	11.2	10.6	11,7	12,1	12,1
1 A 3 Transport	13.9	24.9	22,6	21,2	17.5	10,4	7.8
1 A 4 Small consumption	14.3	13.9	11.2	9,1	7.2	6.1	5.8
1 A 5 Other (military)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1 B Fugitive emissions	0,8	0,5	0,5	0.4	0,3	0,3	0,3
2 Process emissions	13,6	15,7	15.9	15,5	15,1	15,0	14.7
3 Agriculture	8,4	7.2	7.3	7.3	6.6	6.6	6,3
5 Waste	4,4	3.0	2.3	1.3	0.9	0,8	0.7
4 LULUCF	−11,7	−18.1	−19,4	−5.8	−5,7	−4,3	−2,6

Source: Federal Environment Agency 2024;
 rounding differences are noted

Figure 19: GHG emissions by CRF sector classification (incl. emissions trading)



Source: Federal Environment Agency 2024

4.2.2 Renewable energy

4.2.2.1 Current share of renewable energy in gross final energy consumption and in different sectors (heating and cooling, electricity and transport) and per technology in these sectors

The share of renewable energy in gross final energy consumption was 33.8 % in Austria in 2022.

In terms of energy consumption for space heating and air conditioning, the share of renewable energy was 30.6 % in 2022.

In terms of gross electricity consumption, the share of renewable energy was 74.7 % in 2022.

In terms of energy consumption in transport, the share of renewable energy was 10.1 % in 2022.

4.2.2.2 Indicative projection of development with existing policies and measures for 2030 (with outlook for 2040)

Table 20: Development of renewable energy and share in the WEM scenario, overall

	2020	2030	2040	2050
Total EEV (PJ)	1056	1106	1052	1038
EEV EET (PJ)	170	187	192	196
Total BIV (PJ)	1351	1405	1340	1334
BIV EET (PJ)	439	580	609	633
EET share in BEV	36.5 %	44.5 %	50.4 %	53.3 %

Source: Federal Environment Agency 2024

Table 21: Renewable and fossil power generation (WEM scenario)

Application (TWh)	2020	2030	2040	2050
fossil	14	8	8	8
Hydropower	42	47	48	48
Biomass	5	6	6	6
Ambient heat, etc.	0	0	0	0
Photovoltaics	2	13	15	17
Wind	7	17	19	22
Total	69	92	96	101
Application (TWh)	2020	2030	2040	2050
Imports	2	—4	6	11
Boarding	71	87	102	112

Source: Federal Environment Agency 2024

Rounding differences are noted

4.3 Energy efficiency dimension

4.3.1 Current primary and final energy consumption of the economy and by sector (including industry, residential, services and transport)

See Tables 22 and 23.

4.3.2 Current potential for the application of high-efficiency cogeneration and efficient district heating and air conditioning

In Austria, high-efficiency cogeneration and efficient district heating are already used too much, and ongoing network compactions are taking place in district heating and cooling networks. Several studies in Austria address the decarbonisation and expansion of district heating. On the basis of these studies, a federal-Länder working group on the heat strategy considers that it is realistic to increase district heating sales (final energy) to 25 ± 3 TWh by 2030, in this case 27 ± 5 TWh by 2040. In the WEM scenario, the share of district heating (about 17-18 %) in total heating in buildings is expected to be approximately the same for the buildingek; in the WAM scenario, the share rises to around 21 % by 2030 and close to 26 % by 2040.

4.3.3 Projections taking into account existing ones

Energy efficiency policies, measures and programmes as described in 1.2.1) for primary and final energy consumption per sector, at least until 2040 (including for 2030)

Table 22: Projection of final energy consumption and gross inland consumption (total)

	2020	2030	2040	2050
EEV (PJ)	1056	1106	1052	1038
BIV (PJ)	1351	1405	1340	1334

Source: Federal Environment Agency 2024

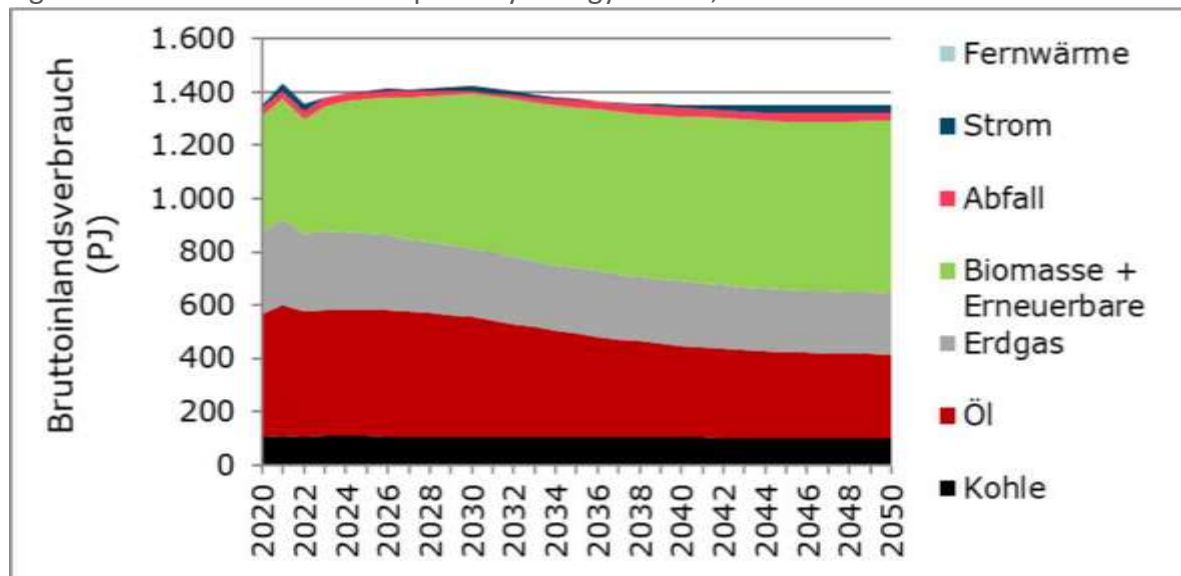
Table 23: Projection of final energy consumption per sector

Information in PJ sheet	Balance	Scenario	Scenario	Scenario
	2020	2030	2040	2050
Transport including off-road	355	357	297	280
Industry	295	340	348	347
Households and DL	392	395	389	393
LW	13	15	17	17
Total	1056	1106	1052	1038

Source: Federal Environment Agency 2024

Rounding differences are noted

Figure 20: Gross inland consumption by energy source, 2020-2050



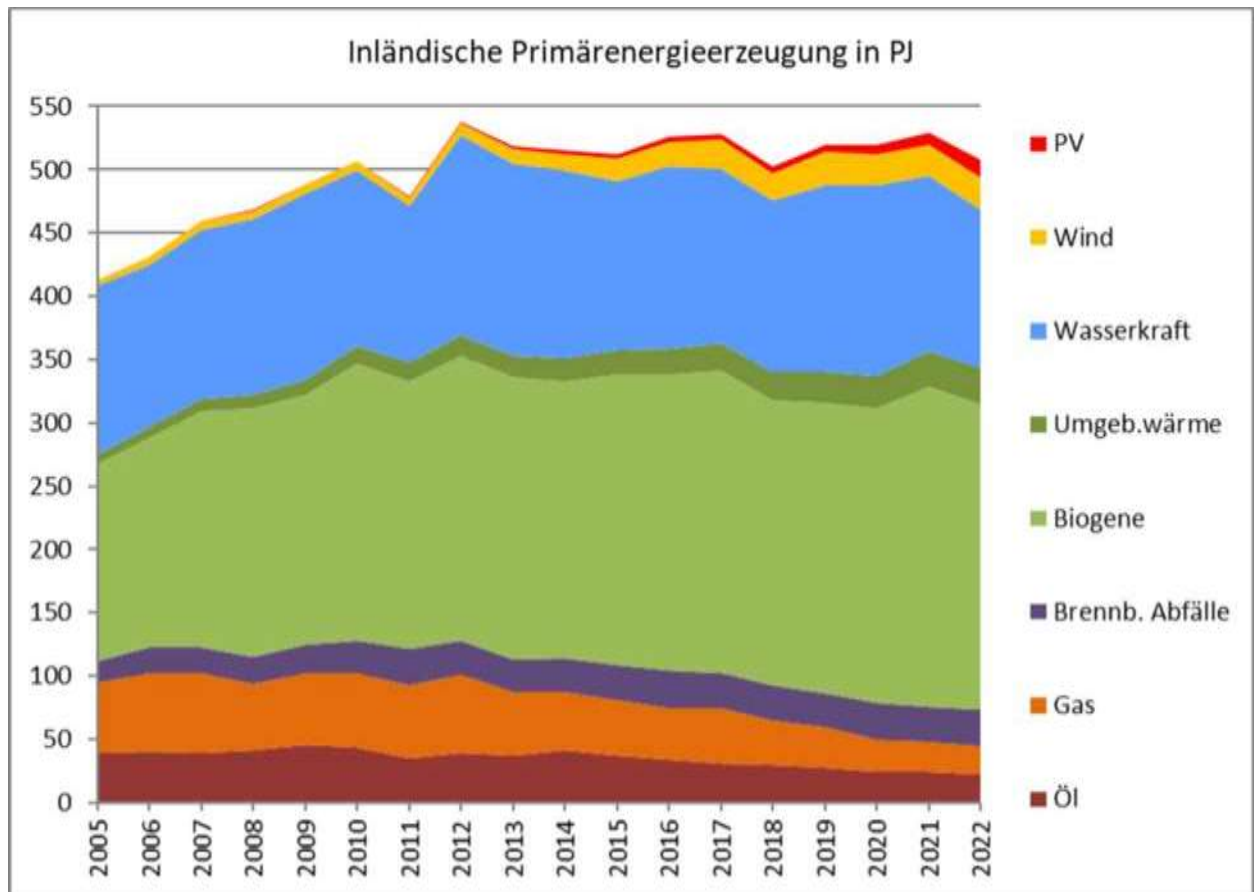
Source: Federal Environment Agency 2024

4.4 Energy security dimension

4.4.1 Current energy mix, domestic energy sources, import dependency, including significant risks

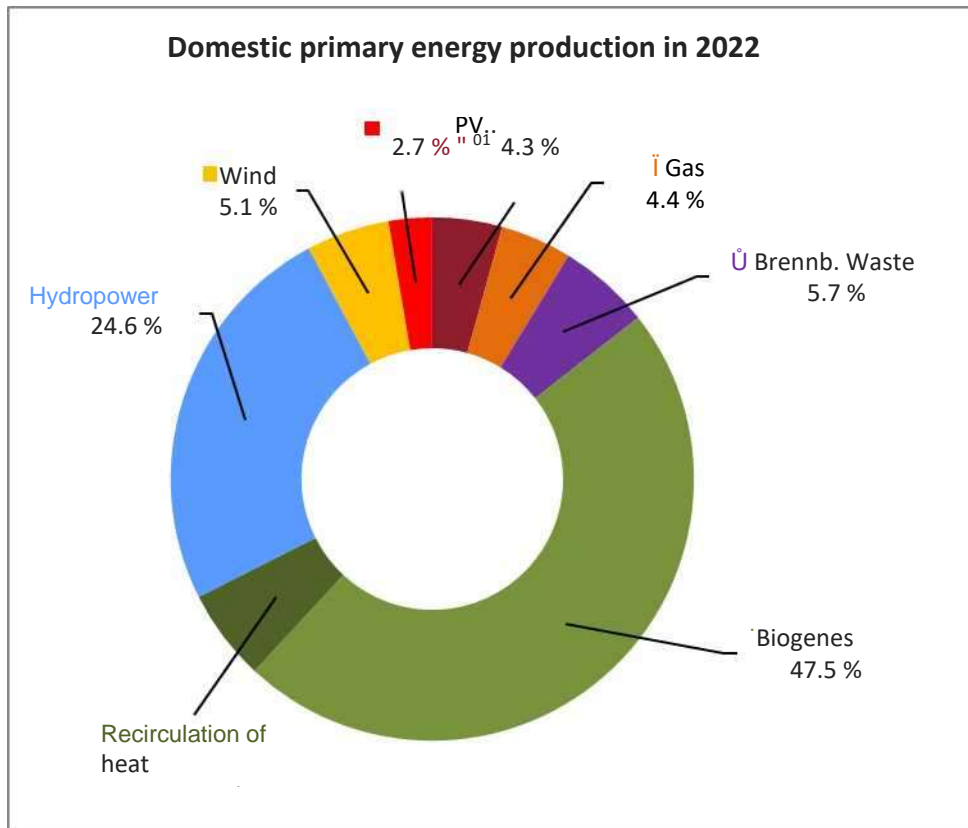
Domestic primary energy production is characterised by a very high share of over 85 % and a strong increase in renewable energy. The structure of domestic energy production shows a significant reduction in fossil energy sources and strong growth in renewable energy.

Figure 21: Domestic primary energy production by energy source, 2005-2022



Source: Statistik Austria

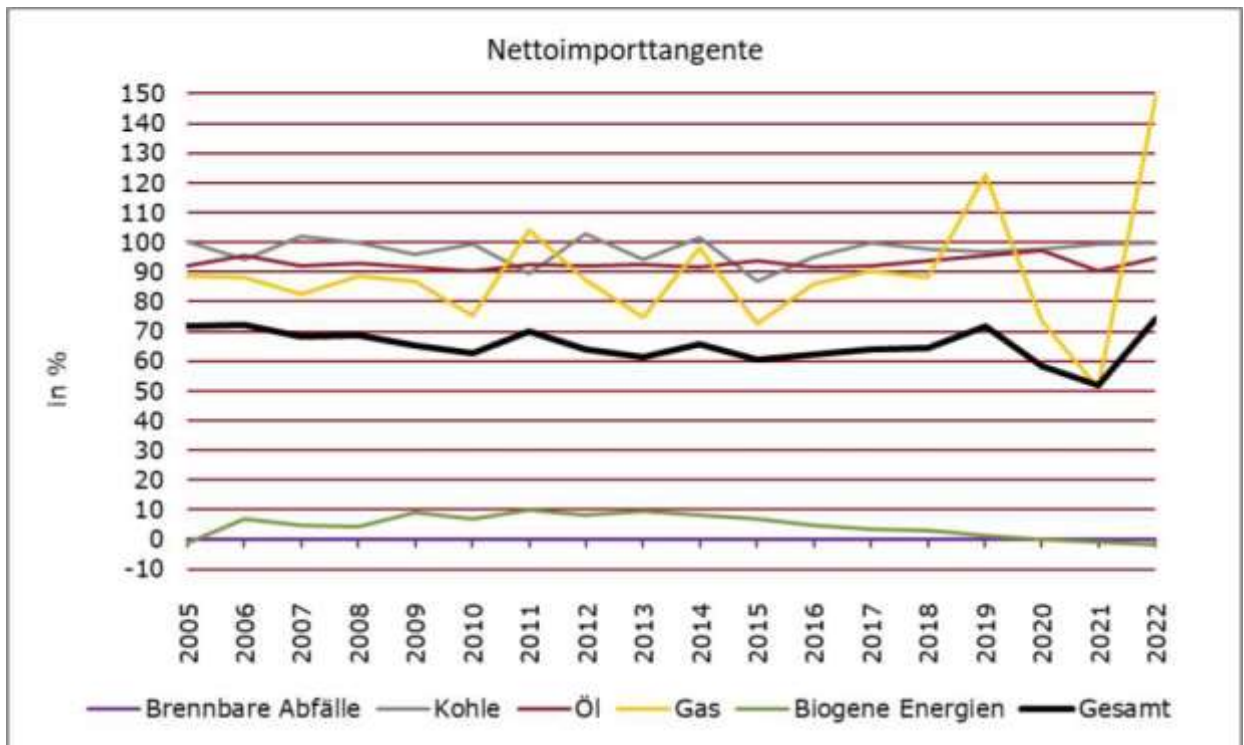
Figure 22: Domestic primary energy production by energy carrier, 2022



Source: Statistik Austria

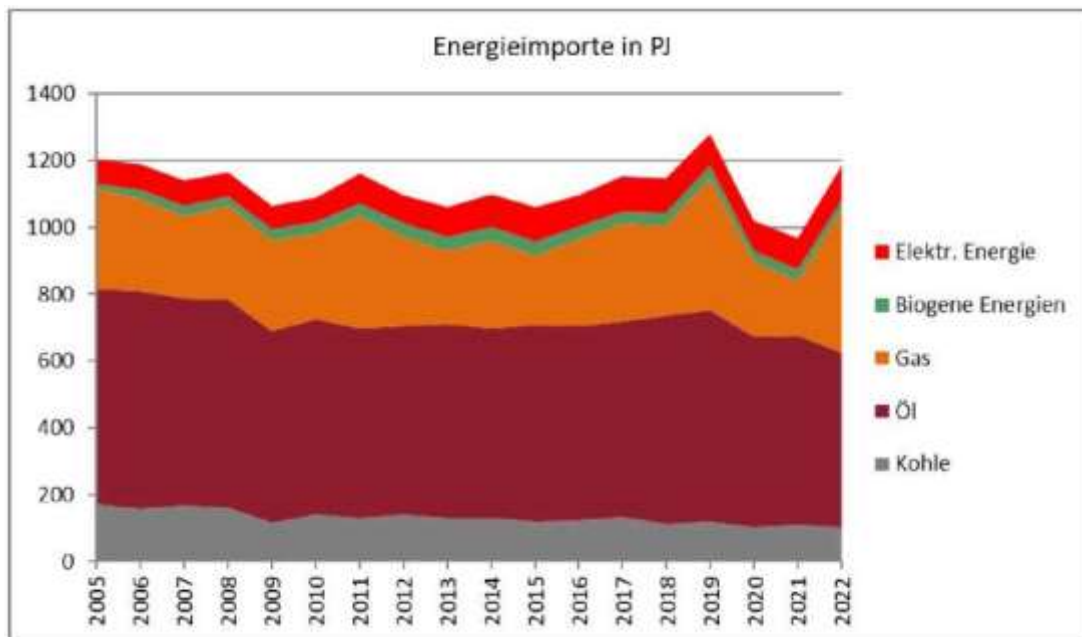
The import dependency of Austria's energy supply is slightly higher than the European average due to the comparatively low availability of fossil fuels. Net imports represent the import dependency of the energy supply and is calculated on the basis of the import-export balance divided by a country's gross domestic needs. In Austria, the total value of net imports in 2022 is 74.5 %. The level of self-consumption (domestic production relative to gross inland consumption) fell to 37.4 % in 2022 (2021: 37.0 %).

Figure 23: Net imports of main primary energy sources, 2005-2022



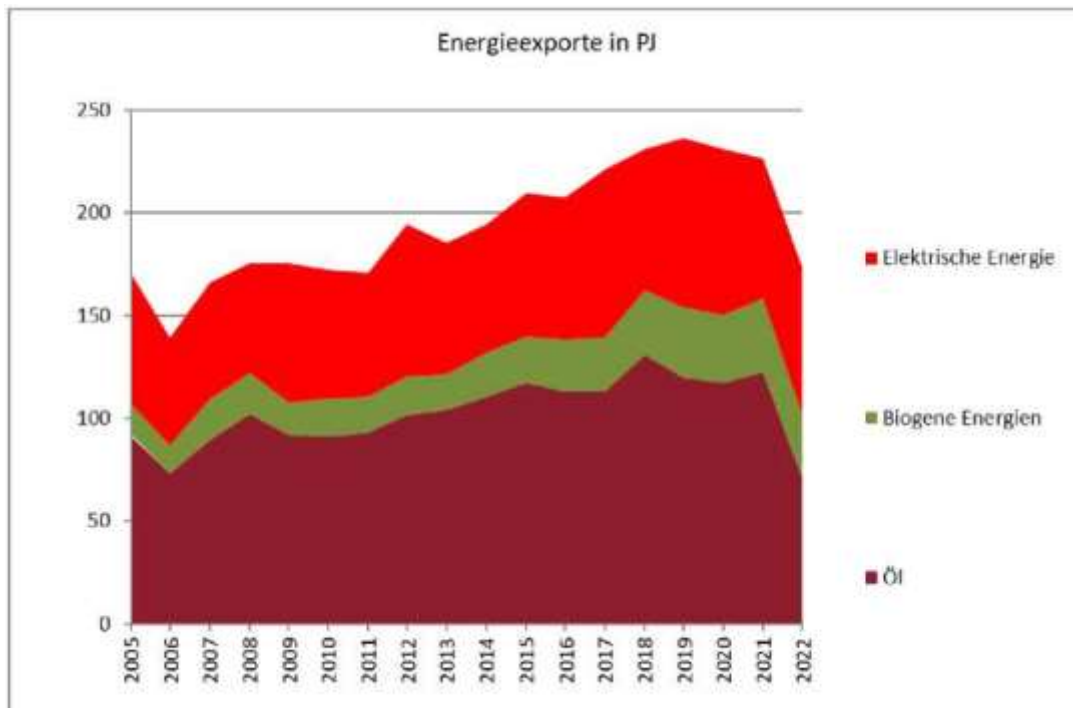
Source: Statistik Austria

Figure 24: Energy imports in PJ, 2005-2022



Source: Statistik Austria

Figure 25: Energy exports in PJ, 2005-2022



Source: Statistik Austria

4.4.2 Projection of development with existing policies and measures, at least until 2040 (including for 2030)

Table 24: WEM projection: Electricity supply (domestic production plus net imports)

Application (TWh)	2020	2030	2040	2050
fossil	14	8	8	8
Hydropower	42	47	48	48
Biomass	5	6	6	6
Ambient heat, etc.	0	0	0	0
Photovoltaics	2	13	15	17
Wind	7	17	19	22
Total	69	92	96	101
Imports	2	−5	6	11
Boarding	71	87	102	112

Source: Federal Environment Agency 2023

Rounding differences are noted

4.4.3 Vulnerability assessment of climate risks

The effects of climate change, such as extreme weather events and rainfall distribution, affect the supply and demand of energy. Natural hazards can cause damage to energy generation facilities and infrastructure. The development of renewable energy sources and decarbonisation will require far-reaching structural and infrastructural adjustments. The consequences of climate change can affect all sectors of the energy sector: the construction, operation and maintenance of infrastructure, production, distribution and supply.

The action plan of the Austrian Strategy for Adaptation to Climate Change provides an assessment of the vulnerability of the electricity sector to current and future climate risks. The activity field 'Energy – Focus electricity industry' covers all energy-related activities with regard to the risk to the client. The close link between climate change mitigation and adaptation in the energy sector makes it necessary to take account of each other's strategic

orientations. Many measures provide useful synergies, as they are likely to reduce emissions and contribute to climate change adaptation.

For successful and effective adaptation, avoiding maladaptation is also enshrined in Austria's adaptation strategy as a key objective. When planning and implementing measures, it is necessary to consider maladaptation as an immediate reactive response to climate change impacts by avoiding short-term adaptations. The need to avoid maladaptation is also clear because of the long periods of use that exist for the construction of infrastructure. Measures must already be designed and implemented today in such a way that they are exposed to climate conditions in several years and centuries. Maladaptations are measures that are mainly reactive and promise to be successful at most in the short term, but which in the long term prove counterproductive. In order to avoid misinvestment, there is a general need to raise awareness of the issue of maladaptation.

4.4.4 Cost-optimal levels for minimum energy requirements from national calculations based on Article 5 of Directive 2010/31/EU

In August 2019, under the guidance of the Austrian Institute for Construction Engineering (OIB), a study on cost-optimal levels was updated, which can be used to derive the requirement for thermal protection for large-scale thermal energy renovations and new buildings in accordance with the NZEB standard (OIB 2018).¹⁰²

4.5 Internal energy market dimension

4.5.1 Interconnection of electricity grids

4.5.1.1 Current level of interconnectivity and main interconnectors

Details can be found in Section A, Chapters 1.2 and 2.4. on the internal energy market.

4.5.1.2 Projections for the required interconnector extension (including for the year

¹⁰²OIB 2018 as amended: Document demonstrating the cost-optimality of the requirements of OIB Directive 6 or the National Plan pursuant to Article 5 of 2010/31/EU.

https://www.oib.or.at/sites/default/files/kostenoptimalitaet_27.08.19_0.pdf

2030)

Details can be found in Section A, Chapters 1.2 and 2.4. on the internal energymarket.

4.5.2 Energy transmission infrastructure

4.5.2.1 Essential characteristics of the existing electricity and gas transmission infrastructure

Details can be found in Section A, Chapters 1.2 and 2.4. on the internal energymarket.

4.5.2.2 Projections of required network expansion at least until 2040 (including for 2030)

Details can be found in Section A, Chapters 1.2 and 2.4. on the internal energymarket.

4.5.3 Electricity and gas markets, energy prices

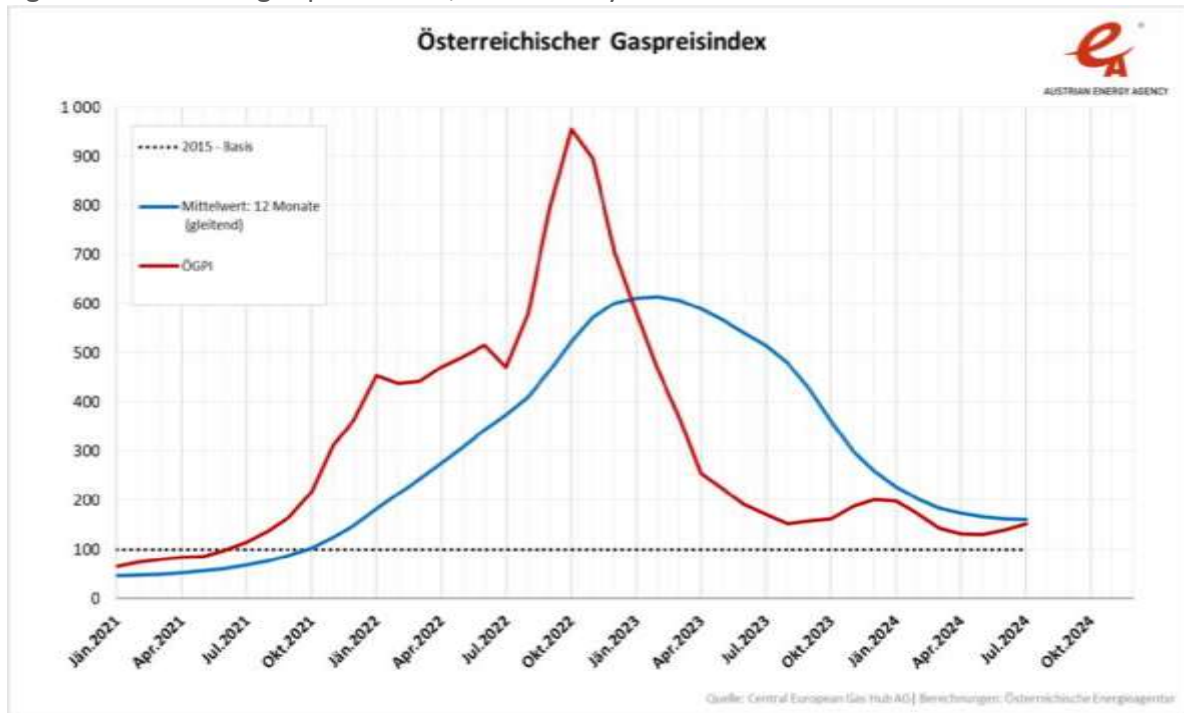
4.5.3.1 Current situation of electricity and gas markets, including energy prices

Figure 26: Austrian electricity price index, 2005 to April 2024



Source: EEX | Calculations: Austrian Energy Agency

Figure 27: Austrian gas price index, 2005 to July 2024



4.5.3.2 Projection of development with existing policies and measures at least until 2040 (including for 2030)

See section 4.1.3.

4.6 Research, innovation and competitiveness dimension

4.6.1 Current situation of the low-carbon technology sector and, where possible, its position on the global market (this analysis will be carried out at European and/or global level)

Innovative energy technologies in Austria – market development 2021¹⁰³

The documentation and analysis of the market development of technologies for the use of renewable energy provides a basis for data, planning and decision-making for numerous players in politics, industry, research and development. This market study “Innovative Energy Technologies in Austria – Market Development 2021” provides these foundations for solid biomass, photovoltaic, photovoltaic battery storage, solar thermal, heat pumps, component activation in Gebäuden and wind power.

Technology-specific methods are used to determine market developments, with questionnaire-based surveys of technology producers, commercial operators and installers, as well as at the funding agencies of the Länder and the Federal Government. Literature analyses, reviews of available statistics and internet searches are also carried out to provide information. The data generated are presented in consistent time series.

In addition to presenting market developments in units or units of performance on an annual basis, the operating stock and the energy yield from the plant stock is determined taking into account the technical life of the plant. The auxiliary energy required for propulsion and auxiliaries shall be used and net greenhouse gas emission savings shall be reported. The business turnover and employment effects illustrate the economic impact of the different technologies in Austria. The following is a more detailed analysis of market developments in individual areas:

Solid biomass – Fuels

The energy use of solid biomass has traditionally been one of the pillars of renewable energy use in Austria. Gross inland consumption of solid biofuels increased from 142 PJ in 2007 to

¹⁰³ Innovative energy technologies in Austria – market development 2021 – biomass, photovoltaic, solar thermal, heat pumps and wind power, Peter Biermayr et al, eds: BMK in series of energy and environmental research 21b/2022, May 2022, https://nachhaltigwirtschaften.at/resources/iea_pdf/schriftenreihe-2022-21b-Market-statistics-2021-web.pdf

around 179 PJ in 2013. In 2014, due to exceptionally mild weather conditions, there was a decline in order to rebound in the aftermath. Slightly lower consumption data can be observed again in 2018 and 2019 due to mild weather conditions. From 2020 onwards, the gross inland consumption of solid biofuels increased again due to weather conditions and increased sales of biomass technologies, reaching 2 021 204.89 PJ. The need for packgut has been steadily increasing since the beginning of the 1980s, with the exception of 2014, reaching a maximum of around 95.2 PJ in 2021. The pellet market developed until 2006, with annual growth of between 30 % and 40 % per year. This development was slowed down by a temporary shortage and increase in pellets in 2006 and then recovered. Compared to 2020, the national pellet's final consumption increased by 17.2 % in 2021 to around 20.3 PJ (1 190 000 tonnes) pellets. To ensure the supply of pellets, around 30 active Austrian pellet producers have built up a production capacity of around 1.82 million tonnes per year. Solid biogenic fuels saved around 10.19 million tonnes of CO₂equivalent in 2021. The bio-fuels sector generated a total turnover of EUR 1.567 billion in 2021, representing an employment effect of 17.932 full-time jobs in this sector. The success of bioenergy depends crucially on the availability of suitable raw materials at competitive prices. Currently, the availability of raw materials is very high due to Kalamii in Austria and neighbouring countries. In addition to traditional use for space heating, there is also a growing focus on the role of bioenergy as part of an all-system in combination with other renewable energies. Here, bio-fuels can mainly be used as energy sources that can be easily stored. In this context, the co-production of electricity and/or material products, such as large intestine plant charcoal, is also the most efficient use of resources.

Solid biomass – boilers and furnaces

The market for biomass boilers in Austria continued to grow at high growth rates between 2000 and 2006. In 2007, sales of all types of boilers fell to low oil prices. In 2007, the effects of a shortage of wood pellets were added, leading to a significant increase in pellet prices and a fall in the pellet boiler market in the order of 60 %. In 2009, sales fell again by 24 % due to the economic and financial crisis. This trend continued in the following years, with the exception of pellet boilers, which increased sales in 2011 and 2012. The decrease in sales was driven by rising biomass fuel prices and advanced investments in the years following the economic and financial crisis, as well as low oil prices and high average temperatures. Since 2019, sales have risen sharply. The sales of pellet fires even increased by 51.8 % in 2021, while that of composite wood pellet boilers increased by 26 %. Sales of ackgut boilers (& 100 kW) increased by 28.2 % and that of wood-wood boilers by 14.8 %.

In 2021, the Austrian market sold 12.344 pellet boilers, 2657 type-tested wood boilers, 1.531 log-wood pellet boilers and 2753 Hackschnitzelkes sel, all power classes. In addition, at least 2400 pellets could be sold, 5500 flocks and 8000 stoves. Austrian biomass boilers typically account for around 80 % – 85 % of their production abroad. The economic activity in the

biomass boiler and kiln market generated a turnover of EUR 1.712 million in 2021, resulting in an employment effect of 7.006 jobs. Research efforts in biomass boilers focus on reducing emissions and using biomass as an energy carrier in industrial and commercial processes with high heat demand. In order to continue to be successful in international markets, a reduction in the cost of plant technology while maintaining the high technical quality will be encouraged as far as possible.

Photovoltaics

After an early phase of innovators and self-sufficient installations, the photovoltaic market in Austria started to grow from the 1980s with the 2003 Green Electricity Act, but soon afterwards collapsed by capping tariff support at 15 MW_{peak} in 2004. After a record increase in 2013, the PV market has stabilised in the following years at annual growth rates ranging from 150 MW_{peak} to 190 MW_{peak}. After a moderate increase in newly installed capacity in the following years (2019: 247 MW_{peak}, 2020: 340.8 MW_{peak}), a significant increase was achieved in 2021: Photo-voltaic installations with a total capacity of 739.7 MW_{peak} were newly installed, an increase of approximately 117 % compared to the previous year. In Austria at the end of 2021, photovoltaic installations with a total cumulated output of 2782.6 MW peaked. This represents an increase of 36.2 %. The photovoltaic installations in operation in Austria resulted in electricity production of at least 2 782.6 GWh in 2021, thus reducing CO₂ eq emissions by 953.598 tonnes. At the end of 2022, photovoltaic installations with a cumulated total output of 3.772 MW were already in operation.

The Austrian photovoltaic industry is involved in the production of modules, inverters and other components, the design, installation, monitoring and maintenance of installations, and research and development. In this sector, there were 4529 full-time jobs in 2021. The average price of a grid-coupled 5 kW_{peak} photovoltaic installation in Austria compared to the previous year is EUR 1.506/kW_{peak}. VAT at EUR 1,543/kW_{peak} excluding VAT increased. For Austria, the development of photovoltaic systems for the integration of buildings is of particular strategic importance, as it is precisely in this sector that a particularly high national added value appears to be achievable. A BIPV (Construction Integrated PV) focus on research and innovation could be an opportunity for Austria's industry to fill a niche offering net opportunities for major export markets worldwide. Integration concerns not only architectural but also systemic as regards the optimal use of locally generated electricity.

Photovoltaic battery storage

Falling prices and public support, coupled with the growing demand for energy autonomy by households and businesses (Hampl et al. 2015), there has been a development that has

made decentralised generation and storage technologies a mass application in both Austria and Germany in the last few years. In order to document the development of stationary battery storage systems that are operated jointly with a PV system ('PV storage systems') also in Austria, FH Technikum Wien has been establishing relevant technical and economic indicators every year since 2014. To this end, in addition to federal and regional funding bodies which have offered support for PV storage systems in the year in question, Austrian companies which joined the PV storage market in Austria in the year in question are also interviewed using different survey forms or contacted directly by e-mail or telephone on a case-by-case basis. For 2021, the survey showed an addition of approximately 8755 PV storage systems with a cumulative usable storage capacity of approximately 131.13 MWh. Of these, around 72.8 % were built with funding and 27.2 % without funding. A total of 20.662 PV storage systems have thus been built in Austria since 2014 with a cumulative usable storage capacity of approximately 251.723 kWh.

For 2021, turnkey PV storage systems were priced at around EUR 1.030 per kWh of usable storage capacity. VAT collected. This represents an increase of around 12.7 % compared to 2020 (EUR 914/kWh benefit). A similar picture can be found in the purchase prices of PV storage systems. In 2021, the value of the above-mentioned purchase prices increased by 13.3 % and amounted to EUR 611 per kWh of usable storage capacity (2020: EUR 539/kWh use).

Solar thermal

Already in the 1980s, solar thermal energy use experienced a first boom in the field of hot water production and the heating of swimming pools. At the beginning of the 1990s, it was possible to open up the scope of space heating for the thermal solar energy. Between 2002 and 2009, sales increased rapidly and reached the historical peak in 2009 with an installed collector area of 364.887 m², corresponding to 255 MWth. After the period of massive growth up to 2009, the domestic market has now been declining for 12 years. This trend is similar not only in Austria, but also, with a few exceptions, in most European countries. In 2021, the Austrian domestic market again decreased by 7 % compared to 2020.

At the end of 2021, 4.8 million square metres of thermal collectors were in operation in Austria, corresponding to an installed capacity of 3.3 GWth. Austria is below the top 10 countries worldwide. Austria ranks 9th in terms of installed collector surface; based on installed collector area per inhabitant: in 4th place. The useful heat yield of these plants was 2.131 GWth. This avoids 369.917 tonnes of CO₂ equivalent emissions on the basis of the Austrian heat mix. In 2021, 70.410 m² of thermal collectors were newly installed, corresponding to a capacity of 49.3 MWth.

The share of exports of thermal collectors increased from 84 % in 2020 to 92 % in 2021. After 12 years of decline, the area of exported coils also increased for the first time in 2021 from 344.844 m² in 2020 to 462.223 m² in 2021. It should be noted that exports represent around 660 % of the domestic market and Austria is therefore one of the largest suppliers on the world market. The turnover of the solar thermal industry was estimated at EUR 147.6 million in 2021 and the number of full-time jobs can be estimated at around 1200.

Large heat reservoirs in local and district heating systems

In Austria, transmission-connected heat supply has a long tradition. 50 to 70 years ago, district heating services based on fossil fuels and CHP plants were implemented in major Austrian cities, starting from around 1990, the implementation of so-called solid biomass-based heating networks in towns and villages. In 2020, the total amount of heat sold in this sector was around 20 TWh and the increase has increased by 73 % since 2000 (Statistic Austria, 2021). The data for the analyses in question were 1056 heat networks collected. In common, the majority of these, both larger urban district heating networks and smaller local heating networks, require flexibility elements to operate according to techno-economic criteria or to further integrate fluctuating renewable and sunny waste heat. One way of providing such flexibility in local and district heating networks is heat storage.

Of the total of 1056 local and district heating networks surveyed, 717 heat storage systems have already been installed as a flexibility element in the last 20 years. A total of 951 container water storage tanks with a total volume of around 199.262 m³ was collected in these heat networks. The largest container water storage tank has a volume of 50.000 m³. Taking into account an average usable temperature difference of 35 K, the tank water storage tanks installed form a total heater storage capacity of around 8.1 GWh.

In 2021, 53 reservoirs with a total volume of 4.280 m³ were constructed, representing an increase of around 2.2 % of the total installed storage capacity. The largest storage facility installed in 2021 has a volume of 1.000 m³ and serves as a flexibility option for a large-scale solar thermal installation as well as for load management.

Heat pumps

The historical development of the heat pump market in Austria is characterised by a first phase of strong market diffusion of domestic water heat pumps in the 1980s, a sharp drop in the market in the 1990s and a second phase of a strong market diffusion of heating heat pumps from 2001. The proliferation of heating heat pumps took place from 2001 in parallel to the market diffusion of energy-efficient buildings, which, through low heating demand

and low pre-heating temperatures, provided good conditions for the energy efficient and economically attractive use of heat pumps.

Total sales of heat pumps (domestic market plus export market for all applications and power classes) increased from 50.210 installations in 2020 to 57.399 in 2021. This represents an increase of 14.3 %. Strong growth of 21.6 % was observed mainly in the domestic market, where all power classes benefited up to 350 kW. The export market grew by 1.9 % over the same period. Sales for industrial water heat pumps increased by 9.3 % on the domestic market and 23.4 % in the export market.

The export market's share of total sales in 2021 was 32.8 %, slightly lower than in 2020. The heat pump industry (production, trade, installation and monetised environmental heat) had a total turnover of EUR 1.015 million in 2021 and an employment effect of 2.160 full-time-jobs. In 2021, the use of heat pumps also avoided net 872.384 tonnes of CO₂ equivalent emissions. Research and development efforts in heat pump systems are currently focused on combinations with other technologies, such as solar thermal installations or photovoltaics, and on the development of other energy services such as space cooling and air conditioning or building dry-cleaning in the renovation area. The use of large-scale heat pumps in district heating networks and energy networks complements the innovation spectrum.

Component activation in buildings

Heating and cooling can be stored in buildings and building units. If there is a large mass and good thermal insulation, this results in a thermal inertia that can be used to shift loads. In massive parts of the building, who incorporates the plastic hose for this purpose, through which a heat carrier medium passes. For the overall energy system, a shift of load is useful if, for example, a system operator has the possibility to control the load via an interface in certain circumstances. Activated components and buildings are usually heated and/or cooled with heat pumps. Heat pumps installed in Austria can generally be switched off remotely from 2005 and will be allowed from 2015 using a smart grid interface. At the end of 2021, around 152.200 buildings in Austria were equipped with smart grid heat pumps, indicating a potential for shifting load of approximately 0.54 GW_{el}. This potential grew by 20 % between 2020 and 2021.

If buildings with remote heat pumps are included in the load shifting potential, this results in a stock of 285.720 buildings with a maximum load shifting potential of 1.11 GW_{el} in 2021. However, the maximum load displacement potential can only be called for in the event of high temperature-related heating or cooling capacity and is distributed over the year according to the temperature distribution.

The national value added from the thermal activation of building parts and burden is difficult

to separate. Strictly technology-specific is only an additional planning performance, possibly an additional use of plastic heat exchanger pipes, and the smart grid interface at the heat pump system or the smart meter of the operator, which allows communication in the system. Load-shifting spots from the thermal activation of components and buildings will grow rapidly in the coming years, and with the widespread availability of smart meters, it is also expected that business models will develop rapidly by network operators and/or energy suppliers.

Wind

While the development of wind power almost stopped in 2020, the expansion of wind power continued at medium levels in 2021. A total of 292 MW were newly built in Austria. Of the 67 installations in total, 20 plants (68 MW) were located in Lower Austria and 47 plants with 224 MW in Burgenland. At the same time, around 103 MW of wind power were dismantled and replaced by modern plants. At the end of 2021, there were 1305 wind turbines with a nominal capacity of 3.294 MW on the grid. This capacity allowed an average annual electricity production of 7.6 TWh, representing more than 11 % of Austria's electricity consumption, i.e. 2.2 million households. Compared with the stock at the end of 2020, the potential for electricity generation from wind power thus increased slightly.

Overall, in 2021, the wind industry generated a total turnover of EUR 1.298 billion, i.e. more than EUR 1 billion, including wind energy operators, suppliers and service companies. This represents an increase compared to the previous year, mainly due to the increase in electricity prices. The Austrian wind industry employed around 5.631 people at the end of 2021, of which 2354 were in construction, dismantling, maintenance and service activities, of which 490 were employed by wind power operators. Around 3277 employees were registered in the supply industry.

As a result of the 2019 Green Electricity Amendment, 320 approved plants with a capacity of 1.185 MW were endowed with support contracts. These projects, which have been going to be implemented since 2015, can only be implemented between 2021 and 2025. The projects established in 2021 resulted in an investment volume of EUR 435 million and 122 full-time jobs.

4.6.2 Current levels of public and, where available, private research and innovation spending on low-carbon technologies; current number of patents and current number of researchers.

Public spending on research, development and demonstration projects in the field of energy amounted to EUR 2 021 224.1 million in year. This represents an increase of 68.9 million euro compared to the previous year, i.e. 44.4 %, and is by far the highest figure recorded in Austria to date.

As in previous years, energy efficiency is the first one, with expenditure of EUR 96.0 million. This figure represents a significant increase from EUR 19.2 million in 2020. EUR 29.9 million went to electromobility, other important sub-sectors are energy efficient buildings and energy efficiency in industry (EUR 15 million each) and Smart Cities with 13.3

Million euro. The ‘transmission, storage and the like’ sectors follow by far, with EUR 45.1 million (increase of EUR 12.7 million in 2020) and ‘hydrogen and fuel cells’, where investment increased almost fivefold to EUR 41.1 million. Hydrogen represents, for the first time, the strongest of all subcategories of this survey, with EUR 31.8 million in 2021.

‘Renewable energy’ (decrease of EUR 1 million) and ‘cross-cutting issues’ (down by 6.4 million euro) each contributed around EUR 20 million. The topics of ‘nuclear energy’ (EUR 1.6 million) and ‘Fossil Energie’ (EUR 0.8 million) are still comparatively far behind in 2021 and do not have any priority in publicly funded energy research in Austria.

More than three quarters of the expenditure presented in this report in 2021 is directly financed by funding bodies (federal, regional, fund). The remaining share of own research, which is funded by federal or Land funds, is made up of ‘own resources’ in universities, colleges of applied sciences and non-university research institutions.

The Federal Ministries contributed EUR 202 176.5 million to programmes available, of which EUR 66.7 million can be allocated to the Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK). The Climate and Energy Fund, the institution with the highest public funding for energy-related research and development (R & D), was for the first time just behind the Bun of the Ministry and contributed a further EUR 70 million in 2021. The BMK and the Climate and Energy Fund were primarily responsible for the large increases in energy research spending in Austria in 2021, with EUR 32.7 million (24 %) exceeding the ordinary budget from the stimulus package. The expenditure indicated by the federal states for 2021 amounted to EUR 5.5 million. The basic programmes of the Österreichische Forschungsförderungsgesellschaft (FFG) maintained their level of expenditure at 17.9 million euro, but the Fund for the Promotion of Scientific Research (FWF) recorded a decrease of 1.6 million euro.

The Austrian Institute of Technology (AIT) dominated, with EUR 27.4 million, energy

research in non-university research institutions. Silicon Austria Labs, which used EUR 8.8 million in energy own resources, were included for the first time in this category. Expenditure from own resources at universities of applied sciences slightly decreased and amounted to EUR 20 211.6 million in the year. On the other hand, the reported own resources expenditure of universities increased to 14.2 million euro.

In 37.8 % of the projects contracted by the FFG in 2021, at least one woman in a senior position is employed in the consortium, compared to 32.7 % in 2020. On average, these women pro-sponsored women were responsible for smaller projects than their male colleague, but the wide gap as in 2020 has narrowed significantly. Almost 1200 projects and activities were recorded in 2021, with 62.4 % of the budget devoted to applied research.

The importance of energy research can also be measured by the share of the economic performance of the national economy expressed by gross domestic product. In 2021, there was a significant increase of 0.056 % (2020: 0.041 %).

4.6.3 Split current prices into the three main components of energy, grids and taxes/fees

Figure 28: Electricity prices for industry and households 2022

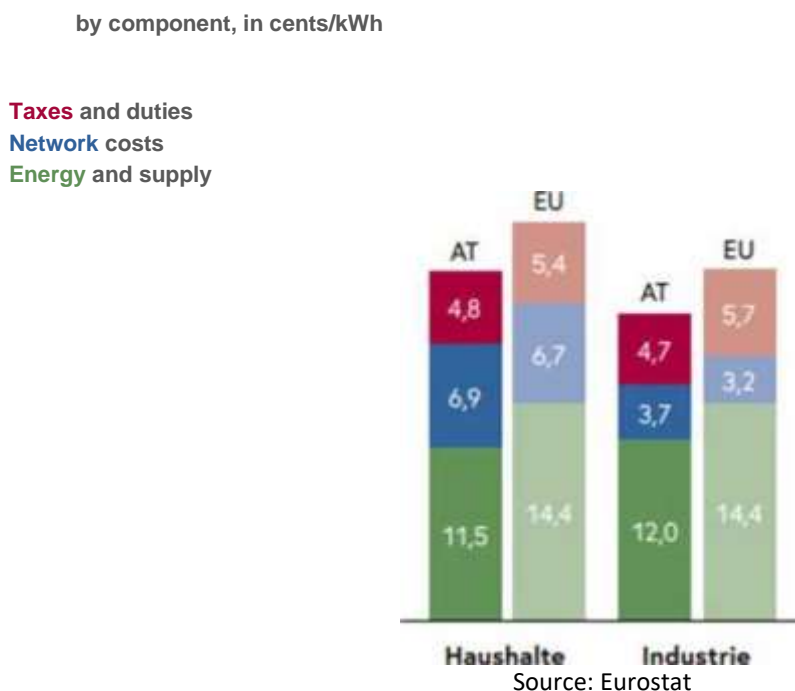
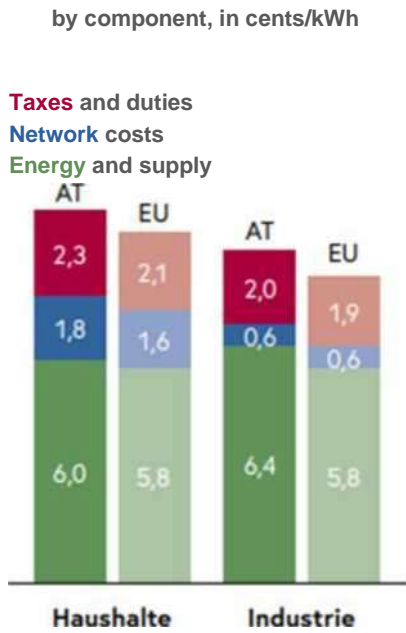


Figure 29: Industrial and household gas prices 2022



Source: Eurostat

4.6.4 Description of energy subsidies, including those for fossil fuels

Reference is made to the comments in Chapter 3.

5 Impact assessment of planned policies and measures¹⁰⁴

5.1 Impact of the planned policies and measures described in section 3 on the energy system and emissions and removals, with a comparison with the projections with the current policies and measures (described in Section 4)

5.1.1 Projections of the evolution of the energy system and of greenhouse gas emissions and removals, but also, where relevant, emissions of air pollutants pursuant to Directive (EU) 2016/2284 with the planned policies and measures at least up to 10 years after the period covered by the plan (including the last year of the period covered by the plan), taking into account relevant Union policies and measures

The WAM scenario shows a decrease in GHG emissions from non-emission sources by 2030 to around 33.2 Mt CO₂equivalent, approximately a 42 % reduction compared to 2005. Despite significant reductions, the transport sector remains the largest emitter of 45 % in the non-ETS sector. Agriculture is the second largest sector (21 %). In the third place, the energy & Industriesector (excluding EH) is 14 %.

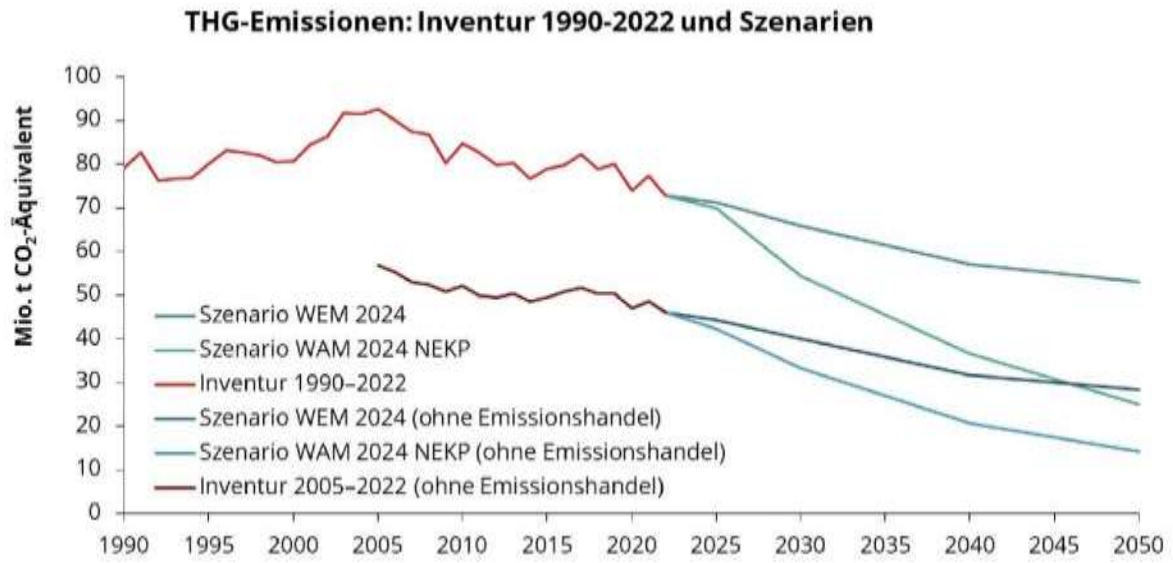
The implementation of CCS projects and the elimination of counterproductive interferences are expected to reduce emissions by an additional amount of around 2.5 million tonnes of CO₂equivalent in 2030, thus representing a reduction in GHG emissions outside the emission threshold of 46 % compared to the base year 2005.

The remaining gap of approximately 1.1 Mt CO₂eq. in 2030 to achieve the GHG reduction of minus 48 % (compared to 2005) can be filled by using ETS flexibility. Up to 11.4 Mt CO₂ eq. is available over the entire trajectory (2021to2030).

Figure 30: GHG emissions inventory and scenarios WEM and WAM with and without

¹⁰⁴The present WAM scenario takes into account measures adopted or put into effect as of 1 January 2022 and are planned to be implemented according to the current state of play.

emissions trading



Source: Federal Environment Agency 2024

Table 25: Total GHG emissions and distinction in EU ETS and Effort Sharing (Mt CO₂ equivalent) in EH delineation from 2013 for the WAM scenario

	1990	2005	2010	2020	2030	2040	2050
Total (excluding LULUCF)	79.1	92.6	84.8	74.0	54.4	36.6	24.9
EU ETS		35,7	32,7	27,0	21,2	15.9	10.7
Effort Sharing		56.8	52.0	47.0	33,2	20.7	14,1

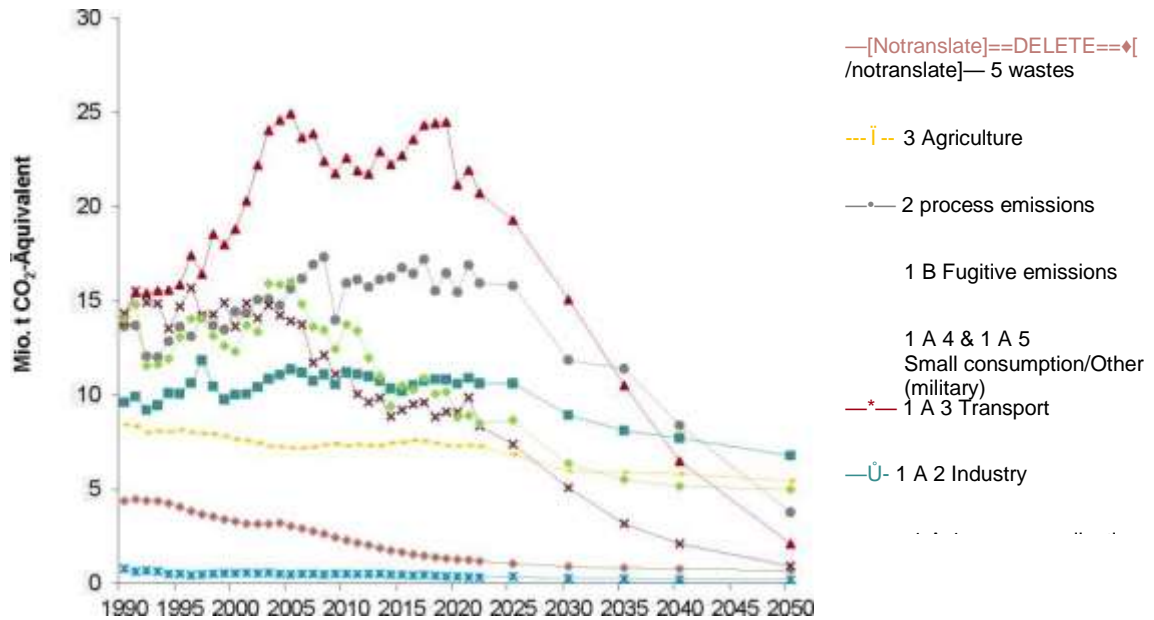
Source: Federal Environment Agency 2024;
rounding differences are noted

Table 26: GHG emissions by CRF sector classification (including emissions trading) for the WAM scenario (Mt CO₂equivalent)

CRF Sector	1990	2005	2010	2020	2030	2040	2050
Total (excluding LULUCF)	79.1	92.6	84.8	74.0	54.4	36.6	24.9
Total (incl. LULUCF)	67.4	74,5	65,4	68.2	48.7	32,4	22,4
1 A 1 Energy application	14,0	16.0	13.7	8,8	6,4	5.2	5.0
1 A 2 Industry	9.6	11,4	11.2	10.6	8.9	7.7	6.8
1 A 3 Transport	13.9	24.9	22,6	21,2	15,1	6,5	2.1
1 A 4 Small consumption	14.3	13.9	11.2	9,1	5.0	2,0	0.9
1 A 5 Other (military)	0.0	0.0	0.0	0.0	0,1	0,1	0,1
1 B Fugitive emissions	0,8	0,5	0,5	0.4	0,3	0,2	0,2
2 Process emissions	13,6	15,7	15.9	15,5	11,9	8,4	3,8
3 Agriculture	8,4	7.2	7.3	7.3	6.0	5.8	5,4
5 Waste	4,4	3.0	2.3	1.3	0.9	0,8	0.7
4 LULUCF	-11,7	-18.1	-19,4	-5.8	-5,7	-4,3	-2,6

Source: Federal Environment Agency 2024;
rounding differences are noted

Figure 31 WAM scenario: GHG emissions by CRF sector classification (incl. emissions trading)



Source: Federal Environment Agency 2024

Table 27: GHG emissions 2005, 2022 and 2030 in the ESR sectors according to WAM (in Million t CO₂equivalent):

	2005	2022 ¹⁰⁵	2030 (WAM 2024)	2030/2005
	Million t CO ₂ equivalent			%
Sum of GHG emissions in the ESR sectors	56.8	46.2	33,2	
Contribution from depletion of climate counterproductive support			-2,0	
Contribution from CCS (effective in ESR)			-0,5	

¹⁰⁵Emission levels corresponding to greenhouse gas inventory 1990 to 2022

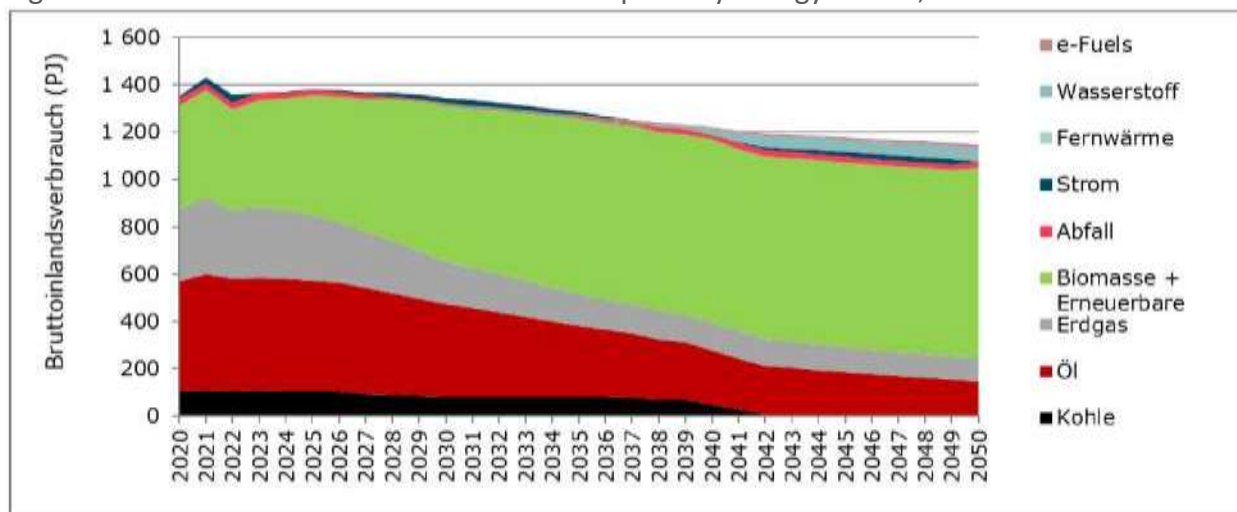
	2005	2022 ¹⁰⁵	2030 (WAM) 2024)	2030/2005
Total		56.8	46.2	−46 %

Table 28: WAM scenario: Projection of final energy consumption and gross inland consumption (total)

	2020	2030	2040	2050
EEV (PJ)	1056	1033	948	884
BIV (PJ)	1351	1324	1221	1147

Source: Federal Environment Agency 2024

Figure 32: WAM scenario: Gross inland consumption by energy source, 2020-2050



Source: Federal Environment Agency 2024

Table 29: WAM scenario: Projection of final energy consumption per sector

Information in PJ sheet	Balance	Scenario	Scenario	Scenario
	2020	2030	2040	2050
Transport including off-road	355	337	268	238
Industry	295	320	320	297
Households and DL	392	365	348	337
LW	13	11	12	13
Total	1056	1033	948	884

Source: Federal Environment Agency 2024

Rounding differences are noted

Table 30: WAM scenario: Development of renewable energy and share, total

	2020	2030	2040	2050
EEV (PJ)	1056	1033	948	884
BIV (PJ)	1351	1324	1221	1147
EET share	36.5 %	55.7 %*	73.8 %	86.5 %

Source: Federal Environment Agency 2024

* The measure 'Removal of counterproductive subsidies' also reduces fossil fuels

Energy consumption, therefore the share of renewables in the target range > 57 % is expected.

Table 31: WAM scenario: Application of electricity from renewable and fossil fuels
Energy carriers

Application (TWh)	2020	2030	2040	2050
fossil	14	6	4	4
Hydropower	42	47	49	49
Biomass	5	6	6	6
Ambient heat, etc.	0	0	0	0
Photovoltaics	2	19	30	35
Wind	7	19	24	27
Total	69	97	112	120
Imports	2	−9	−3	1
Boarding	71	89	109	121

Source: Federal Environment Agency 2024

Rounding differences are noted

5.1.2 Assessment of policy interactions (between existing policies and measures and planned policies and measures within a policy dimension and between existing policies and measures and planned policies and measures of different dimensions) at least until the last year of the period covered by the plan, in particular to establish a robust understanding of the impact of energy efficiency/energy savings policies on the sizing of the energy system and to

reduce the risk of stranded investment in energy supply

Reference is made to the results of the model-based scenario calculations (WEM, WAM, Transition), which were comprehensively published in a final report in autumn 2023.¹⁰⁶

5.1.3 Assessment of interactions between existing policies and measures and planned policies and measures, and between those policies and measures and Union climate and energy policy measures

As explained in Chapter 1, achieving the 2030 climate and energy targets requires, on the one hand, a multitude of national policies and measures and, on the other hand, effective framework conditions at the level of the European Union. For example, relevant technology paths, some of which are supported by assumptions in the present impact sequence, require European principles and systems. This is particularly the case in the transport sector with regard to e-mobility or the 'polluter pays' pricing of the high-level road network. The development and implementation of a national hydrogen strategy must also be hand-in-hand with European strategic objectives and investment flows. In this context, there are also questions of intra-European and international competition, as well as the general objective of avoiding stranded investments.

The future design of the European emissions trading system is of major importance for the development of greenhouse gas emissions in particular. The Fit for 55 package included the extension of the system to new sectors (buildings, road transport, other sectors) ("ETS-2"). Apart from remaining issues of concrete implementation, there is little robust response at this stage to price formation in the ETS-2, which will ultimately have an impact on the development of CO₂ emissions at Member State level, in conjunction with other measures (regulatory, promotion policy).

¹⁰⁶ For more information, see: https://www.umweltbundesamt.at/studien-reports/publication-details?pub_id=2503&cHash=142b7026066f138dc8cc2d9e911ab692

5.2 The impact of the planned policies and measures described in section 3 on the economy and, to the extent possible, on health, environment, employment and education, skills and social conditions – finally, the just transition aspects (in terms of costs, benefits and cost-effectiveness) at least until the last year of the period covered by the plan, with a comparison with the projections with current policies and measures.

For the socio-economic impact assessment of the planned policies and measures, a model-based evaluation of the impact on employment, value creation and income distribution has been carried out. The MIO-ES model of the World Federal Office was used for this purpose.¹⁰⁷ The results of the impact assessment are calculated from the difference between the WAM and WEM scenarios, the assumptions of which have been maintained. This concerns, for example, assumptions on energy and CO₂ prices, as well as energy-related emission reduction measures and climate mitigation investments deposited in the scenarios.

In the WAM scenario, both employment and value added increase slightly compared to the WEM scenario, as shown in Chart 33. On average, around 37.000 full-time equivalent jobs are secured in the WAM scenario over the period 2023 to 2030 compared to the WEM scenario. This reflects a 0.9 % increase in annual employment in the WAM. Value added in the WAM scenario is also higher than in the WEM scenario, which is 1.1 % per year on average over the period; it is 1.5 % in 2030.

These developments are driven by the additional energy, transport, building and industrial incubators of the WAM scenario. Cumulative investments in the WAM scenario over the period 2023 to 2030 are around EUR 36 billion (real 2020) above the WEM scenario. On average, this represents an increase of 4.7 % per year compared to the WEM scenario; it is 5.4 % in 2030. These investments are domestically induced investments mainly in:

Investments reported in Table 41 (Chapter 5.3). The investments in Table 41 are higher than the investments recorded domestically, as some of the investments are covered by imports.

Private consumption is also increasing as a result of additional production and employment stimulated by investment. In the WAM scenario, the average annual rate is 0.9 % higher than

¹⁰⁷Environmental economic analyses using the MIO-ES model, documentation of the model structure and data base, REP-0861, Federal Environment Agency, 2023.

<https://www.umweltbundesamt.at/fileadmin/site/publikationen/rep0861.pdf>

the WEM scenario.

Figure 33: Changes in macroeconomic sizes in the WAM scenario compared to the WEM scenario



Source: Federal Environment Agency, 2024

Looking at the effects at sector level (Table 32), it can be seen that, on the one hand, the additional investments in the WAM scenario generate positive value-added and employment effects in the construction and economic sectors upstream of the construction industry, such as in mining and quarrying. These sectors will be stimulated by the planned expansion of Infrastruktur in public transport, cycling, buildings (renovation and boiler replacement) and renewable electricity generation and pipeline. The construction industry is also a relatively job-intensive sector, meaning that more labour is needed per unit of production compared to other sectors, thus securing more domestic jobs.

On the other hand, the planned expansion of renewable energy sources also significantly increases the production and employment of electricity generation and supply. The production of

tangible goods also includes the production of wood products, metall products and electrical equipment, as well as the installation of machinery and equipment, added value and employment.

Employment gains can only be realised if the necessary staff are available in these areas, as well as appropriate retraining, training and further development. The BMK's Just Transition Action Plan on Education and Training addresses this issue and, by means of its actions, e.g. 'Coordinate training needs or offers and communicate' in this field of action.

Table 32: Changes in gross value added and employment in the WAM scenario versus WEM by economic sector

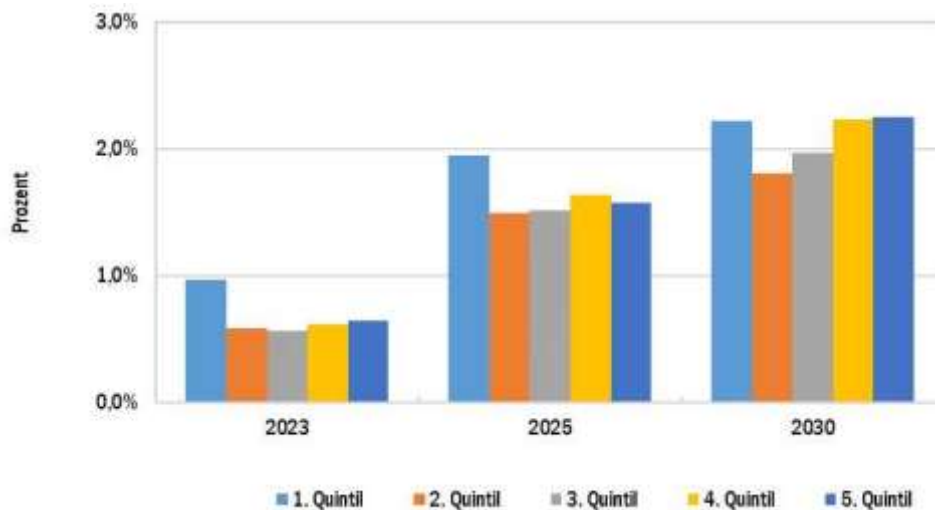
NACE sector	Percentage change (average 2023 to 2030)	
	Value added	Employment
Quarrying	7.8 %	7.3 %
Manufacture of wood products (excluding furniture)	8.7 %	8.1 %
Petroleum	-2.7 %	-2.7 %
Quarrying	2.8 %	2.3 %
Metal production and processing	2.4 %	2.1 %
Manufacture of fabricated metal products, except machinery and equipment	1.8 %	1.6 %
Manufacture of electrical equipment	2.5 %	2.2 %
NACE sector	Percentage change (average 2023 to 2030)	
	Value added	Employment
Repair and installation of machinery and equipment	3.8 %	3.8 %
Electricity generation	6.1 %	2.9 %
Building and civil engineering	11.2 %	13.6 %
Total	1.1 %	0.9 %

Source: Federal Environment Agency, 2024

As regards social impacts, the impact assessment shows that the measures deposited in the WAM scenario slightly increase the disposable household income of all income groups (see Chart 34). The upper income groups (fourth and fifth quintiles) are in absolute terms stronger than the lower ones. On the other hand, income from the lowest quintile rises more than the rest of the

income. On the one hand, employment growth is significant here, which tends to affect lower incomes more than above. The unemployment rate in the WAM scenario in 2030 is 0.9 percentage points lower than in the WEM scenario. On the other hand, rebate measures such as the climate bonus (which is slightly progressive) and income-dependent support, such as 'clean heating for all' and 'UFI to combat energy poverty'.

Figure 34: Percentage changes in disposable income by quintiles in the WAM scenario vs. WEM scenario



Source: Federal Environment Agency, 2024

Below is an estimate of the cost of emission allowances that Austria would have to purchase by 2030 if the EU ETS target is not met¹⁰⁸ through national GHG emission reduction measures.

The estimate depends on the availability of the allowances and thus on nearmen about future allowance prices. The following assumptions are subject to thecalculated net costs:¹⁰⁹

- Austria complies annually with its obligation to surrender allowances by using flexibilities in the ESR, such as the purchase of emission allowances from other EU Member States; thus, no “penalty factor” of 1.08 is due;
- Austria covers up to 2 % of Effort Sharing emissions in 2005 – up to 1.1 Mt CO₂ equivalent— from ETS allowances each year. For this purpose, lost revenue is taken into account in the cost calculation. All other possible flexibilities are not respected in this invoice;
- With regard to the price of the certificate, two variants are taken into account:
 - Variant 1: EUR 100 per t CO₂equivalent over the whole time series for both lost ETS revenues and purchases from Member States;
 - Variant 2: EUR 100 per t CO₂equivalent over the total time series for lost revenues from the ETS; for purchases from Member States, an increase from EUR 100 in 2025 to EUR 200 in 2030.

¹⁰⁸The new EU Effort Sharing Regulation (ESR) requires Austria to reduce greenhouse gas emissions outside emissions trading by 48 % by 2030 compared to 2005.

¹⁰⁹ See also ECA calculations on this topic (Court of Auditors, 2021)

https://www.rechnungshof.gv.at/rh/home/home/Bund_2021_16_Klimaschutz_in_Oesterreich.pdf

For each year 2021 to 2030, the gap between the trajectory and CO₂ emissions shall be calculated on the basis of the following data:

- For 2021 and 2022, emissions are taken from the last Austrian air pollutant inventory.
- For 2023, the results of the Nowcast for 2023 will be used.¹¹⁰
- For the years 2024 to 2030, both the WEM and WAM scenarios are used and compared.

Under the above assumptions, the cumulative cost of achieving targets over the period 2021 to 2030 could be between EUR 3.7 and 5.8 billion in the WEM scenario and between EUR 1.2 and 1.7 billion in the WAM scenario (at 2020 prices); the latter represents around 0.04 % of annual GDP.

In its long-term 2022 budget forecast, the Federal Ministry of Finance has calculated a budgetary risk value in the baseline scenario of around EUR 4.7 billion for the period from 2021 to 2030.¹¹¹ The BMF is currently developing a more detailed assessment approach. A good budget risk monitoring will be put in place and communicated regularly.

With regard to the environment and health, the planned measures not only reduce greenhouse gas emissions, but also reduce the emissions of air pollutants. In the transport sector, all GHG emission-related measures, in particular the increase in e-mobility, the modernisation of the vehicle fleet, etc. lead to significant reductions in NO_x, PM_{2.5} and NMVOC emissions. In the sector

Buildings also have a significant impact on NO_x, NMVOC and PM 2.5 emissions, such as the thermal refurbishment of the de-hull (reduced heating load), the replacement of fossil fuels (heating oil), and energy efficiency measures. Measures to reduce the use of oil and gas in the industrial and energy sectors, such as the development of renewable energy sources and energy efficiency measures, contribute to reducing both greenhouse gas emissions and NO_x emissions.

Drivers of decreases in both GHG and NH₃ emissions in the agriculture sector are decreasing livestock numbers and measures included in the CAP Strategic Plan (BML, 2022). In addition, the modernisation of non-road mobile machinery and its transition to lower-emission technologies also has a positive impact on both GHG emissions and air pollutants such as NO_x.

Traffic measures can also reduce noise pollution. The reduction of particulate matter through measures in the transport and buildings sectors is expected to have a positive impact on human

¹¹⁰Near-term Austrian greenhouse gas emissions forecast for 2023, REP-0918, Federal Environment Agency, 2024.

¹¹¹Long-term budget forecast 2022. Report of the Federal Government pursuant to Section 15(2) BHG 2013. BMF, 2022. https://www.bmf.gv.at/dam/jcr:2411f083-a898-4cd9-b90e-03b333c0dc8b/Long-term_budget_forecast_2022.pdf

health. Thermal renovation and cooling of buildings (including operational buildings) are also relevant for climate change adaptation and have a positive impact on human health (e.g. heat).

Overview of investments required

5.3.1 Existing investment flows and assumptions about future investments related to the planned policies and measures

Introduction and preliminary methodological remarks

To date, there is no comprehensive and methodologically consistent analysis of the overall investment needs for decarbonisation in Austria, which is why a variety of sources and estimates are used with different methodological approaches. It is planned that the BMK, in close cooperation with the BMF, will continue to draw up appropriate in-depth analyses in the future.

The figures presented in this chapter should therefore be regarded as approximations. First, the public funds already budgeted to finance decided measures and thus the actual state of public expenditure are presented. Studies and other relevant estimates of investment needs to meet climate targets will then be collected. Finally, the investment figures deposited with WEM/WAM Modelling are made transparent. Overall, this will provide a good first overview of existing investment flows and current needs.

In order to measure investments, a distinction should be made between regular and multi-investments: The total real-economy investment can be divided into investments (i.e. 'no-one costs') and additional investments (additional costs due to transformation). It is also possible to define climate-relevant investments that make a productive contribution to decarbonisation (= subset of total investments). Since different approaches to identifying investments use different definitions, particular caution is required when comparing these estimates. In the subchapter "Modeled investments in WEM/WAM scenarios"

"a detailed definition of the investments estimated in the scenarios.

According to the NECP reporting requirements, the investment flows presented relate to the years 2022 to 2030 (unless explicitly stated otherwise). However, it is clear that, beyond 2030, a high level of climate and energy-related investments is necessary in order to meet the long-term climate targets and to continue to position Austria as an attractive business location and to maintain its quality of life.

The role of public authorities in financing decarbonisation is multifaceted, ranging from direct financing of infrastructure, through investment grants, to the provision of appropriate incentives

and framework conditions, such as in the tax and levy system, in the allocation of support, but also in the effort to channel finance towards climate-resilient pathways within the meaning of Article 2.1(c) of the Paris Agreement (Green Finance). It can be seen that public spending on climate protection in Austria has increased significantly in recent years.¹¹² In addition, consideration of environmental and climate aspects in the budget process plays an increasingly important role, as shown by the Green Budgeting initiatives in Austria.¹¹³

The figures presented below represent a combination of different sets of data which are not always directly comparable and therefore do not allow, inter alia, to sum formation.

Specific funding and disbursement funds from the federal budget are in principle (and, unless explicitly stated otherwise,) on the basis of the legal situation decided, specifically on the basis of the 2022 Federal Finance Acts, 2023 and 2024 or the corresponding Federal Finance Framework Acts (BFRG; it also includes the current BFRG 2024 – 2027). In cases where the law has already laid down requirements for longer periods of time, this information is also included.

The information from studies and scenario modelling is scientific technical information and expert estimates. All these figures are therefore indicative and do not prejudge future public funds or budget negotiations.

Public contribution

It is generally undisputed that the public sector has a crucial role to play in Austria's transformation and decarbonisation. This role is mainly reflected in the regulation of key transformation processes, the establishment of appropriate frameworks to leverage private investment, the creation of productive incentives through the levy system and the promotion of specific green activities through subsidies. By defining laws and frameworks, governments can effectively manage the transition to a greener economy and ensure that environmentally friendly practices and technologies are promoted and driven.

However, the private sector also plays an essential role in the transformation, as can be directly deduced from the Paris Agreement's target provisions. This concerns in particular the investments needed for the transformation, much of which will have to be borne by the private sector. It should be borne in mind that – depending on climate change ambitions – large

¹¹² See the annual climate and environmental protection annexes to the budget:
https://www.bmf.gv.at/themen/klimapolitik/green_Budgeting/budgetbeilage_klima--_and_environmental_protection.html

¹¹³ https://www.bmf.gv.at/themen/klimapolitik/green_Budgeting.html

investment flows are constantly to be carried out. The share of climate investment that needs to be made is low, as national and international studies have consistently shown.¹¹⁴ This underlines the need for a strong partnership between the public and private sectors, combining innovation and financial resources from the private sector with clear and supportive policy frameworks to accelerate the transition to a climate-resilient business location. By incentivising transformative investment, supporting research and development for sustainable technologies and promoting the market uptake of environmentally friendly products, the state can contribute to an even more active involvement of the private sector in climate action.

This analysis underlines that overall figures on investment gaps must always be seen in terms of the different roles. A large investment gap does not necessarily mean that (massive) public funding is needed to do so; it simply requires the State to ensure that these funds are channelled into the necessary areas, for example through public policy.

Green Finance

Accordingly, the cost-effective and effective mobilisation of private capital while avoiding market distortions (such as greenwashing) and ensuring financial stability is essential. Austria's Green Finance Agenda, as a reform of Austria's recovery and resilience plan (pursuant to Article 18 of Regulation (EU) 2021/241), identifies numerous measures that boost growth and innovation for climate-friendly investments and the systemic redirection of financial flows towards climate and energy objectives.

The BMF and the BMK have developed concrete steps to implement the Green Finance Agenda, based on expertise from the market, consensus and administration. In autumn 2023, the Council of Ministers adopted the formal decision of the Austrian Green Finance Agenda (GFA) on the basis of a joint report.¹¹⁵

The Green Finance Agenda addresses 25 areas of action to create a sustainable finance place in Austria. The areas of action focus on three key aspects:

- **Mobilising capital for climate action and sustainable Austria:**
The measures focus on financing the necessary investments in the targeted sectors and the

¹¹⁴ See, for example, BMF long-term budget forecast; UK Office of Budgetary Responsibility, Economic and fiscal outlook October 2021; Climate Policy Initiative (2024). Top-down Climate Finance Needs. Accessed on 30 July 2024. URL: <https://www.climatepolicyinitiative.org/publication/top-down-climate-finance-needs/>

¹¹⁵ <https://www.bmk.gv.at/green-finance/finanzen/finanzukunft.html>

structural transition towards a climate-neutral and resource-efficient economy. Non-action will lead to significantly higher costs in the medium and long term. Investments in the targeted sectors not only reduce the threat of damage caused by climate change, but are an opportunity for the economy. The aim of the measures is to reallocate capital supply towards the achievement of climate and energy targets.

- Climate-relevant risk management:
 - The financial sector plays a key role in limiting the risks of climate change. It is important to avoid negative impacts of the financial sector on the climate and the environment and to strengthen positive effects. This requires anticipating changing circumstances, actively shaping them and managing associated risks. The inclusion of transition and physical climate and environmental risks in the core business of financial institutions should therefore be done in a dual sense. The aim of the measures is to ensure the appropriate management of climate and environmental risks and to contribute to financial stability by strengthening the resilience of financial institutions and the financial system as a whole.
 - Promoting transparency, long-termism and impact in the capital market: The embedding of long-termism and transparency in financial and economic activities requires a corresponding policy-regulatory approach. A key element of this is a systematic examination, formulation and implementation of long-term objectives. Effective implementation requires a common language and a common understanding of key concepts and impact mechanisms. The aim of the measures is to promote this understanding and to increase transparency on climate and environmental impact.

Regular and systematic monitoring of success is needed to ensure effective and cost-effective implementation of the Green Finance Agenda. The operational agreement between the Commission and Austria, pursuant to Regulation (EU) 2021/241, establishes an indicator-based monitoring and evaluation plan for the implementation of the GFA. In addition, it will be necessary to regularly evaluate and, if necessary, adapt the GFA itself. The evaluation of the GFA, including the terms of reference for the review, is carried out by the BMF together with the BMK. Such an overall evaluation of the Green Finance Agenda should be carried out for the first time by 31.12.2026.

Legally determined & budgeted funds

Public funding for climate protection in Austria has increased significantly in recent years.¹¹⁶ After an overview of climate-relevant payments in accordance with the Green Budgeting Method and an overview of the energy and climate support in Austria, this section briefly presents the statutory budget per sector.

Overview of climate-relevant payments in 2024 according to the Green Budgeting Method

Annex V, which is published annually with the Federal Estimates in connection with the Climate and Environmental Supplements, presents the Federal Government's climate- and environmental-relevant budget positions in a clear manner and at budget position level. This analysis is based on the Federal Government's Green Budgeting Method, which has been developed by the BMF in recent years and is constantly being developed.

The budget items shown therein have an intended productivity (green budgeting score 2) or a climate and environmental side-effect (Green Budgeting Score 1) and are thus considered positive or productive.

According to the Green Budgeting Method used, the 2024 BVA classifies EUR 554.5 million with a green budgeting score 2 and thus as intended productive in terms of the climate and environmental objectives of the Republic. A further EUR 5.420.7 million has a climate and environmental side-effect (green budgeting score 1).

In total, around EUR 10.9 billion of the 2024 BVA disbursements are classified as a positive green budgeting method. The payments presented here therefore represent the total funds made available by the Federal Government via the Federal Finance Act for Climate and Environmental Protection.

¹¹⁶See also climate and environmental protection annexes to the budget:
https://www.bmf.gv.at/themen/klimapolitik/green_Budgeting/budgetbeilage_klima--_and_environmental_protection.html

Table 33: Detailed overview of the use of funds by the Federal Government for Climate and Environmental Protection for the 2024 BVA (source: Annex V, available in detail on the BMF website; in EUR million)

Inbreakdown	Estimation Body	2024 BVA	Environmental and climate funds (covered and side-effect)
25	Travel allowance, free travel, schoolbooks	606,00	606,00
25 Conclusion		606,00	606,00
30	Subsidies and transfers	0.00	0.00
30 Conclusion		0.00	0.00
31	Basic funding of institutions	42,69	42,69
	Research institutions	0.00	0.00
	Federal Geological Institute	0.00	0.00
	Universities		0.00
	Central Institute of Meteorology and Geodynamics	0.00	0.00
31 Conclusion		42,69	42,69
32	Conservation of monuments	0.00	0.00
	Transfers of arts and culture	15.52	11,60
32 Conclusion		15.52	11,60
33	Creation of innovative businesses	2.00	2.00
	Innovation, technology transfer	167,71	134,46
	Scientific-business cooperation	48.50	12.20
33 Conclusion		218,21	148,66
34	FTI support	357,39	349,94
	FTI infrastructure	167,94	121,29
	International collaboration	79,12	53,65
34 Conclusion		604,45	524,88
40	Construction and property management	4,72	4,72
	Business development	692,19	191,95
40 Conclusion		696,90	196,66
41	Total transport and participations in transport	418,49	418,49
	Climate and Energy Fund (CLI.EN)	293,00	293,00
	Climate ticket	795,40	795,40
	Austrian Patent Office	0,10	0,10
	Rail	4052,72	4052,72
	Shipping inspectorate	0.00	0.00
	Federal Safety Investigation Authority	0.00	0.00
	Road	0.00	0.00
	Waterways	68,63	68,63
	Central Body	0,36	0,36
41 Conclusion		5628,72	5628,72

42	Common Agricultural Policy – Federal Government	165,80	165,80
	Common Agricultural Policy – EU, variable	334,90	334,90
	National and internat. Forestry measures	99,97	99,97
	Water treatment	262,27	262,27
	Hydro-engineering	121,28	121,28
	Wildbach and avalanches installation	124,36	124,36
42	Conclusion	1108,58	1108,58
43	Remediation of contaminated sites	64,30	64,30
	JI/CDM programme	0,00	0,00
	Climate and energy	105,79	105,79
	Climate and Energy Fund	364,15	364,15
	Circular Economy (UFG)	47,70	47,70
	Radiation protection	14,73	14,73
	Environment and circular economy	89,41	89,41
	Domestic environmental support scheme	1336,43	1336,43
43	Conclusion	2022,51	2022,51
44	Financial allocations in urban transport matters, variable	133,92	133,92
	Transfers to Länder and municipalities, non-variable	1800,00	540,00
44	Conclusion	1933,92	673,92
	Overall conclusion	12877,50	10964,23

Overview of climate and energy support up to 2030

In Austria, there is a comprehensive offer to promote investment through the most diverse programmes. The direct climate- and energy-related funding programmes (without mobility) set out in the BFRG 2024-2027 (or in the previous BFG/BFRG) alone add up to a volume of around EUR 15 billion for the entire period (see these climate-relevant funding schemes have triggered investments of approximately EUR 3.1 billion with a total funding volume of EUR 737 million and initiated 53.472 projects, which save around 3 215 000 tonnes of greenhouse gas emissions by those who saved them. These investments also create and secure around 13.000 jobs. It is necessary to build on this experience in order to ensure efficient and effective use of resources by 2030.

Table 34) In addition, funding from the Länder and the pay-as-you-go instructions of the EAEC are also included. Although the private investment triggered varies greatly per scheme, the evaluation under the UFG suggests that at least a total of EUR 2, i.e. EUR 30 billion, is triggered by a factor of EUR 30 billion, but also significantly more in some programmes.

Climate and energy-related support are, for the foreseeable future, key instruments for

incentives for voluntary measures to protect the climate and the environment in Austria. As part of the BMK's climate and environmental protection support under the UFG, in 2023 alone, a total funding volume of almost EUR 950 million triggered environmental-release investments of approximately EUR 3.6 billion on the Austrian site (see 2023 Environmental Investment Report¹¹⁷). As a result, 553.602 projects were approved.

These include, inter alia, the climate-relevant domestic environmental promotion programmes, the renovation plan (with the rehabilitation bonus and the oil and gas extraction campaign), the energy efficiency programme, industrial transformation and climate-friendly district heating. These climate-relevant subsidies have triggered investments of approximately EUR 3.1 billion and initiated 53.472 projects, with a total of EUR 737 million, saving around 3 215 000 tonnes of greenhouse gas emissions. These investments also create and secure around 13.000 jobs. It is necessary to build on this experience in order to ensure efficient and effective use of resources by 2030.

Table 34: Overview of climate and energy-related funding programmes (based on the respective BFG/BFRG budgeting; including current BFRG 2024-2027)

Budgeted funding programmes	Budget period	public Total funding 2022-2030 (EUR million)
Who (budget decided before 01/01/2022)		
Domestic environmental support (UFI)	2022-2025	600.0
Expansion and decarbonisation of climate-friendly district heating systems	2022-2030	270.0
Renovation wave	2022	350.0
	2021-2022	140.0
Clean heating for all (support to low-income households)		
Climate and Energy Fund (CLIEN) Annual Programme	2022	98.4
	2023-2027	75.0
Europ. Agricultural Fund for Rural Development (EAFRD)*		
European Regional Development Fund (ERDF)*	2021-2027	80.0
Whom – extra-budgetary		
Investment grants under the Renewables Expansion Act (EAG)**	2022 – 2030	630.0
Funding programmes of the Länder	No uniform data available	
Total WEM		2.243.4

¹¹⁷https://www.bmk.gv.at/themen/klima_umwelt/klimaschutz/ufi/publikationen/umweltinvestitionen.html

Budgeted funding programmes	Budget period	public Total funding 2022-2030 (EUR million)
WAM (budget decided on or after 01/01/2022)		
Domestic environmental support (UFI)	2026-2027	320.0
Additional UFI budget for energy efficiency	2023-2030	1.520,0
Expansion and decarbonisation of climate-friendly district heating systems	2022-2030	316,9
Renovation wave	2023-2027	3.645,0
	2022-2030	1.460.0
Clean heating for all (support to low-income households)		
ÖARP – UFI Klimafitte Ortskerne	2022-2025	50.0
ÖARP – UFI Fight against energy poverty	2022-2025	50.0
ÖARP – KLIEN PA support for private individuals	2023-2025	140.3
ÖARP – CLIEN transformation of the economy	2022-2030	100.0
Industrial transformation	2023-2030	2.975,0
Climate and Energy Fund (CLIEN) Annual Programme	2023	355,4
Climate and Energy Fund (CLIEN) Annual Programme	2024	364.2
Hydrogen Promotion Act	2024-2030	520.0
EAEC one-off payments from the federal budget	2024	909.0
EAG one-off payments from the Federal Budget for biogas and hydrogen	2024	80.0
WAM – tax		
Exemption from VAT Solar PV	2024-2025	650.0
Funding programmes of the Länder	No uniform data available	
Total WAM		13.455,8
	TOTAL WAM + WAM	15.699,2

Source: BMK

* Includes only co-financing contributions to UFI actions.

** The investment support provided by the EAEC is not financed by the budget but by electricity purchasers via the renewable support contribution (= parafiscal). The information on public financing in the table corresponds to the minimum volumes for investment grants according to the EAEC.

Renewable energy and grids – legally determined & budgeted funds

Renewable electricity

In order to stimulate investment in renewable electricity generation, the Renewables Expansion Act (ERG) provides for investment grants, including operating subsidies for installations, known as market premiums. In the case of support through investment grants, applicants receive a one-off financial subsidy for the construction, extension or revitalisation of a generating facility, subject to eligibility criteria and applying national and European State aid ceilings. The market premium, on the other hand, is designed to promote electricity production from renewable

sources in the form of operating support for 20 years. It aims to compensate for the difference between the production costs of electricity from renewable sources and the average market price of electricity in order to increase planning certainty.

Over EUR 1.2 billion of investment is expected to be provided by the EAEC for the years 2022 to 2030. This represents almost EUR 4 billion in total investment.¹¹⁸

The financing needs of the market premium system are determined by the evolution of electricity prices. In 2022, there was no market premium due to high electricity prices. So far, EUR 26 million has been paid out by the EAEC funding management body for 2023.¹¹⁹ A serious estimate of the market premium sub-support volume up to 2030 is currently not possible due to volatile electricity price developments.

In principle, the costs of the green electricity support system are not financed from the federal budget but through a levy system – the renewable support contribution and the renewable subsidy flat rate.¹²⁰ This system has been largely suspended as a result of the energy and flooding crisis. In 2022, 2023 and 2024, the renewable contribution and the renewable support allowance were not raised due to high energy prices. For 2024, on the basis of inflation, funding from the federal budget is provided on a one-off basis.

In addition, further payments are made from the federal budget in the field of renewable energy: With a total budget of EUR 718.5 million, investment grants for photovoltaic projects will be made available through Climate and Energy Fund (CLIEN) funding programmes between 2023 and 2026. The Ministerial Council presentation “More Renewable Energy – Energy Investment Plan in Renewable Energy and Storage in Austria” will make a special budget of EUR 250 million available to KLIEN until 2026 for further renewable energy projects (inter alia storage, geothermal energy).

For the years 2024 and 2025, in addition to the support referred to above, a zero rate (VAT) applies to the purchase and installation of photovoltaic installations up to 35 kilowatt peaks (kWp) and associated storage facilities, provided that they are jointly implemented as part of a project. The temporary reduction in turnover tax for photovoltaic installations leads to a loss of revenue of around EUR 650 million in the period under review.

¹¹⁸This figure is based on the assumption that the investment grants cover 30 % of the total costs needed. As a result, the 1.2 billion EAEC investment grants trigger an additional additional EUR 2.74 billion in private investment by e.g. companies or private individuals.

¹¹⁹Due to outstanding settlements, this number will increase slightly.

¹²⁰While the subsidy flat rate is an annual fixed amount set in the EAEC, the subsidy contribution is proportional to the system use fee components to be paid (network use and network loss charge). In principle, both charges are to be paid by all final consumers connected to the public network (except for low-income households).

As part of national environmental support, installations for the production of renewable electricity in island locations are also supported at approximately EUR 0.6 million per year. This concerns undertakings which are not connected to the grid and therefore do not receive support through feed-in tariffs (e.g. mountain hütten). There are also state support in the field of renewable energies, which, due to insufficient data, cannot be viewed as sent.

Renewable gases

The regulation 'EAG-Investment Grantsverordnung-Gas', which entered into force on 18 June 2024, grants investment subsidies for the construction or conversion of Anlagen for the production and processing of renewable gas. For 2024, EUR 15 million will be available for the retrofitting of existing bio-gas plants and EUR 25 million for the construction of biogas plants.

The 'EAG Investment Grants Regulation – Hydrogen' is currently the subject of political negotiations. A total of EUR 40 million is available for the funding call planned for 2024. The funds are paid out on the basis of the maximum funding rates set in each case and depending on the underlying plant-specific technology. Only costs directly linked to the installation's creation or construction are eligible for funding. In particular, the

Only the costs necessary for the construction of the gas revitalisation plant, the retrofitting of the plant in connection with the change of raw stof and any increase in the capacity of production as a result of the conversion are eligible for support. The level of support is a maximum of 65 % of the eligible costs for small enterprises, 55 % for medium-sized enterprises and 45 % for large enterprises.

At the same time, the 'Hydrogen Promotion Act' entered into force in July 2024. This provides for the promotion of national renewable hydrogen production through annual production support in the form of a fixed premium for the hydrogen produced. The funding will be awarded through participation in the EU Hydrogen Bank, more specifically on the basis of the competitive auctions organised by the EU Innovation Fund. In the context of these auctions, Member States have the possibility to participate with national in order to finance additional national projects. Austria plans to allocate EUR 820 million of national funding to support renewable water projects in Austria, of which a maximum of EUR 400 million is available for the EU hydrogen bank's AUK starting in 2024.

Electricity networks

Increasing electricity consumption as a result of increasing electricity generation due to energy

transitions and increasing electricity production from renewable energy sources require a sharp-expansion of the electricity grids. This is also demonstrated by the results of the Austrian integrated network infrastructure plan (ÖNIP), which, as a strategic planning tool, allows a comprehensive overall assessment of infrastructure needs, but without the specific identification of investment needs.¹²¹

The network operator's investment costs in the electricity grid are financed by the network-operator. The level of network charges that network operators may charge to households is determined annually by the regulatory authority E-Control. In the case of the investments on the electricity grids, there is therefore no funding from the federal budget. One thing was the temporary support of electricity customers to reduce network loss costs in 2023 by the federal budget.

Gas and hydrogen infrastructure

Investments are also needed in gas and hydrogen infrastructure networks to enable the switch to and expansion of renewable gases and renewable hydrogen. To this end, existing gas pipelines can, to a large extent, be converted into pure water, leading to a relatively low need for new pipelines for the transport of hydrogen.

The results of the analysis of methane and hydrogen infrastructure in the ÖNIP show the need to adapt the current methane infrastructure to the growing demand for renewable hydrogen while decreasing methane demand. The ÖNIP also outlines the 'hydrogen start network 2 030 in Austria'. A comparative analysis and preparation of an option paper on model variant tens to finance a future hydrogen start-up network in Austria is currently being carried out on behalf of the BMK.

Industry – statutory & budgeted funds

Many measures are planned to support industry and finance the transformation, which have already been¹²² set out in Chapter 3.1.1.1 and in the outcome paper on the 'Climate neutral industry Austria' process. Therefore, only a brief overview of the main measures is given here:

- Domestic environmental support (UFI) provides significant funding, which can be used by industry for different investment projects (including pilot and demonstration plants or investments in heat and energy efficiency). The total amount of the UFI is EUR 150 million

¹²¹ <https://www.bmk.gv.at/themen/energie/energieversorgung/netzinfrastrukturplan.html>

¹²² https://www.bmk.gv.at/themen/klima_umwelt/gruene-industriepolitik/klimafitte_industrie.html (Chapter 4, p. 20 et seq.)

per year. This is complemented by a support instrument for energy efficiency measures of EUR 190 million per year.

- The national support programme for industrial transformation under the Environmental Promotion Act (UFG) is the largest support instrument in this area. A total of EUR 2.975 billion will be made available by 2030 (to ensure planning certainty). The instrument offers the possibility not only to support investments, but also to increase the operating costs of alternative production processes.
- The Economic Transformation Programme from the National Recovery and Resilience Plan (ARP) provides EUR 100 million from EU funds for emission-reducing measures by the economy by 2026.

Financial resources are also available for Austrian industry through the European Just Transition Fund (JTF), as well as through FTI projects and the European Innovation Fund.

Again, the provision of investment grants supports only part of the total investment costs and thus triggers a multiple of private investment. The funding rate differs from one programme and project to another, also because, for example, these are awarded in a competitive manner in the funding programmes 'Industrial transformation' and 'Transforming the economy'. However, in the case of the above-mentioned instruments, it can be assumed that the funding volumes will trigger significantly more than three times the total investment.¹²³

Buildings/heat – statutory & budgeted appropriations

A key support instrument in the housing sector is housing support in the Länder. However, due to the urgency of implementing climate and environmental protection measures, the Federal Government offers additional incentives to support projects in the rich renovation of buildings and heating. With the support programmes of the Renovation Plan, the renovation bonus and 'oil and gas turmoil', funding is available for the thermal renovation of buildings and the conversion of fossil heaters to climate-friendly alternatives.

In autumn 2023, as part of the Budget Accompanying Act, the Global Promotion Act was amended, which increased the budget for the renovation campaign and the support for low-income households. A total of EUR 3.645 billion will be available for the renovation plan by 2027 for thermal renovation and the transition to climate-friendly heating. In addition, the budget for supporting low-income households in the context of a shift to climate-friendly recovery was

¹²³See 2023 Environmental Investment Report for first figures:
https://www.bmk.gv.at/themen/klima_umwelt/klimaschutz/ufi/publikationen/umweltinvestitionen.html

enshrined in law at EUR 1.6 billion by 2030.

In addition, under the Environmental Promotion Act, the Energy Efficiency Programme was created to meet energy efficiency targets and energy savings obligations. A total of EUR 1.52 billion is available under the Energy Efficiency Programme by 2030. The objective of this instrument is to achieve end-use energy savings, including in the buildings sector. To this end, new funding difficulties have been created, such as 'Thermal renovation for non-profit building associations' and three new areas of support in the health sector: 'Energy-efficient hospitals and reha hospitals', 'Energy-efficient senior: homes and nursing homes' and 'Energy efficient rescue organisations'. In addition, the Energy efficiency programme also established support actions for 'energy-efficient cultural enterprises', 'energy-efficient sports facilities', 'building automation for service buildings and public buildings' and a focus on the 'exchange of renewable heating systems'.

The eco-social tax reform also made it possible for costs to claim tax for the transition to climate-friendly heating systems and for thermal renovation of buildings for private individuals. The claim of the special expenditure budget is linked to the simultaneous support provided by the corresponding UFG support and to this extent increases the total amount of support for these measures. The allowance of EUR 400 (heating switches) and EUR 800 (Thermal renovation of the building) can be claimed annually over a period of five years, in the case of an equivalent period of 10 years.

Mobility – legally determined & budgeted funds

Public policies and investments are key to the transition towards a low-carbon transport sector.

Investment in public transport and active mobility infrastructure is mainly the responsibility of the public sector. In this connection, it should be noted that the public authorities, as the main shareholder of Österreichischen Bundesbahnen (ÖBB), play a central role in the development and management of the Austrian railway network. In addition, it can have a significant influence through the construction of mobility infrastructure and the provision of local public transport services. However, investment in the decarbonisation of road vehicle fleets will have to be supported mainly by private investment in the future.

Table 35 and

Table 37 gives an overview of the already budgeted mobility funds up to 2030.

Table 35: Overview of relevant legal funds in the field of mobility (budget decided before 1 January 2022)

Budgeted federal expenditure in the area of Mobility	Budget period	public funding (EUR million)
Who (budget decided before 01/01/2022)		
Transport Services Contracts (VDV)	2022 to 2030	9.137
Private railways	2022 bis 2027	731
Light regional railways	2022 to 2027	260
ÖBB framework plan	2022 to 2029	24.446
Freight transport	2022 to 2027	846
Tarifliche Maßnahmen (Klimaticket)	2022 bis 2027	2.283
Aktive Mobilität & Mobilitätsmanagement	2022 bis 2027	447
Dekarbonisierung (E-Mobilität)	2022 bis 2027	1.632
Logistik	2022 bis 2027	19
Funding programmes of the Länder	No uniform data available from the Länder	
Total WEM		39.800

Source: BMK, Section II + IV

Table 36: Overview of legally determined relevant funds in the field of mobility (decided as of 1.1.2022)

Federal budgeted expenditure in the field of mobility	Budget period	public funding (EUR million)
WAM (budget decided as of 1.1.2022)		
Transport Services Contracts (VDV)	2022-2030	14.632
Private railways	2022-2027	546
Light regional railways	2022-2027	154
ÖBB framework plan	2022-2029	26.475
Freight transport	2022-2027	1.347
Tariff measures (climate ticket)	2022-2027	2.914
Active Mobility & Mobility Management	2022-2027	565
Decarbonisation (e-mobility)	2022-2027	1.809
Logistics	2022-2027	19
Funding programmes of the Länder	No uniform data available from the Länder	
Total WAM		48.460

Source: BMK, Section II + IV

Agriculture and forestry – legally determined & budgeted funds

The CAP Strategic Plan allocates a total of around EUR 4.8 billion for Austria for the period 2023 to 2027 as ‘climate-related’ funding in the first and second pillars of the CAP. This represents around 50 % of Austria’s total CAP funding. Two-thirds of EU funds are used to finance direct payments under the European Agricultural Guarantee Fund (EAGF) and investments under the

European Agricultural Fund for Rural Development (EAFRD).¹²⁴

The special programme 'Security of supply in rural areas – energy self-sufficient farms' of the Climate and Energy Fund supports various measures taken by farms to switch to renewable energy sources and to increase self-sufficiency and security of supply. A total of EUR 100 million of funding is available until 2026. On the basis of the first approved projects, it is estimated that the programme will generate a total investment of over EUR 450 million.

For forestry, the CAP Strategic Plan allocates EUR 98.7 million to Austria for the period 2023 to 2027, of which EUR 43.4 million is EU funding.

The Austrian Forest Fund estimates a volume of EUR 396 million for the entire period 2020 to 2027 (for all but M3 (compensation of bark beetle damage)). On a pro rata basis, this amounts to approximately EUR 297 million for the Austrian Forest Fund for the period 2022 to 2027.

Funds from the Austrian Catastrophic Fund are also used for the implementation of the Protection Forest Action Programme. A further EUR 15 million is added to the EUR 15 million per year from the co-financing of the Länder and municipalities, corresponding to an annual volume of EUR 30 million.

¹²⁴For more information, see section on agriculture above.

Table 37: Overview of legally determined relevant funds in the agriculture and forestry sector

	Budget period	public funding (in million EUR)	of which EU
Agriculture			
CAP Strategic Plan – Climate-related funding	2023 to 2027	4.785,8	3.090,4
Energy self-sufficient farms – KLIEN	2023 to 2026	100.0	—
Forestry			
CAP Strategic Plan (Forest)	2023 to 2027	98,7	43,4
Austrian Forest Fund	2022 to 2027	297,2	—
Protection Forest Action Programme (Disaster Fund)	2022 to 2030	270.0	—
Total		5.551,70	3.133,8

Source: BML

Research and innovation – budgeted by law

Various funding instruments will be used to implement the planned and proposed actions in the field of research and innovation, with a planned total budget of approximately EUR 1.2 billion. As instruments with higher funding rates are used in the thematic programmes, an average funding rate of 60 % is assumed. As a result, research and innovation measures require a total investment of approximately EUR 3.7 billion.

Table 38: Overview of support measures in the field of research & innovation

Action	Budgeted appropriations	Level	Total investment 2022 to 2030 (estimate)
Electricity, gas & Environmental technologies	165,5	Federa	276
	87 million financing agreement BMK-FFG 2022-23, KLIEN 2022: 18 million flagship region, 16.5 million Energy research, 7 million Smart Cities Initiative; CLIENT 2023: 29 million energy research, 8 million Transformative solutions for climate-neutral cities		Total investment in 60 % funding rate
Mobility system	114	Federa	190
	95 million Financing Agreement BMK-FFG 2022-23, KLIEN 2022: 10 million Zero Emission Mobility, CLIEN 2023: 9 million zero emission Mobility		Total investment in 60 % funding rate
Production technologies	40	Federa	67
	Financing Agreement BMK-FFG 2022-23		Total investment in 60 % funding rate
FTI energy transition	110	Federa	580
	91 million Financing Agreement BMK-FFG 2024-26.19 million KLIEN Annual Programme 2024		Total investment in 60 % funding rate
FTI Circular Economy and Production technologies	412	Federa	1.100
	92 million Financing Agreement BMK-FFG 2024-26.320 million FTI initiative Transformation of the Industry 2023-2027 (280 million) Climate and Transformation plan in UG 41 on KLIEN, 40 million additional funds)		Total investment in 60 % funding rate

FTI Mobility	108	Federa	560
	90 million Financing Agreement BMK-FFG 2024- 26.18 million KLIEN Annual Programme 2024)		Total investment in 60 % funding rate
FTI Climate neutral city	68	Federa	326
	60 million Financing Agreement BMK-FFG 2024- 26.8 million KLIEN Annual Programme 2024)		Total investment in 60 % funding rate
IPCEI Hydrogen	125	EU	428
	RRF funds		Investment amount according to eligible costs
IPCEI Batteries	45	Federa	153
			Investment amount according to eligible costs
Total	1.187,5		3.680.0

Source: BMK, BMF

Need for investment: Overview of studies and technical information

This section collects scientific studies and expert information to mitigate investment needs by sector. The figures presented are only indicative and represent values that do not prejudice future public funding or budget negotiations.

The heterogeneity of the concept of investment and the method of the various studies is a major challenge for the direct comparability and aggregation of the investment figures. The divergent interpretations of the concept of investment result in significant discrepancies in the estimation of the total or additional investment needs required. There is also a high degree of variability in the modelling methods used. This is due to the fact that each study makes specific assumptions about economic, environmental and technological framework conditions. Another important aspect is the use of nominal or

real prices from different years. Nominal prices, which represent current market prices at the time of investment and are not adjusted for inflation, may distort the investment valuation. By contrast, real prices reflect purchasing power, taking into account inflation.

These differences have a significant impact on the quantification and interpretation of investment needs. As a result, it is misleading and will not be able to aggregate the results of various studies into aggregated investment needs. Table 39 provides a consolidated overview of the studies and information on estimated investments presented in this chapter.

Table 39: Overview of scientific studies and technical information on Assessment of investment needs by sector

Sector/area	Total investment needs (in EUR billion)	Multi-reported period (in EUR billion)	
Federal Environment Agency for WKÖ (2022). Potential analysis of investment costs (by 2030) for the transition towards climate neutrality			
Cross-sectoral (energy, industry, buildings and transport)	546.8	145,9	2022-2030
Energy	79.4	44.4	2022-2030
Industry	172,0	8.5	2022-2030
Buildings	177,8	25.7	2022-2030
Transport	117,7	67.3	2022-2030
Federal Environment Agency, Vienna TU for AK Vienna (2023). Public investment for climate action in Austria Potentials of public assets			
Scenario 1: Retrofitting of the public capital stock			
Cross-sectoral (energy; Buildings, transport and land)	68.2	37.0	2023-2030
Energy	24,1	11,9	2023-2030
Buildings	29,3	16.6	2023-2030
Transport	14.6	8,3	2023-2030
Land	0,2	0,2	2023-2030

Sector/area	Overall investment needs (in EUR billion)	More investment needs (in EUR billion)	Reporting period
Scenario 2: Expansion of the public capital stock (including retrofitting)			
Cross-sectoral (energy; Buildings, transport and land)	117.6	866,5	2023-2030
Energy	50.0	37.8	2023-2030
Transport	38.1	31,9	2023-2030
Land	0,2	0,2	2023-2030
IHS (2022). National accounts for green electricity milliards			
Renewable energy	28.4	—	2021-2032
Frontier Economics & AIT for Oesterreichs Energie (2024). Update of the grid calculations of the study Economic value of electricity distribution networks towards climate neutrality in Austria			
Expansion and maintenance of electricity distribution network	24.2	14.3	2022-2030
	44.4	24.7	2022-2040
E-Control (2023). Network development planning			
Electricity grid development	13-15	—	2022-2030
Service station for renewable gases for BMK*			
Biomethane installations; and Hydrogen production installations under the EGG (7.5 TWh)	2,6 – 3.8	—	until 2030
Frontier Economics and TU Vienna for BMK (2023). Role of gas infrastructure in a climate neutral Austria			
Hydrogen and biomethane networks (new construction and repurposing)	0,6-1,1	—	until 2030
	0,1-1,2	—	2031-2040
AIT Austrian Institute of Technology, Austrian Energy Agency, Montan University Leoben, Energy Institute at Johannes Kepler University of Climate and Energy Fund (2024). transform.industry. Transition Pathways and FTI Roadmap for Net-Zero Industry 2 040 in Austria			
Industry (total)	—	7-10	2022-2030
	—	17,4-24,4	2031-2040
Iron and steel	—	10,2–1.7	2022-2030

Sector/area	Total investment needs (billion euro)	More investment needs (billion euro)	Reporting period
Stone, earth and glass	—	2,1 – 3,8	2022-2040
Chemicals	—	0,7-3,7	2022-2040
Paper and printing	—	3,6	2022-2040
Wood processing	—	1,1	2022-2040
Food, beverages, tobacco	—	0,9	2022-2030
Machinery	—	0,4	2022-2040
Building	—	0,3	2022-2030
Vehicle construction	—	0,3	2022-2040
Mining	—	0,1	2022-2040
Non-ferrous metals	—	0,1	2022-2040
Textiles and leather	—	0,1	2022-2040
IIBW – Institute for Real and Bauer, E. (2022). Study on the long-term financing of the heat transition	Construction and housing, Vienna BFI University	Federal	
Buildings (heating exchange and thermal refurbishment)	80,0	20,0	by 2040
TraFFix Transport Planning, Federal Environment Agency, e7 energy innovation & engineering for climate Energy Fund (2023). GREENROAD. Guidelines enabling renewable energy supply for zero emission road traffic infrastructure			
Construction of the necessary zero Emission infrastructure (E— Recharging points and H2	3,3	—	2022-2040
PLANOPTIMO and Verracon for Austrian Energy Agency (2022). Baseline study: Investment needs for cycling			
Development of active mobility (cycling)	5,6-7,0	—	2022-2030

Source: BMK, BMF

* The figures presented here are based on an expert estimate from the Renewable Energy Service Unit, which was established for the National Energy and Climate Plan (NEKP).

Renewable energy and grids

Electricity

An IHS study from 2022¹²⁵ analyses the investment needs for the EAG expansion and the resulting positive economic effects. For the construction of 27 TWh of renewable electricity set out in the EAEC, a cumulative total investment requirement for 2021-2032 was calculated at EUR 25.3 billion (price basis 2021). The corresponding operational cost amounts to EUR 2.9 billion for the same period.

By converting the investment costs per TWh per energy source calculated by IHS to the expansion path established in the WAM scenario (+ 35 TWh), the total investment obtained is close to EUR 33 billion (see Table 40).

Table 40: Assessment of the investment needs for the WAM expansion of renewable electricity

Energy source	Assumptions extension in	for TWh	Cost per TWh EUR million (price level 2021)	Total cost
Biomass		1	900	900
Photovoltaics		17	1.049	17.836
Hydropower		5	1.339	6.695
Wind		12	608	7.296
Total		35	935	32.727

Source: Own calculations under IHS 2022, National Accounts for Green Electricity Milliarde

Renewable gases

It is difficult to accurately estimate the investment costs to provide 7.5 TWh of renewable gas by 2030 due to fluctuating market prices and bottlenecks in the availability of plant components. The service station for renewable gases shall:

¹²⁵ See Table 39 and <https://irihs.ihs.ac.at/id/eprint/6182/7/ihs-report-2022-lappoehn-et-al-Economic-accounts-oekostrommilliarde.pdf>

On the basis of current cost estimates for biomethane plants and literature data for hydrogen

production, estimate a range of EUR 2.6 to 3.8 billion for the necessary investment volume. In order to simplify the calculation, it was not a year-long run-up curve, but on the fictitious assumption that the amount of energy will be achieved in the 2030 target year. Depreciation, interest and turnover effects, etc. are not included, which means that conversion to specific cost costs is not permitted.

Electricity networks

A survey by the regulatory authority E-Control Austria on the medium-term planning of network operators shows that network operators' planned investments increase significantly in the coming years: investments of just over EUR 14 billion – up to EUR 10 billion in distribution networks and over EUR 4 billion in transmission networks – are planned for the period 2022 to 2030. According to the transmission system operator Austrian Power Grid, by 2034, EUR 9 billion of investments in the transmission networks will have to be made.

A study carried out by the Austrian Institute of Technology (AIT) on behalf of the Austrian Energy Interest Group¹²⁶ identifies investment needs in the electricity grids as part of Austria's climate and energy policy objectives. This means that total investment in electricity distribution networks will be needed to reach a total of EUR 24.2 billion by 2030 and EUR 44.4 billion by 2040, of which EUR 9.9 billion and EUR 19.7 billion respectively represent additional investments and the rest of these investments are regular or replacement investments.

The study also warns that investment restraint may lead to an under-dimensioning of the electricity grids, which could lead to significant system costs, for example because supported green electricity installations have to be regulated due to a lack of grid capacity. Underinvestment is therefore a major transformation risk and can lead to inefficiencies.

¹²⁶ <https://oesterreichsenergie.at/publikationen/ueberblick/detailseite/aktualisierung-der-Network-calculations-of-the-study-economic-value-of-the-electricity-distribution-system-climate-neutralitaet-in-oester-rich>

Gas and hydrogen infrastructure

A recent study by Frontier Economics and the Vienna TU on behalf of the BMK¹²⁵ provides a first insight into the need for investment in gas infrastructure. Based on four different scenarios, which differ in terms of electrification level, focus on hydrogen or biomethane and (de-)centralisation of demand, investment needs were estimated to range from EUR 642 million to just over EUR 1 billion for the repurposing of gas infrastructure and the construction of new hydrogen infrastructure by 2030. The rather low reinvestment in the existing methane pipelines of grid level 1 and level 2 by 2030, which will occur after the end of the technical night, is estimated to be between EUR 15 and 18 million. Grid modelling does not involve any new build of methane pipelines. It is worth mentioning that investments in repurposing take place largely until 2030, while investments in the construction of new hydrogen pipelines will be made later, until 2040.

Industry

There is also a significant need for investment in decarbonising industry. Investments in production facilities and processes are mostly long-term and large-scale, which means that the right incentives and framework conditions need to be put in place at an early stage, also to avoid stranded assets and lock-in effects. In addition, changes in operating costs (e.g. due to energy conversion) also play a central role in industrial processes.

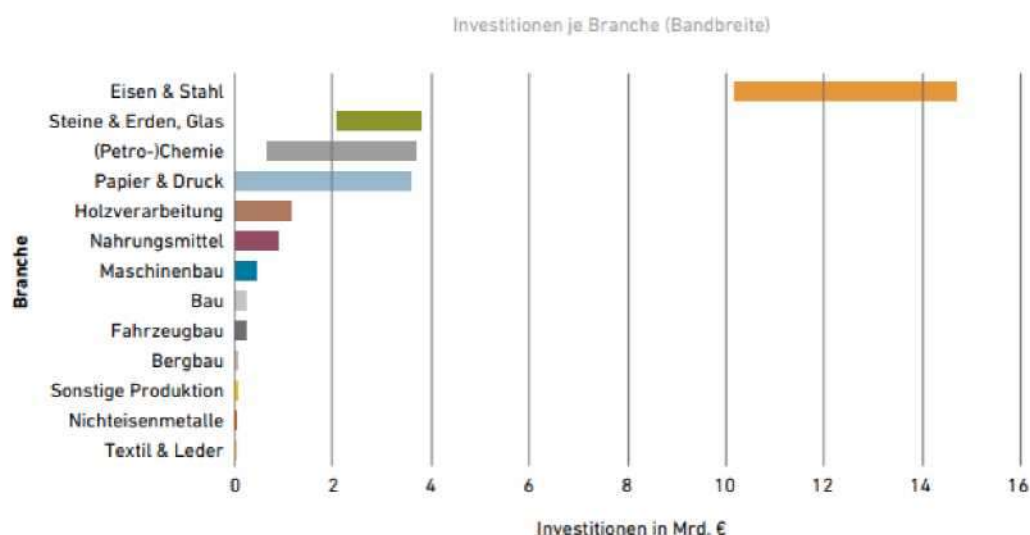
In the Transform Industry research project, a consortium around Austrian Institute of Technology (AIT) developed comprehensive scenarios on possible transformation pathways for Austrian industry and action plans for all industrial sectors.¹²⁶ Investment costs are also estimated by the direct purchase cost of the technology input defined for the scenarios and by adding factors for the indirect construction and installation costs. Changes in operating costs are not taken into account in the analysis. The results estimate an investment need of between EUR 17.4 billion and EUR 24.4 billion by 2040 in Austria. On the basis of the individual action plans, it is also apparent that around 40 % of these investment needs are due before 2030 and 60 % between 2031 and 2040. As a result, investment needs for

¹²⁵ <https://www.bmk.gv.at/themen/energie/publikationen/rolle-gasinfrastruktur.html>

¹²⁶ <https://www.ait.ac.at/themen/efficiency-in-industrial-processes-systems/projekte/transform-industry>

Austrian industry can be expected to be around EUR 7-10 billion for 2022 to 2030. Demand varies widely between industries, with iron and steel ore accounting for more than half of the total demand by 2040. In addition, an aboveaverage demand was found in the browns 'Steine & Erden, Glas', '(Petro-)Chemie' and 'Paper & Druck':

Figure 35: Overview of industrial investment needs up to 2040



Source: AIT et al. (2024): transform.industry – Transformation Pathways and FTI Roadmap for a Net-Zero Industry 2040 in Austria

In a previous study by AIT et al. (from September 2021)¹²⁷ under the BMK 'Green Industrial Policy' project, a much lower investment is expected to be between EUR 6.2 billion and EUR 11.2 billion by 2040. However, the extensive work carried out in the auxiliary project suggests that this study has underestimated the actual needs. The updated estimates are also due to the dynamics of climate-relevant investments by Austrian industry in recent years.

Buildings/heating

The key investments for the decarbonisation of the building sector by 2040 are the transition to climate-friendly heat delivery systems, as well as the thermalisation of the building envelope. According to the 'Study on the long-term financing of the¹²⁸ heat transition', full heating retrofitting in residential and service buildings is expected to cost EUR 34 billion by 2040, i.e. on average EUR 1.7 billion per year (2022 price basis). The costs in the heating system, in addition to the future and own-initiative investments in the heating system, amount to approximately 30

¹²⁷ https://www.bmk.gv.at/themen/klima_umwelt/gruene-industriepolitik/ziele.html

¹²⁸ <https://iibw.at/de/forschungs-datenbank/75-2022-2>

to 40 %, i.e. between EUR 10 and EUR 14 billion and EUR 500 to 700 million per year.

In addition to the change in the heat supply systems, thermal measures would have to be implemented on building envelopes in order to reduce the heating demand to a level that is manageable through renewable energy supply. This results in a total cost of around EUR 45 billion or between 1.5 and 1.8 billion euro per year (distributed over 30 years due to lack of commitment). This is an order of magnitude that has already been reached or exceeded in the past. Thus, the vast part is investments that would be incurred even without a decarbonisation objective.

According to the literature presented, the amount of funding required depends significantly on economic and legal conditions. Since, under the current legal situation, a regulatory framework is neither intended for switching to climate-friendly heating systems nor for the implementation of thermal renovation measures, the incentives for support must be kept attractive accordingly.

Mobility

According to an estimate by the University of Technology (TU) of Vienna and the Environment Association, the conversion of the fossil public capital stock results in an investment potential of around EUR 14.6 billion. The investment in the additional construction and dismantling of the capital stock (without retrofitting) is significantly higher, at around EUR 23.5 billion, mainly in the development of railways, the extension of local public transport, the decarbonisation of the public fleet and the construction of wheel infrastructure. Overall, the study estimates a total investment potential of EUR 38.1 billion by 2030.¹²⁹ However, these estimates reflect only part of the necessary investments in the

Mobility area. Therefore, it is not possible to deduce from this study the actual needs for invoking and budgeting in order to achieve the objectives in the field of mobility.

Furthermore, investments in climate-relevant expansion in the field of active mobility may include both the creation of infrastructure for pedestrians and the expansion of the cycling network. A study commissioned by the Austrian Energy Agency quantifies the investment needs for Austria-wide cycling up to EUR 7 billion by 2030.¹³⁰ In addition, the roll-out of charging infrastructure for e-charging and H₂ refuelling stations can make a significant contribution to supporting the mobility transition. Traffix et al. (2023) estimates investment needs at around EUR 3.3 billion up to 2040 to meet the targets for e- and H₂ mobility in public spaces set out in

¹²⁹ <https://www.arbeiterkammer.at/klimaschutzinvestitionen>

¹³⁰ https://www.klimaaktiv.at/mobilitaet/radfahren/studien_zahlen/investitionsbedarf-radverkehr.html

Modelled investments in WEM/WAM scenarios

This section presents the investments modelled for this NECP in the WEM and WAM scenarios. These are based on expert assessments by the Federal Office for the Environment, on studies or technical information, or on assessments and assumptions from the specialist departments. The investment data presented below are therefore indicative and do not prejudice future public funds or budget negotiations.

The investments in Table 41 include the total public and private climate-relevant investments for the period 2023-2030, modelled by the Federal Environment Agency in the Szenarien. Thus, total climate-relevant investments include public and private investment. 'Public investment' is public investment, for example in infrastructure (e.g. ÖBB framework plan). 'Private investment' means investments made by companies or households. However, many of the private investments contained in Tabelle 41 are made up of public funds (e.g. Funding) triggered or co-financed (e.g. building renovations). 'Climate vante investments' describe investments that have been/will be implemented excisively to reduce greenhouse gas emissions (e.g. measuresto electrify vehicle fleets). However, there are also investments which, as a side effect, have emission-reducing effects (e.g. the extension of railways). Such investments are also included in the total amount of climate-relevant investments. Finally, the term 'total investment' means that replacement investments are not deducted here. In other words, in the case of a heat exchange from a (old) gas heater to a heat pump, the investments in Table 41 include the total investment costs for the installation of the heat pump.

Table 41: Modelled total public and private climate-relevant investments in the WEM and WAM scenarios

Sector/area	Total public and private climate-relevant investments, cumulative 2023-2030 (EUR million – 2022 real prices)	
	WHO	WAM
Energy supply		
Investments in renewable installations	20970	33110
Electricity grid development	11060	18610
H2 expansion	0	2230
Expansion/decarbonisation of district heating systems	1870	2720

131 <https://www.klimafonds.gv.at/wp-content/uploads/sites/16/GREENROAD-Final-Report-230621.pdf>

Industry		
Industry	4020	6070
Buildings		
Residential	83610	92990
Service building	19570	20710
Transport		
ÖBB framework plan	23080	26070
Investments in private railways, regional railways, metro	3070	4080
Financial allocation Section 23(2) of the Financial Equalisation	350	350
E-mobility development	35380	36070
Development of active mobility (wheel, walking, mobility management)	1300	2080
Rail freight, connecting line + Combined transport	170	180
Transport service contracts	4450	6410
Agriculture		
	560	560
European Agricultural Fund for Rural Development, EAFRD		
European Regional Development Fund, ERDF	600	600
Total	210060	252840

Source: Federal Environment Agency, partly on the basis of data provided by the BMK.

Note: The figures presented here correspond to the modelled figures underlying the MIO-ES model. This information is not fully consistent with the statutory resources under the BFG and BFRG, as, for example, updates going beyond the BFRG have been assumed or further assumptions have been made. The data presented here are therefore indicative and do not prejudice future public funds or budget negotiations.

Table 41 shows that the largest investment needs are assumed in the buildings, transport and energy sectors. In the buildings sector, there are high injections into thermal renovation and the switch to renewable heating systems. In the transport sector, the focus is on the attractiveness of public transport and the conversion of the vehicle fleet to e-mobility. The energy converts successively to renewable electricity production, hydrogen and other renewable energy sources, which requires the installation of technologies to make them ready and the corresponding pipeline infrastructure.

Renewable energy and grids

The Renewable Expansion Act (EAG) provides the framework for the costs of expansion and reflects the WEM scenario. The WAM scenario goes beyond the EAEC by 8 TWh to cover the increased electricity demand in the transport, buildings and industry sectors. The extension costs assumed in the modelling are based on the EAEC studies, the IHS study¹³² and a diploma¹³³ at

¹³²[https://irihs.ihs.ac.at/id/eprint/6182/7/ihs-report-2022-lappoehn-et-al-volkswirtschaftliche-Total invoice oekostrommilliarde.pdf](https://irihs.ihs.ac.at/id/eprint/6182/7/ihs-report-2022-lappoehn-et-al-volkswirtschaftliche-Total%20invoice%20oekostrommilliarde.pdf)

¹³³<https://diglib.tugraz.at/download.php?id=6093e88b63f93&location=browse>

TU Graz.

The increasing demand for electricity and the integration of photovoltaics and wind energy can lead to an expansion of electricity grids. This was estimated in a study by Frontier Economics & AIT for Oesterreichs Energie (Austria's road to a climate-neutral energy future).¹³⁴

The Federal Environment Agency's own estimates and calculations for the 2022 WKO project and the 2023 WAM scenario were used to expand the hydrogen network. These were cross-checked with the information from the Resilience Fund.

The Federal Environment Agency's own estimates and calculations for the 2022 WKO project and the 2023 WAM scenario were used for the expansion of the district heating network, taking into account the funding.

Industry

For industry, the costs averaged under the WKO project (Umweltbundesamt 2022) have been updated. The large investments in the iron and steel industry are expected to take place in 2027-2029.

Costs for the other key sectors (chemical, paper and pulp, stone earth glass) have been estimated by the Federal Environment Agency. Some of the investment costs are generalistic for the industry sector and have not been assigned to any specific sector. Investments to increase energy efficiency and waste heat uses are those made in the whole sector and are therefore also not assigned to any specific sector.

Buildings/heating

The investment costs for buildings are estimated on the basis of the cost categories shown in the Invert/EE (TU Vienna) model (windows/external doors, insulating materials for façade, roof, upper and lower floor ceiling, heating). The model covers Austria's buildings in the households and services sectors. Investments in thermal renovations, boiler replacements and new construction have been deposited in the Emission Scenario; the latter include the cost of the

¹³⁴

https://oesterreichsenergie.at/fileadmin/user_upload/Oesterreichs_Energie/Publikationsdatenbank/Diverses/2022/Electricity Strategy_2040_29092022.pdf

This is a previous study to the above-mentioned update study, which is closer to the assumptions of the WAM.

building envelope and the heating system.

For residential buildings, around 55 % of investments in new construction, 30 % for renovation and 15 % for boiler replacement in the reporting period 2023-2030. In the case of services-buildings, the share of new buildings in total investment is higher (around 62 %) than for residential buildings. 32 % of the investment costs relate to building renovation and 6 % to the modification of the heating system.

Important measures in the area of buildings include increasing energy efficiency in new buildings, building new buildings without fossil-based heat supply (gas, oil, coal), increasing the rate of renovation, for example through the (extension of the) renovation plan and the Raus-based oil and gas support programme.

Mobility

Compared to the legally-determined and budgeted resources (WEM), the assumed public expenditure in the transport sector is clearly set in the WAM scenario and continued until 2030. In addition, new funding measures are proposed in the field of inland navigation and air transport. In the field of air transport, the new support measure is intended to ensure the supply of sustainable aviation fuels (SAFs) from 2025, in parallel with the mandatory quotas of the blending obligation under the ReFuel EU Aviation Regulation.

Table 42: Modelled total public climate-relevant public expenditure in transport in the WEM and WAM scenarios

Public climate-relevant Total expenditure of the Federal Government, Länder and other BIPs (EUR million)	Period	WHO	WAM (incl. WEM)
Transport Services Contracts (VDV)	2022 to 2030	13.559	19.685
Private railways	2022 to 2030	2.188	2.521
Light regional railways	2022 to 2030	820	985
ÖBB framework plan	2022 to 2030	28.114	31.235
Freight transport	2022 to 2030	1.264	2.039
Tariff measures (climate ticket)	2022 to 2030	3.480	4.603
Active mobility & Mobility management	2022 to 2030	1.574	2.458
Decarbonisation (e-mobility)	2022 to 2030	2.493	2.803

Inland waterway transport	2022 to 2030	—	30
Logistics	2022 to 2030	28	94
Air transport	2022 to 2030	—	400
Total	2022 to 2030	53.520	66.854

Source: Federal Environment Agency, on the basis of data provided by the BMK

Note: The figures presented here form the data basis for the modelling carried out in the MIO-ES model. This information is not fully consistent with the statutory resources under the BFG and BFRG, as, for example, updates going beyond the BFRG have been assumed or further assumptions have been made. The data presented here are therefore indicative and do not prejudice future public funds or budget negotiations.

Agriculture and forestry

The programmes listed in Table 41 correspond to the support indicated in Table 34 and do not constitute induced investments.

5.3.2 Sector or market risk factors or barriers in the national or regional context

The modelling of the WEM and WAM scenarios and the resulting investment flows until 2030 are fundamentally subject to energy and market uncertainties at both national, European and international levels. Another source of uncertainty is the extension of the European Emission Trade System to other sectors from 2027 onwards (ETS-2). While this is a fundamentally supportive factor in terms of decarbonisation objectives, undesirable effects (e.g. in terms of price volatility, price equity) cannot be excluded.

5.3.3 Analysis of additional public finance support or resources to fill identified gaps identified under point ii

As can be seen from the descriptions in Section 5.3.1, most public funding and funding are legally established and budgeted until 2027. In individual cases, funding instruments were already enshrined in law until 2030. This concerns, for example, funding for energy efficiency, industrial transformation, expansion and decarbonisation of district heating and cooling systems and support for low-income households to cover increased costs as a result of thermal energy renovation measures. The future budgetary coverage of other instruments beyond 2027 is a matter of renewed budgetary negotiations.

Impact of the planned policies and measures described in section 3 on other Member States and regional cooperation at least until the last year

of the period covered by the plan, with a comparison with the projections with current policies and measures

5.4.1 Impacts on the energy system in neighbouring and other Member States in the region to the extent possible

The impact assessment shows that the security of energy supply in the WAM scenario increases significantly in the sense that imports of fossil fuels (oil and natural gas) can be significantly reduced. Net imports of electricity can also be significantly reduced, at least temporarily, but this does not support the conclusion that overall cross-border exchanges of electricity will decrease. On the contrary, it can be assumed that there is a need for further increasing cross-border electricity line capacity, in particular in order to be able to temporarily better integrate electricity volumes from volatile generation for men into the market and stabilise distribution networks. There are intensive bilateral and multilateral efforts with neighbouring countries and beyond on these issues (including gas and possible future hydrogen transport).

5.4.2 Impacts on energy prices, utilities and energy market integration

No analysis of this has yet been provided.

5.4.3 Possible impact on regional cooperation

Regional, cross-border energy cooperation is expected to increase significantly in the years, in line with the significantly increasing challenges, including cross-border ones, also in the context of Russia's war of aggression against Ukraine. This may (and will) also affect cooperation between the Union and third countries.

Part 2

ANNEX I:

List of parameters and variables to be taken into account in Section B of the plan¹³⁵

ANNEX II:

Information referred to in Annex III of the Governance Regulation (EU) 2018

¹³⁵This part will be recorded in a separate Excel template provided by the European Commission and submitted ex-post after final quality assurance.

Table 43: Alternative measures under Article 7b of Directive 2012/27/EU as amended by Directive (EU) 2018/2002 (EEDII)

Savings per alternative policy measures in TJ	Period of effect										Cumulative Savings
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Provincial support for housing construction, energy and the environment	985	1.969	2.934	3.899	4.864	5.829	7.203	8.562	9.919	11.277	57.441
Domestic environmental support scheme	3.093	7.899	12.706	17.513	22.320	27.120	28.863	30.606	32.350	34.093	216.562
Federal Remediation Plan	1.744	3.035	4.211	5.502	6.765	8.074	8.074	8.074	8.074	8.074	61.629
Climate and Energy Fund	262	525	787	1.050	1.312	1.575	1.837	2.100	2.362	2.625	14.436
Eco-social tax reform	—	—	20.072	25.783	31.579	—	—	—	—	—	77.433
Additional energy efficiency support	—	—	6.944	13.889	20.833	27.778	34.722	41.667	48.611	55.556	250.000
Industrial transformation	—	—	440	1.240	2.040	2.840	3.480	4.120	4.760	5.400	24.322
Total											701.824

The table shows the annual cumulative savings and total savings of the main alternative measures in accordance with Article 7b EED II. A slightly higher savings potential is already identified in terms of the contribution to the REPowerEU objective. The EEffG currently sets a cumulative savings target of 650 PJ for 2021-2030. Taking into account the new target provisions of EED III, a cumulative savings target of at least 717 PJ is necessary to contribute to the achievement of the target. This value is pre—

conclusively, as already currently savings from support measures are those that have not yet been taken into account in the table.

Note 2023 Progress Report: The NECP presents separately the planned savings from the policy instruments housing support and renovation plan, while the implemented savings of the same policy instruments are summarised in the NECPR under the PAMs 'Increased energy efficiency of buildings' and 'Increased share of renewable energy for space heating'. The NECPR highlights the underlying savings measures. In both presentations, double counting is methodologically excluded.

Table 44: Residential building subsidies

Name of Action	Provincial support for housing construction, energy and the environment
Type of policy measure	Promote
Description of the policy measure	Housing support funds in the Länder support the improvement of the thermal quality of residential buildings and the distribution of efficient heating systems. The amount of support depends on the thermal quality or efficiency of the heating system achieved and is supported by product-independent energy advice from the Länder. In addition to criteria relating to useful energy and final energy, support for new buildings will strengthen the requirements for primary energy demand and GHG emissions. The structure of the support varies from one Land to another and is disbursed in the form of loans, grants and/or aid. In addition, the BMK supports the renovation of individual parts and the overall thermal renovation of buildings.
Sources/ References	https://www.oesterreich.gv.at/themen/bauen_wohnen_und_umwelt/wohnen/2 . HTML
Cumulative Final energy saving (PJ) in the Period 2021 to 2030 net	57.44
Annual new final energy savings (PJ/a) from 2021	2021: 0,99; 2022: 0,99; 2023: 0,99; 2024: 0,99; 2025: 0,99; 2026: 0,99; 2027: 1,39; 2028: 1,39; 2029: 1,39; 2030: 1.39.
competent authority	Federal states
Target sectors	Households
Actions permitted under the measure concerned	Promotion of thermal energy measures related to buildings
Where applicable, specific policy measures or individual actions targeting energy poverty.	Promoting energy-poor households
Calculation method	Final energy saving: Trend update reported 2016-2019 minus measures no longer eligible

Name of Action	Provincial support for housing construction, energy and the environment
	Budget template: Public funding according to the 2021 Monitoring Report on Climate and Energy Targets, trend update from 2016-2019.
Method for reporting the Energy savings	Building on the Regulation on valuation methods for the valuation of individual measures in the 2021-2030 period, calculation methods have been adapted to new requirements under EU law.
Lifetime	Measures on building renovation and construction 30 years, measures to modernise heating systems 20 years. BGBLA 2024 II 28.pdf (bka.gv.at)
Sources of information or references	Real estate research (iibw.at)
Additionality	Additionality is ensured by means of the calculation method baseline. Measures generate savings only if higher standards than the current building code and EU regulations are met.
Materiality	The financial support is an incentive for the implementation of energy efficiency measures.
Avoidance of overlaps (EEO and alternative measures) and double counting	There can be no double counting within housing support, as each Land supports only on its own territory. In many cases, the Federal Remediation Plan is used as co-funding. The cut volumes of the two funding instruments are divided and counted only once.

Table 45: National environmental support

Name of the measure to promote the environment in Germany

Type of policy measure	Promote
Description of the policy measure	<p>In addition to support for initial and implementation advice, support for investments in energy efficiency measures can be applied for via company environmental support in Germany. The support consists of an investment grant of approximately 30 % of the investment costs.</p> <p>Measures for efficient use of energy in commercial and industrial production processes, thermal renovation of existing buildings and heat recovery will be supported. These investment support is also co-financed by the ERDF through the Austrian IWB Programme.</p> <p>In addition to these nationwide initiatives, there are energy advisory and business support programmes in all Länder, in particular the regional programmes.</p>
Sources/References	https://www.umweltfoerderung.at/

Name of the measure	Domestic environmental support scheme
Cumulative End-use energy saving (PJ) Period 2021 to 2030 net	216,56
Annual new Final energy saving (PJ/a) from 2021	2021: 3,09; 2022: 4.81; 2023: 4.81; 2024: 4.81; 2025: 4.81; 2026: 4.80; 2027: 1.74; 2028: 1.74; 2029: 1.74; 2030: 1.74.
competent authority	Federal Government, some funding programmes also co-financing with Länder
Target sectors	Businesses, associations and municipalities
Actions permitted under the measure concerned	The UFI supports specific investment projects at company level and initial and implementation advice for farms. Support will be given to consultations and investments that reduce negative climate and environmental impacts in Austrian companies.
Calculation method	Estimated savings. The data is based on the annual reporting by KPCs as part of the energy efficiency monitoring. These notifications were linked to the old and new funding budgets.
Method for reporting the Energy savings	The data is based on the annual reporting by KPCs as part of the energy efficiency monitoring.
Lifetime	Weighted average 17 years.
Sources of information or references	Evaluation of federal environmental funding 2017-2019 (bmk.gv.at) 2021 Federal Environmental Investments (bmk.gv.at)

Table 46: Renovation wave

Name of the Federal Remediation Plan measure

Type of policy measure Promote

Description of the policy measure The building sector, with heating, cooling, hot water, etc., accounts for about one third of Austria's total energy consumption. There is a corresponding potential to reduce energy consumption and associated GHG emissions through targeted thermal remediation measures. A key support instrument in the housing sector is the housing support provided by the Länder. Due to the urgency to implement climate protection measures and high-quality energy renovations in the building sector, the Federal Government provides additional incentives for support. Here too, experience from environmental support in Germany can be used. Similarly, measures under the support scheme established since 2009

Name of the measure	Federal Remediation Plan
	Build up and further develop the Federal Remediation Plan. One of these developments is the focus on ‘true oil and gas’, i.e. the rapid phase-out of fossil fuels in the building sector. As part of the Renovation Plan, the transition of fossil heating systems to climate-friendly alternatives has been particularly important in reducing CO2 emissions for a number of years.
Sources/References	https://www.oesterreich.gv.at/themen/bauen_wohnen_und_umwelt/energie_saving/1/remediation_offensive.html
Cumulative End-use energy saving (PJ) Period 2021 to 2030 net	61,63
Annual new End-use energy saving (PY/a) from 2021	2021: 1.74; 2022: 1,29; 2023: 1,18; 2024: 1,29; 2025: 1.26; 2026: 1.31.
competent authority	Federal Government, co-financed by the Länder
Target sectors	Businesses, associations, municipalities and households
Actions permitted under the measure concerned	The Federal Remediation Plan promotes thermal renovations in the business and private sectors and encourages the exchange of fossil heating systems towards climate-friendly alternatives for private individuals.
Where applicable, specific policy measures or individual actions targeting energy poverty.	In addition to the eligible measures under the Recovery Plan, EUR 710 million will be made available for low-income households between 2022 and 2026 (www.sauber-heizen.at). In addition to these national funds, national environmental support has been successfully obtaining funding from the European Union’s Structural Funds (EAFRD/ERDF) for decades. For the BMK, the Austrian recovery and resilience plan also implements projects – such as a dedicated programme entitled ‘Energy poverty – climate-fitted buildings for vulnerable people’, with funding from the European Union Reconstruction Fund, amounting to EUR 50 million until 2026.
Calculation method	Final energy saving: Trend update reported between 2016 and 2019 less measures that can no longer be counted in proportion to the new funding budgets compared to the old funding budgets.
Lifetime	Measures to improve the thermal building envelope 30 years, measures to modernise heating systems 20 years.
Sources of information or references	Federal Environmental Investments 2022 (bmk.gv.at)
Avoidance of overlaps (EEO and alternative)	Housing support from the Länder is in many cases used as co-funding. The cut volumes of the two funding instruments are divided and counted only once.

Name of the Federal Remediation Plan measure

**Measures) and
Double counting**

Table 47: KLI.EN

Name of the measure	Climate and Energy Fund
Type of policy measure	Promote
Description of the policy measure	Launched by the Federal Government in 2007, the Climate and Energy Fund (KLI.EN) supports the implementation of the objectives of domestic climate policy with funding programmes for research, mobility, market penetration and awareness raising. Support will be given to actions in the thematic areas: Research & development, e-mobility, renewable energy, transport & mobility, energy efficiency, model regions and construction & renovation. Since its creation, the Fund has supported around 200.000 projects in Austria.
Sources/References	www.klimafonds.gv.at
Cumulative End-use energy saving (PJ) Period 2021 to 2030 net	14.4
Annual new End-use energy saving (PY/a) from 2021	From 2021 to 2030: 0,26
competent authority	Federal Government
Target sectors	Private companies, municipalities, research institutes
Actions permitted under the measure concerned	The implementation of climate-friendly energy supply will be supported through long-term support strategies for energy supply and mobility, the development of innovative technologies and climate change research, and climate change adaptation strategies.
Where applicable, specific policy measures or individual actions targeting energy poverty.	Measures related to energy poverty will be supported, among others.
Calculation method	Final energy saving: Trend update of reported measures from 2016 to 2019 minus measures that are no longer eligible. Budget template: Public support according to the 2021 Monitoring Report on Climate and Energy Targets, trend update from 2016 to 2019.

Name of the measure	Climate and Energy Fund
Lifetime	In principle, technology-specific; in the case of mobility, 10 years.
Sources of information or references	https://www.energieeffizienzmonitoring.at/wp-content/uploads/2024/03/Progress report on the Energy Efficiency Act-2024—1.pdf (see p. 27)

Table 48: Eco-social tax reform

Name of Action	Eco-social tax reform/CO ₂ pricing
Type of policy measure	National emissions trading
Description of the policy measure	<p>As part of the eco-social tax reform, a pricing of climate-damaging greenhouse gas emissions via a national emission allowance trading scheme (not yet covered by the European ETS) was introduced on 1 October 2022. The phasing-in is foreseen in three phases, with a fixed and increasing price path until 2025. When importing relevant energy sources, allowances need to be purchased according to the amount of GHG, which in turn increases the consumer price of fossil products. This will make the use of innovative, low-carbon technologies more attractive and motivate the population to change behaviour and save energy. In order to compensate for the resulting additional burdens, a climate bonus for individuals will be introduced, as well as carbon leakage and hardship rules for the economy.</p>
Sources/ References	<p>https://www.bmk.gv.at/themen/klima_umwelt/klimabonus/oekosoziale-tax Reform.html</p> <p>https://www.ris.bka.gv.at/Dokumente/BgblAuth/BGBLA_2022_I_10/BGBLA_2022_I_10.html</p>
Net cumulative final energy savings (PJ) over the period from 2021 to 2030	77,43
Annual new final energy savings (PJ/a) from 2021	2023: 20,07; 2024: 25,78; 2025: 31,57.
Implementing public bodies, participating or entrusted parties and their responsibilities	Federal Government

Name of Action	Eco-social tax reform/CO ₂ pricing
EN at the Implementation of the strategic action	
Target sectors	Businesses and households
Actions permitted under the measure concerned	<p>Gradual increase of CO₂prices</p> <ul style="list-style-type: none"> • 2022: 30Euros • 2023: 35Euros • 2024: 45Euros • 2025: 55Euros <p>and transition to a market phase from 2026/2027.</p>
Where applicable, specific policy measures or individual actions targeting energy poverty.	From 2022, climate bonus for all. The climate bonus is granted to all people who have their main residence in Austria for at least six months, regardless of their nationality or age. From 2023, the climate bonus consists of a flat-rate cap and a regional compensation (depending on residence).
CalculationMethod	Estimate of savings on the basis of price elasticity per energy source concerned. Taking into account only short-term effects (excluding investments).
Source of information or references	https://www.bmk.gv.at/themen/klima_umwelt/klimabonus/oekosoziale-steuerreform.html

Table 49: Additional energy efficiency support

Name of Action	Additional energy efficiency support
Type of policy measure	Promote
Description of the policy measure	In particular, funding commitments aim to ensure that end-use energy savings of at least 250 Petajoules are cumulated by 31. December 2030, in particular to meet energy efficiency targets and energy savings obligations under the Energy Efficiency Directive. Eligible energy efficiency measures for households and businesses are eligible under the EU Directive.
Sources/References	<p>https://www.ris.bka.gv.at/Dokumente/BgblAuth/BGBLA_2022_I_185/BGBLA_2022_I_185.html</p> <p>https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&GesetzesNumber=20008914</p>

Name of Action	Additional energy efficiency support
Net cumulative end-use energy savings (PJ) over the period 2023 to 2030	250
Annual new final energy savings (PJ/a) as of 2023	2023 to 2030: 6,94
Implementing public bodies, participating or entrusted parties and their responsibilities for the implementation of the policy action	Federal Government
Target sectors	Households, beneficiary households ¹³⁸ , businesses, associations and municipalities
Actions permitted under the measure concerned	Energy efficiency measures eligible under the EU Directive are eligible for support in households, in companies
Where applicable, specific policy measures or individual actions targeting energy poverty.	3 % of the savings should be made or achieved by beneficiary or energy-poor households.
CalculationMethod	Building on the Regulation on valuation methods for the valuation of individual measures in the 2021-2030 period, calculation methods have been adapted to new requirements under EU law. Estimated savings. The data is based on the annual reporting by KPCs as part of the energy efficiency monitoring. These notifications were linked to the old and new funding budgets.
Lifetime	Depending on the individual measures supported

¹³⁸'beneficiary household' – a low-income or low-energy household that receives special support under the Energy Efficiency Act or other federal laws

Table 50: Industrial transformation

Name of the measure	Industrial transformation
Type of policy measure	Promote
Description of the policy measure	The industrial transformation measure is intended to support energy-intensive industries to make their production processes climate neutral.
Sources/References	UFG
Cumulative End-use energy saving (PJ) Period 2021 to 2030 net	24,32
Annual new Final energy saving (PJ/a) from 2021	2023: 0.44; 2024: 0.80 2025: 0,80; 2026: 0,80; 2027: 0.64; 2028: 0.64; 2029: 0.64; 2030: 0.64.
competent authority	Federal Government
Target sectors	Sectors and subsectors according to UFG Annex I
Actions permitted under the measure concerned	The focus is on reducing greenhouse gas emissions as much as possible from direct combustion of fossil fuels or directly from industrial production processes.

If the alternative policy measures do not specify, the following conditions shall apply:

Type of calculation method (deemed/scaled/measured/surveyed savings):

The estimate of the expected savings of alternative policy measures for the period 2021 to 2030 is based on a continuation of the achieved and reported savings of these instruments from 2014 to 2020. A representative average from 2014 to 2020 was formed for this purpose.

Discount factors have been used to ensure that changes in the baseline (additionality) are taken into account in the new period. In addition, for the period:

2014 to 2020 reported savings that are no longer attributable to the period from 2021 to 2030 (e.g. photovoltaics for self-supply of electricity) excluded from extrapolation. In addition, known changes to the budgets of support schemes were included directly

proportionally in the calculation.

In parallel, a proposal for adapted assessment methods for the evaluation of individual measures in the period from 2021 to 2030 was prepared and used to estimate savings. The document on generalised methods (= deemed savings), which had already been notified for the period 2014 to 2020, was adapted to new requirements under EU law and methods or measures which did not work well in the 2014-2020 period were removed from the document.

The main changes underlying the estimations of savings are as follows:

- Delete the method “photovoltaic to increase self-supply”;
- Adaptation of the solar thermal method to the pure final energy effects (saving of conversion losses instead of the amount of useful heat produced = significant reduction of eligible savings);
- Adaptation of baselines for buildings and heating systems. This concerns changes in building codes and market developments, such as the increased uptake of heat pumps or other efficient heating systems;
- Adaptation of baselines for vehicles, i.e. taking into account the increased take-up of more efficient vehicles;
- Improvement of the method of comparing deemed savings ex-ante with actual savings.

How to take into account the lifetime of savings:

The procedure for taking into account the lifespan of the different measures and the associated savings is laid down in the current Regulation.

Information on eligibility, additionality and materiality:

With regard to the assessment and accounting of energy efficiency measures, the following principles shall apply, inter alia:

- Energy efficiency measures are eligible if they:
Bring about energy efficiency improvements and go beyond minimum legal or technical obligations or beyond the state of the art (additionality);
- The incentive to adopt an energy efficiency measure must be substantial and attributable to the measure adopter (materiality);
- It must also be demonstrated that the measures have to be taken after the 31st.

December 2020 and the final energy savings resulting from the energy efficiency improvement shall be determined on the basis of a generalised methodology or an individual assessment;

- End-use energy savings shall be determined from the normalised and normalised final energy consumption before an energy efficiency measure (reference final energy consumption) minus the normalised and normalised final energy consumption after the implementation of an energy efficiency measure.

Additionality is already taken into account in the determination of baselines in general assessment methods. For example, when purchasing new appliances, the market average was used, which goes beyond the requirements of the Ecodesign Regulation. In the case of individual assessments of energy efficiency measures, there is an indication of the reference case, i.e. the energy consumption that would have taken place in the absence of a change in the measure.

In order to assess materiality, every reporting of an energy efficiency measure is asked about the incentive to take an energy efficiency measure. The incentive was provided either through an activity or assistance provided by an obliged entity or had to relate to the obligation under the Energy Efficiency Act.

Information on how to prevent potential overlaps between measures and individual actions in order to avoid double counting of energy savings:

Each new calculation method, as well as any new individual assessment, shall be assessed separately for possible double or multiple counting in order to count the energy efficiency measures set on its basis. In particular, the interaction with other methods or individual assessments should be examined in the preparation process. Any double or multiple counting should be corrected. Under the EEEG and in accordance with the requirements of EU law, double counting of final energy savings is not permitted.

For standardised measures, potential overlaps are avoided by means of correction factors (example 1) or the way the measure is defined (example 2).

Energy efficiency measures submitted are checked and cross-checked at the time and place of implementation. Energy efficiency measures that overlap savings with other measures are adjusted either in the baseline (e.g. heating demand in the renovated building for boiler modernisation) or as a correction factor (e.g. electric vehicles and charging infrastructure), so that the savings of both measures do not exceed the actual savings. Individual assessments are required to carry out similar overwriting in order to avoid double counting.

However, there may be overlaps in individual cases (e.g. insulating vouchers and total renovations). In these individual cases, the sum of all savings is cross-checked by deducting the measures with the smaller savings in the same category of measures.

Example 1: For vehicles with alternative propulsion and the associated infrastructure discount factors are applied.

Example 2: The assessment of the thermal insulation of pipes cannot be combined with the boiler scouring, as insulation of pipes is a suspension for the use of the boiler replacement method. This is explicitly stated as a quality criterion in the boiler replacement method.

A description of the monitoring and verification system for each measure; and description of the independence of the monitoring and review of measures, sampling methods for monitoring and verification, information on Member States' legislation on penalties to be applied in the event of non-compliance.

By promulgating the EEffG, E-Control Austria took over the monitoring and verification of energy efficiency measures. As an authority, E-Control has already been set up. When the EEffG was announced, E-Control was assigned the tasks by law. The performance of tasks is to be carried out independently by E-Control in the non-regulatory area. The E-Control carries out the verification, measurement and control system in an independent manner from the respective action framers. E-Control's activities are supervised by the Federal Minister for Climate Protection, the Environment, Energy, Mobility, Innovation and Technology.

The rules on assessment and eligibility should continue to be laid down in a binding manner. As part of its power to carry out and ensure compliance with these requirements, E-Control must carry out and ensure compliance with these requirements. In addition to sampling, energy efficiency measures can be tested, plausibility checked or checked in an appropriate way. On-the-spot verifications are also possible. Energy efficiency measures will, as until now, be collected through a central database. The Bundesverwaltungsgericht (Federal Administrative Court) recognises appeals against decisions of E-Control.

Sanctions

The EEffG, as amended, lays down the penalties required by EU law. As a result, district administrative authorities may impose administrative penalties for non-compliance with statutory obligations, such as carrying out energy audits or the establishment of recognised

management systems. The Landesverwaltungsge hears appeals against decisions of the district administrative authorities.

All data refer to the current legal situation. The new rules on liability for measures, in particular pursuant to Annex V EED III, are being evaluated and implemented in a binding manner by the end of the transposition period. Double-wearing will be avoided as in the past. § 62(1)(13) EEffG is already laid down by law and applies indefinitely.

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⁸ The ETS flexibility under Article 6 of the ESR allows Austria to transfer annually, during the commitment period 2021-2030, an amount of 2 % of ESR base-year emissions in the EU ETS to the extent of 2 % of ESR base-year emissions in 2005 to the area of Effort Sharing. The resulting annual volume of 1.14 million tonnes of CO₂ equivalent can be used if needed.

⁴⁹ The CO₂ price was reduced to EUR 32.5 due to the triggering of the price stability mechanism pursuant to § 10 NEHG as a result of the significant increase in the price of energy products