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Republic of Austria
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

Austria's EIGHTH NATIONAL COMMUNICATION and FIFTH BIENNIAL REPORT

under the United Nations Framework Convention on Climate Change.

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Introductory Remarks

The purpose of National Communications under the UNFCCC is to communicate to the Conference of the Parties “information related to the implementation of the Convention”. National Communications follow specific reporting guidelines and particular COP decisions and present information related to the obligations of the Convention. For Parties to the Kyoto Protocol additional reporting requirements have been decided.

Information contained in the National Communications should inform how Parties fulfil requirements of the individual articles of the Convention. It is the basis for the work of the Expert Review Team during the in-depth reviews.

For this reason the text of Austria’s National Communication has been streamlined in order to present facts and figures in a concise manner, preferring short statements and lists over elaborate text and elaborate design. The Eighth National Communication includes the Fifth Biennial Report as an Annex.

1 Executive Summary

REPORTING GUIDELINES:

2. The national communication shall include an executive summary that summarizes the information and data contained in the full document. The executive summary shall consist of no more than 15 pages.

1.1 National circumstances relevant to greenhouse gas emissions and removals

Austria is a land-locked country in central Europe with an area of 83,858 km². A large part of Austria is covered by the eastern Alps; about 40 % of the total area lies more than 1000 m above sea level. Energy for space heating has a significant share in energy demand. Forests make up almost half of the Austrian total territory; the agricultural area including alpine pastures has a share of more than one third. The Austrian political system is a Federation with 9 federal provinces, each of which has its own government and parliament. Government responsibilities are shared between federation, federal provinces and local authorities. Austria acceded to the European Union in 1995 and ceded some areas of national jurisdiction to the community.

Austria's total permanent population has reached 8.90 million inhabitants in 2020; after stagnation in the early 1980ies this represents an increase of more than one million since 1990. Almost one third of all Austrians live in 5 cities with more than 100,000 inhabitants each; more than half of the population lives in communes with less than 10,000 inhabitants. Whereas population increased by 16 % from 1990 to 2020, the number of households increased by 36 % and useful floor space by 50 %.

Gross domestic product (GDP) at current prices was € 403 billion in 2021; per capita GDP was € 45,030. The largest contribution to Austria's GDP with more than two third comes from the tertiary production, the rest is contributed mainly by secondary production. The latter accounts for more than one third of Austria's GHG emissions, half of these emissions stem from iron and steel production. The Austrian energy profile shows a high share of renewable energy with more than one quarter of total gross energy consumption, contributed mainly by biomass and hydropower. With a gross domestic consumption per capita of 151 MJ in 2020 Austria belongs to the countries with low energy consumption among industrialised countries. Regarding the development of final energy consumption since 1990 the transport sector exhibits by far the strongest increase; however, the

amount of road fuel that is sold in Austria but consumed abroad (“fuel export in the vehicle tank”, the so called “fuel tourism”) has been a significant reason for that increase. Regarding transport activity in Austria, public transport has a relevant share: About one quarter of all passenger kilometres in 2020 were travelled by public transport, rail had a share of about one quarter of freight transport.

1.2 Greenhouse gas inventory information

Austria’s total emissions of the greenhouse gases CO₂, N₂O, CH₄, HFCs, PFCs, SF₆ and NF₃ (without emissions/removals from LULUCF) amounted to 73.6 Mt (million tons) CO₂ equivalent in the year 2020. The ranking of the CRF (sub)sectors according to their relative contribution is as follows:

- 1A3: Transport (29 %)
- 2: Industrial Processes and Product Use (21 %)
- 1A2: Manufacturing Industries and Construction (14 %)
- 1A4: Other Sectors (12 %)
- 1A1: Energy Industries (12 %)
- 3: Agriculture (9 %)
- 5: Waste (2 %)

The emissions of CO₂ clearly dominate the GHG emissions in Austria with 84 % compared to 8 % for CH₄, 5% for N₂O and 3 % for F-gases. CO₂ emissions per capita amounted to 7.5 t in 2020 and total greenhouse gas emissions per capita to 8.3 t CO₂ equivalent.

Total greenhouse gas emissions in 2020 were 4.4 Mt below the 1990 base year emissions (partly an effect of the pandemic). Emissions from transport increased considerably (+52%); emissions from waste, “other sectors” and agriculture showed a steady decline (cf. Fig. 1.1). Emissions growth from road transport is due to increasing inland transport demand and increasing road fuel export in the vehicle tank after 1990.

Table 1.1: Austrian GHG emissions 1990 and 2020, in Mt CO₂ equivalent

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990					2020				
	CO ₂	CH ₄	N ₂ O	F-Gas	Total	CO ₂	CH ₄	N ₂ O	F-Gas	Total
Total without LULUCF	62.15	10.11	4.51	1.66	78.42	62.04	5.82	3.50	2.24	73.59
Total with LULUCF	49.91	10.13	4.65	1.66	66.36	60.61	5.84	3.65	2.24	72.34
1. Energy	51.16	1.21	0.43		52.80	48.78	0.54	0.61		49.93
A. Fuel Combustion	51.06	0.61	0.43		52.10	48.67	0.32	0.61		49.60
1. Energy Industries	13.96	0.01	0.04		14.01	8.69	0.02	0.10		8.81
2. Manuf, Industr., Constr.	9.76	0.01	0.07		9.85	10.41	0.02	0.12		10.55
3. Transport	13.76	0.07	0.13		13.96	20.92	0.02	0.25		21.18
4. Other Sectors	13.54	0.52	0.19		14.25	8.62	0.26	0.15		9.03
5. Other	0.04	0.00	0.00		0.04	0.03	0.00	0.00		0.03
B. Fugitive Emiss. from Fuels	0.10	0.60	IE,NA		0.70	0.11	0.22	IE,NA		0.33
2. IPPU	10.87	0.04	1.01	1.66	13.57	13.11	0.05	0.09	2.24	15.49
3. Agriculture	0.09	5.08	2.95		8.12	0.15	4.29	2.53		6.96
4. LULUCF	-12.23	0.02	0.14		-12.06	-1.43	0.02	0.15		-1.25
5. Waste	0.03	3.78	0.12		3.93	0.00	0.94	0.27		1.21
6. Other	NO	NO	NO		NO	NO	NO			NO

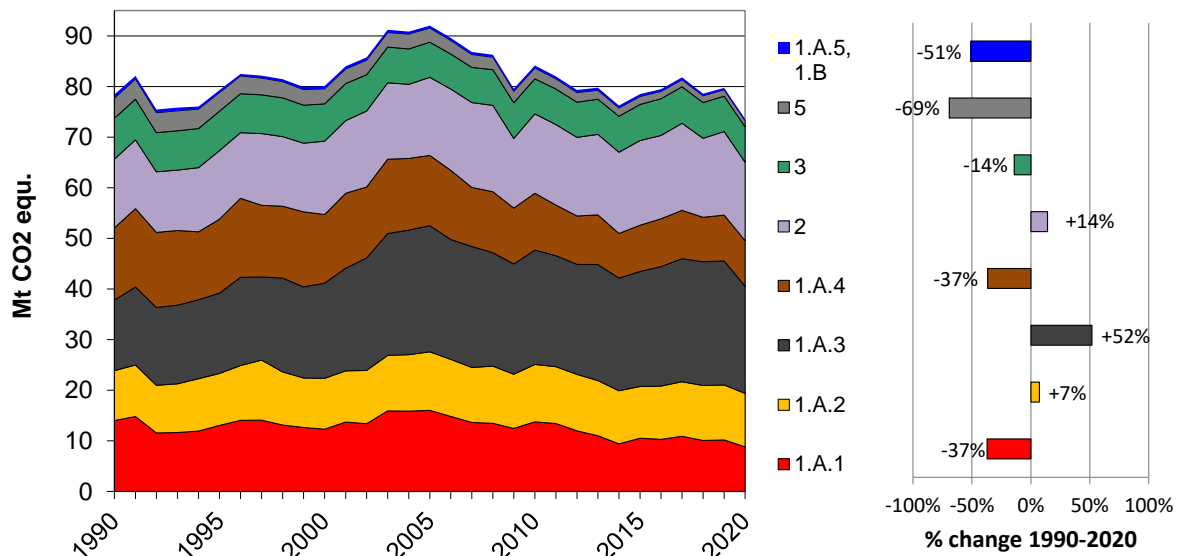


Figure 1.1: GHG emission trend by sector

1.3 Policies and measures

The Federal Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology is responsible for issues of climate change as well as for the important sectors energy and transport and has a co-ordinating function with respect to the overall climate change policy in Austria. However, jurisdiction for policies and measures to mitigate

greenhouse gas emissions is distributed among several federal ministries and other policy making and implementing entities, namely the federal provinces and the municipalities. EU legislation has considerable impact on Austrian climate policy.

Targets and responsibilities to fulfil international and European climate change commitments are laid down in the Austrian Climate Change Act. For the implementation of individual policies and measures there are different legislative arrangements, depending on sectors and legislative and administrative competences. Based on the Climate Change Act, a national mitigation programme to meet the 2020 target under the EU Effort Sharing Decision has been adopted. Many federal provinces have adopted their own regional climate change programmes, taking into account specific regional circumstances and areas of competence.

Relevant policies cover energy industries and manufacturing industries (increase the share of renewable energy in power supply and district heating, increase energy efficiency in energy and manufacturing industries), transport (Increase the share of clean energy sources in road transport, increase fuel efficiency of road transport, modal shift to environmentally friendly transport modes), the buildings sector (increase energy efficiency of buildings, increase the share of renewable energy for space heating, increase of energy efficiency in residential electricity demand), industrial process and product use (reduce emissions from F-gases and other product use), agriculture, waste and LULUCF.

1.4 Projections and total effect of policies and measures

The latest national greenhouse gas (GHG) emission projections up to 2040 have been developed in the years 2020/2021, they are, however, based on activity scenarios which have been developed before. Scenarios “with measures” and “with additional measures” have been calculated. Modelling has been performed with a combination of an economic top-down and several bottom-up models, in a co-operation of Umweltbundesamt with universities and other research-institutions.

The pandemic has not been taken into account in the scenarios, as the projections are based on the previous inventory with 2019 as the base year. This needs to be taken into account when comparing scenario results with historic data for 2020 from the latest inventory. Scenario “with measures” shows a decrease of total GHG emissions from 73.6 Mt CO₂ eq in 2020 to 72.5 Mt in 2030 (-1 %), which is mainly caused by decreasing emissions in from “other sectors”, energy industries and IPPU. Scenario “with additional measures” shows a decrease of total GHG emissions from 73.6 Mt CO₂ eq in 2020 to 66.5 Mt in 2030 (-10 %); the additional reduction mainly stems from the transport sector and from “other sectors”.

Compared to the pre-pandemic emissions in 2019, the decrease is considerably larger: Total emissions -9 % in the scenario “with measures”, -17 % in the scenario WAM.

Table 1.2: Projected greenhouse gas emissions 1990–2040

	GHG emissions and removals						Projections			2030 vs.	
	(Mt CO ₂ eq)						(kt CO ₂ eq)			historic	
	1990	2005	2010	2015	2019	2020	2020	2030	2040	2019	2020
With measures	78.42	92.03	84.15	78.49	79.74	73.59	76.89	72.54	69.33	-9%	-1%
With additional measures	78.42	92.03	84.15	78.49	79.74	73.59	76.38	66.54	61.08	-17%	-10%

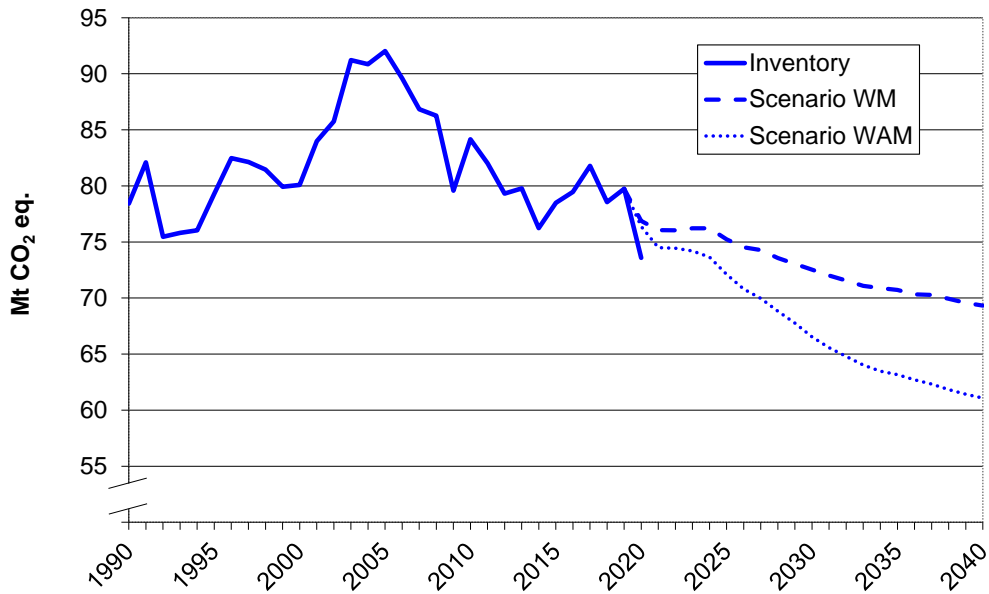


Figure 1.2: Projected greenhouse gas emissions 1990–2040

1.5 Vulnerability assessment, climate change impacts and adaptation measures

Significant changes can already be observed. Mean annual temperature in Austria has increased by nearly 2°C since 1880. Glacier inventories show losses in area and volume and duration of snow cover has been reduced in the last decades. Changes of precipitation have been observed as well.

A detailed assessment of the aspects of climate change relevant for Austria has been compiled. The “Austrian Assessment Report Climate Change 2014”, which has been developed according to the model of the IPCC Assessment Reports, deals with the physical science basis as well as with consequences for society and nature and with mitigation and adaptation.

Model results for Austria, based on the SRES A1B emissions scenario, show a. o. a medium temperature increase of almost 4°C for the end of the century (compared to the period 1961–90), a triplication of hot nights and heat waves and a comparable decrease of days with frost, as well as seasonal changes of precipitation. Vulnerability to climate change is different across sectors and regions; for example agriculture and forestry as well as ecosystems and biodiversity are assessed to be highly vulnerable to expected changes, whereas vulnerability of tourism is expected to be high for winter and lower for summer tourism. Vulnerability of water resources and water management exhibits strong regional variability, vulnerability of transportation infrastructure is high in specific regions. Vulnerability concerning human health must be differentiated for population groups regarding heat stress, air quality and spreading of diseases.

A comprehensive national adaptation strategy has been developed, based on expert knowledge and an extensive stakeholder process. The strategy has been adopted by the Federal Government and by the federal provinces in 2012 and 2013 respectively; an update has been adopted by the Federal Government in August 2017. In total 136 recommendations in 14 areas have been included in the National Strategy for Adaptation. The Action Plan, as the second part of the Strategy, describes the recommendations in detail. The Action Plans lists a. o. the objective, relations to other instruments, status of implementation, further steps, necessary resources and responsibilities for every recommendation. Implementation of the National Adaptation Strategy is done in close cooperation of Federation, federal provinces and local authorities. The federal provinces have prepared regional adaptation strategies or integrated adaptation issues in their climate mitigation strategies. Financial support is provided for model regions in implementing adaptation measures. A process for monitoring and evaluation of the plan's implementation has been established; the second progress report was finalised in autumn 2021.

1.6 Financial, technological and capacity-building support

Public climate finance support by Austria to developing countries – including for technology transfer and capacity-building – has increased considerably since the UNFCCC entered into force. From 2013 to 2019, public bilateral and multilateral climate finance support has increased from EUR 142 million to 333 million. In 2020 the amount decreased to EUR 258 million due to the pandemic. A broad range of actors and instruments contribute to Austria's overall contribution to climate finance.

A inter-ministerial working group regularly takes stock of developments related to climate finance, including the tracking of support. Its work is based on the Austrian climate finance strategy which has been adopted in 2013 and revised in 2016. The Austrian Development Agency collects the relevant data. Tracking and reporting the provision of climate finance is based on OECD DAC methodologies. Austria is a pioneer nation in

environmental technologies. Transfer of technology for mitigation and adaptation is a component of many of the programmes and projects supported by Austria's climate finance commitments; the Austrian Development Cooperation has a strong focus on sustainable energy, in particular hydro and solar power as well as dissemination of decentralised renewable energy solutions. Furthermore initiatives by Austrian enterprises in developing countries are supported, which are often related to renewable energy and energy efficient buildings. An important actor is the official Development Bank of Austria, mandated to promote sustainable development through financing private sector projects in developing countries; special focus is put on energy and resource efficiency as well as renewable energy.

Austria is also member of institutions and initiatives that focus on technology development and transfer, e.g. the Renewable Energy and Energy Efficiency Partnership, the Private Financing Advisory Network and the Global Forum on Sustainable Energy.

Capacity-building is an integral part of most of the projects which are supported by the Austrian Development Cooperation.

1.7 Research and systematic observation

Austria is actively engaged in promoting research and systematic observation related to the climate system by supporting numerous research projects and programmes, at both the national and the international level. Climate system research and research on climate change impacts are heavily influenced by the Alps, which cover almost two thirds of the surface area of Austria.

Research programmes on sustainable development have been set up by different ministries concerned. Projects related to climate change (impacts, adaptation, mitigation) are carried out by a large number of university institutes as well as by extra-university institutions. The Climate and Energy Fund is an important actor, supporting RTD projects for the reduction of GHGs in Austria as well as basic climate system research. Since 2003 the programme "StartClim" supports research on climate change impacts and adaptation options, financed by the Federal Ministry for Climate Action together with partners. As a coordinating facility to promote and support climate research in Austria the Climate Change Centre Austria has been established in 2011.

A dense network of observing stations for meteorological and hydrological parameters has been brought about by the rather heterogeneous meteorological patterns in the alpine region. Austria's instrumental time series are amongst the longest in Europe and go back as far as the 18th century. The high altitude meteorological observatory at Hoher Sonnblick (at 3,106 metres above sea level) has been operating continuously since 1886, which is the longest continuous and homogeneous meteorological time series for high altitudes

worldwide. Austrian data are exchanged within international networks such as the GCOS surface network (GSN), the GCOS upper air network (GUAN), the Global Atmosphere Watch (GAW), CLIMAT, the Global Terrestrial Network – Glaciers (GTN–G), the Network for the Detection of Atmospheric Composition Change (NDACC) and the World Data Centre for Greenhouse Gases (WDCGG). The Austrian GCOS coordination unit has been established at the Central Institute for Meteorology and Geodynamics and has compiled the latest GCOS report in 2020. Austria participates in the programme for earth observation of the European Space Agency and many projects of the Austrian Space Programme have dealt with the development of earth observation applications, including climate change related applications.

1.8 Education, training and public awareness

Environmental education in schools is an inter-disciplinary instruction principle and issues related to climate protection, such as energy saving and renewable energy, have received increased attention during the recent decades. A national *Strategy for Education for Sustainable Development* passed the Austrian Council of Ministers in 2008. Objectives and principles have been laid down in a *Decree on environmental education for sustainable development* by the responsible ministry. Awareness of climate issues in schools is strengthened by various initiatives at the level of Federation and federal provinces. More than 550 schools and 13 university colleges of teacher education participate in the *Network for Schools and Environment (ÖKOLOG)*.

Training programmes and seminars have been established by public institutions and regional energy agencies for different target groups. Reliable and independent advisory services on energy issues are offered free of charge to private households by energy agencies and several non-profit environmental consulting organisations and partly by the authorities of the federal provinces themselves. Related programmes directed especially at small and medium enterprises exist in all provinces. The Federal Ministry for Climate Action has launched the initiative “klimaaktiv” with a series of target-group oriented programmes in the areas construction and energy efficiency, transport and mobility, communities and renewable energy sources. Training and advisory services dealing with sustainable farming and forestry are offered by the regional Chambers of Agriculture and further institutions.

There is substantial public awareness on climate change issues in Austria. Campaigns and initiatives are organised and funded by the Federal Government and by the federal provinces; they usually focus on concrete recommendations and incentives for measures to protect the climate system, for example in the areas energy, transport and agriculture. Particular mention must be made of *Climate Alliance Austria*, which has a. o. more than 1000 municipalities and the federal provinces as members. Members of Climate Alliance Austria commit themselves to a continuous reduction of GHG emissions and support of

the indigenous partners in Amazonia. Climate Alliance Austria does not only contribute to public awareness of the global dimension of climate change, but has initiated many successful and impressive mitigation projects at community and company level.

2 National circumstances relevant to greenhouse gas emissions and removals

REPORTING GUIDELINES:

3. Parties shall provide a description of their national circumstances, how the national circumstances affect greenhouse gas (GHG) emissions and removals, and how the national circumstances and changes therein affect GHG emissions and removals over time. Parties should provide information on how their national circumstances are relevant to factors affecting GHG emissions and removals, including disaggregated indicators, to explain the relationship between the national circumstances and emissions or removals. Parties may provide whatever information best describes their own national circumstances and historical trends. However, in order to improve the comparability of national communications, reporting information under the following headings is recommended ...

2.1 Government structure

Austria is a federal state comprising nine federal provinces. Government responsibilities are shared by three levels of territorial authority, the federation (“Bund”), the nine federal provinces (“Länder”) and the local authorities (“Gemeinden”, municipalities).

The head of the Austrian state is the federal president („Bundespräsident”), who is directly elected by the people and represents the Republic of Austria internationally. He appoints the federal chancellor („Bundeskanzler”), who is the head of the Federal Government and, at the suggestion of the Bundeskanzler, the federal ministers. The “Nationalrat” and the “Bundesrat” are the two houses of Parliament, the main legislative body. The Nationalrat is elected every five years on the basis of an electoral system of proportional representation; the members of the Bundesrat are nominated by the parliaments of the provinces, the “Landtage”.

Every federal province (“Land”) has its own regional government (“Landesregierung”) headed by the provincial governor (“Landeshauptmann”); the members of the Länder governments corresponding to the federal ministers are the “Landesräte”.

A characteristic of Austria’s political structure is the so-called “social partnership”, the system of co-operation and co-ordination of interest between different interest groups,

especially employers and employees. Several national federations are key players in the system, like the Federal Chamber of Labour, the Austrian Economic Chamber, the Austrian Chambers of Agriculture and the Austrian Trade Union Federation. The umbrella federations of the social partners also have influence as regards political opinion forming and decision-making.

Legislative and executive competences are distributed between the federation and the Länder according to the regulations on this matter in the Federal Constitution Act. Whenever a national approach is required but the federal government does not have the authority of policy making the parties involved may conclude a treaty of state (“Staatsvertrag”) according to Art. 15a of the Federal Constitution Act in which they agree to undertake certain actions, jointly or separately.

Austria has become a Member State of the European Union in 1995. Part of the decisions and legislation in, a. o. the areas of climate change, energy, transport and agriculture, are made at EU level.

2.2 Population profile

- Total permanent population: 8.90 million inhabitants 2020.
- +1.2 million since 1990, due to immigration and increasing life expectancy (+16 %).
- Projection 2030: Increase to 9.2 million inhabitants, 30 % expected to be ≥60 years and 30 % younger than 30 years.
- Life expectancy at birth: 70 years in 1970, 76 years in 1990, 81 years in 2020.
- Future trends of Austrian population growth and age structure will be primarily determined by immigration policies.
- Increase of number of households more than two times higher than increase of population.
- Average household size is decreasing, +87% single-person households since 1990.
- Increase in population and number of households is an important driver for residential energy demand (see Section 2.10).
- Average population density: 107 inhabitants/km² total area or 276 inhabitants/km² settlement area.

Table 2.1: Austrian Population 1990 to 2022 and projection for 2030 by age groups
(Data: Statistik Austria)

	1990	2000	2010	2015	2020	2022	2030
Total (mill.)	7.68	8.01	8.36	8.63	8.90	8.98	9.24
< 15 years	18%	17%	15%	14%	14%	14%	14%
15-29 years	24%	19%	19%	18%	17%	17%	16%

30-44 years	21%	25%	22%	20%	20%	20%	20%
45-59 years	17%	19%	22%	23%	23%	22%	20%
60-74 years	13%	14%	15%	15%	16%	17%	20%
> 74 years	7%	7%	8%	9%	10%	9%	11%

Table 2.2: Private households and their size for selected years (Data: Statistik Austria)

	1990	2000	2010	2015	2021
Total number of households (1000)	2,913	3,237	3,624	3,817	4,020
with 1 persons	814	977	1,300	1,418	1,526
with 2 persons	802	975	1,069	1,141	1,222
with 3-4 persons	989	1,025	1,012	1,019	1,032
with > 4 members	341	286	255	238	240
Average household size	2.6	2.4	2.3	2.2	2.2

2.3 Economic profile

- Austria has the characteristics of a small open economy; export and imports of goods are at a comparable level, the balance of trade in services shows high surplus.
- Export quota (goods and services) was more than half of GDP during the last years; it has considerably increased from 34% in 1995.
- Largest share of exports – more than two third – is related to final goods.
- Austria's main trading partners are within the EU (about two third of imports and exports), most important is neighbour Germany (one third of total imports and almost one third of total exports).
- GDP at current prices: € 403 billion in 2021.
- GDP per capita: € 45,030 in 2021.
- GHG emissions per GDP: 183 kg CO₂ equ / 1000 € in 2020.
- Share of secondary sector in gross value added: 28% in 2020; decreasing trend (see Table 2.4).
- Tourism has significant share in GDP: 7% in 2019 (drop in 2020 due to the pandemic).

Table 2.3: Development of GDP in the period 1995-2021 (Source: Statistik Austria)

	Nominal GDP		GDP/capita	GDP price index		Real GDP, reference year 2010
	bn €	% Change	€	Index	% Change	prices bn €
1995	176.61		22,220	70.3		242.07
1996	182.54	+ 3.4	22,940	72.0	+ 2.3	247.75
1997	188.72	+ 3.4	23,690	73.5	+ 2.1	252.94

1998	196.35	+ 4.0	24,610	76.1	+ 3.6	262.00
1999	203.85	+ 3.8	25,510	78.8	+ 3.6	271.32
2000	213.61	+ 4.8	26,660	81.5	+ 3.4	280.48
2001	220.53	+ 3.2	27,420	82.5	+ 1.3	284.03
2002	226.74	+ 2.8	28,050	83.9	+ 1.7	288.72
2003	231.86	+ 2.3	28,560	84.7	+ 0.9	291.44
2004	242.35	+ 4.5	29,670	87.0	+ 2.7	299.41
2005	254.08	+ 4.8	30,890	88.9	+ 2.2	306.13
2006	267.82	+ 5.4	32,390	92.0	+ 3.5	316.70
2007	283.98	+ 6.0	34,230	95.4	+ 3.7	328.51
2008	293.76	+ 3.4	35,300	96.8	+ 1.5	333.31
2009	288.04	- 1.9	34,530	93.2	- 3.8	320.76
2010	295.90	+ 2.7	35,390	94.9	+ 1.8	326.65
2011	310.13	+ 4.8	36,970	97.7	+ 2.9	336.20
2012	318.65	+ 2.7	37,820	98.3	+ 0.7	338.49
2013	323.91	+ 1.6	38,210	98.3	+ 0.0	338.57
2014	333.15	+ 2.9	38,990	99.0	+ 0.7	340.81
2015	344.27	+ 3.3	39,890	100.0	+ 1.0	344.27
2016	357.61	+ 3.9	40,920	102.0	+ 2.0	351.12
2017	369.36	+ 3.3	42,000	104.3	+ 2.3	359.05
2018	385.42	+ 4.3	43,610	106.9	+ 2.5	368.03
2019	397.52	+ 3.1	44,780	108.5	+ 1.5	373.52
2020	379.32	- 4.6	42,540	101.2	- 6.7	348.36
2021	403.10	+ 6.3	45,030	105.8	+ 4.6	364.24

Table 2.4: Gross value added and sector share (Source: Statistik Austria)

	1995	2005	2015	2020
Gross value added (bn €)	158.8	225.9	307.0	340.3
Primary sector	2.4%	1.4%	1.3%	1.2%
Secondary sector	32.1%	30.5%	28.2%	28.4%
Tertiary sector	65.5%	68.1%	70.5%	70.4%

2.4 Geographical profile

Austria is located in southern central Europe, between 49°01' and 46°22' north and from 9°32' to 17°10' east, covering part of the eastern Alps and the Danube region. It is land-locked and has common borders with eight other countries. Due to its situation in the centre of Europe, Austria is quite exposed to activities of its neighbouring countries, e. g.

to cross-border air pollution and to transit traffic, the latter having direct influence on emissions from transport.

Austria's total surface area covers 83,858 km² with a share of 38.8 % settlement area. The landscape falls into five main sections: The dominating Eastern Alps (63 % of total area), the Alpine and Carpathian foothills (11 %), the eastern foreland which is part of the low-lying Pannonic plains (11 %), the Vienna basin (4 %) and the Granite and Gneiss Highland north of the Danube which is part of the Bohemian massif (10 %).

About 70 % of Austria's surface is situated higher than 500 m above Sea level (maSl), 40 % higher than 1000 m; the landscape shows a very distinct orographic structure. Given the fact that ecosystems in mountainous regions are highly sensitive to changes, it is obvious that large parts of Austria are highly vulnerable to climatic changes

2.5 Climate profile

Austria belongs to the central European transitional climatic zone; climate is crucially influenced by the Alps, which are situated in a transitional area of the Mediterranean, the Atlantic Ocean and continental Europe. Austria can be divided into three climatic zones: The eastern part shows a continental Pannonian climate (mean temperature for July usually above 19°C, annual rainfall often less than 800 mm), while the central Alpine region has the characteristic features of the Alpine Climate (high precipitation, short summers, long winters). The remaining part of the country belongs to the transitional central European climatic zone, which is characterised by a wet and temperate climate (mean temperature for July 14–19°C, annual precipitation 700–2000 mm, depending on location, exposure and altitude). As Austria is a country with a highly structured relief, a lot of small-scale climatic processes occur caused by orographic conditions.

Mean daily temperature in Vienna (about 200 maSl) in January is 0.1°C (July: 20.2°C), the number of days per year with minimum temperature below 0°C is 66. In alpine regions temperatures can become considerably lower, e.g. in St. Jakob at 1,400 maSl mean daily temperature in January is -7.5°C (July: 13.2°C), the number of days per year with minimum temperature below 0°C is 197. Space heating is required in buildings throughout the winter season (partly from autumn to spring – depending on height above sea level and year-to-year variations in temperature). Winter temperatures are an important driver for residential energy consumption – about one fourth of final energy consumption in Austria is used for space heating (see also Section 2.10). The use of air conditioning in summer is increasing.

Since 1880 an increase of almost 2°C in average temperatures has been measured in Austria, a trend, which could be observed in all regions, whereas precipitation shows no homogeneous trend. In the western part, a rising tendency was observed during the 20th

century; in the east and south precipitation has shown a falling tendency since the 1940ies. Exceptionally warm years could be observed during the last two decades, some of them years with the highest average temperature since the beginning of measurements in 1775. Since 2000, heating degree days above the long-term average have been measured only in three years (cf. Fig. 2.1). Useful indicators for long-term tendencies in average temperatures stem from measurements of the Alpine glaciers. Historical measurements reveal a steady decline of the volume of glaciers since the 19th century. This tendency has increased since the early 1980ies. (Source: Central Institute for Meteorology and Geodynamics, Institute of Meteorology of the University of Natural Resources and Applied Life Sciences, Vienna)

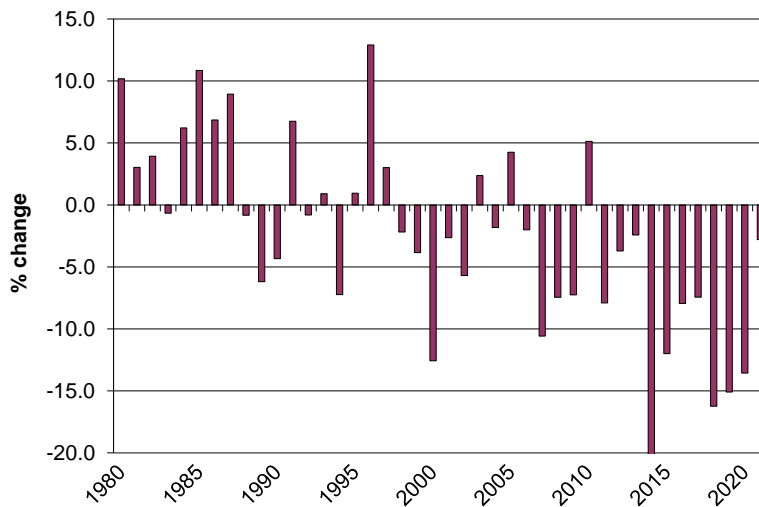


Fig. 2.1: Heating degree days and deviation from mean value for 1981–2020 (Data: Statistik Austria)

2.6 Energy

Gross energy consumption:

- Rather high share of renewables in energy supply: 11 % hydro power¹ and 21 % other renewables (more than half of that is biomass) in 2020.
- Still considerably dependency on fossil fuels: 34 % share of oil products, 23 % of natural gas and 8 % of coal products in 2020.
- Since 1990 decreasing share of coal, considerable increase of renewables and a decrease of oil products in the last decade.
- Total gross consumption increased by 37 % from 1990 to 2005, consumption of fossil coal, oil, gas by 33 %; from 2005 to 2020 total consumption decreased by 6 %, consumption of coal, oil and gas by 22 %.

¹ Without net imports/exports for electricity

- Gross energy consumption per capita: 151 GJ/cap in 2020, increase by 5% since 1995.
- Gross energy consumption per GDP (at 2015 prices): 3.9 MJ/€ in 2020, decrease by 18 % since 1995.

Table 2.5: Gross energy consumption 1990–2020 in PJ (Data: Statistik Austria)

	1990	1995	2000	2005	2010	2015	2020
Coal	172	145	153	168	142	137	105
Oil	444	478	513	606	546	502	461
Gas	219	270	276	339	340	289	305
Hydro	113	133	151	134	138	134	151
Other Renew.	98	114	127	166	258	287	288
Electricity	-2	-9	-5	9	9	36	8
Waste	8	9	11	17	26	28	28
Total	1,052	1,140	1,225	1,438	1,458	1,412	1,346

Final energy consumption:

- Oil products have highest share: 35% in 2020, considerable decrease after 2005 (2005: 45 % share), influenced by transport and export in the vehicle tank – see Section 2.7;
- share of electricity and gas (one fifth and slightly below one fifth in 2020) relatively constant throughout the last two decades;
- increasing share of renewables and district heating since 2000 (16 and 7 % respectively in 2020, 11 and 4 % in 2000);
- coal not relevant any longer;
- dominating sector is transport (32 % in 2020), followed by industry (29 %), households (27 %), service sector (10 %);
- share of household sector decreasing since 1990, transport stagnating at high level after increase until 2005;
- clear decoupling of GHG emissions from GDP and energy consumption (cf. Fig. 2.2).

Table 2.6: Final energy consumption by fuels 1990– 2020 in PJ (Data: Statistik Austria)

	1990	1995	2000	2005	2010	2015	2020
Coal	50	37	33	25	20	18	18
Oil	328	365	402	496	434	410	367
Gas	114	144	167	195	198	191	194
Electricity	152	166	183	207	216	220	220
District heating	25	35	42	51	66	70	72
Renewables	89	93	103	123	172	178	171
Waste	4	5	6	8	10	10	11
Total	763	845	936	1,105	1,116	1,097	1,053

Table 2.7: Final energy consumption by sectors 1990–2020 in PJ (Data: Statistik Austria)

	1990	1995	2000	2005	2010	2015	2020
Industry	213	220	250	301	317	309	307
Transport	209	245	293	380	370	384	336
Households	244	264	261	276	296	278	280
Services	72	94	110	126	110	104	108
Agriculture	25	23	22	22	23	23	22
Total	763	845	936	1,105	1,116	1,097	1,053

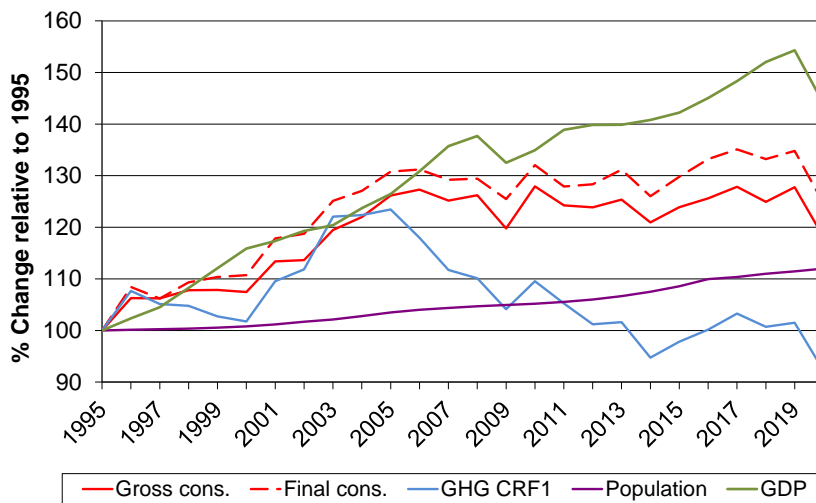


Fig. 2.2: Gross inland and final energy consumption, GHG emissions from CRF sector 1, population und GDP at constant prices 2015; development relative to 1995 values (Data: Statistik Austria, Umweltbundesamt)

Energy industries – public electricity and heat production:

- accounts for 8 % of total GHG emissions and 12 % of emissions from fuel combustion in 2020;
- increasing demand is most important driver for emissions – electricity consumption has increased by almost half from 1990 to 2020, district heating demand has triplicated;
- increasing use of biomass and fuel switch from coal to gas (improved fossil carbon intensity) as most important decreasing drivers have more than compensated the increase in demand;
- a further driver for emission increase is the substitution of decreasing electricity production from industrial autoproducers by public plants;
- further drivers for emission decrease are efficiency improvement (incl. cogeneration) growing electricity imports (from net exports in 1990 to 8 PJ imports in 2020);
- see also Fig. 2.3.

Table 2.8: Public electricity production from renewable sources 1990–2020 in PJ (Data: Statistik Austria)

	1990	1995	2000	2005	2010	2015	2020
Biofuels				3	8	8	7
Hydropower > 10 MW				115	118	114	127
Hydropower <= 10 MW				14	16	18	22
Windpower				5	7	17	24
Photovoltaics				0.1	0.3	3.4	7
Total	105	124	143	137	150	161	189

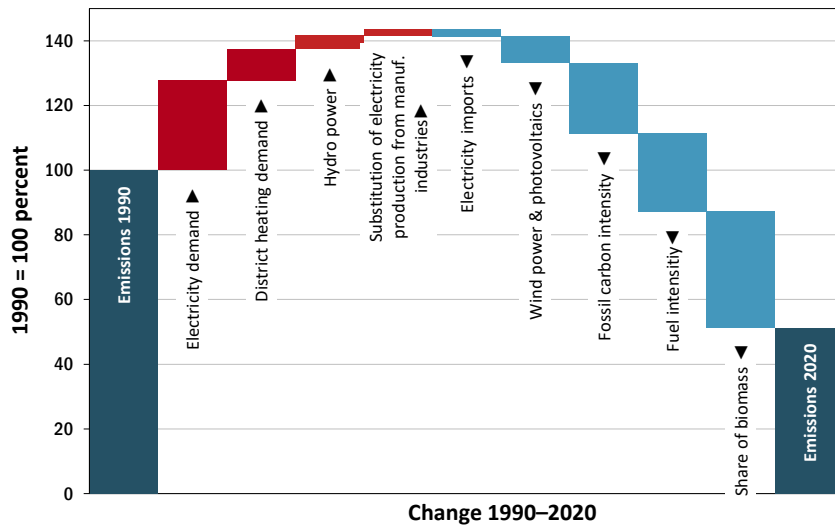


Figure 2.3: Decomposition analysis of sectoral GHG emissions – public electricity and heat production

Energy industries – petroleum refining:

- one refinery in Austria, accounts for most of the rest of emissions from energy industries;
- emissions have been about 15 % higher than 1990 during the last decade, the amount of crude oil processed has increased to a lesser extent;
- change of product mix in favour of more energy intensive products, i.e. sulphur free fuels and light fraction products, is reason for emission increase.

2.7 Transportation

General:

- Transport accounts for one third of final energy demand and for more than one fourth of GHG emissions (GHG emissions +51 % since 1990);
- Strong increase in transport volume after 1990 in Austria, especially in freight transport: +59 % tonne-km 1990–2000 and about one fifth each in den periods 2000–2010 and 2010–2020.
- Reasons: A. o. fall of the iron curtain, Austria’s accession to the European Union, introduction of the common currency, accession of eastern European countries to the Union.
- Registered vehicles: Passenger cars 5.1 million in 2020 (2.8 million in 1990), light duty vehicles 0.5 million in 2020 (0.2 million in 1990), heavy duty vehicles 0.08 million in 2020 (figure comparable to 1990, but the share of smaller vehicles has decreased and an increasing share of Austrian road hauliers’ vehicles has been registered in other countries in the meantime, i.e. “flagged out”).
- Increased share of diesel fuelled passenger cars, from 14 % in 1990 to almost 55 % in 2020.
- Number of electric cars (battery EV and plug-in hybrid vehicles) increased from some 100 in 2010 to 60,000 in 2020 (1.2% of registered passenger cars); in 2020 new registrations of electric cars amounted to 10 % of all new registrations of cars.

Passenger transport

- Passenger transport volume increased from 77 billion passenger-kilometres in 1990 to 115 billion in 2019; due to the pandemic there was a considerable drop to 93 billion in 2020;
- passenger transport dominated by cars (about two thirds of transport demand in 2019), about one quarter share of public transport;
- no significant change of modal split in the last decades;
- no relevant share of aviation in inland travel.

Table 2.9: Passenger transport 1990– 2020 in billion passenger-km on Austrian territory (Source: Umweltbundesamt)

	1990	1995	2000	2005	2010	2015	2020
Passenger cars	53.7	59.4	64.7	68.5	68.4	72.9	65.2
Motorcycles	0.9	1.0	1.2	1.3	1.5	1.7	2.0
Public transport	18.9	22.3	23.7	24.7	26.3	28.5	23.1
Walking & cycling	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Aviation	0.1	0.1	0.2	0.2	0.2	0.2	0.0
Total	76.7	86.0	92.9	97.9	99.5	106.5	93.3

Table 2.10: Modal split of passenger transport 1990– 2020 on Austrian territory (Source: Umweltbundesamt)

	1990	1995	2000	2005	2010	2015	2020
Passenger cars	70%	69%	70%	70%	69%	68%	70%
Motorcycles	1%	1%	1%	1%	2%	2%	2%
Public transport	25%	26%	25%	25%	26%	27%	25%
Walking & cycling	4%	4%	3%	3%	3%	3%	3%

Freight transport

- inland freight transport volume increased from 34 billion tonne-kilometres in 1990 to 80 billion in 2020;
- dominated by road transport (more than two thirds in 2020);
- relatively high share of rail transport compared to other EU countries (26 % in 2020),
- shipping (on the Danube river) of marginal relevance;
- modal split has shifted to road transport in the early 1990ies, relatively stable since then.

Table 2.11: Freight transport² 1990–2020 in billion ton-km on Austrian territory (Source: Umweltbundesamt)

	1990	1995	2000	2005	2010	2015	2020
Road	22.4	30.0	38.5	45.2	47.3	51.7	59.2
Rail	11.3	12.3	15.3	17.3	18.2	20.3	20.5
Shipping	0.1	0.1	0.1	0.2	0.1	0.1	0.0
Aviation	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	33.9	42.5	54.0	62.6	65.6	72.1	79.8

Table 2.12: Modal split of freight transport 1990– 2020 on Austrian territory (Source: Umweltbundesamt)

	1990	1995	2000	2005	2010	2015	2020
Road	66%	71%	71%	72%	72%	72%	74%
Rail	34%	29%	28%	28%	28%	28%	26%

² Net freight – without weight of lorries transported by rail (piggyback transport) and without weight of containers

Fuel sold in Austria and used abroad

- GHG inventory shows a disproportionately high increase of GHG emissions from road transport after the mid 1990ies (compared to the inland transport demand). Caused by increasing share of the fuel sold in Austria and used abroad (“fuel export in the vehicle tank”).
- Reasons: slightly lower fuel prices than in many neighbouring countries, transit traffic on important routes for long-distance freight traffic crossing Austria, increasing transport demand due to the integration of eastern neighbour states into the European economic area (transit as well as import/export traffic).
- In 2005 about one third of the greenhouse gas emissions from transport were caused by fuel export in the vehicle tank (mainly by freight transport).
- Reduction of fuel export in the vehicle tank after 2005, stabilisation after 2010 (see Figure 2.9).

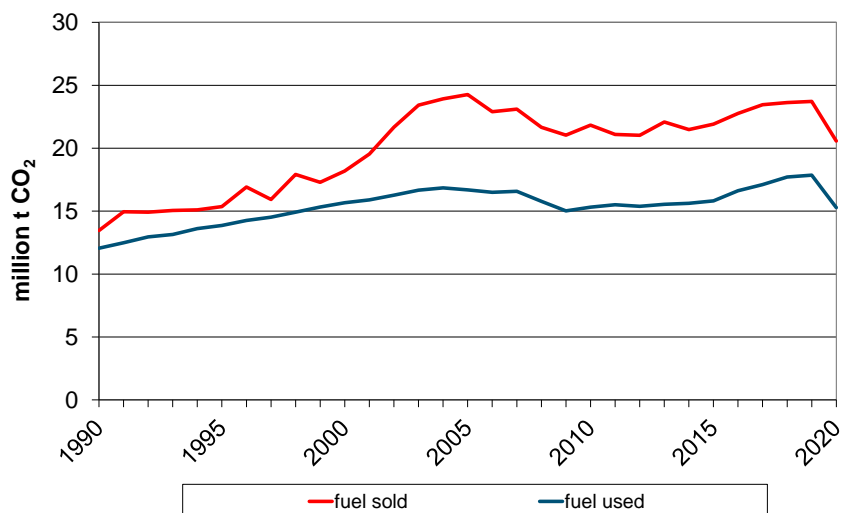


Fig 2.4: GHG emissions of road transport – calculation based on fuel sales in Austria (“fuel sold”) and on inland fuel use (“fuel used”). (Source: Umweltbundesamt)

Driving forces for emissions

- Transport accounts for more than one third of final energy demand and for more than one fourth of GHG emissions (GHG emissions +60 % since 1990);
- increasing transport demand and fuel export in the vehicle tank are the most important drivers for the emission increase;
- further increasing factors are a shift of the modal split to road transport (especially in freight transport) ;
- the compulsory blending of diesel and petrol with biofuels has slowed down the emission increase;

- efficiency improvement is a relevant driver: in freight transport mainly due to technical progress, in passenger transport also depending on occupancy rate, purchase and driving behaviour;
- see Fig. 2.5.

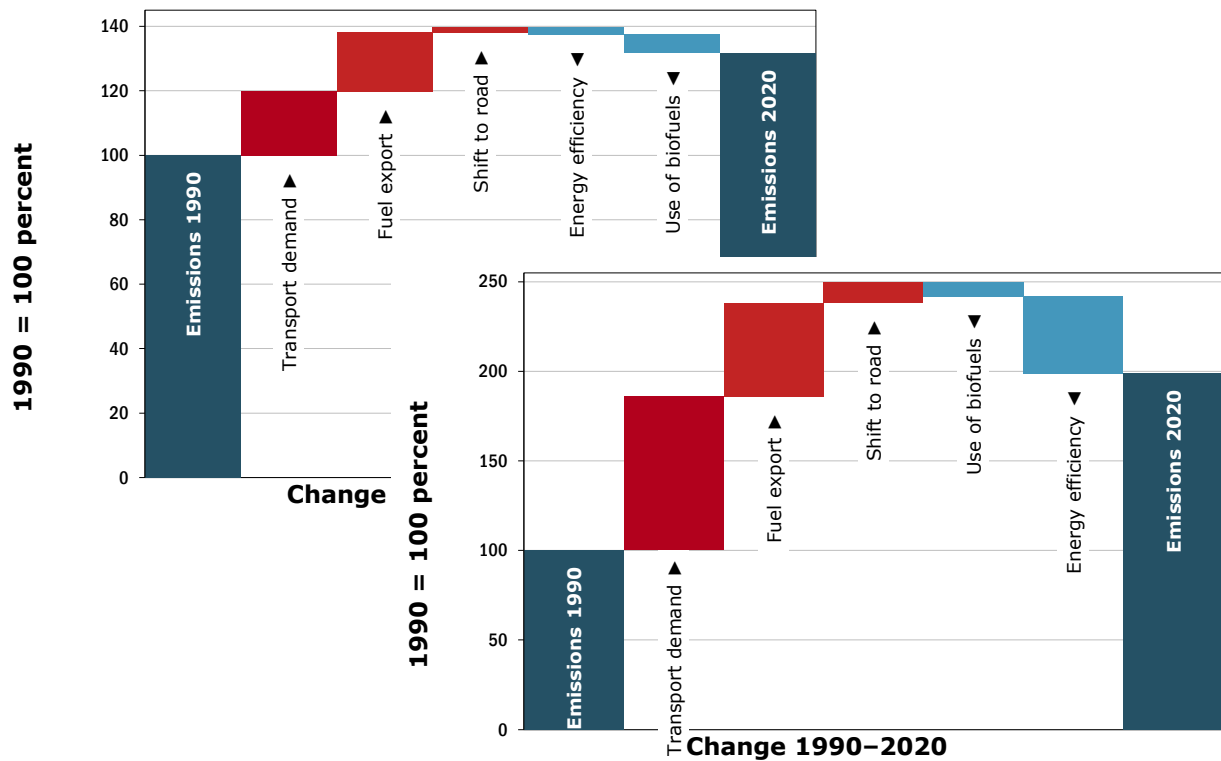


Figure 2.5: Decomposition analysis of sectoral GHG emissions – passenger transport (top) and freight transport (bottom)

2.8 Industry

General:

- Gross value added of manufacturing industries (at 2015 prices) increased by about two third from 1995 to 2020, that of construction decreased by 12 %.
- GVA of manufacturing industries dropped by 15 % due to the economic depression in 2009, but reached pre-crisis level again in 2012; GVA of construction remains below the 2009 level.
- With regard to the growth of GVA of its industrial sector since 1995, Austria ranks among the leaders within the EU-15 countries.
- Almost one fifth of Austria's economic productivity is derived directly from manufacturing industries, 7 % from construction. The most important branches of the production of goods are iron and metal products, machinery, electrical and electronic appliances, chemicals, food and vehicles.

- Compared to other industrialized countries basic materials industries still play a relevant role in Austria, industry's energy and process emissions account for more than one third of total national emissions;
- The share of iron and steel production in GHG emissions (energy and process) from manufacturing industries has increased from about 40 % in the 1990ies to about 50 % in the last decade. Production of cement and lime, pulp and paper and basic chemicals account for another third of emissions.
- Decoupling of emissions from iron and steel production from amount of steel produced with increasing production after 2000, but increasing carbon intensity during the last years parallel to decline of production. Clear decoupling of emissions from the rest of manufacturing industry from gross value added (cf. Fig. 2.6).

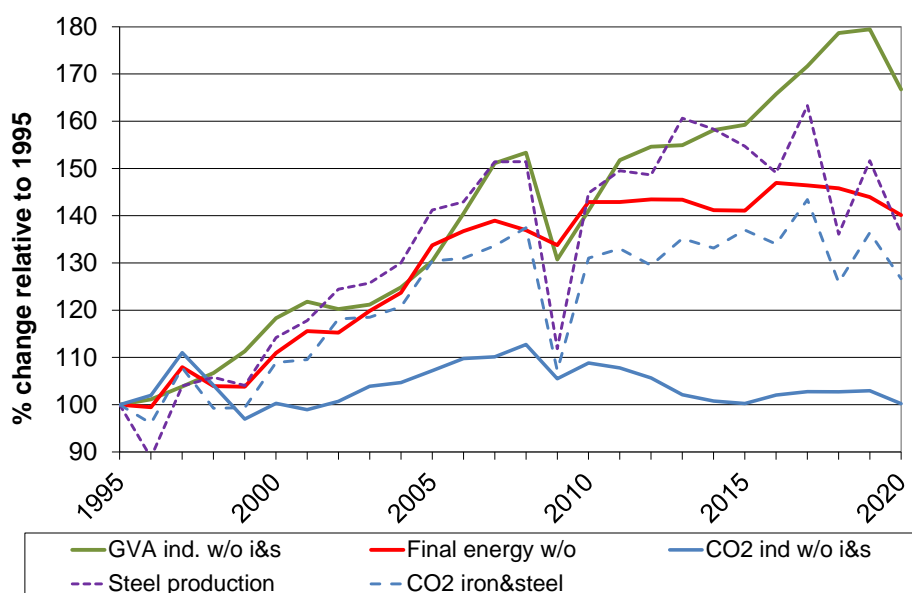


Fig. 2.6: Production of steel and CO₂ emissions; gross value added (at 2015 prices), final energy consumption and CO₂ emissions in the rest of manufacturing industries; development relative to 1995 values (Data: Statistik Austria, Umweltbundesamt)

Driving forces for emissions:

- Early decoupling of energy consumption from production growth since the mid 1970ies – final energy consumption in manufacturing industries and construction relatively constant until the mid 1990ies, gross value added increased by about 50 ;
- driving force for 45 % emission increase 1990–2017 of iron and steel industry was the 89 % increase of steel production; decline of production in the last years was stronger than decline of emissions;
- emission growth was mainly weakened by reduced energy intensity of raw iron and steel production (efficiency improvement of plants, increasing input of scrap iron);

- emission decrease in industry also as a consequence of a shift to fossil fuels with lower carbon content and the reduced share of fuels in total energy consumption (i.e. increasing share of electricity from the public grid);
- driving force for emissions increase in the rest of manufacturing industry was the increase in value added;
- decreasing factors are the higher biomass share, the reduced share of fuels in total energy consumption, shift to fossil fuels with lower carbon content and decreasing energy intensity of production (less energy demand per unit of value added).

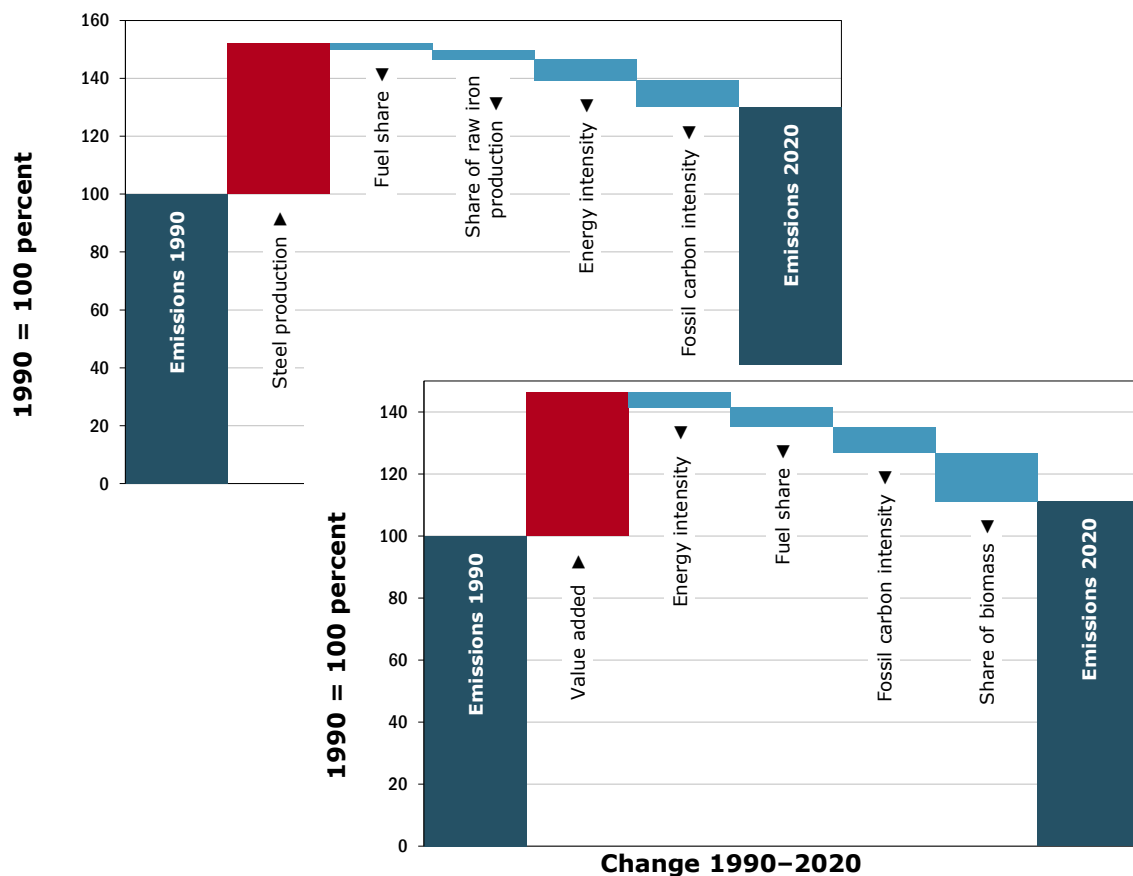


Figure 2.7 Decomposition analysis of sectoral GHG emissions – iron and steel production (top) and rest of manufacturing industries (bottom)

2.9 Waste

Solid waste:

- Total amount of waste generated in Austria in 2019 was about 71 million tonnes; excavation material accounted for almost 60 % of that amount, waste from construction for another 16 %. There was a considerable increase by one fifth since

2015, which is mainly due to the increase of excavation material (because of large railway tunnel construction projects).

- Disregarding excavation material, 64 % of total waste is recycled, 17 % is incinerated for energy recovery; 11 % is deposited to landfills, the rest undergoes other treatments.
- Waste from households and similar sources amounted to 4.5 million tonnes in 2019 (about 500 kg waste per capita); about one third was secondary material (glass, paper, metal, ...) and about one fourth organic waste, which were collected and treated separately (recycling, composting/digestion).
- Incineration of household waste has become the most important treatment (cf. Table 2.11).
- There is practically no deposition of untreated household waste in landfills any longer due to law, no input of reactive carbon, CH₄ emissions from landfills result from material deposited before 2005 and 2009 respectively.
- Treating of organic waste by composting and in biogas plants has increased since 1990, leading to some increase in emissions of CH₄ and N₂O from this subsector

Table 2.13: Treatment of household waste 1990–2019 (Source: Umweltbundesamt)

	1990	1995	2000	2005	2010	2015	2019
Direct landfill	55%	32%	27%	6%	0%	0%	0%
Mechan.-biolog. treatment	15%	7%	6%	10%	9%	7%	4%
Incineration	12%	16%	15%	31%	40%	41%	43%
Hazardous waste treatment	0.4%	0.8%	0.9%	1.4%	2.5%	2.1%	2,9%
Recycling/recovery	16%	31%	35%	36%	31%	27%	27%
Composting, fermentation	1%	13%	16%	16%	18%	22%	23%

Driving forces for emissions:

- Amount of waste from households is still increasing, but carbon content of waste deposited in landfills is now low due to mandatory treatment (compared to the 1990ies);
- Content of reactive carbon in landfills continuously decreasing, methane production as well.

Wastewater:

- Rate of connection to municipal sewage plants has increased from about 70 % of the population in 1990 to 96 % in 2020.

- Strong decrease of CH₄ emissions from cesspits (by more than 80 % compared to 1990).
- Increase of N₂O emissions from wastewater treatment plants (more wastewater collected, population increase by 16 %).

2.10 Building stock and urban structure

General:

- About one fifth of the Austrian population lives in Vienna, the only city with a population exceeding one million; another 10 % live in the five cities with 100,000 to 300,000 inhabitants each;
- about one third of the Austrian population live in the metropolitan region of Vienna (according to the definition of eurostat)³;
- more than half of all Austrians live in communes with less than 10,000 inhabitants;
- rural communes partly with a quite low density of population and buildings, especially in the northern and south-eastern parts of Austria, leading to a high share of single family homes and unfavourable conditions for public transport;
- land use planning is a competence of municipalities and Federal Provinces;
- 44 % of the dwellings (with principal residences) are located in buildings with only one or two dwellings, about one third in buildings with 10 or more dwellings (latest survey 2011);
- high share of single-family houses with an inherently higher energy demand compared to multi-storey buildings;
- number of households and dwellings increased to a much higher extent than population did: Population +16 %, households and dwellings +36 % (1990–2020);
- useful floor space has increased even faster (+50 %);
- most dwellings (>90 %) are equipped with central heating (including single storey heating and district heating), considerable improvement compared to 1990 (<60 %);
- one quarter of existing buildings is quite new (built after 1990), 15 % quite old (built before 1919), high share (about 40 %) of buildings from the period 1945 to 1980 when thermal efficiency was no priority;
- efficiency improvement measures for buildings and heating systems have lead to a clear decoupling of emissions from the growth of population and number of dwellings (cf. Fig. 2.8).

³ <https://ec.europa.eu/eurostat/web/metropolitan-regions/background>

Table 2.14: Number of buildings with principal residences 1991 and 2011 [1000] (Source: Statistik Austria)

	1991	2011
Buildings with 1-2 dwellings	1,257	1,523
Buildings with 3-10 dwellings	121	179
Buildings with >10 dwellings	55	71
Total	1,433	1,773

Table 2.15: Number dwellings with principal residences 1991 and 2011 [1000] (Source: Statistik Austria)

	1991	2011
In buildings with 1-2 dwellings	1,483	1,806
In buildings with 3-10 dwellings	662	976
In buildings with >10 dwellings	1,025	1,334
Total	3,170	4,116

Table 2.16: Number of secondary residences 1991 and 2011 [1000] (Source: Statistik Austria)

	1991	2011
Total number of buildings	208	275
Total number of dwellings	223	325

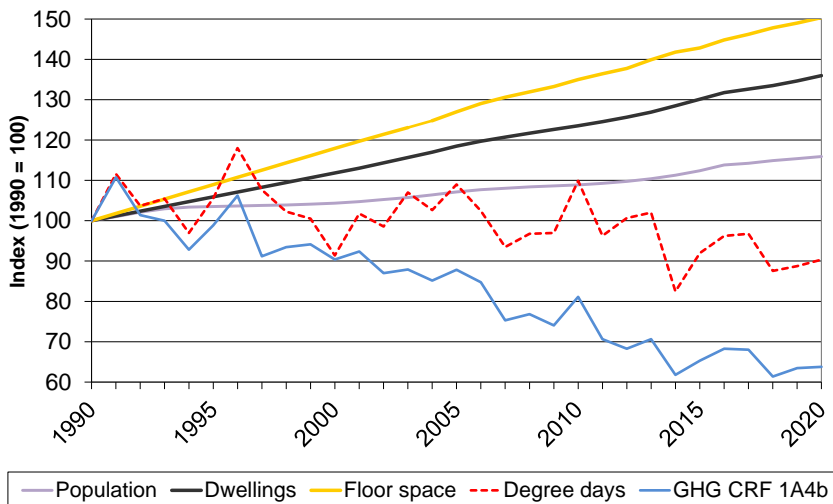


Fig. 2.8: Development of population, number of dwellings (main residences), floor space, heating degree days and GHG emissions from households 1990–2020 (Data: Statistik Austria, Umweltbundesamt)

Driving forces for emissions:

- Emissions from space heating in the household sector have decreased by more than one third; increase of dwellings and floor space would have led to an emission increase of more than 40 % (cf. Fig. 2.9);
- most important drivers for reduction are the increased efficiency of buildings and heating systems (i.e. lower final energy demand per m² due to renovation of existing buildings and better thermal standards of new buildings), increased share of biomass and district heating in the final energy demand for heating;
- further reductions of sector emissions due to lower fossil carbon intensity (i.e. shift to gas), increased use of ambient heat (solar thermal and heat pumps) and an increasing share of electricity in final energy demand.

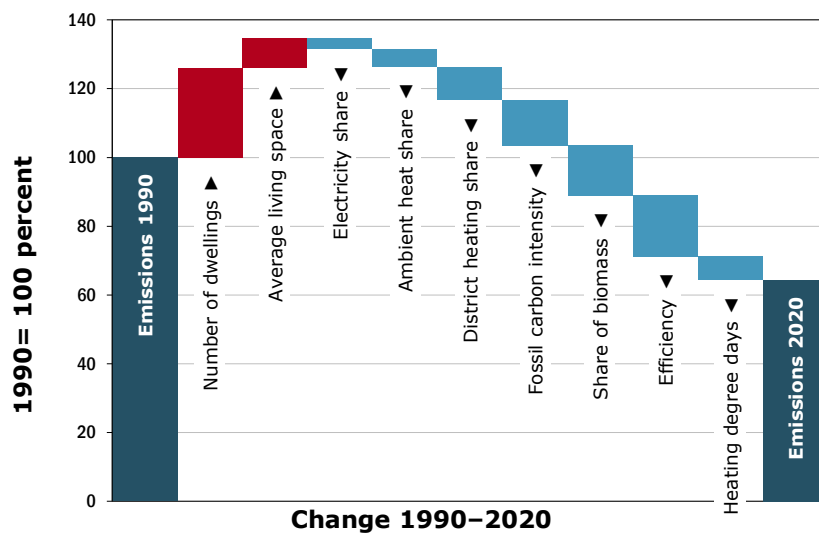


Figure 2.9: Decomposition analysis of sectoral GHG emissions from households

2.11 Agriculture

- Area used for agriculture has a share of about one third of the Austrian total territory;
- extensive grassland production with cattle stocking dominate in the Alpine regions, while arable farming is concentrated on the lowlands and basins and especially in the east of the country;
- Share of agriculture and forestry in GDP: 1.1 % in 2020.
- Number of agricultural holdings was about 110,000 in 2020 and has decreased significantly throughout the last decades: -58 % since 1990 (holdings with land used for agriculture) ;

- still small structured agriculture, but clear trend to increasing farm size – share of holdings with area below 10 ha has decreased from 60 % in 1990 to 38 % in 2020; holdings with area > 30 ha increasing (share and absolute numbers);
- arable land and grassland have comparable shares, other areas used in agriculture (mainly vineyards and orchards) account for about 3 %; grassland with mountain pastures make up one quarter of total grassland, other grassland with extensive use accounts for another quarter;
- about two third of the holdings and of the agricultural area are situated in less favoured areas (mountainous areas, other less favoured areas and small-structured areas);
- the number of Austrian organic farms increased from about 1,500 in 1990 to about 24,000 in the year 2020 (more than one fifth of Austrian farms who manage about one fourth (appr. 680,000 ha) of the agricultural area in Austria);
- the Austrian Agri-environmental programme ÖPUL aims to preserve and promote agricultural practices that make a positive contribution to environment and climate, measures include e. g. renouncement of mineral fertilizers, the establishment of green covers on arable land, the grazing of livestock and the maintaining of permanent grassland as well as reduced tillage or the planting of diversified crop rotations; about four fifth of the agricultural holdings participated in the programme; the total area of land for which ÖPUL support was granted in 2020 accounts for a share of around 80% of agriculturally used areas (without alpine pastures);
- cattle stock – most relevant for GHG emissions from agriculture – has decreased by more than 10 % from 2000 to 2020; cattle have a share of about 60 % of total livestock units, swine make up for another quarter.
- average milk yield of dairy cows has increased by 40 % (from 5.2 t/animal.year in 2000 to 7.3 in 2020) and total milk production has increased by about one fifth; emission intensity of milk production has decreased;
- use of synthetic fertilizer has decreased by slightly more than one tenth from 2000 to 2020;
- emissions from the agriculture sector have decreased by more than 6 % from 2000 to 2020 and by 14 % from 1990 onwards.

Table 2.17: Farm structure – number of holdings (with land used for agriculture) [1000]

Farm size [ha]	1990	2000	2010	2020
< 10	156.3	112.7	77.4	41.3
10 to < 30	80.3	65.5	49.7	40.7
30 to < 100	21.7	20.3	23.6	25.8
>= 100	3.3	2.9	2.8	2.4
Total [1000]	261.7	201.5	153.5	110.2

Table 2.18: Land use in Austria 2020 in 1000 ha (Data: Farm Structure Survey)

	2020
Arable land	1,323
Grassland intensive use	790
Grassland extensive use	94
Mountain pastures	326
Vine-yards, orchards, etc.	70

Table 2.19: Livestock in million head

	1990	2000	2010	2020
Cows	0.95	0.86	0.79	0.72
Other cattle	1.63	1.31	1.22	1.14
Swine	3.69	3.20	3.08	2.69
Poultry	13.82	10.15	10.15	14.25

2.12 Forest

- Forests have a share of almost half of the Austrian total territory, growing from 3,924 kha in the 1990s to more than 4.000 kha during the last observation period of the national forest inventory;
- number of holdings with forests was 137,000 in 2020, five sixth of the holdings have less than 20 ha forest and account for about one fifth of forest area (most of them holdings with forestry as well as agriculture);
- about one fifth of Austrian forests is publicly owned;
- about one third of forest area has protective function against natural hazards;
- coniferous trees make up about 60 % of the forest area, steadily declining from 70 % in the 1990s; deciduous trees about 25 % (rest: shrub and clearance);
- almost 1.2 billion solid cubic meter of standing timber in Austrian forests, less than 90 % of annual increment have been harvested throughout the last years;
- high volume of damaged wood throughout the last years, in 2020 about half of total wood harvested; reasons are wind throw as a consequence of extreme weather events such as storms as well as bark beetle calamities after extensive drought periods;
- 16.8 million solid cubic meter wood (w/o bark) harvest in 2020, which is a slightly above the average of the last ten years.

3 Greenhouse gas inventory information

The Austrian greenhouse gas inventory was compiled according to the revised UNFCCC reporting guidelines according to Decision 24/CP.19 and the IPCC 2006 Guidelines for National Greenhouse Gas Inventories.

Austria, as many other European Countries, uses the CORINAIR calculation method (Core Inventory Air) for quantifying national emissions. The national project covering the entire present assessment of Air Emissions in Austria during the reported period is the Austrian Air Emission Inventory ("*Osterreichische Luftschadstoff-Inventur – OLI*"). The OLI figures for Austria's national emissions resulting from the project mentioned above have been transferred to the IPCC format using CORINAIR standard procedures, in order to comply with UNFCCC reporting obligations to ensure comparability of the reported data. No corrections (neither for temperature nor for electricity production share from hydropower) have been applied. Bunker fuels have not been included in the national totals, but tabled separately.

This report shows data from the inventory for the period 1990 to 2020 (NIR 2022 submitted to the UNFCCC secretariat in April 2022). Differences to figures reported in the last national communication are due to recalculations.

3.1 Summary tables

5. Summary information from the national GHG inventory ... shall be provided for the period from 1990 (or another base year) to the latest year reported in the most recent annual inventory submission available (the most recent inventory year). The information provided in the national communication should be consistent with that provided in the most recent annual inventory submission available (for the year prior to the due date of submission of the national communication) and any differences should be fully explained.

6. For the purpose of the national communication, complete inventory information need not be provided. However, at a minimum, Parties shall report the summary of GHG emissions and removals, including the information expressed in carbon dioxide (CO₂) equivalent in emission trend tables provided in the common reporting format contained in the UNFCCC Annex I inventory reporting guidelines. Parties may elect to replicate the information reported in the biennial report submitted with the national communication. The tables may be provided as an annex, as part of the national communication rather than in the main text.

CRF summary tables 10s1, 10s2, 10s3, 10s4, 10s5 and 10s6 are shown in Annex B.

3.2 Descriptive summary

7. In the main text of the national communication, Parties should provide a descriptive summary and figures illustrating the GHG emissions reported in the summary tables referred to in paragraph 6 above. Parties should provide a description of the factors underlying emission trends.

Overview:

- Total emissions of the greenhouse gases⁴: 78.4 Mt CO₂ equivalent in 1990 and 73.6 Mt in 2020, decrease of 4.8 Mt;
- emissions peaked in 2005 with 92.0 Mt CO₂-eq, showed a decreasing trend during the following ten years, a stagnation thereafter and a sharp decrease in 2020 due to the pandemic;
- increase mainly in the transport sector, which contributed less than one fifth to total emissions in 1990 and near to one third in 2019 (29 % in 2020);
- two third of the emissions result from fuel combustion;
- CO₂ emissions per capita amounted to 7.5 t in 2020 and total greenhouse gas emissions per capita to 8.3 t CO₂ eq., GHG emissions per GDP (at 2010 prices) to 183 kg CO₂ eq. per € 1000.

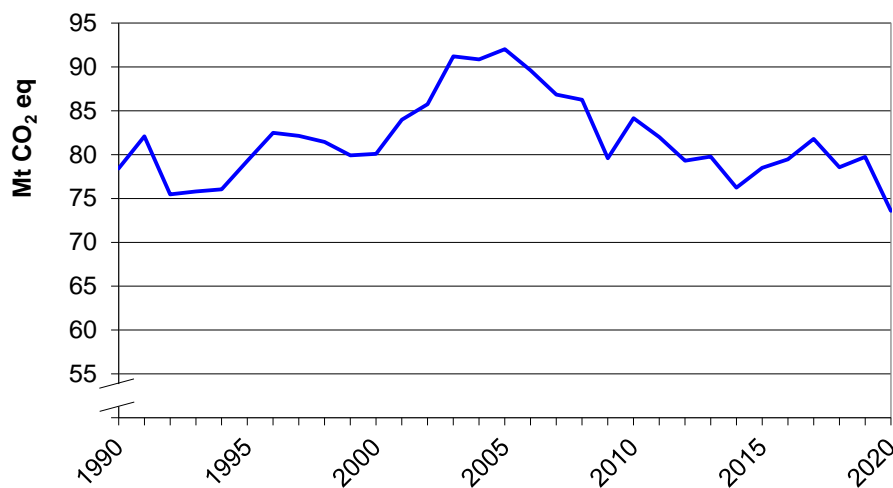


Figure 3.1: Trend in total GHG emissions 1990–2020 (excluding LULUCF)

⁴ CO₂, N₂O, CH₄, HFCs, PFCs, SF₆ and NF₃ (excluding Land Use, Land-Use Change and Forestry)

Table 3.1: GHG emissions by sector and gas 1990–2020

Sector	GHG emissions (kt CO ₂ eq)					Change (%)		Share (%)	
	1990	2000	2010	2019	2020	1990-2020	2019-2020	1990	2020
	1. Energy	52,804.84	55,253.35	59,419.06	54,976.93	49,929.24	-5.4	-9.2	67.3
A. Fuel combustion	52,102.84	54,756.67	58,951.03	54,629.94	49,600.29	-4.8	-9.2	66.4	67.4
A.1 Energy Industries	14,011.18	12,318.38	13,756.08	10,177.39	8,807.30	-37.1	-13.5	17.9	12.0
A.2 Manufacturing industries and construction	9,845.39	10,034.67	11,351.82	10,855.78	10,549.50	7.2	-2.8	12.6	14.3
A.3 Transport	13,957.03	18,804.83	22,585.07	24,507.72	21,183.03	51.8	-13.6	17.8	28.8
A.4 Other sectors	14,253.37	13,556.99	11,214.01	9,054.35	9,026.80	-36.7	-0.3	18.2	12.3
A.5 Other	35.87	41.80	44.05	34.70	33.67	-6.1	-3.0	0.0	0.0
B. Fugitive emissions from fuels	702.00	496.68	468.03	346.99	328.94	-53.1	-5.2	0.9	0.4
C. CO ₂ transport and storage	NO	NO	NO	NO	NO				
2. IPPU	13,573.52	14,491.01	15,680.40	16,519.26	15,489.29	14.1	-6.2	17.3	21.0
3. Agriculture	8,118.59	7,375.64	6,926.14	6,984.71	6,964.25	-14.2	-0.3	10.4	9.5
4. LULUCF	-12,064.61	-16,561.46	-3,777.68	-2,629.31	-1,252.91	-89.6	-52.3	-15.4	-1.7
5. Waste	3,926.27	2,965.02	2,124.63	1,259.84	1,209.24	-69.2	-4.0	5.0	1.6
6. Other	NO	NO	NO	NO	NO				
<i>Gas</i>									
CO ₂	62,145.25	66,149.78	72,006.41	67,936.19	62,037.45	-0.2	-8.7	79.2	84.3
CH ₄	10,110.68	8,224.69	7,007.82	5,914.33	5,819.44	-42.4	-1.6	12.9	7.9
N ₂ O	4,511.46	4,355.29	3,388.73	3,550.73	3,497.99	-22.5	-1.5	5.8	4.8
HFCs	2.44	682.37	1,329.22	1,851.03	1,756.59		-5.1	0.0	2.4
PFCs	1,182.79	87.87	78.05	38.45	29.89	-97.5	-22.3	1.5	0.0
SF ₆	470.61	574.53	335.87	436.42	438.63	-6.8	0.5	0.6	0.6
NF ₃	NO,NA	10.51	4.12	13.61	12.04		-11.5		0.0
Total without LULUCF	78,423.22	80,085.03	84,150.23	79,740.74	73,592.02	-6.2	-7.7	100.0	100.0
Total with LULUCF	66,358.61	63,523.56	80,372.54	77,111.43	72,339.10	9.0	-6.2		

Trend by gas:

- Emissions dominated by CO₂ with 84 % in 2015; CH₄ 8 %, N₂O 5 %, F-gases 3 %;
- CO₂ emissions in 2020 at the same level as in 1990, increasing trend from 1990 to 2005, decreasing afterwards and stagnation during the last years, 10 % drop in 2020; increase due to trend in sector fuel combustion, especially increasing energy consumption in the transport sector;

- CH₄ continuously decreasing since 1990 as a result of the trend in the sectors waste and agriculture;
- N₂O decreasing after 2000, mainly due to a drop of emissions in industrial processes; currently more than two third of emissions from agriculture, which have shown a decreasing trend mainly in the 1990ies;
- increase of F-gas emissions: Emissions of SF₆ and PFCs have clearly decreased because of legal restrictions and the termination of primary aluminium production respectively, HFCs increasing due to use as substitute for HCFCs, NF₃ is of minor relevance.

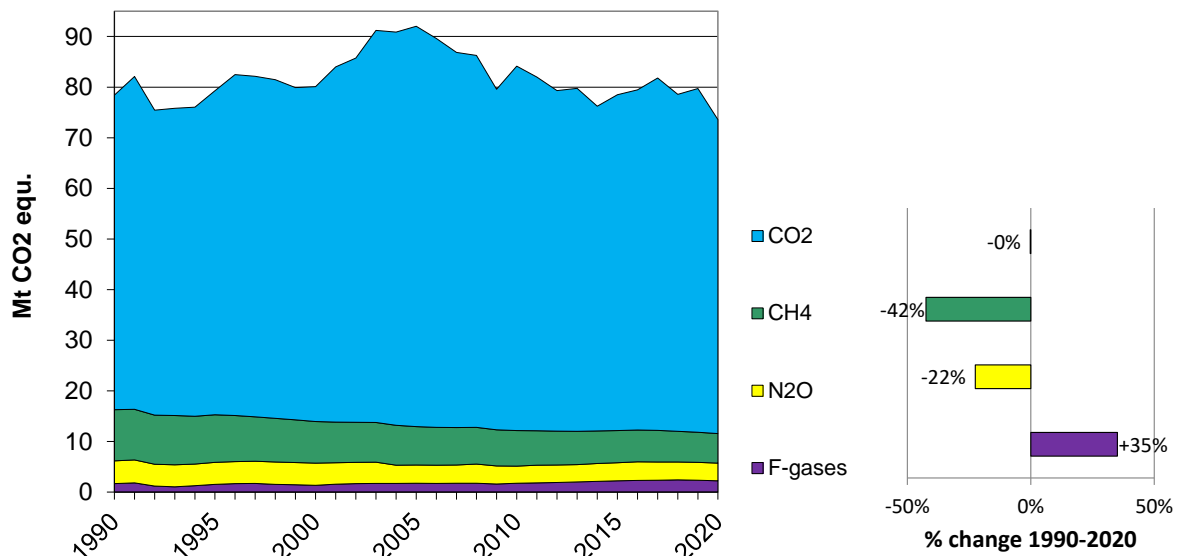


Figure 3.2: GHG emission trend (excluding land-use change and forestry) by gases

Trend by sector:

- Sectoral shares in total GHG 2015: Transport/CRF 1.A.3, 29 %, IPPU/CRF 2 21 %, manufacturing industries and construction/CRF 1.A.2 14 %, other sectors/ CRF 1.A.4 12 %, energy industries/CRF 1.A.1 12 %, agriculture/CRF 4 9 %, waste/CRF 5 2%. The share of sectors 1.A.1, 1.A.4 and 5 have decreased by some percentage points, the share of 1.A.3 has increased considerably (from 18 % in 1990) and that of 1.A.2 and 2 moderately;
- despite increasing electricity and district heating demand, emissions from energy industries decreased (-37 % from 1990 to 2020) due to a shift from solid and liquid fossil fuels to gas and biomass, increasing contribution of hydro and wind power, more electricity imports as well as increasing efficiency of production;
- production increase in manufacturing industries and construction was the main driving force for the increase of emissions, but emission increase was only 7 % due to

a fuel switch to gas and biomass as well as increasing use of electricity instead of combustion processes;

- transport emissions increased by 7.2 Mt CO₂ eq. or 52 % (even more before the pandemic: +10.6 Mt or +76 % 1990–2019), caused by increasing inland road transport demand (especially freight transport, but also passenger transport) and by significant increase of fuel export in the vehicle tank; use of biofuels since 2005 and more efficient vehicles in freight transport have attenuated emission growth;
- substantial decrease of emissions from “other sectors” (CRF 1.A.4, -37%) despite population growth and increasing number of dwellings, due to improvement of energy efficiency of the building stock and heating systems, fuel shift from coal and oil to gas and biomass as well as increased use of district heating and heat pumps;
- 14 % increase of emissions from industrial processes and product use (+22 % from 1990 to 2019) is mainly due to increase in metal production (iron and steel causing three quarters of the sector’s emissions, production increase by about 50 % 1990 to 2019, drop in 2020), efficiency measures in the steel industry and by N₂O abatement measures in the chemical industry have slowed down the increase; emission increase of F-gases (see above) contributes to the trend but is small in absolute figures;
- emission decrease in the sector agriculture (-14%) is mainly due to decreasing livestock numbers and lower amounts of fertilizers applied on agricultural soils;
- substantial emission decrease in the waste sector (-69%) due to increasing waste separation, reuse and recycling activities, obligatory pre-treatment of deposited waste with high carbon content and recovery of landfill gas.

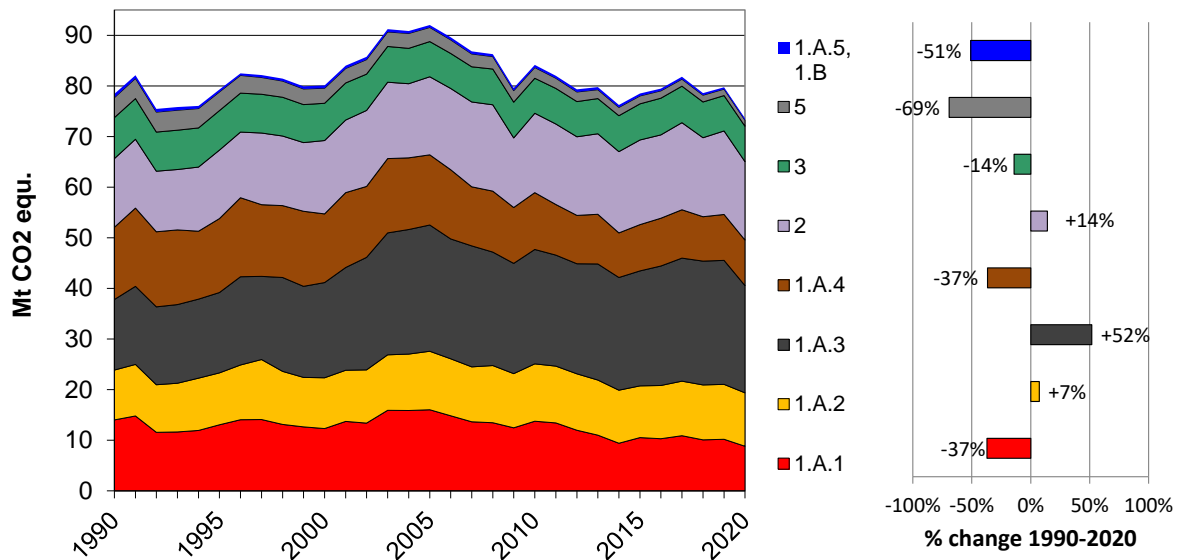


Figure 3.3: GHG emission trend by sectors

3.3 National inventory arrangements

8. Parties shall provide summary information on their national inventory arrangements in accordance with the reporting requirements related to national inventory arrangements contained in the UNFCCC Annex I inventory reporting guidelines and on any changes to those national inventory arrangements since their previous national communication or biennial report.

As a Party to the United Nations Framework Convention on Climate Change (UNFCCC), Austria is required to produce and regularly update National Greenhouse Gas (GHG) Inventories. *Umweltbundesamt* (Environment Agency Austria) is identified as the single national entity *with* overall responsibility for the national inventory by law. The responsibilities for the inventory planning, preparation and management are specified and are all allocated within *Umweltbundesamt*.

The national greenhouse gas inventory is prepared by the inspection body for GHG inventories within *Umweltbundesamt*, an inspection body accredited according to the International Standard ISO 17020 General Criteria for the operation of various types of bodies performing inspections. The Quality Management System (QMS) also includes the necessary procedures to ensure quality improvement of the emission inventory. These comprise documentation and attribution of responsibilities of any discrepancy found and of the findings by UNFCCC review experts in particular.

The inventory preparation, including identification of key categories, uncertainty estimates and QC procedures, is performed according to the 2000 Intergovernmental Panel on Climate Change (IPCC) Good Practice Guidance and Uncertainty Management of Greenhouse Gas Inventories. The inventory management as part of the QMS includes a control system for data and calculations, for records and their archiving as well as documentation on QA/QC activities. This ensures the necessary documentation and archiving for future reconstruction of the inventory and for the timely response to requests during the review process.

Part of the legal and institutional arrangements in place as basis for the national system concerns the data availability for the annual compilation of the GHG inventory. The main data source for the Austrian inventory preparation is the Austrian statistical office (Statistics Austria). The compilation of several statistics is regulated by European and Austrian statistical legislation and partly complemented by contracts at national level. Other data sources include reporting obligations under national and European regulations and reports of companies and associations.

The inventory preparation at *Umweltbundesamt* is supported by a quality management system that embeds an inventory improvement plan. This centralized improvement

management guarantees the cost-effective allocation of resources to programmes specific for inventory improvement. Improvement programmes are formulated in a continuous process in all inventory sectors and cover the quality of country-specific emission factors, activity data and models.

Detailed information on the national inventory system has been reported in Austria's Initial Report⁵ according to Decision 13/CMP.1. The Austrian national system was reviewed during the in-country review of the initial report of Austria (February 2007). Para 10 of the review report⁶ states that the national system has been developed in line with the relevant guidelines and can fulfil the requirements of the Kyoto Protocol as well as other obligations regarding its air emissions inventory that Austria has to comply with. More details of the inventory arrangements can be found in Section 1.2 of the Austrian National Inventory Report 2022.⁷

There were no changes of the inventory system since the last Biennial Report.

⁵ http://unfccc.int/files/national_reports/initial_reports_under_the_kyoto_protocol/application/pdf/at-initial-report-200611-corr.pdf

⁶ <http://unfccc.int/resource/docs/2007/irr/aut.pdf>

⁷ <https://www.umweltbundesamt.at/fileadmin/site/publikationen/rep0811.pdf>

4 Policies and measures

9. In accordance with Article 12, paragraph 2, of the Convention, Parties shall communicate information on policies and measures adopted to implement their commitments under Article 4, paragraph 2(a) and (b), of the Convention, which need not have the limitation or reduction of GHG emissions or the enhancement of removals as a primary objective.

10. In their reporting, Parties should give priority to policies and measures, or combinations of policies and measures, that have the most significant impact on GHG emissions and removals, and they may also indicate those that are innovative and/or effectively replicable by other Parties. Parties may report on adopted policies and measures and those in the planning stage, but should clearly distinguish them from implemented policies and measures. ...

12. Parties should report on actions taken to implement their commitments under Article 4, paragraph 2(e)(ii), of the Convention, which requires them to identify and periodically update their own policies and practices that encourage activities that lead to greater levels of anthropogenic GHG emissions than would otherwise occur. Parties should also provide the rationale for such actions in the context of their national communications.

13. Parties are encouraged to provide, to the extent possible, detailed information on the assessment of the economic and social consequences of response measures.

- **Policies that lead to greater levels of anthropogenic GHG emissions:** The current governmental states a clear commitment to an end to funding and subsidies for fossil infrastructures. Consequently the existing data and information basis on harmful subsidies (climate mitigation) have been updated and extended: A study has been commissioned to serve as a robust basis for the next steps with regard to the reduction or elimination of these subsidies. Further action in this respect will be coordinated between the Ministry of Finance and the Ministry for Climate Action. The current war between the Russian Federation and Ukraine has however led to a sharp increase in energy prices, thus dampening efforts to reduce respective subsidies.
- A previous study (from 2016) had been prepared by the Austrian Institute of Economic Research and funded by the Austrian Climate and Energy Fund.⁸ The study has a broad look on (indirect) subsidies and tax exemptions, including those resulting from EU provisions (free allocation in the ETS, tax exemptions of fuels used for electricity production) and international regulations (taxation regarding international aviation and shipping). It also includes subsidies from the housing subsidy schemes for the construction of new buildings, although the subsidy schemes require advanced energy standards to be met. We therefore do not share all aspects of the outcome of the study. Main identified counterproductive (indirect) subsidies are a cap on energy taxes

⁸ <http://www.wifo.ac.at/wwa/pubid/58641>

for energy intensive industries (enacted to avoid disadvantages in international competition), lower tax rate for diesel fuel compared to gasoline (as a transport subsidy to support the export oriented Austrian industry) and distance-dependant tax reductions for commuters (enacted to ease mobility of workers).

- **Assessment of economic and social consequences:**
 - At the national level, there are mandatory government-wide impact assessments for federal legislative acts, which cover economic, environmental and social consequences of proposed legislation, as appropriate. These assessments target all policies and measures, including measures to combat climate change, and require information on: The Austrian Federal budget, economic impacts (GDP, employment, costs for SMEs, etc.), social impacts (consumers, youth, etc.), environmental impacts (climate change; air and water quality; biodiversity; energy and waste), gender equality. The level of detail of the assessment depends on the extent of the expected impacts. Impact assessment are prepared by the administrative units responsible for the proposal, supported by a common IT tool; resulting documents are published on the website of the Austrian Parliament as part of the package of accompanying materials of legislative proposals.
 - Austrian policies are determined by EU policies to a considerable extent. EU legislation is subject to extensive impact assessments (preparation usually supported by external consultants). Information on these impact assessments can be found in the EU NC8 and BR5.

4.1 Policymaking process

17. The national communication should describe the overall policy context, including any national targets for GHG mitigation. Strategies for sustainable development, long-term mitigation strategies or other relevant policy objectives may also be covered.

18. The national communication should provide a description of the way in which progress with policies and measures to mitigate GHG emissions is monitored and evaluated over time. Institutional arrangements for the monitoring of GHG mitigation policy should also be reported in this context.

4.1.1 General information

Policy making and implementation is shaped by Austria's federal structure. Decisions related to policies and measures can be taken at different levels: Legislative measures at the Federation level and the level of the federal provinces ("Länder"), administrative measures at both levels, and decision-making of districts and municipalities. Due to the membership in the European Union an additional level of legislation exists since 1995.

The Federal Constitution Act contains detailed provisions on the distribution of legislative power between the Federation and the federal provinces. For different issues, the Constitution Act prescribes either

- legislative and executive power of the Federation, or
- legislative power for the Federation and executive power for the federal provinces, or
- legislative power of the Federation with respect to fundamental principles and legislative power of the federal provinces with respect to implementation issues as well as executive power for the federal provinces, or
- legislative and executive power of the federal provinces. (All issues not explicitly regulated in the Constitution Act fall in the competence of the federal provinces.)

Legislation at EU level, adopted by EU Council and Parliament, has either to be transposed into national law at the level of Federation and federal provinces (directives) or is directly applicable in all Member States (regulations).

With regard to matters related to GHG emissions and climate change, responsibility for important policies is shared among the different levels, e. g.

- Federal jurisdiction for issues of taxation, industry and trade, crisis management for energy, highway and railway infrastructure and motor vehicles;
- Jurisdiction of the federal provinces for buildings construction, small-scale heating systems, regional land-use planning, road construction at regional level;
- Shared jurisdiction of Federation and federal provinces for energy policy, waste management, agriculture;
- Jurisdiction of municipalities for local land-use planning, public transport, local road construction.

Private business affairs of Federation, Länder and municipalities (e.g. procurement, public buildings) are managed independently.

4.1.2 Institutional arrangements

- At the level of the Federation, the Minister for Climate Action, Environment, Energy, Mobility, Innovation and Technology is responsible for issues of climate change as well as for the important sectors energy and transport (responsibilities had been distributed over different ministries before). The responsibilities are stipulated by the *Federal Ministries Act*.
- Institutional, legal, administrative and procedural arrangements with respect to Austria's target under the EU Effort Sharing Decision (ESD) are based on the Austrian *Climate Change Act*.
- The National Climate Change Committee supports the co-ordination of climate change related measures. It comprises high level representatives of the federal ministries involved in climate change and the Länder, of the "Social Partners", as well as

representatives from science, energy and industry interest groups, environmental NGOs and the political parties represented in the first chamber of the Parliament.

- Temporary committees and working groups had been established for the development of the National Energy and Climate Plan (NECP) in 2019. Comparable expert groups and coordination groups are currently working on the update of the NECP.
- CHANGES compared to latest BR: As a result of the elections in autumn 2019, a new government has taken office in January 2020. The directorates for environment, climate change and energy have been transferred from the former Federal Ministry for Sustainability and Tourism to the former Federal Ministry for Transport, Innovation and Technology, creating the new Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology.

4.1.3 Targets

- 2020 GHG emission reduction target for emissions not covered by the EU emissions trading system has been laid down in EU legislation, for Austria -16 % compared to 2005 with a mandatory target path for 2013–2020; represents EU-internal effort sharing for the EU NDC, which is fulfilled jointly by the EU and its Member States; sectoral targets laid down in the Austrian Climate Protection Act (*Klimaschutzgesetz*).
- 2020 targets from EU legislation also for the share of renewable energy (34 % of gross energy consumption) and for energy efficiency (indicative national target: Primary energy consumption of 31.5 Mtoe and final energy consumption of 25.1 Mtoe).
- 2030 GHG emission reduction target for emissions not covered by the EU emissions trading system has been laid down in EU legislation, for Austria -36 % compared to 2005 with a mandatory target path for 2021–2030; revision of the target is under way with a target of -48 % for Austria in Commission proposal.
- 2030 targets for renewable energy and energy efficiency have been laid down in the National Energy and Climate Plan (requested by EU legislation): Increase of the share of renewable energy in final energy consumption to 46–50 % and improvement of the primary energy intensity by 25–30 % (which corresponds to a maximum consumption of 30.76–28.71 Mtoe).
- The Austrian Long Term Strategy, which has been adopted in 2019 under the previous Federal Government, has climate neutrality in 2050 as main target (climate neutrality: emissions do not exceed removals).
- Climate Neutrality by 2040 is part of the programme of the current Federal Government; no legal status but a declaration of the intention of the governing coalition which has taken office in 2020.
- Targets have been adopted other levels of administration; e. g. in its government programme from 2020 the provincial government of Vienna has declared the intention to reach climate neutrality in 2040 at provincial level. Local governments may set individual climate related targets (which are not legally binding).

4.1.4 Implementation and enforcement

- Plans and programmes like the National Energy and Climate Plan or the Long Term Strategy are usually not legally binding. The NECP is a document requested by EU legislation and has been adopted by the Federal Government; it contains targets and measures, which have to be implemented by law.
- Law making at the level of the Federation usually starts with the draft of a legal act, developed by a ministry. The draft has to be (informally) agreed in the government coalition and (formally) adopted by the Council of Ministers for submission to the Parliament. The draft is discussed in the relevant Parliament committee and adopted in the plenary. An act may foresee delegated power to enact secondary legislation by a federal minister. Comparable processes exist at provincial level.
- As there is no uniform legal basis for national measures to mitigate climate change, legislative arrangements are quite different for the implementation of measures. Areas of responsibility are spread among federal ministries as well as between the Federation, provinces and municipalities (cf. Section 4.1.1). The legal basis for the individual instruments ranges from legislation for public subsidies or taxation to market regulation to technical regulations of motor vehicles or buildings. Administrative procedures for implementation and monitoring are different for the diversity of measures.
- The same must be said for enforcement rules, which need to be laid down in the respective legal acts as appropriate. Enforcement provisions in the EU ETS are of course quite different from those in non-ETS sectors, such as housing or transport. The Emissions Trading Act, for example, provides for monetary sanctions for non-compliance with rules under the EU-ETS, e.g. sanctions of at least EUR 100 per tonne of CO₂ eq emissions in case a company does not surrender fully and in time emission allowances amounting to its verified emissions in a given year. On the other hand, subsidies for climate action must be repaid by companies or individuals according to the contractual obligation, if conditions for receiving the subsidy are not met.

4.1.5 Monitoring of progress

- Sectoral data of the GHG inventory gives information on the progress of various measures. Environment Agency Austria is responsible for the inventory (see Section 3.3) the agency also annually publishes a report with sectoral details of emission trends and reasons for emission changes.
- Austria's Climate Change Act sets the general framework for the evaluation and progress documentation of Austria's climate policies. A progress report has to be prepared by the Minister for Climate Action on an annual basis for presentation and discussion both in the National Climate Committee and the Parliament. If the overall annual targets are missed,

- A monitoring process has also been established at EU level: Member States report to the European Commission a multitude of data on GHG emissions, renewable energy and energy efficiency and related policies and measures biennially, based on the Governance Regulation ((EU) 2018/1999). If there is a risk for a Member State to miss the targets, the Commission gives recommendations to Member State.

4.2 Policies and measures and their effects

19. The presentation of each policy or measure shall include information on each of the subject headings listed below. The presentation of each policy or measure should be concise and include the details suggested after each subject heading as follows: (a) Name of policy or measure; (b) Sector(s) affected; (c) The GHG(s) affected; (d) Objective and/or activity affected; (e) Type of instrument; (f) Status of implementation (g) Brief description of the policy or measure; (h) Start year of implementation; (i) Implementing entity or entities. (j) Estimate of mitigation impact.

20. In the description of each policy or measure or set of complementary measures reported, Parties shall include, as appropriate, a quantitative estimate of the impact of individual policies or measures or collections of policies and measures (if such estimation is not possible, Parties shall explain why), including estimated changes in activity levels and/or emissions and removals due to adopted and implemented policies and measures reported and a brief description of estimation methods. Estimates should be presented for a particular year, ending in either a zero or a five, following the most recent inventory year.

21. Parties may also provide information under the following headings for each policy or measure reported: (a) Information on costs of policy or measure; (b) Information on non-GHG mitigation benefits; (c) Information on how it interacts with other policies and measures at the national level.

22. In the light of the information provided in paragraph 34 below, Parties shall provide information on how they believe their policies and measures are modifying longer-term trends in anthropogenic GHG emissions and removals consistent with the objective of the Convention.

4.2.1 General information

- Policies which lead to a mitigation of GHG emissions date back to the early 1990ies, as Austria's early National Communications under the UNFCCC have illustrated. Chapter 3 of the current report shows that emissions from residential heating have decreased substantially due to increased efficiency of buildings and fuel shift; emissions in the waste sector have decreased because of recycling and landfill policies. Measures in the industry and transport sector have significantly slowed down the emission increase that would have resulted from production growth and higher transport demand.
- Policies shown below contribute to the achievement of the targets listed in the previous section.

- Information on the **effects of its individual mitigation actions** is only partly available, as no uniform regulations for estimating, monitoring and reporting the effect of PaMs and individual instruments could be established up to now. This is because the responsibilities for policies are distributed between Federation, federal provinces and municipalities, and jurisdiction in these fields is laid down in the Constitution Act. Many measures have multiple targets besides GHG mitigation (e.g. air pollution mitigation, road safety, noise prevention, health, livable cities, tax yield, affordable housing, sustainable buildings etc.), actors in the administrations have quite different background and focus. Establishing common reporting rules would require considerable additional resources at all levels of administration.
- For the same reason **quantifications of non GHG benefits** are missing in general (unless the effect is related to the main policy area of the measure). For many measures, however, positive effects besides GHG mitigation are obvious, e.g.:
 - A change from caloric power plants to electricity generation by water power, wind power and PV as well as reduced energy demand (improved efficiency) in industry, transport and buildings reduces emissions of air pollutants from fuel combustion;
 - Reducing the share of cars and lorries in road transport in favour of public transport, cycling and walking reduces noise, air pollution and road accidents, active mobility by cycling and walking has positive health effects;
- All policies are expected to **modify the long term emission trend** by sustainable structural and behaviour changes and by reducing emission intensity and improving efficiency in the sector affected, e.g. by increasing the stock of power generation units and heating systems based on renewable energy, by changes to more energy efficient production processes, or by establishing efficient building stock and environmentally sound transport infrastructure:
 - The EU ETS is considered a driving factor for efficiency improvements in plants and the Environmental Support Scheme as well as the Climate and Energy Fund provide support for changes in plants, infrastructure and buildings; an increased number of power/heat plants based on renewables (infrastructure) as well as efficiency improvements in industrial infrastructure have still an effect many years later.
 - In the transport sector changes of the fleet (efficiency, renewable energy) do not only affect fleet emissions in the longer term, but demand changes (e.g. electric cars) will change production structures and prices; extension of infrastructure (rail transport, charging of electric vehicles) will persist.
 - Buildings and their heating systems usually have a long lifetime, thus low energy buildings, thermal renovation and installation of heating systems based on renewable energy sources have effect on emissions over a long time.
 - F-gases are replaced by alternative solutions and will not come back.
 - In agriculture the conversion of holdings to organic farming or the construction of low emission manure systems and the enhancement of soil carbon can be

- expected to have effects in the longer term, as well as forest management practices for the forest carbon stock.
- The ban of the deposition of untreated waste avoids long-term methane emissions.

Sector definitions for the following sections: The “Energy” sector as defined in the reporting guidelines and used in the CTF tables covers policies in energy industries and manufacturing industries as well as policies in the buildings sector, (CRF 1.A.1, 1.A.2, 1.A.4, the latter listed in a separate section below), the “Industry/industrial processes” sector as defined in the reporting guidelines and used in the CTF tables covers policies in the industrial processes and product use sector listed below (CRF 2). Transport, agriculture and waste are equivalent to the CRF definitions.

Consistency with projections: The scenarios “with measures” and “with additional measures”, as described in Chapter 5, are based on activity scenarios from 2018/2019. The “with measures” scenario (WM) takes account of climate change mitigation measures that were implemented and adopted before January 2018. The “with additional measures” scenario includes measures of the National Energy and Climate Plan, which has been adopted at the end of the year 2019. This definition is also used the following sections in order to have a consistent classification of PaMs in both chapters.

4.2.2 Cross-cutting Policies and Measures

EU Emission Trading Scheme

The EU Emission Trading Scheme is the most important policy for installations with high energy demand and CO₂ emissions in energy industries, manufacturing industries and industrial processes, as well as N₂O emissions from chemical industry. Its objective is to limit emissions by means of trading allowances, which have initially been allocated for free or auctioned. More than 200 Austrian installations are covered by the EU ETS; in total about 11,000 installations are covered in the EU.

The EU ETS (Directive 2003/87/EC as amended) is implemented in Austrian law with the Emissions Allowance Trading Act (Emissionszertifikatengesetz 2011 – Federal Law Gazette I No. 118/2011 as amended).

From 2013 onwards, a fully harmonised system for allocation of free allowances is being applied, based on the revision of the ETS Directive (2009/29/EC). Rules on free allocation for stationary installations covered by the scheme are strictly harmonised within the EU, combined with a Union-wide cap, which is characterised by a linear factor that provides for the reduction of GHG emissions by 21% to be achieved in 2020 relative to 2005. So called

“National Implementation Measures” need to strictly follow the rules for free allocation, laid down in the “Benchmarking Decision” by the European Commission. For most activities, free allocation is calculated on the basis of product or heat benchmarks, which are derived from the 10 % most efficient installations in Europe.

For the last years, data for Austria show that free allocation amounted to only about two third of total emissions in the EU ETS, requiring installations to buy allowances to cover their remaining emissions:

	2013	2014	2015	2016	2017	2018	2019	2020
verified emissions	29,9	28,1	29,5	29,0	30,6	28.4	29.6	27.0
free allocation	22,5	21,9	21,1	20,5	19,9	19.3	18.8	18.2

At EU level a surplus of allowances has built up during the last years. To balance supply and demand in the market the EU has established a market stability reserve, which started operation in January 2019.

GHG affected: CO₂, N₂O

Type of policy: Regulatory, economic

Implementing entity: Federal government

Mitigation impact: not available

Domestic Environmental Support Scheme

The *Domestic Environmental Support Scheme* in general provides financial support for projects which improve environmental performance beyond mandatory standards in energy, manufacturing as well as service industry. Projects may be related to all greenhouse gases. Focus areas in the climate change context comprise mainly projects to improve energy efficiency, support the use of renewable energy sources and promote sustainable transport.

The legal basis is the Austrian Environmental Support Act, the scheme is administered by Kommunalkredit Public Consulting (www.publicconsulting.at/eng).

From 2019 to 2020 federal support granted for projects with relevance for GHG mitigation has increased from about 60 to 90 million euro. Half of the support was dedicated to energy efficiency, about one third to renewables. These projects granted in 2020 are expected to bring about a current emission reduction of about 340 kt CO₂ p. a. and of 5 million tonnes over their whole life time. (An evaluation of the effect of all projects implemented in previous years for a specific target year is not available.)

GHG affected: Focus on CO₂, in principle all gases

Type of policy: Economic

Implementing entity: Federal government

Mitigation impact: not available

Austrian Climate and Energy Fund

The *Austrian Climate and Energy Fund (KLI.EN)* has been established in order to support the reduction of GHGs, mainly CO₂, in Austria in the short, medium and long term. It focuses on research in and development of renewable energy systems, development and testing of new transport and mobility systems and market penetration of GHG mitigation measures.

The legal basis of the Fund is the Climate and Energy Fund Law ('Klima- und Energiefondsgesetz' Federal Law Gazette I No. 40/2007), its objective is to contribute to meeting Austria's climate change commitments by funding of climate and energy related projects. The funding should bring about a long-term transformation to a climate-friendly energy system. Two relevant funding concepts of the recent years are "Model Regions" to help climate-friendly energy and mobility systems to be successful at the regional level and "Flagship Projects" to help new technical developments to be actually tested and implemented. Support of EUR 113 million has been granted in 2020; this was a 50 % increase compared to 2019.

GHG affected: CO₂

Type of policy: Economic, research

Implementing entity: Federal government

Mitigation impact: not available

4.2.3 Policies in energy industries and manufacturing industries

The policies relevant for energy and manufacturing industries focus on the reduction of CO₂ emissions from fossil fuels.

Increase the share of renewable energy in power supply and district heating

Increasing the share of renewable energy sources in the public power and heat supply is the main policy to reduce climate impacts of the energy system. Large-scale hydro power for electricity generation has delivered a significant contribution to power supply since the first half of the last century.

In order to provide for further growth of renewable sources, quantitative targets for 2020 for the increase of the share of wind power, photovoltaics, small hydro plants and biomass/biogas in electricity generation have been laid down in the Green Electricity Act and shall be achieved by fixed feed-in tariffs. After similar previous regulations the current instrument to achieve this policy target is the Green Electricity Act 2012 (Federal Law Gazette I No. 75/2011 as amended) and the respective Feed-in Tariff Ordinance. Tariff

support is provided for plants installed until 2020 for a limited period. The target of supported new installations with an additional capacity of 3900 MW compared to 2010 has been exceeded in 2020.

For biomass-based district heating systems investment support is granted under the Domestic Environmental Support Scheme and serves to increase the share of biomass in heat supply.

GHG affected: CO₂

Type of policy: Regulatory, economic

Implementing entity: Federal government

Mitigation impact: 4,200 kt CO₂ eq in 2020 (Green Electricity Act)

Increase energy efficiency in energy and manufacturing industries

Efficiency increases are essential to limit growing demand for energy and fuels and their environmental impacts. Austria has implemented EU legislation (Energy efficiency Directive 2012/27/EU) through the Energy Efficiency Act (Federal Law Gazette I No. 72/2014), which specifies an energy efficiency target for 2020 and obligations for large companies and energy suppliers. An Energy Efficiency Action Plan has to be compiled and updated every three years, the latest plan was submitted to the European Commission in April 2017⁹.

In addition, financial support for cogeneration of power and heat is granted in order to improve the efficient use of primary energy for electricity production (Combined Heat and Power Act, Federal Law Gazette I No. 111/2008 as amended). Due to unfavourable market conditions for gas-based CHP plants the effect of this regulation is currently estimated to be quite low.

GHG affected: CO₂

Type of policy: Economic, regulatory, planning

Implementing entity: Federal government, federal provinces

Mitigation impact: not available

Further enhancement of renewable energy in energy supply (WAM)

Beyond the traditional use of large-scale hydropower for electricity generation, quantitative targets are set in the Renewable Energy Expansion Act to increase, in the next decade, the share of wind power, photovoltaics, small hydropower plants and

⁹ https://ec.europa.eu/energy/sites/ener/files/documents/at_neeap_2017_en.pdf

biomass/biogas in electricity generation (+27 TWh/a in total by 2030). Support will be granted by investment subsidies and market premium.

Investment support for biomass-based district heating systems will continue to be granted via the Domestic Environmental Support Scheme. Funding for this scheme has been considerably increased recently. Additional support for innovative district heating systems will be granted.

GHG affected: CO₂

Type of policy: Economic, regulatory

Implementing entity: Federal government

Mitigation impact: 8,500 kt CO₂ eq in 2030

4.2.4 Further enhancement of energy efficiency in energy and manufacturing industries (WAM)

Planned revision of the Energy Efficiency Act. The National Energy and Climate Plan foresees new targets for 2030 for primary energy intensity, primary energy demand and final energy demand. The targets should be achieved by energy saving obligations for energy suppliers and a combination of strategic measures.

GHG affected: CO₂

Type of policy: Economic, regulatory

Implementing entity: Federal government

Mitigation impact: 900 kt CO₂ eq in 2025; 1,700 kt CO₂ eq in 2030

4.2.5 Further enhancement of renewables in gas supply

Increasing the share of biomethane and hydrogen in the gas grid is an essential policy to reduce fossil emissions from several sectors, but especially for energy industries, where gas is the dominating fossil fuel. A combination of instruments, including the setting of obligations for suppliers and the development of a hydrogen strategy, is planned according to the NECP.

GHG affected: CO₂

Type of policy: Economic, regulatory

Implementing entity: Federal government

Mitigation impact: 100 kt CO₂ eq in 2025; 700 kt CO₂ eq in 2030

4.2.6 Policies in the transport sector

The policies relevant for transport focus on the reduction of CO₂ emissions from fossil fuels, but there is also some effect on N₂O emissions from catalytic exhaust gas cleaning in cars.

Increase the share of clean energy sources in transport

The substitution of fossil fuels by clean energy sources is an important and well established policy in the transport sector. Starting with the Biofuels Directive 2003/30/EC, the EU has in place legislation on the promotion of renewable energy sources in transport. Currently the Renewable Energy Sources Directive 2009/28/EC requires Member States to replace at least 10% of the fossil fuels used in transport by renewables by 2020. (Target includes biofuels and electricity from renewable energy sources in rail transport as well.)

The Directive has been implemented into national law by the Austrian Fuel Ordinance (Federal Law Gazette II No. 398/2012) which stipulates minimum targets for the share of biofuels (fatty-acid methyl ester and ethanol) in diesel and gasoline sold in Austria. The minimum share targets have been raised over time (currently 5.75 %, from 2020 onwards 8.45 %). In 2018 the share reached 6.25%¹⁰. A further instrument is funding through the consulting and funding programme “klimaaktiv mobil” (conversion of municipal and company fleets to run on pure biofuels).

In 2012 three federal ministries have launched the national Implementation Plan for electric mobility, aiming at a (in the short term moderate) electrification of road transport from 0.1% in 2013 to 1.0 % of the fleet in 2020 (pure electric vehicles and plug-in hybrid vehicles). A funding programme for 2017 and 2018 has been established by the federal ministries for transport and sustainability together with partners from industry; funding is granted for vehicles and charging infrastructure. The share of electric vehicles among registered new cars exceeded 2.5% in 2018¹¹. The funding programme has been renewed for 2019 and 2020, providing € 93 million. RTD-funding of the Climate and Energy Funds is expected to contribute in the longer term to an expansion of electric road mobility.

GHG affected: CO₂

Type of policy: Economic, regulatory

Implementing entity: Federal government

Mitigation impact: 4,500 kt CO₂ eq in 2030

¹⁰ <https://www.bmnt.gv.at/umwelt/luft-laerm-verkehr/biokraftstoffbericht.html> (in German)

¹¹ https://www.bmvit.gv.at/dam/jcr:74e523fc-97bf-4f1a-859a-af2347546231/emobil_2018_highlights_ua.pdf

Increase fuel efficiency of road transport

Energy demand for transport has more than doubled in the last three decades (partly due to increasing fuel export in the vehicle tank, however). Increasing fuel efficiency was therefore an essential policy to limit that growth. Efficiency of motors and vehicles has in principle improved due to technical progress. In freight transport real world performance of vehicles on the road has improved (due to inherent economic incentives of that sector). In passenger transport, however, consumer behaviour (i.e. desire for larger cars and higher engine power) has weakened or counteracted that trend.

Instruments for increasing efficiency need to foster the choice of vehicles with low specific consumption and their efficient use. Fuel tax according to the Mineral Oil Tax Act (Federal Law Gazette No. 630/1994 as amended) is directly related to fuel consumption on the road, the tax rate has last been raised in 2011. Fuel consumption based car registration tax according to the Standard Consumption Levy Act (Federal Law Gazette No. 695/1991 as amended) is expected to promote the sales of passenger cars with lower fuel consumption; taxable base is the price of the car, the tax rate increases parallel to the standard fuel consumption and therefore penalises cars with high consumption. (Cars with CO₂ emissions below 90g/km and electric vehicles are exempt from registration tax.)

Awareness raising and training programmes for fuel-efficient driving improve performance of drivers, fuel-efficient driving has also become part of the training in driving schools. Trainings for drivers of passenger cars, buses and heavy duty vehicles (and even for agricultural tractors) have been established by the programme “klimaaktiv mobil”, 5–15 % lower CO₂ emissions can be achieved compared to conventional driving behaviour.

Other instruments like speed limits (which have been established due to other environmental concerns) and the mileage based lorry toll on highways (with lower rates for modern vehicles) contribute to reduced fuel consumption.

GHG affected: CO₂

Type of policy: Fiscal, economic, regulatory, information

Implementing entity: Federal government, federal provinces

Mitigation impact: 2,000 kt CO₂ eq in 2030

Modal shift to environmentally friendly transport modes

Although Austria belongs to the EU Member States with the highest share of rail transport in the modal split, a further shift to environmentally friendly transport modes with a lower energy demand is essential for decreasing GHG emissions. Considerable investments have been made in railway infrastructure in the last decade, as increased capacity is a prerequisite for enhancing rail transport and as railway stations had to be modernised to become an attractive place for passengers. An extension of the public transport network is also under implementation in Vienna, especially with respect to the underground lines.

The programme “klimaaktiv mobil” for mobility management and awareness raising is an essential tool to promote environmentally friendly transport modes like public transport, cycling and walking. It is funded by the Federal Ministry for Climate Action. The cornerstones of “klimaaktiv mobil” are the funding programme for businesses, communities and associations, target group-oriented counselling programmes, awareness-raising initiatives, partnerships, and training and certification initiatives.

With respect to freight transport, investment support for corporate feeder lines aims at shifting transport activities from road to rail.

GHG affected: CO₂

Type of policy: Economic, information

Implementing entity: Federal government

Mitigation impact: 500 kt CO₂ eq in 2030

Further enhancement of fuel efficiency in road transport (WAM)

The use of electric vehicles can provide the most important contribution for an efficiency increase in transport. A planned market ramp-up of battery-electric vehicles or vehicles that are powered by hydrogen fuel cells is based on a financial support for vehicles and infrastructure, obligation for zero emission vehicles in the taxi and rental car industry, and support for the conversion of diesel fleets to hydrogen.

GHG affected: CO₂

Type of policy: Fiscal, economic, regulatory, information

Implementing entity: Federal government, federal provinces

Mitigation impact: 700 kt CO₂ eq in 2030 (in addition to WEM)

Further modal shift to environmentally friendly transport modes (WAM)

A speed-up of the shift to environmentally friendly transport modes is seen as essential to achieve the targets for climate mitigation – in passenger transport as well as in freight transport. The planned instruments consist of accelerated improvement of the railway infrastructure (extended capacity), expansion of service contracts in order to use the additional capacity, expansion of long-distance rail services and of combined freight transport.

GHG affected: CO₂

Type of policy: Fiscal, economic

Implementing entity: Federal government, provinces, business

Mitigation impact: 700 kt CO₂ eq in 2030 (in addition to WEM)

Further enhancement of clean energy sources for transport (WAM)

The target of a 14% share of renewable energy in the transport sector is implemented in accordance with the Directive on the promotion of renewable energy (RES II). The proportion of renewable energy in the transport sector will increase, primarily due to the increasing market penetration of electric mobility paired with a high proportion of renewable energy in the electricity mix and a slight increase in the use of sustainably produced biofuels. In 2017, Austria had a share of renewables in the transport sector of around 9.5%. The additional 4.5% to achieve the minimum target of 14% in 2030 can be reached by increasing the share of e-mobility and an increased share of biofuels in gasoline and diesel fuels.

GHG affected: CO₂

Type of policy: Fiscal, regulatory

Implementing entity: Federal government, business

Mitigation impact: 1,100 kt CO₂ eq in 2030 (in addition to WEM)

Enhanced consideration of climate mitigation in spatial planning & mobility management (WAM)

The current transport system is the result of decades of car-centred traffic and spatial planning. Spatial structures react only slowly to external impulses, but the creation of short distances and the mix of different uses are of central importance in order to enable sustainable, environmentally friendly mobility. This PaM foresees the promotion of ecological spatial planning combined with multimodal mobility management. The aim is to sustainably reduce the need for using a private car, to support multimodal mobility behaviour and thus optimise energy efficiency in the transport sector.

GHG affected: CO₂

Type of policy: Regulatory, information, education, other (planning)

Implementing entity: Federal government, federal provinces, local governments, business

Mitigation impact: 1,100 kt CO₂ eq in 2030 (in addition to WEM)

4.2.7 Policies in the buildings sector

The policies relevant for the buildings sector focus on the reduction of CO₂ emissions from fossil fuels.

Increase energy efficiency of buildings

Improving the energy efficiency of buildings, including their heating systems, is for quite some time one of the most effective policies to reduce the carbon footprint of the Austrian population.

Construction standards with respect to the energy demand of new residential and non-residential buildings and criteria for the renovation of buildings are laid down in guidelines by the Austrian Institute for Constructional Engineering (“OIB Guideline 6 – Energy saving and thermal insulation”). Standards for the heat demand have been supplemented by standards for the total energy demand of buildings (including e.g. warm water and cooling). The requirements are based on the EU Directive on the energy performance of buildings (2010/31/EC) and have been tightened in regular intervals in order to achieve a ‘nearly zero energy’ building standard to comply with the target of the EU Directive in 2020. The federal provinces translate this guideline into their regional building law. Furthermore, energy performance certificates have to be provided by sellers and landlords in the course of real estate transactions or rentings.

Besides the mandatory standards, funding is granted for the construction of residential buildings with advanced efficiency standards (housing support schemes of the federal provinces) and for the thermal renovation of buildings (including heating systems) within several programmes, e.g. the support schemes of the federal provinces and the federal “renovation cheque” initiative for residential buildings and a programme within the environmental support scheme for commercial and industrial buildings. In addition, the federal programme klimaaktiv as well as regional energy agencies of the federal provinces provide consulting and advice on these issues. In 2020, € 47 million federal support have been granted for nearly 11,000 renovation projects.

GHG affected: CO₂

Type of policy: Regulatory, economic, information

Implementing entity: Federal government, federal provinces

Mitigation impact: 0,600 kt CO₂ eq in 2025; 0,700 kt CO₂ eq in 2030

Increase the share of renewable energy for space heating

Apart from the efficiency of buildings, the type of energy source is crucial for greenhouse gas emissions from this sector. Financial support for biomass and solar heating systems (in new buildings as well as boiler replacement in existing buildings) is provided for households via funding of the federal provinces and of the Climate and Energy Funds, support for commercial and industrial applications by the domestic environment support scheme. Funding is supplemented by awareness raising measures on the level of Federation (klimaaktiv programme) and of the federal provinces.

The District Heating and Cooling Act (Federal Law Gazette I No. 113/2008 as amended) aims at the construction of district cooling systems in order to reduce electricity demand for air conditioning, as well as at the expansion of district heating networks based on waste heat from industry and renewable energy sources; subsidies are provided for that purpose.

GHG affected: CO₂

Type of policy: Regulatory, economic

Implementing entity: Federal government, federal provinces

Mitigation impact: 1,100 kt CO₂ eq in 2025; 1,400 kt CO₂ eq in 2030

Increase energy efficiency in residential electricity demand

An increase of energy efficiency in residential electricity demand as a further policy target is achieved by important instruments at EU level, especially the eco-design requirements for energy using products (Directive 2009/125/EC and implementing acts) and the mandatory labelling of household appliances according to energy consumption (Directive (EU) 2017/1369 and delegated acts). These instruments are supported by awareness raising measures at national level with respect to energy efficient products and by advice provided by regional energy agencies. Furthermore the Federal Energy Efficiency Act (implementing the Energy Efficiency Directive 2012/27/EU) requires energy providers to prove saving in final energy demand, optionally amongst their customers.

GHG affected: CO₂

Type of policy: Regulatory, information

Implementing entity: Federal government, federal provinces

Mitigation impact: not available

Further enhancement of the energy efficiency of buildings (WAM)

The EU Energy Efficiency Directive (2012/27/EU) has been amended by Directive (EU) 2018/844. The new requirements for efficiency standards have to be implemented in the construction guidelines (OIB guidelines).

GHG affected: CO₂

Type of policy: Regulatory, economic, information

Implementing entity: Federal government, federal provinces

Mitigation impact: 0,100 kt CO₂ eq in 2025; 0,100 kt CO₂ eq in 2030 (in addition to WEM)

Accelerated replacement of fossil fuels with renewable energy sources (WAM)

As heating systems and energy distribution networks have a considerable lifetime, a speed-up of the phase-out of heating systems based on fossil fuels is necessary. For that reason a ban on the use of fossil fuels in new buildings as well as of the installation of oil boilers in existing buildings has to be enacted. A mandatory replacement of liquid fossil fuel heating systems, which are older than 25 years, with systems using renewables or district heating is supported by increased subsidies and information about the mandatory phase-out.

GHG affected: CO₂

Type of policy: Regulatory, economic, information

Implementing entity: Federal government, federal provinces

Mitigation impact: 0,400 kt CO₂ eq in 2025; 0,900 kt CO₂ eq in 2030 (in addition to WEM)

4.2.8 Policies in the industrial processes and product use sector

EU Emission Trading Scheme and the *Environmental Support Scheme* – both described under “cross-cutting” – are the leading policies and measures with respect to CO₂ and N₂O mitigation in this sector. Further policies listed in this section focus on the use of F-gases, as other measures relevant for the industry sector are covered in the energy sector.

Reduce emissions from F-gases and other product use

Mitigation of F-gas emissions has been early targeted by national policy. National bans for certain uses have been enacted since 2002 (Federal Law Gazette II No. 447/2002 as amended): The used of SF₆ is prohibited for most applications, the use of HFCs and PFCs banned e.g. for the production of foam materials.

National regulations have been complemented by EU law at a later stage: Provisions for the maintenance of refrigeration and air conditioning systems aim at a minimisation of emissions, EU Regulation No 517/2014 has introduced a quota system for production and imports and enhanced use restrictions. Placing on the market of F-gases must be reduced to 63 % (compared to the average 2009–2012) by 2020 and to 21 % by 2030. For air conditioning systems in passenger cars the use of refrigerants with GWPs higher than 150 has been prohibited for new models since 2013 and is completely banned for new cars since 2017. The phase-down requirements of the Kigali Amendment of the Montreal Protocol, which has been signed by Austria and the EU, are part of the current revision of the EU F-gas regulation.

CO₂ emissions from organic solvents are of limited relevance; it may be mentioned that legislation to reduce emissions from solvent use in industry and due to paint application exists at national and EU level.

GHG affected: HFCs, PFCs, SF₆
Type of policy: Regulatory
Implementing entity: Federal government
Mitigation impact: not available

4.2.9 Policies in the agriculture sector

The policies relevant for agriculture focus on the reduction of CH₄ and N₂O as well as of CO₂ emissions.

Implementation of EU agricultural policies

The common agricultural policy (CAP) is an essential part of EU policy. It is designed to provide a level playing field for farmers in the EU, contributing to food security as well as to rural development and is intended to promote agricultural practices beneficial for the climate and the environment. The reform of the common agricultural policy (CAP) at EU level in 2013 has brought about the requirement for farmers to maintain land in good agricultural and ecological condition in order to receive payments (“cross-compliance”). Measures have to be implemented by the Member States according to the common rules stipulated by Council Regulation (EC) No. 1305/2013. Austria puts, i. a., a focus on environmental sound farming practices for Austria’s largely small-structured agricultural system. Relevant actions with respect to the mitigation of greenhouse gas emissions (CH₄, N₂O) are e.g. improved feeding of pigs and poultry, covering of manure storages, low-loss application of manure and biogas slurry, promotion of organic farming, promotion of grazing and reduced use of mineral fertilisers, which are part of the Austrian agri-environmental programme.

GHG affected: CH₄, N₂O, CO₂
Type of policy: Regulatory, economic
Implementing entity: Federal government, federal provinces
Mitigation impact: not available

Livestock and feeding management (WAM)

Improved feed quality according to the animals’ needs and adapted to local conditions, and the use of methane-reducing feed additives is expected to decrease CH₄ emissions from enteric fermentation. Optimisation of feeding with respect to N content should result in lower N species emissions along the entire farmyard manure chain. An improved promotion of grazing should also result in lower emissions of both greenhouse gases compared to indoor housing of animals.

GHG affected: CH₄, N₂O

Type of policy: Regulatory, economic, information
Implementing entity: Federal government, federal provinces
Mitigation impact: not available

Sustainable N management (WAM)

Decreased use of mineral fertilisers should contribute to reducing NO₂ emissions from agricultural soils. Improvement of demand-oriented dosage through fertiliser planning and soil testing, nitrogen fixation through the cultivation of leguminous plants and improved manure management in order to reduce N loss are appropriate tools to reduce the demand for mineral fertiliser; instruments to incentivise a reduction are planned to be expanded. Legal regulations within the framework of the Nitrate Action Programme (to protect ground water) and of the National Air Pollution Control Programme (to reduce air emissions) are expected to contribute to reduced fertiliser use too.

GHG affected: N₂O
Type of policy: Regulatory, economic, information
Implementing entity: Federal government, federal provinces
Mitigation impact: not available

Anaerobic digestion of manure (WAM)

The share of slurry treated in biogas plants is to be significantly increased, in order to supply relevant amounts of biogas to the gas distribution network. The identification of possible sites for the construction of biogas plants with suitable framework conditions (suitable livestock or raw material supply, short distances, possibility of feeding into the gas grid) is the first step; appropriate incentives (e.g. energy prices or a bonus for the use of animal manure for anaerobic digestion, incentives for the raw material management of agricultural residues) need to be implemented. Research in the field of substrate use and plant technology should allow for an optimisation of the process.

GHG affected: CH₄, N₂O, CO₂
Type of policy: Regulatory, economic, research
Implementing entity: Federal government, federal provinces
Mitigation impact: not available

4.2.10 Policies in the LULUCF sector

It must be noted that PaMs attributed to other sectors influence emissions/removals in the LULUCF sector as well. In agriculture, the Austrian agri-environmental programme covers instruments that promote the enhancement of carbon stocks in the agricultural environment (e.g. reduced tillage, organic farming), especially in soils. With respect to the

sectors energy, transport and buildings, policies for increasing the share of – besides other renewable energy sources – biomass need to be mentioned, which may have indirect impacts on LULUCF.

Sustainable forest management

The overall principles of forest management in Austria are stipulated in the Forest Act (Federal Law Gazette I No. 1975/440, as amended) and cover the preservation of forest area, the preservation of the productivity of forest sites and their functions, and the preservation of yields for future generations; i.e. sustainable management. The Forest Act furthermore assigns four functions to forests: productive (i.e. sustainable timber production), protective (i.e. protection against erosion and natural hazards, welfare (i.e. the protection of environmental goods such as drinking water), and recreation (use for recreation). This results a. o. in a general ban on forest clearance/deforestation and on forest destruction, the requirement of immediate re/afforestation after felling, a ban on forest litter removal, clear provisions for harvest haulage & forest roads and the sustainable use of forests. More information can be found in the Austrian LULUCF Action Plan¹².

GHG affected: CO₂

Type of policy: Regulatory, information

Implementing entity: Federal government, federal provinces

Mitigation impact: not available

4.2.11 Policies in the waste sector

Emissions from the waste sector are clearly dominated by solid waste disposal, the policy focus has therefore been on the avoidance of emissions from landfills.

Reduce emissions from waste treatment

Main principles of the Austrian Waste Management Act (Federal Law Gazette I No. 102/2002 as amended) are a. o. the prevention of waste and waste recovery/recycling (including incineration with energy recovery). Due to the Austrian Landfill Ordinance the deposition of untreated biodegradable waste has been banned completely. The carbon content of waste is reduced through incineration or mechanical-biological treatment before deposition (pre-treatment options). Methane emissions from old landfills are reduced by the mandatory collection and use of landfill gas. Reducing the amount of waste reduces the need for waste treatment; awareness raising campaigns and networks

¹² https://www.bmk.gv.at/dam/jcr:77397df2-5984-4246-9b6f-37d23afa79dc/LULUCF_Aktionsplan.pdf

have been established to minimise food waste and other waste and to promote the reuse and recycling.

GHG affected: CH₄

Type of policy: Regulatory, information

Implementing entity: Federal government, federal provinces

Mitigation impact: not available

Table 4.1: Summary of policies (CTF Table 3)

Name of mitigation action ^a	Sector(s) affected ^b	GHG(s) affected	Objective and/or activity affected	Type of instrument ^c	Status of implementation ^d	Brief description ^e	Start year of implementation	Implementing entity or entities	Mitigation impact (kt CO ₂ eq)	
									2020	2030
EU Emission Trading Scheme (ETS)*	Energy, Industry/IPPU	CO ₂ , N ₂ O	fossil fuel combustion, process emissions	Economic, Regulatory	Implemented	The objective is to limit the CO ₂ emissions of energy intensive stationary installations and aviation through a trading mechanism for emission certificates.	2005	Federal government	NE	NE
Domestic Environmental Support Scheme*	Energy, Industry/IPPU, Transport	all gases, focus on CO ₂	energy use / GHG emissions in industry/business	Economic	Implemented	Financial support to GHG mitigation projects (energy efficiency, renewables, waste,...)	1993	Federal government	NE	NE
Austrian Climate and Energy Fund (KLI.EN)*	Energy, Transport	CO ₂	framework policy, multi-sectoral policy	Economic, Research	Implemented	Financial support to energy-relevant research projects, to climate friendly transport projects and to market launch of new climate friendly technologies.	2007	Federal government	NE	NE
Increase the share of renewable energy in energy supply and district heating*	Energy	CO ₂	electricity generation, district heating	Regulatory, Economic	Implemented	feed-in tariffs for various forms of electricity generation from renewable sources, support for non-fossil district heating	2002	Federal government	4,200	NE

Increase energy efficiency and use of renewables in energy and manufacturing industries*	Energy	CO2	energy use in industry/business	Economic, Regulatory	Implemented	Energy efficiency target for 2020 and obligations for energy suppliers and large consumers, support for co-generation of heat and power	2008	Federal government, federal provinces	NE	NE
Further enhancement of renewable energy in energy supply	Energy	CO2	electricity generation, district heating	Economic, Regulatory	Planned	Future targets and support for electricity and heat generation from renewables		Federal government	NA	8,500
Further enhancement of energy efficiency in energy and manufacturing industries	Energy	CO2	energy use in industry/business	Economic, Regulatory	Planned	Future targets and instruments regarding energy consumption in industry		Federal government	NA	1,700
Further enhancement of renewables in gas supply	Energy	CO2	gas supply	Economic, Regulatory	Planned	Instruments to increase share of biogas and hydrogen in gas supply		Federal government	NA	700
Increase share of clean energy sources in road transport*	Transport	CO2	fossil fuel use in transport	Economic, Regulatory	Implemented	Mandatory minimum share of biofuels in transport fuels, support for electric mobility	2004	Federal government	NE	4,500
Increase fuel efficiency of road transport*	Transport	CO2	energy consumption of transport	Economic, Fiscal, Information, Regulatory	Implemented	Fiscal instruments to penalise cars with high fuel consumption, initiatives to promote fuel-efficient driving,	2004	Federal government, federal provinces	NE	2,000

Modal shift to environmentally friendly transport modes*	Transport	CO2	modal split of transport	Information, Economic	Implemented	Reduction of individual motorised transport and a shift towards public transport by mobility management, awareness raising, training; improving on intermodal freight transport logistics	2005	Federal government	NE	500
Further enhancement of fuel efficiency in road transport	Transport	CO2	energy consumption of transport	Economic, Fiscal, Information, Regulatory	Planned	Enhanced support for electricity and hydrogen as transport fuel		Federal government, federal provinces	NA	700
Further modal shift to environmentally friendly transport modes	Transport	CO2	modal split of transport	Fiscal	Planned	Improvement of railway infrastructure and services		Federal government, provinces, business	NA	700
Further enhancement of clean energy sources for transport	Transport	CO2	fossil fuel use in transport	Fiscal, regulatory	Planned	Future target according to RES II Directive		Federal government, business	NA	1,100
Enhanced consideration of climate mitigation in spatial planning & mobility management	Transport	CO2	transport demand	Regulatory, information, education, other (planning)	Planned	Promotion of ecological spatial planning combined with multimodal mobility management.		Federal government, business	NA	1,100

Increased energy efficiency of buildings*	Energy	CO2	energy consumption of buildings	Regulatory, economic, information	Implemented	construction standards for new buildings, thermal insulation of existing buildings, introduction of energy certificates for buildings, implementation of construction guidelines	2006	Federal government, federal provinces	NE	700
Increased share of renewable energy for space heating*	Energy	CO2	energy use for space heating	Economic, Regulatory	Implemented	Stepping up the replacement of heating systems, District heating and district cooling Act, Funding for wood heating systems and solar heating systems	2000	Federal government, federal provinces	NE	1,400
Increased energy efficiency in residential electricity demand*	Energy	CO2	electricity consumption of appliances in household and service sector	Regulatory, Information	Implemented	implementation of eco-design requirements, introduction of energy labelling for energy consuming products, advice and information on energy efficient products	2007	Federal government, federal provinces	NE	NE
Further enhancement of the energy efficiency of buildings	Energy	CO2	energy consumption of buildings	Regulatory, economic, information	Planned	Implementation of the new standards of the EU Energy Efficiency Directive		Federal government, federal provinces	NA	100
Accelerated replacement of fossil fuels for space heating with renewable energy sources	Energy	CO2	energy use for space heating	Regulatory, economic, information	Planned	Obligations for replacement of liquid fossil heating systems, ban for fossil energy in new buildings		Federal government, federal provinces	NA	900

Reduce emissions from F-gases and other product use*	Industry/IPPU	HFCs, PFCs, SF6	use of fluorinated gases	Regulatory	Implemented	reduction of F-gases in stationary applications and products, restriction of HFC used in mobile air conditions, quota system on EU level	2002	Federal government	NE	NE
Implementation of EU agricultural policies*	Agriculture	CH4, N2O, CO2	cropland and grassland management, livestock and manure management,	Regulatory, Economic	Implemented	Implementation of the EU Common Agricultural Policy which takes into account the need for a reduction of environmental pollution from agricultural activity, national agricultural support programme considering environmental aspects	2007	Federal government, federal provinces	NE	NE
Livestock and feeding management	Agriculture	CH4, N2O, CO2	livestock management	Regulatory, economic, information	Planned	Optimized feeding with respect to enteric CH4 emissions and N2O emissions from manure		Federal government, federal provinces	NA	NE
Sustainable N management	Agriculture	N2O	manure management and fertilizer use	Regulatory, economic, information	Planned	Demand-oriented dosage through fertiliser planning and soil testing, nitrogen fixation through the cultivation of leguminous plants		Federal government, federal provinces	NA	NE
Anaerobic digestion of manure	Agriculture	CH4, N2O, CO2	manure management	Regulatory, economic, research	Planned	Increased production of biogas from manure		Federal government, federal provinces	NA	NE
Sustainable forest management*	Forestry/LULUCF		forest management	Regulatory, information	Implemented	Obligations according to the Forest Act and resulting activities	1975	Federal government, federal provinces	NE	NE

Reduce emissions from waste treatment*	Waste management/waste	CH4	waste treatment and landfill management	Regulatory, information	Implemented	Landfilling of untreated biodegradable waste banned. Mandatory landfill gas collection and use/flaring. Awareness measures regarding waste reduction, reuse and recycling.	1997	Federal government, federal provinces	NE	NE
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5 Projections and total effect of policies and measures

24. The primary objective of the projections section of the national communication is to give an indication of future trends in GHG emissions and removals, given current national circumstances and implemented and adopted policies and measures, and to give an indication of the path of emissions and removals without such policies and measures.

The latest national greenhouse gas (GHG) emission projections up to 2040 have been developed in the years 2020/2021 and published in March 2021. They are, however, based on activity scenarios which have been developed before. The “with measures” scenario (WM) takes account of climate change mitigation measures that were implemented and adopted before January 2018. The “with additional measures” scenario includes measures of the National Energy and Climate Plan, which has been adopted at the end of the year 2019. The scenarios are described in more detail in the latest report on Austria’s GHG emission projections “GHG Projections and Assessment of Policies and Measures in Austria”¹³.

5.1 Projections

25. At a minimum, Parties shall report a ‘with measures’ projection, in accordance with paragraph 26 below, and may report ‘without measures’ and ‘with additional measures’ projections.

26. A ‘with measures’ projection shall encompass currently implemented and adopted policies and measures. If provided, a ‘with additional measures’ projection also encompasses planned policies and measures. If provided, a ‘without measures’ projection excludes all policies and measures implemented, adopted or planned after the year chosen as the starting point for that projection. In their reporting, Parties may refer to their ‘without measures’ projection as a ‘baseline’ or ‘reference’ projection, for example, if preferred, but should explain the nature of that projection.

27. Parties may report a sensitivity analysis for any of the projections, but should aim to limit the number of scenarios presented. Parties may provide the results of a sensitivity analysis for the reported GHG emissions together with a brief explanation of the methodologies and parameters used.

¹³ <https://www.umweltbundesamt.at/fileadmin/site/publikationen/rep0766.pdf>

28. Emission projections shall be presented relative to actual inventory data for the preceding years.

...

31. Projections shall be presented on a sectoral basis. To the extent possible, the sectoral categories used should be the same as in the GHG inventories.

32. Projections shall be presented on a gas-by-gas basis for the following GHGs: CO₂, CH₄, N₂O, PFCs, HFCs, SF₆ and NF₃ (treating PFCs and HFCs collectively in each case). Parties may also provide projections of indirect emissions of carbon monoxide, nitrogen oxide and non-methane volatile organic compounds, as well as sulphur oxide. In addition, projections shall be provided in an aggregated format for each sector as well as for a national total, using global warming potential values agreed upon by the COP.

33. To ensure consistency with inventory reporting, emission projections related to fuel sold to ships and aircraft engaged in international transport shall, to the extent possible, be reported separately and not included in the national total.

The projections are presented relative to 2020, which is the latest inventory year. Please note that the effect of the pandemic in 2020 has not yet been taken into account in the modelling work for the projections, as the projections are based on the previous inventory with 2019 as the base year and 2020 is already part of the projections. The comparison of 2030/2040 with inventory data for 2020 may therefore be misleading especially for sectors with a significant drop of emissions from 2019 to 2020. Additional comparison figures are therefore shown in Tables 5.1 and 5.2.

Overview:

- **Scenario “with measures”**: Total GHG emissions (excluding LULUCF) decrease from 73.6 Mt CO₂ eq in 2020 to 72.5 Mt in 2030 and 69.3 in 2040 (-1 % and -6 % respectively);
- long-term decrease driven by “other sectors” (1.A.4) with a decrease of 2.7 Mt CO₂ eq or 30 % 2020–2040, and by energy industries and IPPU (decrease 2.3 and 1.5 Mt respectively), relative decrease strongest in the waste sector (39 %);
- share of fuel combustion remains at a level of about two third in the longer term;
- CO₂ emissions per capita expected to decrease to 6.4 t in 2040 and total greenhouse gas emissions per capita to 7.4 t CO₂ eq.
- **Scenario “with additional measures”**: Total GHG emissions (excluding LULUCF) decrease from 73.6 Mt CO₂ eq in 2020 to 66.5 Mt in 2030 and 61.0 in 2040 (-10 % and -6 % respectively);
- Additional reduction compared to the WM scenario mainly stems from the transport sector and from “other sectors”, the latter shows a reduction of more than 50 %;
- CO₂ emissions per capita at 5.7 t in 2040, total greenhouse gas emissions per capita at 6.6 t CO₂ eq;

- **Compared to the pre-pandemic** emissions in 2019, the decrease is considerably larger: Total emissions -9 % by 2030 and -13 % by 2040 in the scenario WM, -17 % by 2030 and -23 % by 2040 in the scenario WAM; highest contribution from sector transport (-6.0 Mt CO₂ eq or -25 % by 2040) and “other sectors” (-5.0 Mt or -56 % by 2040).

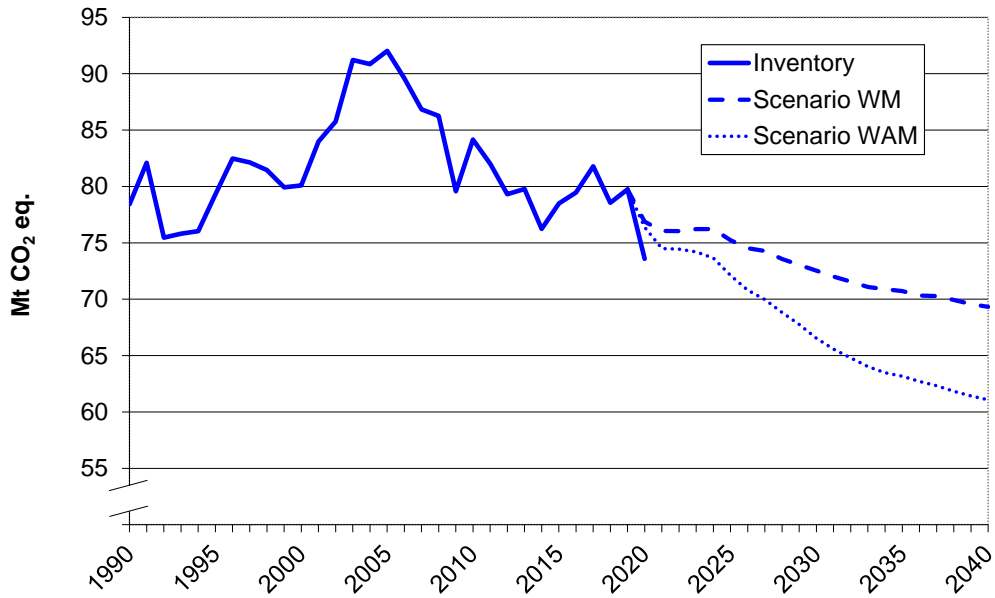


Figure 5.1: Actual and projected total GHG emissions without LULUCF

Table 5.1: Actual and projected GHG emissions under the “with measures” scenario, by sector and by gas

	GHG emissions and removals								GHG emission projections					projection 2040 vs.		
	(kt CO ₂ eq)								(kt CO ₂ eq)					inventory data		project.
	1990	1995	2000	2005	2010	2015	2019	2020	2020	2025	2030	2035	2040	2019	2020	2020
Sector																
1A1 Energy industries	14,011	13,062	12,318	16,032	13,756	10,511	10,177	8,807	9,873	8,169	7,311	6,824	6,470	-36%	-27%	-34%
1A2 Manufact. industries	9,845	10,245	10,035	11,541	11,352	10,228	10,856	10,550	10,323	11,134	11,377	11,716	12,058	+11%	+14%	+17%
1A3 Transport	13,957	15,857	18,805	24,944	22,585	22,725	24,508	21,183	24,555	24,605	23,743	22,933	22,095	-10%	+4%	-10%
1A4 Other sectors	14,253	14,617	13,557	13,869	11,214	9,145	9,054	9,027	8,530	7,928	7,312	6,745	6,282	-31%	-30%	-26%
1A5, 1B	738	498	538	482	512	463	382	363	433	371	334	267	237	-38%	-35%	-45%
2. IPPU	13,574	13,514	14,491	15,440	15,680	16,730	16,519	15,489	14,854	14,828	14,316	14,076	13,986	-15%	-10%	-6%
3. Agriculture	8,119	7,837	7,376	6,928	6,926	7,135	6,985	6,964	7,110	7,192	7,272	7,364	7,458	+7%	+7%	+5%
4. LULUCF	-12,065	-13,277	-16,561	-10,770	-3,778	-2,201	-2,629	-1,253	-4,594	-3,633	-3,129	-3,605	-1,608	-39%	+28%	-65%
5. Waste	3,926	3,653	2,965	2,794	2,125	1,551	1,260	1,209	1,206	1,005	874	794	742	-41%	-39%	-38%
<i>MEMO Intl. Bunkers</i>	<i>942</i>	<i>1,412</i>	<i>1,790</i>	<i>2,065</i>	<i>2,143</i>	<i>2,201</i>	<i>2,980</i>	<i>1,099</i>	<i>2,356</i>	<i>2,384</i>	<i>2,509</i>	<i>2,652</i>	<i>2,792</i>	<i>-6%</i>	<i>+154%</i>	<i>+19%</i>
Gas																
CO ₂ including LULUCF	49,914	50,589	49,446	68,172	68,081	63,982	65,136	60,611	60,466	60,761	59,231	57,041	57,659	-11%	-5%	-5%
CO ₂ excluding LULUCF	62,145	64,023	66,150	79,078	72,006	66,349	67,936	62,037	65,211	64,536	62,484	60,748	59,358	-13%	-4%	-9%
CH ₄ including LULUCF	10,135	9,406	8,249	7,636	7,032	6,378	5,938	5,843	6,127	5,932	5,824	5,769	5,772	-3%	-1%	-6%
CH ₄ excluding LULUCF	10,111	9,382	8,225	7,613	7,008	6,354	5,914	5,819	6,103	5,909	5,801	5,745	5,748	-3%	-1%	-6%
N ₂ O including LULUCF	4,653	4,471	4,474	3,719	3,513	3,697	3,698	3,647	3,471	3,465	3,447	3,440	3,444	-7%	-6%	-1%
N ₂ O excluding LULUCF	4,511	4,338	4,355	3,607	3,389	3,555	3,551	3,498	3,344	3,347	3,347	3,361	3,377	-5%	-3%	+1%
HFCs	2	351	682	1,047	1,329	1,856	1,851	1,757	1,712	1,138	755	704	680	-63%	-61%	-60%
PFCs	1,183	83	88	163	78	50	38	30	49	49	49	49	49	+28%	+64%	0%
SF ₆	471	1,100	575	494	336	310	436	439	455	244	93	100	107	-75%	-76%	-76%
NF ₃	NO,NA	6	11	28	4	13	14	12	11	11	11	11	11	-23%	-13%	0%
Total with LULUCF	66,359	66,007	63,524	81,259	80,373	76,286	77,111	72,339	72,291	71,599	69,411	67,114	67,721	-12%	-6%	-6%
Total without LULUCF	78,423	79,283	80,085	92,029	84,150	78,487	79,741	73,592	76,885	75,232	72,540	70,719	69,329	-13%	-6%	-10%

Table 5.2: Actual and projected GHG emissions under the “with additional measures” scenario, by sector and by gas

	GHG emissions and removals								GHG emission projections					projection 2040 vs.		
	(kt CO ₂ eq)								(kt CO ₂ eq)					inventory data		project.
	1990	1995	2000	2005	2010	2015	2019	2020	2020	2025	2030	2035	2040	2019	2020	2020
Sector																
1A1 Energy industries	14,011	13,062	12,318	16,032	13,756	10,511	10,177	8,807	9,848	8,445	7,558	7,082	6,611	-35%	-25%	-33%
1A2 Manufact. industries	9,845	10,245	10,035	11,541	11,352	10,228	10,856	10,550	10,305	10,530	10,116	10,437	10,703	-1%	+1%	+4%
1A3 Transport	13,957	15,857	18,805	24,944	22,585	22,725	24,508	21,183	24,363	22,828	20,891	19,507	18,462	-25%	-13%	-24%
1A4 Other sectors	14,253	14,617	13,557	13,869	11,214	9,145	9,054	9,027	8,264	7,248	5,952	4,599	4,029	-56%	-55%	-51%
1A5, 1B	738	498	538	482	512	463	382	363	433	371	334	267	237	-38%	-35%	-45%
2. IPPU	13,574	13,514	14,491	15,440	15,680	16,730	16,519	15,489	14,854	14,811	14,245	13,948	13,803	-16%	-11%	-7%
3. Agriculture	8,119	7,837	7,376	6,928	6,926	7,135	6,985	6,964	7,110	6,870	6,566	6,528	6,490	-7%	-7%	-9%
4. LULUCF	-12,065	-13,277	-16,561	-10,770	-3,778	-2,201	-2,629	-1,253	-4,594	-3,633	-3,129	-3,605	-1,608	-39%	+28%	-65%
5. Waste	3,926	3,653	2,965	2,794	2,125	1,551	1,260	1,209	1,206	1,005	874	794	742	-41%	-39%	-38%
<i>MEMO Intl. Bunkers</i>	<i>942</i>	<i>1,412</i>	<i>1,790</i>	<i>2,065</i>	<i>2,143</i>	<i>2,201</i>	<i>2,980</i>	<i>1,099</i>	<i>2,356</i>	<i>2,384</i>	<i>2,509</i>	<i>2,652</i>	<i>2,792</i>	<i>-6%</i>	<i>+154%</i>	<i>+19%</i>
Gas																
CO ₂ including LULUCF	49,914	50,589	49,446	68,172	68,081	63,982	65,136	60,611	59,978	57,979	53,947	50,322	50,377	-23%	-17%	-16%
CO ₂ excluding LULUCF	62,145	64,023	66,150	79,078	72,006	66,349	67,936	62,037	64,724	61,754	57,200	54,030	52,076	-23%	-16%	-20%
CH ₄ including LULUCF	10,135	9,406	8,249	7,636	7,032	6,378	5,938	5,843	6,111	5,743	5,418	5,248	5,128	-14%	-12%	-16%
CH ₄ excluding LULUCF	10,111	9,382	8,225	7,613	7,008	6,354	5,914	5,819	6,087	5,720	5,394	5,224	5,104	-14%	-12%	-16%
N ₂ O including LULUCF	4,653	4,471	4,474	3,719	3,513	3,697	3,698	3,647	3,473	3,312	3,133	3,123	3,118	-16%	-15%	-10%
N ₂ O excluding LULUCF	4,511	4,338	4,355	3,607	3,389	3,555	3,551	3,498	3,346	3,194	3,033	3,044	3,051	-14%	-13%	-9%
HFCs	2	351	682	1,047	1,329	1,856	1,851	1,757	1,712	1,138	755	704	680	-63%	-61%	-60%
PFCs	1,183	83	88	163	78	50	38	30	49	49	49	49	49	+28%	+64%	+0%
SF ₆	471	1,100	575	494	336	310	436	439	455	244	93	100	107	-75%	-76%	-76%
NF ₃	NO,NA	6	11	28	4	13	14	12	11	11	11	11	11	-23%	-13%	+0%
Total with LULUCF	66,359	66,007	63,524	81,259	80,373	76,286	77,111	72,339	71,790	68,475	63,407	59,558	59,470	-23%	-18%	-17%
Total without LULUCF	78,423	79,283	80,085	92,029	84,150	78,487	79,741	73,592	76,384	72,108	66,536	63,163	61,078	-23%	-17%	-20%

Trend by gas:

- By 2030 the share of F-gases decreases from 3 to 1 % in both scenarios, the share of the other gasses increases slightly;
- CO₂ emissions trend (WM: -4 %, WAM: -16 %, 2020–2040) due to decrease in fuel combustion as well as in industrial processes;
- CH₄ emissions: In the WM scenario emissions remain at the 2020 level (decrease in the waste sector is compensated by an increase in agriculture), in the WAM scenario emissions decrease by 12 % 2020–2040 (emissions decrease also in agriculture);
- N₂O emissions decrease by 13 %, mainly due to falling emissions from agriculture;
- F-gas emissions are expected to decrease by more than half, mainly because of legal restrictions for HFCs on EU level and the increased availability of low GWP alternatives.

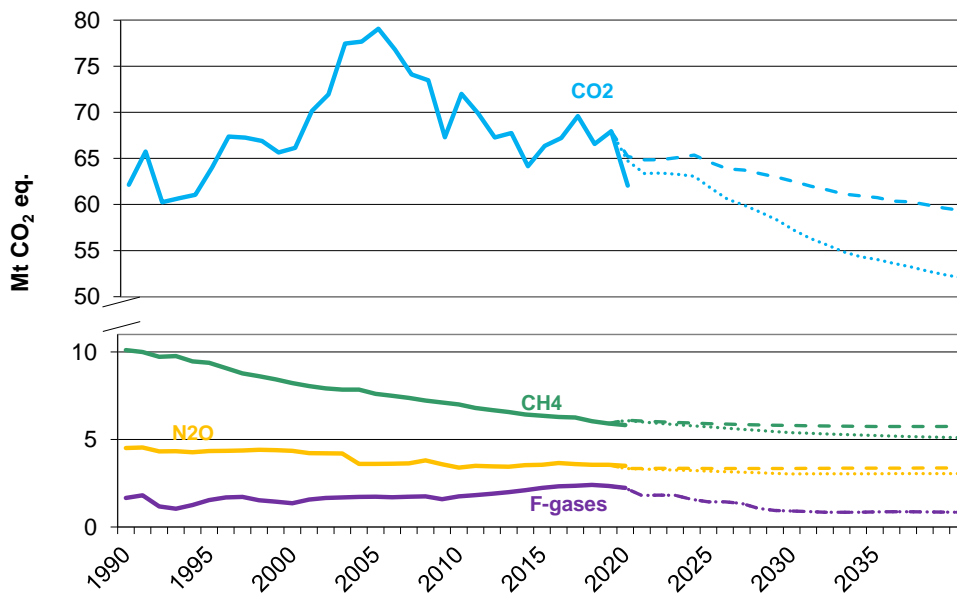


Figure 5.2: Actual and projected GHG emissions (excluding LULUCF) by gases

Trend by sector:

- Sectoral shares change by up to 7 percentage points for the sectors from 2020 to 2040, transport (30 %) still dominates total emissions in 2040 in the WAM scenario, followed by IPPU (23 %), manufacturing industries and construction (18 %), energy industries (11 %), agriculture (11 %) and “other sectors” (7 %);
- despite increasing electricity demand, emissions from energy industries are expected to decrease further in both scenarios (about one quarter from 2020 to 2040) due to a further shift from fossil fuels renewable energy sources (hydro, solar and wind power);
- emission increase in several branches of manufacturing industries and construction in the WM scenario due to the expected economic development (production increases),

in total +14 % by 2040; in the WAM scenario emissions remain relatively constant due to increased efficiency and significant amounts of biomethane and hydrogen available;

- compared to the year 2020 (with extraordinary low emissions) transport emissions are 4 % higher in 2040 in the WM scenario, although they show a 10 % decrease relative to 2019 due to further increase in the use of biofuels, better efficiency standards and more electric mobility; in the WAM scenario further measures for the market penetration of alternative-powered vehicles lead to an emission decrease also relative to 2020 (-13 % in 2040); the share of emissions caused by fuel exported in the vehicle tank is expected to remain relatively constant at about a quarter of the sector's emissions;
- a further decrease of emissions from "other sectors" (CRF 1.A.4) is expected in the WM scenario (-30 % in 2040), mainly because of further improvement of energy efficiency of the building stock and heating systems, shift from fossil fuels to biomass and ambient heat (including heat pumps); in the WAM scenario concerted replacement of fossil oil heating systems and mandatory efficiency measures boost the emission decrease to 55 %.
- in contrast to the past trend, emissions from industrial processes and product use are expected to decrease until 2040 by about 10 % in both scenarios, mainly due to decreasing emissions from metal production (because of import of direct reduced iron from 2016 onwards); decreasing emissions of F-gases (see above) contribute to the trend;
- in the WEM scenario an emission increase in the sector agriculture (7 % until 2040) is mainly due to an expected increase of livestock (increasing milk production), which cannot be sufficiently compensated by the mitigation measures; in the WAM scenario additional measures (optimised feeding, improved N-management, increased use of manure in biogas plants) lead to a 7 % reduction until 2040;
- the LULUCF sector is projected to remain a net sink with slight fluctuations until 2035 and a decreasing sink after 2035; driving factors are changes in biomass growth and biomass use in the dominating subsector "forest"; there is no difference between the scenarios; almost until the end of the period the sink strength is projected to be higher than the average of the last years, which have been influenced by forest calamities;
- further downward trend of emissions from the waste sector (-39% in both scenarios), mainly because of the decreasing carbon content of historically landfilled waste as well as because of a decrease in the amount of waste deposited in landfills.

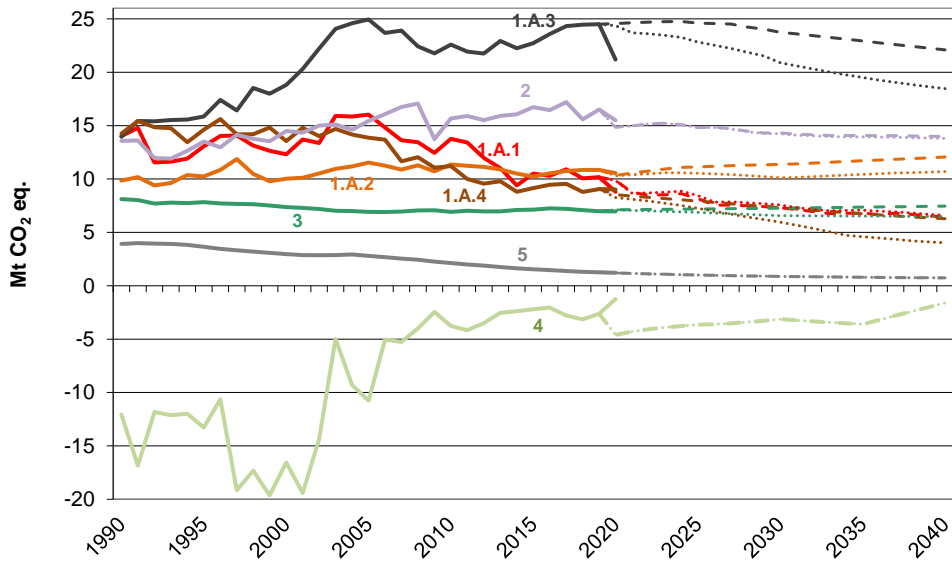


Figure 5.3: Actual and projected GHG emissions by sectors

Non-ETS emissions:

The totals above show emissions from industries which are part of the EU emission trading system as well as emissions from the sources falling under the EU Effort Sharing Regulation (cf. Chapter 4).

Emissions falling under the Effort Sharing Regulation (“ESR emissions”) represent less than 2/3 of Austrian total GHG emissions. Most of the emissions from energy industries and industry (including industrial processes) fall under the EU ETS, only about one quarter under the ESR. ESR emissions therefore are dominated by transport emissions, which currently account for slightly less than half of ESR emissions. The ratio of ESR to ETS emissions is not expected to change significantly over time.

ESR emissions trend:

- **Scenario “with measures”:** ESR emissions increase by 1 % by 2030 and decrease by 4 % by 2040 compared to historic emissions in 2020 (+0.4 and -2.0 Mt CO₂ eq respectively);
- long-term decrease driven by “other sectors” (1.A.4) with a decrease of 2.7 Mt CO₂ eq or 2020–2040, IPPU (decrease 1.3 Mt) and waste sector (-0.5 Mt); compared to the historical emissions in 2020 emissions from transport, manufacturing industries and energy industries are projected higher in 2040.
- **Scenario “with additional measures”:** ESR emissions decrease by 12 % by 2030 and by 21 % by 2040 compared to historic emissions in 2020 (-5.4 and -9.9 Mt CO₂ eq respectively);

- additional reduction compared to the WM scenario mainly stems from the transport sector and from “other sectors”, the latter shows a reduction of more than 50 %.
- **Compared to the pre-pandemic** emissions in 2019, the decrease by 2040 is considerably larger: -11 % in the scenario WM, -27 % in the scenario WAM; highest contribution from sector transport (-6.0 Mt CO₂ eq in WAM).

Table 5.3 Information on ESD greenhouse gas projections under a ‘with measures’ scenario

	GHG emissions and removals				GHG emission projections		
	(kt CO ₂ eq)				(kt CO ₂ eq)		
	2005	2010	2019	2020	2020	2030	2040
ESD Sector							
1.A.1 Energy industries	1,575	1,504	1,539	1,530	2,088	1,994	1,913
1.A.2 Manufact. Industries	3,400	4,275	4,275	4,195	4,022	4,763	5,179
1.A.3 Transport	24,519	22,202	23,920	20,681	23,895	23,110	21,484
1.A.4 Other sectors	13,846	11,199	9,005	8,979	8,479	7,281	6,252
2. IPPU	2,637	2,651	2,751	2,601	2,653	1,349	1,295
3. Agriculture	6,928	6,926	6,985	6,964	7,110	7,272	7,458
5. Waste	2,794	2,125	1,260	1,209	1,206	874	742
1.A.5, 1.B	482	512	382	363	433	334	237
Total	56,183	51,393	50,117	46,523	49,887	46,977	44,561

Table 5.4 Information on ESD greenhouse gas projections under a ‘with additional measures’ scenario

	GHG emissions and removals				GHG emission projections		
	(kt CO ₂ eq)				(kt CO ₂ eq)		
	2005	2010	2019	2020	2020	2030	2040
ESD Sector							
1.A.1 Energy industries	1,575	1,504	1,539	1,530	2,087	1,997	1,887
1.A.2 Manufact. Industries	3,400	4,275	4,275	4,195	4,002	3,789	4,122
1.A.3 Transport	24,519	22,202	23,920	20,681	23,702	20,258	17,852
1.A.4 Other sectors	13,846	11,199	9,005	8,979	8,212	5,922	3,999
2. IPPU	2,637	2,651	2,751	2,601	2,653	1,363	1,309
3. Agriculture	6,928	6,926	6,985	6,964	7,110	6,566	6,490
5. Waste	2,794	2,125	1,260	1,209	1,206	874	742
1.A.5, 1.B	482	512	382	363	433	334	237
Total	56,183	51,393	50,117	46,523	49,406	41,103	36,638

5.2 Assessment of aggregate effect of policies and measures

36. The estimated and expected effects of individual policies and measures are addressed in the policies and measures section of the national communication. In the projections section of the national communication, Parties shall present the estimated and expected total effect of implemented and adopted policies and measures. Parties may also present the total expected effect of planned policies and measures.

37. Parties shall provide an estimate of the total effect of their policies and measures, in accordance with the 'with measures' definition, compared with a situation without such policies and measures. That effect shall be presented in terms of GHG emissions avoided or sequestered, by gas (on a CO₂ eq basis), in the most recent inventory year and in subsequent years that end in either a zero or a five, extending at least 15 years from the most recent inventory year (not cumulative savings). This information may be presented in tabular format.

38. Parties may estimate the total effect of their measures by calculating the difference between a 'with measures' and a 'without measures' projection. Alternatively, Parties may use another approach, for example individually assessing the effect of each significant policy and measure and aggregating the individual effects to arrive at a total. In either case, in the reporting it should be clear from what year onward it was assumed that policies were implemented or not implemented in calculating the estimate.

Chapter 4 shows a comprehensive listing of policies. Implemented and adopted policies and measures represent an important part of Austria's strategy to mitigate GHG emissions. It has to be mentioned, however, that the highly fragmented responsibilities for climate change mitigation among the Federation, 'Länder' and Municipalities still cause difficulties for coherent monitoring and evaluation of the effects of policies and measures, cf. Section 4.2.1. An estimate of the effects of all PaMs is not available.

A "without measures" scenario has not been calculated for Austria. The development and regular update of a WOM scenario in Austria's modelling system would cause considerable additional costs, but would not deliver value for policy making and future policy targets.

An indicator based approach was therefore chosen to monitor and evaluate progress with policies and measures and to calculate an approximate estimate of the aggregate effect of policies and measures:

- Assumptions: No effect of policies and measures before 1995, without policies and measures the GHG intensity would have remained constant since 1995 and emissions would follow the development of activities only;
- indicators are calculated as mean of the years 1990–1995 on subsectoral basis;
- indicators are used to calculate GHG emissions for 2020 and projection years by multiplying with the respective historic/projected activity;
- aggregate effect derived by subtraction of emissions from the 'with measures' scenario from the indicator based emissions.

Indicators:

- 1.A.1: specific CO₂ emissions of the total output of the public power sector (power and CHP plants);
- 1.A.2 & 2: CO₂ intensity of steel production, CO₂ intensity of the gross value added for the rest of industry;
- 1.A.3: CO₂ intensity of driven passenger car kilometers and of ton kilometers for freight transport;
- 1.A.4: CO₂ intensity of households (stock of permanently occupied dwellings), CO₂ intensity of the gross value added of the service sector;
- CRF 2: N₂O intensity of chemical industry;
- CRF 3: CH₄ intensity of milk production, N₂O emissions from mineral fertilizers per unit arable land;
- CRF 5: CH₄ generated by municipal waste (growth of municipal waste is assumed to be equal to population growth).

For fluorinated gases emissions policies have come into effect in 2003. Emissions without measures have been extrapolated from the period 1990–2002 to later years (without sector 2.C, as not covered by policies). The aggregate effect of policies was calculated by subtracting emissions from the ‘with measures’ scenario from extrapolated emissions.

The calculated effects of implemented policies and measures are summarized in Table 5.5.

Table 5.5: Aggregate effect of implemented and adopted policies and measures by gas (indicator based approach)

	2020	2025	2030	2035
CO ₂	30.6	38.2	44.5	50.6
CH ₄	4.2	4.4	4.7	4.9
N ₂ O	2.3	0.8	0.9	1.1
F-gases	0.6	1.8	2.7	3.0
Total	37.6	45.2	52.8	59.6

These numbers may include effects that are not directly attributable to policies and measures. There are effects which may have contributed to the decrease of the GHG intensity of activities (e.g. autonomous efficiency improvement of motor vehicles and heating systems), whereas some effects might have contributed to an increase (e.g. trend to bigger cars and more engine power as well as to larger dwellings and higher room temperature, due to increasing prosperity and decreasing service price). Assuming that autonomous efficiency improvements have a stronger impact than effects that lead to an emission increase, the estimates should be seen as an upper limit on the total effect of implemented policies and measures. Nevertheless, they give a proxy on how emissions would have grown from 1995 onwards without the implemented measures and other incentives for GHG emission reductions.

The aggregate effect of planned policies and measures has been calculated as the difference of scenarios WM and WAM.

Table 5.6: Aggregate effect of planned policies and measures by gas

	2025	2030	2035
CO ₂	2.8	5.3	6.7
CH ₄	5.7	5.4	5.2
N ₂ O	0.2	0.3	0.3
F-gases	0	0	0
Total	8.7	11.0	12.3

5.3 Methodology

39. When projecting GHG emissions and removals and estimating the total effects of policies and measures on emissions and removals, Parties may use any models and/or approaches that they choose. Sufficient information should be reported in the national communication to allow a reader to obtain a basic understanding of such models and/or approaches.

40. In the interest of transparency, for each model or approach used, Parties should briefly: (a) Explain for which gases and/or sectors it was used; (b) Describe its type and characteristics; (c) Describe the original purpose that it was designed for; (d) Summarize its strengths and weaknesses; (e) Explain how it accounts for any overlap or synergies that may exist between different policies and measures.

41. Parties should provide references to more detailed information related to the information referred to in paragraph 40(a–e) above.

42. Parties should report the main differences in assumptions, methods employed and results between the projections reported in the current national communication and those reported in previous national communications.

43. The sensitivity of the projections to underlying assumptions should be discussed qualitatively and, where possible, quantitatively.

44. To ensure transparency, Parties should report information on key underlying assumptions and values of variables such as GDP growth, population growth, tax levels and international fuel prices, using table 5 below. The information should be limited to that not covered by paragraph 45 below (i.e. it should not include sector-specific data).

45. To provide the reader with an understanding of emission trends from 1990 to at least 15 years from the most recent inventory year, Parties shall present relevant information on factors and activities for each sector. Such information may be presented in tabular format.

Models

Emission projections for CO₂, CH₄, N₂O and F-gases are generally calculated by the Environment Agency Austria (Umweltbundesamt). Basically, the same methodologies as for the national GHG inventory are applied, as reported in Austria's National Inventory Reports. The projections are consistent with the historical emission data of the Austrian Emission Inventory submission April 2021, with emission data up to the data year 2019.

The underlying sectoral forecasts of activities are based on the use of several models and methods and have been carried out in close collaboration with several institutions:

- The energy forecast is based on the National Energy Balance of Statistics Austria and on the econometric input-output model DYNK of the Austrian Institute of Economic Research, supported by calculations based on bottom-up models:
 - o Austrian Energy Agency with the model TIMES for public electric power and district heating supply,
 - o Energy Economics Group of the Technical University Vienna with INVERT/EE-Lab, for domestic heating (incl. district heating demand) & hot water supply,
 - o Technical University of Graz with the models NEMO, which was developed for the calculation of emission inventories for road transport in larger areas, and GEORG, a fleet based model for the calculation of energy consumption and emissions of mobile off-road sources.
- The forecast of emissions from industrial processes and solvents are based on expert judgements of Umweltbundesamt and on projections of respective gross value added (NACE codes) from the DYNK model.
- The estimations of emissions for fluorinated gases are based on a study published in 2010, supplemented by assumptions on the latest EU legislation.
- The agricultural forecast is based on the PASMA model of the Austrian Institute of Economical Research.
- The waste forecast is generally based on Umweltbundesamt expert judgements on waste amount and waste treatment.
- Several models have been used for the different LULUCF subsectors:
 - o For forest growth the model CALDIS was used, for soil organic carbon the YASSO 07 model;
 - o for cropland and grassland the PASMA model model of the Austrian Institute of Economical Research;
 - o expert judgements have been used for wetlands, settlements and other land;
 - o the forest sector model FOHOW2 has been used for projections of harvested wood products.

The same models and methods have been used for the preparation of the scenario as for the scenarios described in Austria's Fourth Biennial Report. The models are described in more detail in Annex C of the NC8. Details on models, emissions factors used and underlying parameters can be found in Chapter 3 of the (above mentioned) report on Austria's GHG emission projections^{Fehler! Textmarke nicht definiert.} 13

Main strength of the modelling approach is the set of bottom-up models which provide a very detailed description of the Austrian situation and its combination with an economic top-down model. As a weakness can be seen that this approach needs considerable resources (time, staff and budget) for each individual scenario. Therefore, in this scenarios compared to the last scenarios only significant changes in historical data of the GHG inventory were considered. A full run of scenarios with updated policies and measures is currently ongoing and will be published in the first half-year of 2023.

The data structure of activities, input data, emission factors and emission calculations is based on the detailed SNAP categories (Selected Nomenclature for sources of Air Pollution). The structure of output data is presented and aggregated in the Common Reporting Format (CRF) of the UNFCCC. Sectoral definitions align fully with the IPCC.

Differences to previous scenarios

Compared to data reported in the Fourth Biennial Report, the new WM scenario shows slightly lower total emissions for all years: Emissions are lower by 2.8 Mt CO₂ eq for 2020 and 1.4 Mt for 2030.

As the scenario was only adapted for sectors with major changes in historical data, differences exist mainly in 1.A.2 & 2 (-2.4 Mt in 2020 and -1.1 in 2030), Agriculture (-0.4 Mt in 2020 and -0.4 in 2030) and LULUCF (-0.4 Mt in 2020 and -0.5 in 2030). Minor changes occur in sectors 1.A.3, 1B and 5.

The changes with respect to the previous GHG emission projections are influenced mainly by changes in the base data (e.g. GHG inventory and emission factors, energy balance, recent market developments).

Details can be found in Chapter 5 of the above mentioned report on Austria's GHG emission projections.

Sensitivity analysis

The sensitivity analysis regarding the energy sector was based on the influence of economic growth on GHG emissions from transport, energy industries and manufacturing industries and construction, as well as the influence of changes in fuel prices and subsidies on GHG emissions in the residential and commercial sector. All these assessments are based on model results, obtained by calculating the effects on the Energy sector.

It is necessary to mention that the emission results in general are not linearly dependent on changes of an input factor. This is the reason why the presented sensitivity data cannot be seen as a functional dependency with varied parameters. The emission effect can only be seen for the specific values of the given parameters.

Two complete scenarios with different assumptions on economic growth and energy prices were calculated, based on the WM scenario. Main difference was a higher average economic growth of 2.5 % per year in the “Sensitivity 1” scenario and a lower growth of 0.8 % per year in the “Sensitivity 2” scenario. Energy prices as well as certificate prices in the EU ETS are influenced by economic growth (at EU and global level), the price assumptions for the sensitivity scenarios are shown in Table 4.4.

Table 5.7: Changes of parameters for sensitivity scenarios compared to the WM scenario

Sensitivity 1	2020	2030
International oil price	+5%	+27%
International coal price	+3%	+13%
International gas price	+7%	+31%
CO ₂ certificate price	+32%	+18%
Sensitivity 2		
International oil price	-3%	-8%
International coal price	-1%	-4%
International gas price	-2%	-11%
CO ₂ certificate price	-13%	-23%

The model calculations show 7 % higher total emissions for “Sensitivity 1” compared to the “With Measures” scenario and 8 % lower emissions for “Sensitivity 2” in 2030, see Table 5.8. Sector 1.A.1 shows the highest dependency on GDP growth, as the model projects that increased electricity demand can be met by domestic production in existing power plants under these more favourable economic circumstances (prices).

Table 5.8: Results of the sensitivity analysis – emission change compared to WM

Sensitivity 1	2020	2030
1.A.1 Energy industries	+0.1%	+48%
1.A.2 Manuf.. Industries	+0.2%	+3%
1.A.3 Transport	+0.3%	+3%
1.A.4 Other sectors	+0%	+0%
2 IPPU	+0.3%	+3%
Total (without LULUCF)	+0.2%	+7%
Sensitivity 2		
1.A.1 Energy industries	-6%	-28%
1.A.2 Manuf.. Industries	-3%	-9%
1.A.3 Transport	-3%	-8%
1.A.4 Other sectors	0%	+1%
2 IPPU	-2%	-6%
Total (without LULUCF)	-3%	-8%

Key input parameters

A summary of key input parameters used is given below.

Table 5.8: Key input parameters

Key underlying assumptions		Historical					Projected				
Assumption	Unit	1995	2000	2005	2010	2017	2020	2025	2030	2035	2040
GDP growth rate	%		3.4	2.2	1.8	3.1	1.8	1.4	1.4	1.6	1.6
Population	thousands	7 948	8 012	8 225	8 361	8 797	8 942	9 158	9 331	9 447	9 562
No. of households	thousands	3 093	3 237	3 475	3 624	3 831	3 992	4 126	4 230	4 318	4 402
Heating degree days		3 186	2 884	3 341	3 365	3 224	3 204	3 171	3 118	3 065	3 013
Exchange rate USD	USD/EUR				1.3	1.2	1.2	1.2	1.2	1.2	1.2
International oil price	EUR/GJ *					8.2	13.9	15.7	17.3	18.1	19.1
International coal price	EUR/GJ *					3.0	2.6	3.2	3.8	4.0	4.2
International gas price	EUR/GJ *					5.8	8.9	9.6	10.5	11.2	11.6
CO ₂ certificate price	EUR/t CO ₂					7.0	15.5	23.3	34.7	43.5	51.7
	* 2016 prices										

Sectoral key parameters – change from 2020 (actual data) to 2040:

- 1.A.1: Gross electricity production increases by 11 TWh (+16 %), the increase is delivered by renewable energy sources (+ 16 TWh or +29 %), whereas electricity from fossil fuels shows a decline; final energy consumption increases by 14 %;
- 1.A.2 and 2: Increase of final energy consumption by about 40 % or 129 PJ (electricity +44 PJ, renewables +31 PJ, oil +21 PJ);
- 1.A.3: Increase of the number of passenger-kilometres by 70 % and of freight transport tonnes-kilometres (all modes) by 18 %; increase of final energy demand for road transport (including fuel export in the vehicle tank) by 18 %;
- 1.A.4: Further increase of the number of households by 9 %; decrease of residential final energy consumption by 18 % and of heating degree days by 6 %;
- 3: Increase of cattle number by 4 %, decrease of pig and poultry numbers (4 / 16 %); increasing nitrogen input into solid from synthetic fertilizer (2 %) and manure (3 %);
- 5: 7 % decrease of solid municipal waste going to landfills.

More information on sectoral activity data and parameters can be found in in Annex 2 of the above mentioned report on greenhouse gas projections.¹³

6 Vulnerability assessment, climate change impacts and adaptation measures

46. The national communication shall include information on the expected impacts of climate change and an outline of the action taken to implement Article 4, paragraph 1(b) and (e), of the Convention with regard to adaptation. Parties are encouraged to use and reference relevant methodologies and guidance for assessing climate change impacts, vulnerability and adaptation measures. Parties may refer, inter alia, to integrated plans for coastal zone management, water resources and agriculture. Parties may also report on specific results of scientific research in the field of vulnerability assessment and adaptation.

47. Parties are encouraged to use the following structure when reporting information in this section:

(a) Climate modelling, projections and scenarios: for example, updated information on climate modelling, climate projections and scenarios relevant to the assessment of climate change impacts and vulnerability;

(b) Assessment of risks and vulnerability to climate change: for example, updated information on key economic, social and/or environmental vulnerabilities or risks related to current and expected climate change impacts;

(c) Climate change impacts: for example, updated information on both observed and potential future impacts of climate change; (d) Domestic adaptation policies and strategies: for example, updated information on progress on adaptation policies, strategies or plans that illustrate the Party's medium- and long-term approaches to addressing risks and vulnerability through its broader domestic development and sectoral planning;

(e) Monitoring and evaluation framework: for example, updated information on approaches to the monitoring and evaluation of implemented adaptation strategies or plans;

(f) Progress and outcomes of adaptation action: for example, updated information on adaptation measures taken to address current risks and vulnerabilities and on their status of implementation; and updated information on progress and, where possible, outcomes and the effectiveness of already implemented adaptation measures.

In order to fulfil its obligations according to Article 4 (1) (b) and (e) of the Convention ("Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing ... measures to facilitate adequate adaptation to climate change" and "cooperate in preparing for adaptation to the impacts of climate change"), Austria has developed the National Adaptation Strategy, consisting of a Strategic Framework and of the National Action Plan, which contains a series of options for the relevant sectors (see Section 6.4). The strategy is currently under revision. The implementation of the strategy is monitored (see Section 6.5). EU Member States cooperate in preparing for adaptation, for example by information sharing through the

ClimateAdapt Platform of the EEA and by the *EU Mission Adaptation to Climate Change* (with participating Austrian regions); more information on these issues can be found in the National Communication of the EU. Cooperation with developing countries on adaptation is part of the Austrian climate finance support; for details see Section 7.1 and the relevant markers in the tables on bilateral support.

6.1 Climate modelling, projections and scenarios

Observations and data are available for the last 250 years in the greater alpine region (HistAlp-Dataset). The longest temperature and air pressure series extend back to 1760, precipitation to 1800, cloudiness to the 1840s and sunshine to the 1880s in the alpine region.

Projections are available for the Alpine region for temperature, precipitation, heat, heavy precipitation and storms. Data collection and provision is located at the Central Institute for Meteorology and Geodynamics (ZAMG) with meteorological stations measuring temperature, precipitation, wind, sunshine and many other meteorological parameters. New regional climate scenarios for Austria and its nine provincial states have been available since autumn 2016. The scenarios are based on 13 EURO-CORDEX models, a 12.5km x 12.5 km grid, and use two greenhouse gas scenarios. Factsheets for all nine federal states with more detailed information on projected climate elements and climate indices are available. Results are available via the Climate Change Centre Austria (CCCA) data portal (CCCA Data Centre, <https://data.ccca.ac.at/group/oks15>).

The ÖKS15 data provide comprehensive, high-resolution and error-corrected information on climate change on a homogeneous basis for entire Austria for the first time. Their analysis delivers climate projections until the end of the 21st century and provides good insights into the expected effects of climate change in Austria. The climate projections provide information for the near future (2021–2050) and for the distant future (2071–2100) compared to the 1971–2000 period.

The ÖKS15 projections are based on 13 regional climate models and two different greenhouse gas scenarios (RCP8.5 and RCP4.5). The use of these two greenhouse gas scenarios clearly shows that the climate future is in our own hands:

- Scenario RCP8.5 reflects “business as usual” – i.e. unchecked greenhouse gas emission, so that by 2100 there is a 3 times higher concentration than today.
- Scenario RCP4.5 shows a future in which, after 2040, global greenhouse gas emissions have successfully been reduced and by 2080 have diminished to about half today’s level. In order to fulfil the obligations of the world climate agreement, however, even the RCP4.5 path would still have to be significantly undercut.

6.2 Assessment of risks and vulnerability to climate change

The Austrian Strategy for Adaption to Climate Change contains a qualitative vulnerability analysis, differentiated according to the areas of action. The analysis builds mainly on the expected temperature- and precipitation-induced effects, some examples of the effects and resulting vulnerability assessments are listed below:

- Agriculture and forestry are strongly dependent on meteorological and climatic factors and are assessed as sectors with high vulnerability. There is considerable regional variability of vulnerability. Heat stress, reduced water supply due to changing precipitation patterns, new invasive species and pathogens may affect crop production and grassland as well as animal husbandry. Comparable risks exist for forestry, where changes may be faster than the life-cycle of trees and common tree species may not be fit for changed circumstances. Forest fires due to longer periods with reduced precipitation have to be seen as additional risk in this sector.
- Vulnerability with respect to water resources and water management exhibits strong regional variability. Increase in precipitation and runoff in winter and decrease in summer is expected for some regions and may have impacts on shipping, quality of water bodies and aquatic biocenoses, the latter also being affected by increasing water temperature. In southern and eastern Austria, a decrease in groundwater recharge is likely. On a small scale, existing bottlenecks in water supply in areas with unfavourable water resources could worsen. Seasonal changes of precipitation patterns and earlier melting of snow may shift the risk of flooding into spring and winter in northern Austria, but there is high uncertainty regarding this topic.
- Tourism is assessed to have high to low vulnerability. Depending on the region, winter snow cover may be considerably reduced, resulting in considerable losses in winter tourism. Low vulnerability is assumed for summer tourism as well as city tourism and health and spa tourism, which may benefit from increasing air and water temperatures, less rainfall in summer and an extended summer season on the one hand but which bear risks from worsening water quality of warmer lakes, heat waves in cities and lower diversity in the natural scenery (biodiversity, glacier retreat) on the other hand.
- In the energy sector vulnerability is expected to be low for space heating because of decreasing energy demand of buildings and decreasing heating degree days. High vulnerability is expected for cooling of buildings, as cooling degree days will increase and periods of high electricity demand for cooling may coincide with unfavourable conditions for electricity production. Electricity production by thermal power plants are assessed as vulnerable, because increasing temperatures of ambient air and cooling water deteriorate efficiency and availability of thermal plants. Run-of-river power plants may be affected by seasonal changes in runoff, but current data does not allow for a reliable estimate of vulnerability. Supply of renewable energy sources is heavily influenced by climatic conditions; especially production of forest biomass is expected to be highly vulnerable in some regions.

- In construction and housing, existing buildings are – regionally different – highly vulnerable to e. g. heat waves in urban areas, to more frequent events of heavy rain, to increased snow loads, to increasing frequency of local-scale floods as well as avalanches and landslides. Some of these risks may be minimised by renovation measures and most risks may be avoided for the construction of new buildings.
- Different grades of vulnerability can be found concerning human health. Vulnerability to heat stress is high for children, elder people and people with heart diseases and lower for the rest of the population. Vulnerability to increasing levels of ground-level ozone and increasing UV-radiation is high for sensible parts of the population but moderate for the general population. Changed climatic conditions may be favourable for the spread of pathogens, vectors and allergic plants, which poses a risk for population in general.
- Ecosystems and biodiversity are assessed to be highly vulnerable to the expected changes, like increasing temperature and changed precipitation patterns. Especially regions with a high share of endemic species like alpine regions must be seen as highly vulnerable. Changes in species composition, spread of alien species and loss of habitats and species must be expected.
- Vulnerability is expected to be high for transportation infrastructure in some regions. Increase in the amount of snow at elevations above 1800 m, potentially accompanied by a higher risk of avalanches in certain regions, and thawing of permafrost, resulting in rock-fall and land-slides, may affect infrastructure in higher regions. Heavy precipitation on local level can result in drainage system overloads and the flooding of underpasses as well as in increasing risk of landslides and mud flows; erosion and washouts can threaten the stability of railroad embankments and road beds. Increased heat stress can result in damage to materials and structures, as well as the deformation of pavement and rail infrastructure.
- For industry and trade vulnerability in general is assessed to be moderate. Higher temperatures and heat waves increase the cooling requirements for the storage and transport of various products and affect working conditions. Decrease in the availability of cooling water can affect cooling-intensive production as well as power generation. Potential changes in the availability of raw materials and intermediate products due to changes in temperature and precipitation conditions can have an impact on the entire value chain. Through globalisation, both the supply for production in Austria and the sales of Austrian products will be influenced by climate effects in other regions of the world.

Current climate scenarios do not allow for an assessment of the future trend for extreme events, like storms and hail, floodings and landslides. Most of the sectors mentioned above, however, would exhibit considerable vulnerability to an increase of the frequency and intensity of extreme events.

More details on the vulnerability assessment can be found in Part 2 of the Austrian Adaptation Strategy.

6.3 Climate change impacts

Temperature in Austria has risen by nearly 2°C since 1880, more than double as much as the global increase of 0.85°C. The increase was strongest in the period after 1980, when an increase by 1°C has been observed. Annual sunshine duration has increased by about 20%. All observed glaciers in Austria have clearly shown a reduction in surface area and in volume in the period since 1980. Duration of snow cover has been reduced in recent decades, especially in altitudes around 1,000 m above sea level. Precipitation change shows regional differences during the past 150 years: An increase by around 10–15 % has been observed in western Austria, a decrease of a comparable proportion in the south-east.

Results of scientific research on climate change with relevance for Austria have been compiled in the “Austrian Assessment Report Climate Change 2014”, which has been developed according to the model of the IPCC Assessment Reports. It deals with the physical science basis as well as with consequences for society and nature and with mitigation and adaptation. A summary for policy makers as well as a synthesis report are available in English language (http://hw.oeaw.ac.at/Autorenbuch_engl.pdf). Examples of the results with respect to future climate change impacts are shown below.

A first special report addressed health, demography and climate change (<https://sr18.ccca.ac.at/>) and was published in September 2018. The effects of climate change on health are already being felt today and can be classified as an increasing threat to health in Austria. A second special report on tourism (<https://sr19.ccca.ac.at/>) was published in December 2020.

Expected future climate change, based on the SRES A1B emissions scenario (i. e. medium to large increase in GHG concentrations):

- Anticipated medium temperature increase in the Alpine region compared to 1961–1990 is 1.6°C for 2021–2050 and 3.7 °C for 2071–2100;
- precipitation increase compared to 1970–2000 in winter (10 %) and decrease in summer (20 % and more) by the end of the 21st century, with more dry conditions in the southeast;
- moisture decrease in summer (5 %) by the end of the 21st century;
- global radiation decrease in winter and increase in summer (5–10 %) by the end of the 21st century;

- temperature extremes will significantly increase in the 21st century, e.g. hot nights in Vienna are expected to triplicate, whereas the number of days with frost shows a comparable decrease by the end of the century;
- frequency of heat waves will increase from around 5 to 15 per year by the end of the century;

Impacts hydrology:

- Seasonal shifts in runoff (decrease in summer, increase in winter, more decrease in the south);
- heavy and extreme precipitation events are likely to increase from autumn to spring, the risk of extreme floods is likely to be increased by a warming Mediterranean Sea.
- increasing temperature of lakes (+ 1–2.6°C) and rivers (+1°C) in summer by middle of the century;
- increasing evaporation especially in the second half of the century and in southern regions;
- reduced snow cover in low and medium altitude (e. g. -30 days snow cover duration at 1000–2000m altitude, more pronounced in southern regions) by middle of the century;
- glaciers will continue to shrink, by 2030 ice volume and glacier area are expected to have declined to half of the mean values of the period 1985–2004;

Impacts soil:

- decreasing soil moisture especially in the second half of the century and in southern regions;
- Enhanced susceptibility to landslides and debris flow due to increasing heavy precipitation and increased warm periods during snow;
- Retreat of the permafrost line, large areas of current permafrost would become free of permafrost;
- Increased rockfall and debris flow in high altitude areas influenced by permafrost.

Impacts on the living environment:

- Changes in ecosystem composition, migration of species (with a loss of species adapted to cold conditions);
- loss of native fish species due to increasing water temperatures;
- increasing productivity of mountain forests and agriculture in regions with sufficient precipitation, decreasing productivity at low altitudes in case of increasing dry periods;
- shift of coniferous forests to deciduous forests;

- regional shifts of conditions relevant for agriculture, crops and grassland, e. g. expansion of areas suitable for wine cultivation, increasing irrigation demand for fruit crops;

Impacts on Humans and society:

- Rising mortality due to increase in heat waves;
- negative impacts on health due to improved conditions for yet non-endemic infectual diseases and allergen plants;
- negative impacts on winter tourism due to decrease in snow cover and increasing costs for artificial snow-making;
- slight reduction in electricity production from hydropower due to reduced runoff;
- decreasing energy demand for space heating and increasing electricity demand for cooling;
- potential increase of extreme events which may affect infrastructure and buildings.

6.4 Domestic adaptation policies and strategies

The Federal Ministry for Climate Action (BMK) is in charge of coordinating adaptation policy in Austria. The Environment Agency Austria (EAA) regularly acts as a semi-public support unit providing expertise and policy support along all stages of the policy cycle to the BMK, the Climate and Energy Fund as well as the provinces. EAA is a “bridging” or “boundary organisation” that is deeply involved in knowledge generation and capacity-building as well as in practice-related decision support (manual, work aids, etc.) for stakeholders, linking science, administration and policy-making.

A national adaptation strategy (NAS) was adopted on 23rd October 2012 by the Council of Ministers and endorsed by the Provincial Governors’ Conference on 16th May 2013. The NAS was revised and published in 2017. The Austrian NAS consists of two parts: a Strategic Framework (or “Context”) and an Action Plan.

The objective of the Austrian Adaptation Strategy is to avoiding adverse effects of climate change on the environment, society and economy, and to take advantage of opportunities, which may arise. The adaptation strategy aims at strengthening the natural, social and technical capacity to adapt. Adaptation measures should thus involve no social downsides; rather, they should minimize risks to democracy, health, security, and social justice. Another key objective is to increase awareness at all levels in order to sensitize actors and make the complex issue of adaptation to climate change more tangible. Another important objective is to identify linkages between the areas of action and related recommendations, in order to avoid negative impacts in other areas and possible

conflicts in the implementation process. Adaptation activities that conflict with other key objectives – such as environmental protection or climate change mitigation – or that disadvantage social groups should also be precluded.

A national adaptation plan (NAP) was adopted in 2012 (as part of the NAS) and revised in 2016 (and approved together with the revised NAS in 2017). The NAP presents a catalogue of 135 adaptation options for 14 sector-related fields of action. Some examples for the recommended options are shown below:

- Agriculture: Activities for the protection of soil fertility, structure and stability ; promotion of water-saving irrigation systems and improvements in Irrigation planning; breeding of water-saving, heat-tolerant plants; optimised fertilizer management; advice on new agricultural diseases and pests; selection of a site-adapted crop; promotion of animal welfare and animal health under changing climatic conditions.
- Forestry: Better selection of tree species; soil-friendly management; reduction of damage caused by wildlife; preventative measures in view of the potential increase in forest fires; development of innovative techniques for wood processing.
- Water resources and water management: Extended data use and collection; improved coordination of water consumption for various uses; increased consideration of low water in the management of water resources; adaptive flood risk management with robust measures; emphasis on water temperature in water management measures.
- Tourism: Integration of climate change into tourism strategies; provision of regional data as the basis for decision-making; creation of offers not dependent on snow and strengthening of alpine summer tourism.
- Energy: Optimisation of the network infrastructure and promotion of decentralised energy production and feed-in; increased research on potential methods of energy storage; optimisation of the interaction between generation and consumption; Increasing security of supply through more diversified energy sources; reduction of internal heat loads in buildings in summer by reducing power consumption and increasing final energy efficiency.
- Construction and housing: Implementation of structural measures to ensure thermal comfort in buildings and to protect them from extreme weather events, including the further development of building standards; use of passive and active cooling with sustainable technologies; improvement of urban spaces with respect to micro-climatic conditions; support of respective research, awareness raising and training.
- Protection against natural hazards: Raising of awareness regarding risks and individual responsibility; increased consideration of adaptation needs and hazards in spatial development strategies; promotion of water retention in catchment areas; further development of warning and measurement systems; research into the impact of climate change on extreme events.
- Human health: Preparedness with respect to extreme events (heat waves, floods, ...), (new) infectious diseases and the spread of allergenic/toxic species; Incorporation of climate-relevant topics in the training and further education of medical professions.

- Ecosystems and biodiversity: Improving knowledge on the effects of climate change on ecosystems/biodiversity through research and extension of monitoring systems; strengthening of threatened populations and species and protection of key habitats; adjustment in the design of open spaces in residential areas and in the design of leisure and vacation activity offers.
- Transportation infrastructure / mobility: Further expansion of early warning systems; safeguarding a functional transportation system under changed climate conditions / extreme events; appropriate air conditioning in public transport in order to reduce heat stress; review of legal standards for the construction and operation of transport infrastructure ; reduction of sealed surfaces for transport infrastructure; Improved public information methods.

Details regarding all sectors and options can be found in the Action Plan ([available in English](#)).

The federal states pursue different approaches when creating CCA policies: Upper Austria (2013), Styria (2015), Vorarlberg (2016) and Salzburg (2017) have their own CCA strategies. Tyrol has an integrated climate strategy (2015). Lower Austria (2011 and 2020) and Carinthia (2018) have integrated adaptation measures into existing climate mitigation strategies. In Vienna's climate mitigation program (KliP II, duration 2010 – 2020), adaptation measures are continuously being implemented. In the upcoming climate mitigation program 2030 (KliP 3), mitigation and adaptation are considered equally. In Burgenland, adaptation measures are integrated into other sectoral programs and strategies.

6.5 Monitoring and evaluation framework

The methodological concept for monitoring and evaluation is pragmatic and comprises two work streams: 1) a self-assessment approach using a stakeholder survey based on the NAP and sent to the key actors mentioned therein; 2) an indicator-based approach with qualitative and quantitative data collections. The first progress report on implementation of measures was published in 2015. The results have given a broad picture of the state of implementation and of key adaptation trends in Austria. The progress report has shown that implementation and mainstreaming of adaptation is increasing in Austria with a different level of progress in the various areas of action. Based on these results, sectoral targets were introduced in the revised national adaptation strategy (NAS) and action plan (NAP). The results were of high relevance for the first updated edition of the Austrian Adaptation Strategy and its Action Plan as of 2017.

One of the lessons learned was that not all aspects of adaptation processes are 'measurable'; thus, the analysis of quantitative and qualitative data and information only provides input for partial or indirect statements. As there are different ways of

interpreting quantitative and qualitative data, a common understanding is needed and can be ensured with strong stakeholder engagement.

For the second progress report, the written stakeholder survey was replaced with a series of stakeholder workshops per sectoral field of action in the NAP, which provided rich in-depth insights and delivered group-based expert judgments on the implementation progress. The complementary indicator-based assessment approach was maintained. Following rounds of written consultations, the second progress report was finalised in autumn 2021.

6.6 Progress and outcomes of adaptation action

The second progress report shows that climate change adaptation has gained momentum and activities for the implementation of measures have increased all over Austria. The topic is increasingly recognised as important in the different sectors as well as on regional and local level. Relevant results:

- Awareness for the need of adaptation measures in agriculture is continuously increasing. A considerable share of the measures of the Austrian Agri-Environmental Programme contributed to adaptation; although there is high acceptance of the support measures by farmers there is still room for extension.
- In the forest sector the decrease of the share of spruce in favour of mixed forests with a high share of deciduous wood continues, but at a slightly lower pace compared to the period of the previous forest inventory.
- In water sector progress has been made regarding flood risk management and aquatic ecology.
- Forecast and early warning systems are important with respect to the protection against natural hazards as well as for the transport infrastructure. Early warning systems have been established for many relevant parameters.
- Early warning systems are also relevant for the protection of human health. Heat protection plans have been developed at federal level as well as in the majority of the federal provinces; they are targeted at information and warning of the population.
- The need for action at the local level, which has been emphasised in the National Adaptation Strategy, has been met by the establishment of the support and funding programme “Climate Change Adaptation Model Regions” of the Climate and Energy Fund. The number of participants has been continuously increasing during the last years.

There is, however, still need for accelerated action, especially with respect to the integration of adaptation aspects into all kinds of other sectoral strategies, plans and programmes at federal, regional and local level.

7 Financial, technological and capacity-building support

48. Parties included in Annex II to the Convention (Annex II Parties) shall provide information on the provision of financial, technological and capacity-building support to Parties not included in Annex I to the Convention (non-Annex I Parties), including information to show how this support is new and additional. In reporting such information, Parties should distinguish, to the extent possible, between support provided to non-Annex I Parties for mitigation and adaptation activities, noting the capacity-building elements of such activities, where relevant. For activities with multiple objectives, the funding could be reported as a contribution allocated partially to the other relevant objectives.

49. Each Annex II Party shall provide a description of its national approach to the tracking of the provision of financial, technological and capacity-building support to non-Annex I Parties, if appropriate. This description shall also include information on indicators and delivery mechanisms used and allocation channels tracked.

50. In reporting information in accordance with paragraphs 52 and 53 below, Annex II Parties shall use any methodology to be developed under the Convention, taking into account international experience. Annex II Parties shall describe the methodology used and shall report in a rigorous, robust and transparent manner the underlying assumptions and methodologies used to produce information on finance.

The provision of financial, technological and capacity-building support to developing countries is a key element in tackling climate change at the global level.

Austria is firmly committed to providing such support in the larger context of meeting the ultimate objective of the Convention and the long-term goals of the Paris Agreement. In tables 7, 7(a), 7(b), 8, and 9 we provide full details on our efforts in 2019 and 2020, respectively (excluding mobilised private climate finance, separate information on this can be found below).

We also strive to achieve in the longer term a balance between support for adaptation and mitigation in our bilateral cooperation, while noting that such a balance must be viewed in a comprehensive manner (both quantitatively and qualitatively, and acknowledging that projects often address both adaptation and mitigation elements) and also taking into account other priorities articulated by our partner countries.

In this context it is also important to note that “mitigation” and “adaptation” are concepts that are often difficult to distinguish in concrete activities on the ground. In addition, latest scientific findings by the IPCC (WGII report of AR6) suggest a need to consider both

mitigation and adaptation in an integrated manner in the context of “climate-resilient development” and in pursuit of sustainable development.

Austria is committed to mainstreaming climate action into government policy both domestically and in cooperation with partner countries around the world.

7.1 Finance

51. Each Annex II Party shall describe, to the extent possible, how it seeks to ensure that the resources it provides effectively address the needs of non-Annex I Parties with regard to climate change adaptation and mitigation.

52. Each Annex II Party shall provide information on the financial support that it has disbursed and committed for the purpose of assisting non-Annex I Parties to mitigate GHG emissions and adapt to the adverse effects of climate change and any economic and social consequences of response measures, and for capacity-building and technology transfer in the areas of mitigation and adaptation, where appropriate. To that end, each Annex II Party shall provide summary information in textual and tabular format (see tables 6, 7 and 8 below) on allocation channels and annual contributions for the previous two calendar or financial years, without overlapping with the previous reporting periods, ...

53. Each Annex II Party shall provide the summary information referred to in paragraph 52 above for the previous two calendar or financial years in textual and tabular format on the annual financial support that it has provided for the purpose of assisting non-Annex I Parties, including the following: (a) The amount of financial resources; (b) The type of support; (c) The source of funding; (d) The financial instrument; (e) The sector; (f) An indication of what new and additional financial resources it has provided pursuant to Article 4, paragraph 3, of the Convention, including clarification of how it has determined that such resources are new and additional.

54. Each Annex II Party shall provide detailed information on the assistance provided by it for the purpose of assisting developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation to those adverse effects, in textual format and with reference to table 6 below.

55. Recognizing that the goal of mobilizing financial resources referred to in decision 1/CP.16, paragraph 98, includes private financial sources, each Annex II Party should report, to the extent possible, on private financial flows leveraged by bilateral climate finance towards mitigation and adaptation activities in non-Annex I Parties, and should report on policies and measures that promote the scaling up of private investment in mitigation and adaptation activities in developing country Parties.

A broad range of actors and instruments contribute to Austria’s overall contribution to climate finance. Key actors include the Development Bank of Austria (OeEB), the Federal Ministry of Finance, the Austrian Development Cooperation (ADC), and the Federal Ministry of Climate Action.

7.1.1 Summary information on contributions to climate finance for 2019 and 2020

Austria provided financial resources to address climate change in developing countries to the tune of EUR 332.8 million (EUR 346.4 million including mobilised private climate finance) in 2019 and EUR 257.9 million (EUR 260.3 million including mobilised private climate finance) in 2020. These resources assist our partner countries in various ways, including through strengthening of local capacities, building resilience against specific local and regional impacts of climate change and increasing energy efficiency and promoting the use of renewable energies.

The financial resources provided target (1) adaptation, (2) mitigation and (3) cross-cutting activities. Cross-cutting activities address adaptation and mitigation in an integrated manner in the context of climate-resilient development. Taken together, adaptation and cross-cutting activities received the majority of resources in both 2019 and 2020. Official Development Assistance (ODA) and Other Official Flows (OOF) represent the largest sources of funding. The most common financial instrument is a standard grant. Key sectors of engagement include Agriculture, Energy, Forestry, and Water.

N.B. The decrease from 2019 to 2020 is in large part attributable to the global COVID-19 pandemic, which resulted in far fewer new contracts being signed in 2020, as compared to 2019. Preliminary data for 2021 suggest that financial resources provided and mobilized are to rise again in subsequent years.

Figure 7.1 below provides an overview of the last eleven years (2010-2020) of climate finance provided by Austria to developing countries, including mobilised private climate finance.

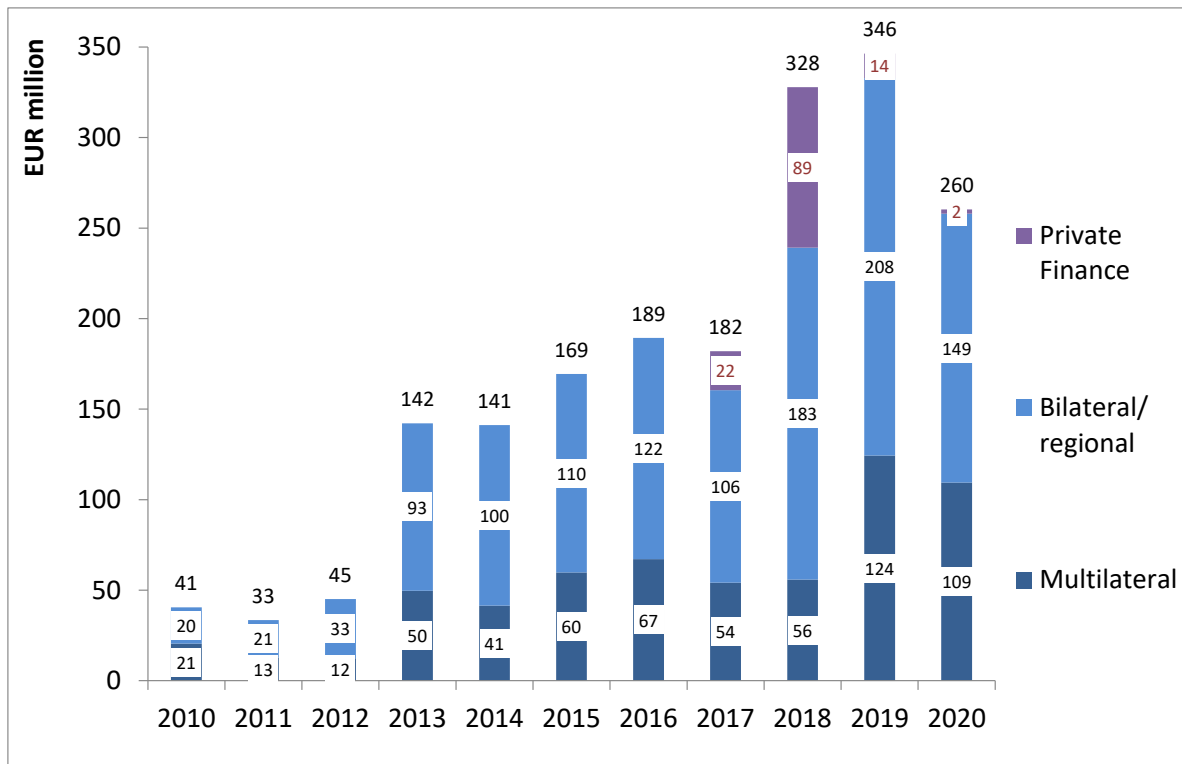


Figure 7.1: Austria’s provision of climate finance to developing countries, 2010–2020 (in millions of EUR). Totals include mobilised private climate finance and therefore deviate from totals in the respective CTF tables. The coverage of private climate finance has changed over time.

Further information on specific projects and the way they assist partner countries can be found in the detailed project descriptions in CTF tables 7(b) for 2019 and 2020, respectively (see Tables 7.6 and 7.7 below).

The first column of tables 7.6 and 7.7, below, lists recipient countries and regions using the OECD DAC country codes (three-digit numbers). Consistent with OECD DAC guidelines, projects that benefit more than one country in different regions and/or have a global dimension are designated as “Bilateral unallocated (998)”.

7.1.2 New and additional resources

Public climate finance support by Austria to developing countries – including for technology transfer and capacity building – has increased considerably since 1990.

This development is in line with our commitment to provide “new and additional” resources, which we define as a gradual scaling up of support over time, with new programmes, projects and focus areas supplementing and/or extending existing initiatives over time, with the overall volume of support provided increasing in the longer term. Figure 7.1 shows the longer-term trend of the provision of new and additional resources from 2010 to 2020.

7.1.3 National approach for tracking the provision of financial support to developing countries

In 2013, Austria adopted an international climate finance strategy (KFS, available in German only¹⁴). KFS established a new inter-ministerial working group (AGIK) dedicated to climate finance. AGIK is tasked to regularly take stock of national and international developments related to the provision of financial, technological and capacity-building support to developing countries and to respond to emerging developments, including on tracking the provision of financial, technological and capacity-building support.

In 2016, KFS was revised¹⁵ and now includes a dedicated chapter on rules and methodologies for tracking and reporting the provision of climate finance. These guidelines stipulate the use of OECD DAC methodologies to ensure consistency with Austria's ODA reporting as well as comparability with other climate finance providers.

This entails, inter alia:

- Identification of eligible recipient countries using the most current DAC list of ODA recipients (for BR reporting this has been changed to Non-Annex I Parties upon recommendation by the ERT reviewing our BR3);
- bottom-up identification of climate-relevant projects using DAC Rio markers for mitigation and adaptation, respectively; (for projects marked with a Rio marker value "1", amounts reported as climate finance are discounted by 50 percent);
- no double-counting of DAC Rio markers (if a project has more than one Rio marker valued at "1" or above, only one value (the higher value) is used for the amounts reported as climate finance);
- identification of "climate-specific" contributions to multilateral organizations (MDBs) using the latest available DAC data on imputed multilateral shares;
- use of official DAC EUR-USD exchange rates for a given reporting year;
- all flows reported on a commitment basis.

Detailed rules and methodologies are specified and explained as "criteria" K1-K12 in KFS.

Data collection for climate finance is undertaken by the Austrian Development Agency (ADA) Statistics Office under the responsibility of the Federal Ministry of Climate Action, with ADA compiling and storing information as well as ensuring quality control.

¹⁴ https://www.bmk.gv.at/themen/klima_umwelt/klimaschutz/int_klimapolitik/finanzierung/klimafinanz_strategie.html

¹⁵ See link in footnote above.

Standard contractual clauses for individual contracts require monitoring and reporting of project implementation by the implementing agencies, thus ensuring that funds deliver on the objectives defined for individual projects.

7.1.4 How the provision of financial, technological and capacity-building support is assisting developing countries / is addressing their respective needs

All bilateral programmes, projects and initiatives that Austria supports are developed and implemented in close cooperation with our partner countries. Austria cooperates with partner countries based on the internationally agreed principles of the “Busan Partnership for Effective Development Cooperation”. These principles include:

- Ownership of development priorities by developing countries
- A focus on results
- Partnerships for development
- Transparency and shared responsibility.

Austria implements the “Busan Partnership” through country and regional strategies that are jointly developed with our partner countries.¹⁶ These strategies reflect current and emerging interests, needs and priorities of our partners, including in the areas of climate change mitigation and adaptation.

We seek to ensure that all programmes, projects and initiatives are compatible with other related national development strategies of our partner countries.

We therefore understand that all bilateral programmes, projects and initiatives meet existing and emerging needs and interests expressed by our partner countries at the national level and in the context of concrete policy implementation.

7.1.5 Assistance provided for the purpose of assisting developing country Parties that are particularly vulnerable to the adverse effects of climate change in meeting the costs of adaptation

As mentioned in section 7.1.4, above, Austria develops all bilateral programmes, projects and initiatives in close cooperation with our partner countries. This includes countries that are particularly vulnerable to the adverse effects of climate change, especially those in Sub-Saharan Africa.

¹⁶ <https://www.entwicklung.at/en/ada/funding/country-and-regional-strategies/>

Recent work by the UNFCCC Secretariat on assessing and meeting the costs of adaptation¹⁷ has shown that estimating the costs of adaptation at national and local levels is challenging and that various methodological approaches exist, all of which have their respective strengths and weaknesses. Austria does not suggest the use of any given approach or mix of approaches. Rather, we focus on identifying through a dialogue with partner countries their priorities, including in relation to adaptation options and needs.

7.1.6 Private financial flows leveraged by bilateral climate finance / mobilised private climate finance

In line with the commitment of developed countries as a group of mobilizing jointly USD 100 billion dollars a year by 2020 from a wide variety of sources, Austria is committed to mobilise private climate finance and to extend tracking to cover mobilised private climate finance over time. We recognize that reporting under the BR is voluntary and that there is no CTF table to provide information in a common format.

Up until 2016, we were only able to track mobilised private climate finance through ADC business partnerships¹⁸. These partnerships allow for a co-financing of up to 50 percent of a given business investment by ADC, provided the overall project supports development objectives in line with priorities of our partner countries.

Austria is now also in a position to track private climate finance mobilised by the Development Bank of Austria (OeEB). For figures for 2019 and 2020, respectively, see Table 7.1 below.

Table 7.1 Private climate finance mobilised by Austria in 2019 and 2020 (in EUR)

	2019	2020
ADC business partnerships	821,339	852,713
Development Bank of Austria	12,766,632	1,464,718
Total	13,587,972	2,317,430

We continue to closely follow international developments on the issue, e.g. under the OECD Research Collaborative for Tracking Private Climate Finance and intend to expand

¹⁷ “Synthesis report on the cost of adaptation - Efforts of developing countries in assessing and meeting the costs of adaptation: Lessons learned and good practices - Synthesis report by the Adaptation Committee in the context of the recognition of adaptation efforts of developing country Parties”, available online at <https://unfccc.int/documents/621859>

¹⁸ <https://www.entwicklung.at/en/actors/businesses/business-partnerships>

the scope of reporting on mobilised private climate finance as further guidance is developed.

7.1.7 Economic and social consequences of response measures

Austria does not assess / track dedicated support related to economic and social consequences of response measures. However, we understand that many projects and programmes we support have direct or indirect economic and social co-benefits for recipient countries in terms of stimulating sustainable economic growth and/or strengthening, inter alia, local communities, indigenous peoples, women, and youth.

Table 7.2 (CTF Table 7): Provision of public financial support: summary information in 2019

Allocation channels	European euro – EUR					USD ^b				
	Core/ general ^c	Climate-specific ^d				Core/ general ^c	Climate-specific ^d			
		Mitigation	Adaptation	Cross-cutting ^e	Other ^f		Mitigation	Adaptation	Cross-cutting ^e	Other ^f
Total contributions through multilateral channels:		1,591,667		122,794,407			1,782,381		137,507,735	
Multilateral climate change funds ^g				46,576,120					52,156,909	
Other multilateral climate change funds ^h										
Multilateral financial institutions, including regional development banks				73,926,829					82,784,803	
Specialized United Nations bodies		1,591,667		2,291,459			1,782,381		2,566,023	
Total contributions through bilateral, regional and other channels		163,779,216	13,549,446	31,106,661			183,403,377	15,172,952	34,833,887	
Total		165,370,882	13,549,446	153,901,069			185,185,759	15,172,952	172,341,622	

Table 7.3 (CTF Table 7): Provision of public financial support: summary information in 2020

Allocation channels	European euro - EUR					USD ^b				
	Core/ general ^c	Climate-specific ^d				Core/ general ^c	Climate-specific ^d			
		Mitigation	Adaptation	Cross-cutting ^e	Other ^f		Mitigation	Adaptation	Cross-cutting ^e	Other ^f
Total contributions through multilateral channels:		1,649,545		107,787,979			1,883,043		123,045,639	
Multilateral climate change funds ^g				35,517,004					40,544,525	
Other multilateral climate change funds ^h										
Multilateral financial institutions, including regional development banks				67,356,760					76,891,279	
Specialized United Nations bodies		1,649,545		4,914,215			1,883,043		5,609,835	
Total contributions through bilateral, regional and other channels		100,485,075	13,371,382	34,650,958			114,708,990	15,264,134	39,555,888	
Total		102,134,621	13,371,382	142,438,937			116,592,033	15,264,134	162,601,527	

Table 7.4 (CTF Table 7(a)): Provision of public financial support: contribution through multilateral channels in 2019

Donor funding	Total amount				Status	Funding source ^d	Financial instrument	Type of support	Sector
	Core/genera		Climate-specific						
	EUR	USD	EUR	USD					
Total contributions through multilateral channels			124,386,074	139,290,116					
Multilateral climate change funds ^e			46,576,120	52,156,909					
1. Global Environment Facility			16,576,120	18,562,284	committed	ODA	Other ¹	Cross-cutting	Not appl.
2. Least Developed Countries Fund									
3. Special Climate Change Fund									
4. Adaptation Fund									
5. Green Climate Fund			30,000,000	33,594,625	committed	ODA	Grant	Cross-cutting	Not appl.
6. UNFCCC Trust Fund for Supplement. Activities									
7. Other multilateral climate change funds									
Multilateral financial institutions, including regional development banks			73,926,829	82,784,803					
1. World Bank			54,957,172	61,542,186	committed	ODA	Grant, Other ¹	Cross-cutting	Not appl.
2. International Finance Corporation									
3. African Development Bank			11,805,202	13,219,711	committed	ODA	Grant, Other ¹	Cross-cutting	Not appl.
4. Asian Development Bank			879,802	985,221	committed	ODA	Other ¹	Cross-cutting	Not appl.
5. European Bank for Reconstr. and Devel.									
6. Inter-American Development Bank			381,898	427,658	committed	ODA	Grant	Cross-cutting	Not appl.
7. Other									
Asian Infrastructure Investment Bank			5,902,755	6,610,028	committed	ODA	Grant	Cross-cutting	Not appl.
Specialized United Nations bodies			3,883,125	4,348,405					
1. United Nations Development Programme									
2. United Nations Environment Programme									
<i>Montreal Protocol</i>			1,591,667	1,782,381	committed	ODA	Grant	Mitigation	Not appl.
3. Other									
<i>UNFCCC, KP</i>			123,321	138,098	committed	ODA	Grant	Cross-cutting	Not appl.
<i>International Fund for Agricultural Developm.</i>			2,168,137	2,427,925	committed	ODA	Grant	Cross-cutting	Not appl.

¹ Other = capital subscription

Table 7.5 (CTF Table 7(a)): Provision of public financial support: contribution through multilateral channels in 2020

Donor funding	Total amount				Status ^b	Funding source ^f	Financial instrument ^f	Type of support ^{f, g}	Sector ^c
	Core/general ^d		Climate-specific ^e						
	EUR	USD	EUR	USD					
Total contributions through multilateral channels			109,437,525	124,928,681					
Multilateral climate change funds ^g			35,517,004	40,544,525					
1. Global Environment Facility			10,517,004	12,005,712	committed	ODA	Other ¹	Cross-cutting	Not appl.
2. Least Developed Countries Fund									
3. Special Climate Change Fund									
4. Adaptation Fund									
5. Green Climate Fund			25,000,000	28,538,813	committed	ODA	Grant	Cross-cutting	Not appl.
6. UNFCCC Trust Fund for Supplement. Activities									
7. Other multilateral climate change funds									
Multilateral financial institutions, incl. Reg Dev. B.			67,356,760	76,891,279					
1. World Bank			49,855,368	56,912,521	committed	ODA	Grant, Other ¹	Cross-cutting	Not appl.
2. International Finance Corporation									
3. African Development Bank			16,477,548	18,809,986	committed	ODA	Grant, Other ¹	Cross-cutting	Not appl.
4. Asian Development Bank			840,294	959,240	committed	ODA	Other ¹	Cross-cutting	Not appl.
5. European Bank for Reconstr. and Development									
6. Inter-American Development Bank			183,550	209,532	committed	ODA	Grant	Cross-cutting	Not appl.
7. Other									
Specialized United Nations bodies			6,563,761	7,492,878					
1. United Nations Development Programme									
<i>UNDP</i>			1,250,405	1,427,403	committed	ODA	Grant	Cross-cutting	Not appl.
2. United Nations Environment Programme									
<i>Montreal Protocol</i>			1,649,545	1,883,043	committed	ODA	Grant	Mitigation	Not appl.
3. Other									
<i>UNFCCC, KP</i>			113,811	129,922	committed	ODA	Grant	Cross-cutting	Not appl.
<i>FAO</i>			1,581,429	1,805,284	committed	ODA	Grant	Cross-cutting	Not appl.
<i>International Fund for Agricultural Development</i>			1,968,570	2,247,226	committed	ODA	Grant	Cross-cutting	Not appl.

¹ Other = capital subscription

Table 7.6 (CTF Table 7(b)): Provision of public financial support: contribution through bilateral, regional and other channels in 2019

Recipient country/ region/project/programme ^b	Total amount		Status ^c	Funding source ^g	Financial instrument ^g	Type of support ^{g, h}	Sector ^d	Additional information ^e
	Climate-specific ^f							
	European euro - EUR	USD						
Serbia (063)	3,956	4,430	committed	ODA (10)	Standard Grant (110)	mitigation	Agriculture (311)	Independent Environmental and Social due Diligence Assessment
Serbia (063)	11,375	12,738	committed	ODA (10)	Standard Grant (110)	mitigation	Industry (321)	Second Opinion on Compliance with relevant EU E&S Standards
Serbia (063)	26,000,000	29,115,342	committed	OOF (21)	Standard loan (421)	mitigation	Industry (321)	Energy Efficiency
Serbia (063)	35,000,000	39,193,729	committed	OOF (21)	Standard loan (421)	mitigation	Cross-Cutting (410)	Finance of a Waste to energy facility
Bosnia and Herzegovina (064)	28,353	31,750	committed	ODA (10)	Standard Grant (110)	mitigation	OTHER - Business and other services (250)	Implementation and certification ISO 14001 and ISO 45001 ((AS Group Implementation Environmental and Social Action Plan (ESAP))
Albania (071)	100,000	111,982	committed	ODA (10)	Standard Grant (110)	cross-cutting	Forestry (312)	Afforestation, training and education for sustainable community-based forest management in Albania (Economic Partnership - Albania - Lenzing (WP-ALB-Lenzing))
States of ex-Yugoslavia, unspecified (088)	2,000,000	2,239,642	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	EBRD City Regeneration and Environment (CREATE) Fund
States of ex-Yugoslavia, unspecified (088)	1,000,000	1,119,821	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (430)	EBRD European Western Balkans Joint Fund (WBJF)
Europe, regional/multi-country (089)	15,169	16,986	committed	ODA (10)	Standard Grant (110)	cross-cutting	Forestry (312)	R20 Austrian World Summit Breakout Session
Europe, regional/multi-country (089)	7,500	8,399	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Voluntary contribution towards the UNECE for the Environmental Performance Review Programme
Europe, regional/multi-country (089)	38,500	43,113	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Voluntary contribution to the Trust Fund for Supplementary Activities (TFSA)
Europe, regional/multi-country (089)	10,000	11,198	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Voluntary contribution to the OECD Research Collaborative on Tracking Finance for Climate Action
Moldova (093)	804,420	900,806	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (410)	Enhancing climate resilience in the Biosphere Reserve "Prutul de Jos" (Lower Prut)

Eastern Africa, regional (121)	337,969	378,465	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	IBRD - Donor Funded Staffing Program - Social, Urban, Rural and Resilience (SURR) Global Practice, Urban Developm. and Disaster Risk Mgmt. East Africa
Egypt (142)	35,000	39,194	committed	ODA (10)	Standard Grant (110)	mitigation	OTHER - Business and other services (250)	restructuring management
Egypt (142)	850,801	952,745	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Damage-cost compensation for Austria's Development Bank: Financing of a credit (net of guarantee premia)
Burundi (228)	3,750	4,199	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Supporting smallholder producers
Benin (236)	20,000	22,396	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Feasibility Study (FS) - ARGE IB Neuwirth - Crowdfunded Solar Power for Benin
Ethiopia (238)	511,047	572,281	committed	ODA (10)	Standard Grant (110)	mitigation	OTHER - Secondary education (113)	Frameworkprogramme Youth One World 2019 - 2022 - Solar Skills Training and Environmental Education in Ethiopia and Uganda
Ethiopia (238)	15,000	16,797	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Water, Sanitation and Hygiene-Project (WASH-Projekt) – sustainable solutions (second disbursement)
Ethiopia (238)	175,000	195,969	committed	ODA (10)	Standard Grant (110)	cross-cutting	OTHER - Government and civil society, general (151)	Delivering Together in Support of the 2030 Agenda in Ethiopia (Delivering as One)
Ethiopia (238)	250,000	279,955	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Coffee Alliances for Ethiopia (CAFE) Phase 2 ((Economic Partnership (EC))
Ethiopia (238)	60,718	67,993	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	Program design of new engagement Simien Mountains National Park in North Gondar, Ethiopia
Ethiopia (238)	750,000	839,866	committed	ODA (10)	Standard Grant (110)	adaptation	OTHER - Emergency response (720)	Contribution to the WFP Ethiopia Interim Country Strategic Plan (Food Assistance)
Ghana (241)	10,000	11,198	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Solar energy supply for households without access to roof areas in Ghana (Feasibility Study - Ghana - Efficient Energy Technology (FS-GHA-EET))
Ghana (241)	2,737,000	3,064,950	committed	ODA (10)	Interest subsidy (210)	mitigation	Transport (210)	Interest subsidy for the project: Enhancement of Road Safety by Implementing the Photovoltaic Based Street Lighting

Ghana (241)	634,375	710,386	committed	ODA (10)	Interest subsidy (210)	mitigation	Transport (210)	Interest subsidy for the project: Enhancement of Road Safety by Implementing the Photovoltaic Based Street Lighting
Ghana (241)	7,500,000	8,398,656	committed	OSEC (22)	Standard loan (421)	mitigation	Transport (210)	Frame II export credit: Enhancement of Road Safety by Implementing the Photovoltaic based Street Lighting Programme
Madagascar (252)	4,050	4,535	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Solar energy for four health centres
Mozambique (259)	500,000	559,910	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Contribution Pronasar 2019 - 2021
Mozambique (259)	7,348	8,228	committed	ODA (10)	Standard Grant (110)	mitigation	Water and Sanitation (140)	Consultant for Waste Management
Mozambique (259)	4,898	5,485	committed	ODA (10)	Standard Grant (110)	mitigation	Water and Sanitation (140)	Consultant for Waste Management
Mozambique (259)	46,259	51,802	committed	ODA (10)	Standard Grant (110)	adaptation	OTHER - Conflict prevention & resolution, peace & security (152)	Expertise on developing a project to support the consolidation of peace for the Province Sofala in Mozambique
Mozambique (259)	1,500,000	1,679,731	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Increasing Food and Nutrition Security for Women in the District of Chemba in Sofala Province, Mozambique
Mozambique (259)	325,000	363,942	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Contribution to the FAO Country Programming Framework 2017 - 2019
Mozambique (259)	8,000	8,959	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Mangroves - environment protection and renewable energy
Nigeria (261)	7,500	8,399	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Improvement of the infrastructure for drinking water supply in Alaocha
Rwanda (266)	25,000	27,996	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	Regional Development Cooperation to Strengthen the Resilience of Rural Communities in Kirimbi/Nyamshoke (Project from 2017 to 2019)
Senegal (269)	500	560	committed	ODA (10)	Standard Grant (110)	cross-cutting	Energy (232)	Support for the Development of Photovoltaic Systems / Africa - Tamacouda
Senegal (269)	15,000	16,797	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Participative research in agroecology in Niouro du Rip, Senegal
Senegal (269)	7,150	8,007	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Water well for increase of agricultural production

Sudan (278)	5,000	5,599	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Purchase of solar lamps
Tanzania (282)	3,250	3,639	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Research cooperation and realisation of sustainable energy sources in Tanzania
Tanzania (282)	7,500	8,399	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Promotion of renewable energies and energy-saving technologies
Tanzania (282)	7,000	7,839	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Farming improvements through water management
Tanzania (282)	29,390	32,912	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Personnel deployment: Advisor for organic agriculture and fair trade in Bukoba
Uganda (285)	10,000	11,198	committed	ODA (10)	Standard Grant (110)	cross-cutting	OTHER - Education, level unspecified (111)	Installation of water tanks, solar system and interior design at the education house in Mityana
Uganda (285)	518,953	581,134	committed	ODA (10)	Standard Grant (110)	mitigation	OTHER - Secondary education (113)	Frameworkprogramme Youth One World 2019 - 2022 - Solar Skills Training and Environmental Education in Ethiopia and Uganda
Uganda (285)	200,000	223,964	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Switch on Solar - Uganda ((Economic Partnership (EP))
Uganda (285)	16,840	18,858	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Photovoltaic (PV) system for Holy Family Hospital Nyapea
Uganda (285)	250,000	279,955	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Secure Livelihoods for South Sudanese Refugees and Host Communities in West Nile region, Uganda, Phase 2
Uganda (285)	100,000	111,982	committed	ODA (10)	Standard Grant (110)	mitigation	Agriculture (311)	Earmarked contribution to CGIAR: research project - Sustainable Intensification of the Pig Value Chain in Uganda
Burkina Faso (287)	4,500	5,039	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Light for schools 2018 in Kao, Outoum, Djouma Peulh
Burkina Faso (287)	992,500	1,111,422	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Project for local irrigation and agricultural resilience in Burkina Faso (PIRA-BF)
Burkina Faso (287)	422,500	473,124	committed	ODA (10)	Standard Grant (110)	adaptation	Industry (321)	Economic development of women through innovation in the cashew nut sector in Burkina Faso
South of Sahara, regional/multi-country (289)	250,000	279,955	committed	ODA (10)	Standard Grant (110)	adaptation	OTHER - Other social infrastructure and services (160)	ReBuild II: Resilience Building for refugees, IDPs and host communities in Ethiopia and Uganda Phase II

South of Sahara, regional/multi-country (289)	350,000	391,937	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Mainstreaming Gender in SADC Renewable Energy Sector, Phase II
South of Sahara, regional/multi-country (289)	2,500,000	2,799,552	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Southern African Solar Training and Demonstration Initiative, Phase IV
South of Sahara, regional/multi-country (289)	200,000	223,964	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Enhancing data generation and innovating insurance products for climate resilience (Economic Partnership with the Company Sustainable Finance Risk Consulting; EC - SFR)
Africa, regional/multi-country (298)	250,000	279,955	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	African Water Facility Special Fund 2017-2019 - Contribution 2017-2019
Africa, regional/multi-country (298)	1,292,488	1,447,355	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Resilience for People and Landscapes Programme (REPLAP)
Africa, regional/multi-country (298)	533,433	597,349	committed	ODA (10)	Standard Grant (110)	cross-cutting	Water and Sanitation (140)	Technical Assistance for the African Water Facility of the African Development Bank - 2019-2021
El Salvador (342)	29,390	32,912	committed	ODA (10)	Standard Grant (110)	mitigation	Agriculture (311)	Consultant for school management program in Kiun
Guatemala (347)	34,000	38,074	committed	ODA (10)	Standard Grant (110)	cross-cutting	Energy (231)	Wood saving stoves for 280 families in the mountains of Guatemala in the municipality of Joyabaj
Guatemala (347)	2,449	2,743	committed	ODA (10)	Standard Grant (110)	mitigation	Agriculture (311)	Triangular cooperation, component agroecology: Promotion of the agroecological approach at three indigenous organizations in Guatemala
Nicaragua (364)	12,770	14,300	committed	ODA (10)	Standard Grant (110)	mitigation	Transport (210)	Production of passenger and cargo bikes with electric assistance in Leon
Nicaragua (364)	20,000	22,396	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Energy-saving ovens for the partner village Chacaraseca - Phase III in Leon
Nicaragua (364)	7,348	8,228	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Consultant for Agroecology at FEM and UNAG
Nicaragua (364)	4,898	5,485	committed	ODA (10)	Standard Grant (110)	mitigation	Agriculture (311)	Consultant for agroecology in Nicaragua
Nicaragua (364)	9,797	10,971	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Personnel deployment: Advisor for capacity development in the field of environmental protection and climate change in Bluefliefs

North & Central America, regional (389)	5,583,125	6,252,100	committed	OOF (21)	Shares in collective investment vehicles (520)	cross-cutting	Cross-Cutting (410)	Shares: preservation of biodiversity & improvement of resource efficiency
North & Central America, regional (389)	5,583,125	6,252,100	committed	OOF (21)	Shares in collective investment vehicles (520)	cross-cutting	Cross-Cutting (410)	Shares: preservation of biodiversity & improvement of resource efficiency
Argentina (425)	50,000	55,991	committed	ODA (10)	Standard Grant (110)	cross-cutting	Forestry (312)	REDD+ Project for "Enhancing Sustainable Livelihoods in Forest Communities" in North Argentina; first payment
Argentina (425)	1,222,456	1,368,932	committed	OOF (21)	Standard loan (421)	mitigation	Energy (232)	Financing Envelope II
Bolivia (428)	8,500	9,518	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Implementation of solar energy components
Brazil (431)	750	840	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Support for the Purchase and the Construction of Water Tanks
Brazil (431)	29,000	32,475	committed	ODA (10)	Standard Grant (110)	cross-cutting	OTHER - Government and civil society, general (151)	Program to Secure Landrights and use Plans of the Indigenous Population in the Area of the Rio Negro, Amazonia
Brazil (431)	5,300	5,935	committed	ODA (10)	Standard Grant (110)	cross-cutting	OTHER - Government and civil society, general (151)	Land Rights and use Plans at Rio Negro. Brazil - A15-501 Good Life at Rio Negro II
Brazil (431)	4,150	4,647	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Climate Alliance: Financial contribution to a project in Amazonia Regional Development RIO NEGRO
Brazil (431)	3,639	4,075	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Contribution to climate protection in Rio Negro
Colombia (437)	25,000	27,996	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Regional Development Cooperation to Protect the Amazonas Rainforest in the Rural Areas of the Province of Guaviare (Project from 2017 to 2019)
Colombia (437)	2,676	2,997	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (430)	Various Projects - Climate Alliance in Colombia
Ecuador (440)	13,395,000	15,000,000	committed	OOF (21)	Standard loan (421)	mitigation	Energy (231)	Credit to finance SME development for energy conservation
Paraguay (451)	400,000	447,928	committed	ODA (10)	Standard Grant (110)	cross-cutting	Forestry (312)	Reducing CO2 emissions through agro-ecology and sustainable forestry and strengthening

								indigenous peoples and peasant communities in Paraguay
Peru (454)	851,627	953,670	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Damage-cost compensation for Austria's Development Bank: Risk sub-participation (net of guarantee premia)
South America, regional/multi-country (489)	38,040	42,598	committed	ODA (10)	Standard Grant (110)	cross-cutting	Transport (210)	Associate Professional Officer (APO) Program - Infrastructure/Urban Transport (INE/TSP)
South America, regional/multi-country (489)	191,356	214,284	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Associate Professional Officer (APO) Program - Climate Change and Sustainability Division (CSD/CCS)
South America, regional/multi-country (489)	700,000	783,875	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Multidonor Trust Fund for the Development of Sustainable Cities in Latin America and the Caribbean (CIT)
Iran (540)	10,000	11,198	committed	ODA (10)	Standard Grant (110)	mitigation	OTHER - Construction (323)	Feasability Study (FS) Sustainable Buildings in Iran
Lebanon (555)	250,000	279,955	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Improved Water, Sanitation and Hygiene (WASH) for Syrian refugees and host communities in Lebanon, Baalbek
Syria (573)	250,000	279,955	committed	ODA (10)	Standard Grant (110)	adaptation	OTHER - Emergency response (720)	Rehabilitaion of damaged/bombed water supply system
Middle East, regional/multi-country (589)	2,000,000	2,239,642	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	EU Trust Fund in Response to the Syria Crisis (MADAD Fund) - 4th Contribution
Armenia (610)	1,000,000	1,119,821	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	EU-Green Agriculture Initiative in Armenia - ADC Co-financing
Armenia (610)	342,780	383,852	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Fruit Production Sector Development Project in Armenia (FRUITENIA)
Armenia (610)	1,470,000	1,646,137	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Adolescents as Agents of Climate Change in their Communities
Armenia (610)	8,037,000	9,000,000	committed	OOF (21)	Standard loan (421)	mitigation	Energy (232)	Loan for financing of SMBs and projects for renewable energy
Georgia (612)	448,750	502,520	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Organic Agriculture and Rural Tourism Development in Mtskheta-Mtianeti region
Georgia (612)	186,750	209,127	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Implementing LEADER in Mestia municipality for better livelihoods in high mountainous regions of Georgia

Georgia (612)	100,000	111,982	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Earmarked contribution to CGIAR: research project - Enhancing Rural Livelihoods in Georgia
Bhutan (630)	300,000	335,946	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Capacity Development for Monitoring of Hydropower Plant Safety, Final Phase
Bhutan (630)	7,000	7,839	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Mutual training of organic farmers
Bhutan (630)	251,875	282,055	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Minimum Environmental Flow for Hydropower Projects in Bhutan, Final Phase
India (645)	2,500	2,800	committed	ODA (10)	Standard Grant (110)	adaptation	OTHER - Other social infrastructure and services (160)	Pushkar Slum - secure standards of living
India (645)	66,500	74,468	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Holistic environmental programme - solar plant for Don Bosco umbrella organisation
India (645)	8,930,000	10,000,000	committed	OOF (21)	Standard loan (421)	mitigation	Energy (236)	Credit for financing of natural gasoline and electric vehicles for SMEs
Maldives (655)	15,200	17,021	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Swimsol Technical Risk Assessment
Nepal (660)	28,000	31,355	committed	ODA (10)	Standard Grant (110)	mitigation	OTHER - Banking and financial services (240)	Dolma U&S Capacity Building Phase 2
Nepal (660)	7,450	8,343	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Expansion of a vegetable farm to supply the local population
Nepal (660)	2,000	2,240	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Landslide-EVO (Environmental virtual observatories)
Bangladesh (666)	2,100	2,352	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Construction of photovoltaic systems
Mongolia (753)	20,000	22,396	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	MS Polytechnik, Bioenergy for Mongolia
Far East Asia, regional/multi-country (789)	337,969	378,465	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	IBRD - Donor Funded Staffing Program - Environment and Natural Resources Management Global Practice, East Asia and Pacific Region
Asia, regional/multi-country (798)	182,203	204,034	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	Secondment of an expert for Disaster Risk Management
Oceania, regional/multi-country (889)	10,000	11,198	committed	ODA (10)	Standard Grant (110)	cross-cutting	Energy (232)	International Union for Conservation of Nature (IUCN) - Cooperation with PSIDS (Pacific Small

								Island Developing States) on sustainable energy
Bilateral unallocated (998)	3,000,000	3,359,462	committed	ODA (10)	Standard Grant (110)	cross-cutting	Water and Sanitation (140)	Global Water Security and Sanitation Program (GWSP)
Bilateral unallocated (998)	669,273	749,465	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	A Stake in Water: Advancing inclusive water resources decision making through dynamic multi-stakeholder and learning platforms
Bilateral unallocated (998)	2,000,000	2,239,642	committed	ODA (10)	Standard Grant (110)	cross-cutting	Transport (210)	Mobility and Logistics Multi-Donor Trust Fund
Bilateral unallocated (998)	795,000	890,258	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Contribution to Sustainable Energy for All (SEforAll)
Bilateral unallocated (998)	300,000	335,946	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	GET.pro - Transformational Advice
Bilateral unallocated (998)	300,000	335,946	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Contribution to GN-SEC Platform
Bilateral unallocated (998)	200,000	223,964	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Contribution 2019/2021 towards the Renewable Energy and Energy Efficiency Partnership (REEEP), first payment
Bilateral unallocated (998)	1,000,000	1,119,821	committed	ODA (10)	Standard Grant (110)	cross-cutting	OTHER - Banking and financial services (240)	Europe and Central Asia (ECA) Climate Smart Finance Project
Bilateral unallocated (998)	750,000	839,866	committed	ODA (10)	Standard Grant (110)	mitigation	OTHER - Business and other services (250)	Facility for Investment Climate Advisory Services (FIAS) Investment Climate Cooperation Trust Fund Fiscal Year 17-21
Bilateral unallocated (998)	15,000	16,797	committed	ODA (10)	Standard Grant (110)	cross-cutting	Forestry (312)	Forestry Knowledge and Information Shared Globally
Bilateral unallocated (998)	10,000	11,198	committed	ODA (10)	Standard Grant (110)	cross-cutting	Forestry (312)	Exchange with women from developing countries
Bilateral unallocated (998)	27,383	30,664	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	IUCN Membership fee 2019
Bilateral unallocated (998)	33,498	37,512	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (410)	Austrian contribution 2019 towards the Trust Fund of the Montreal Protocol on Substances that deplete the Ozone Layer
Bilateral unallocated (998)	20,000	22,396	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (410)	THE PEP (Transport, Health and Environment Pan-European Programme)
Bilateral unallocated (998)	20,000	22,396	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (410)	THE PEP (Transport, Health and Environment Pan-European Programme)

Bilateral unallocated (998)	550,000	615,901	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	IBRD - Donor Funded Staffing Program - new position that will be advertised in early 2020
Bilateral unallocated (998)	35,000	39,194	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Technical support on legal issues in the context of the UNFCCC
Bilateral unallocated (998)	5,000	5,599	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Technical support for tracking and reporting of the Austrian contribution for climate finance
Bilateral unallocated (998)	2,000,000	2,239,642	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	GFDRR MDTF for Supporting Disaster and Climate Resilience in Developing Countries
Bilateral unallocated (998)	2,000,000	2,239,642	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Europe an Central Asia (ECA) Sustainable Upstream Infrastructure Platform
Bilateral unallocated (998)	1,000,000	1,119,821	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	International Finance Cooperation - Europe and Central Asia (IFC - ECA) Cities Platform II
Bilateral unallocated (998)	250,000	279,955	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Participatory Urban Design Project Externally Financed Output
Bilateral unallocated (998)	215,000	240,761	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Austrian Contribution to the OECD/DAC Programme of Work and Budget 2019-2020
Bilateral unallocated (998)	275,000	307,951	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	IBRD - Donor Funded Staffing Program - new position that will be advertised in early 2020
Bilateral unallocated (998)	8,483,500	9,500,000	committed	OOF (21)	Subordinated loan (431)	mitigation	Energy (232)	Off-grid solar companies- Senior Tranche
Bilateral unallocated (998)	25,000,000	27,995,521	committed	OOF (21)	Shares in collective investment vehicles (520)	mitigation	Energy (231)	Investment in A-shares for energy conservation
Bilateral unallocated (998)	13,278,918	14,870,009	committed	OOF (21)	Shares in collective investment vehicles (520)	mitigation	Energy (231)	Shares: Energy Conservation
Bilateral unallocated (998)	4,426,288	4,956,649	committed	OOF (21)	Shares in collective investment vehicles (520)	mitigation	Energy (231)	Shares: Energy Conservation
Total contributions through bilateral, regional and other channels	208,435,324	233,410,217						
Subtotal	45,995,911	51,507,179		ODA				

Subtotal	162,439,412	181,903,037		OOF				
Subtotal	42,624,536	47,731,843			Grants			
Subtotal	108,567,956	121,576,659			Loan			
Subtotal	57,242,831	64,101,714			Other			
Subtotal	6,704,362	7,507,685					Agriculture	
Subtotal	88,817,729	99,459,943					Energy	
Subtotal	590,169	660,883					Forestry	
Subtotal	26,433,875	29,601,204					Industry	
Subtotal	12,922,185	14,470,532					Transport	
Subtotal	6,530,689	7,313,202					Water	
Subtotal	4,399,411	4,926,553					Other	
Subtotal	62,036,902	69,470,215					Cross-cutting	

Table 7.7 (CTF Table 7(b)): Provision of public financial support: contribution through bilateral, regional and other channels in 2020

Recipient country/ region/project/programme ^b	Total amount		Status ^c	Funding source ^g	Financial instrument ^g	Type of support ^{g, h}	Sector ^d	Additional information ^e
	Climate-specific ^f							
	European euro - EUR	USD						
Serbia (063)	200,000	228,311	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Piloting and Foundation for the Scaling of Short Rotation Wood Biomass Production for Renewable Energy in Serbia
Serbia (063)	12,500,000	14,269,406	committed	ODA (10)	Standard loan (421)	cross-cutting	Industry (321)	Extension of production and wastewater treatment
Serbia (063)	100,000	114,155	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Establishing Transparency Framework for the Republic of Serbia
Montenegro (065)	15,000,000	17,123,288	committed	OOF (21)	Standard loan (421)	mitigation	Energy (232)	Finance of a hydropower plant
States of ex-Yugoslavia, unspecified (088)	1,000,000	1,141,553	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (430)	EBRD European Western Balkans Joint Fund (WBJF)
Europe, regional/multi-country (089)	6,000,000	6,849,315	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Climate Support Facility (CSF) Western Balkans Green Recovery Program
Europe, regional/multi-country (089)	7,500	8,562	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Voluntary contribution towards the UNECE for the Environmental Performance Review Programme
Europe, regional/multi-country (089)	42,470	48,481	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	Disaster Risk Reduction“ (DRR) in Development Cooperation - Inception Phase
Europe, regional/multi-country (089)	300,009	342,476	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Coal exit in the Western Balkans: From “mega polluters” to “energy transition lighthouses”
Europe, regional/multi-country (089)	232,150	265,011	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (410)	Mitigating climate change through improved residential heating in the Western Balkans
Europe, regional/multi-country (089)	20,000	22,831	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (410)	Strengthening responses to security risks from climate change in South-Eastern Europe, Eastern Europe, the South Caucasus and Central Asia
Europe, regional/multi-country (089)	64,114	73,189	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Advisor in the office of the Austrian Executive Director (ED) at the EBRD
Moldova (093)	960,000	1,095,890	committed	ODA (10)	Standard Grant (110)	cross-cutting	Water and Sanitation (140)	Establishing safe water disposal in the town of Cantemir - Moldova - OEZA
Egypt (142)	748,169	854,074	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Damage-cost compensation for Austria's Development Bank: Financing of a credit (net of guarantee premia)

South Africa (218)	44,800	51,142	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Support in the construction of a photovoltaic system (incl. retrofitting) at the Ikhwezi Lokusa Rehab. centre
Cameroon (229)	245,000	279,680	committed	OOF (21)	Subordinated loan (431)	mitigation	Energy (232)	Production of roof tiles made out of recycled plastic
Ethiopia (238)	63,525	72,517	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Environmental management for livelihood security, Ethiopia
Ethiopia (238)	20,950	23,916	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	Development of sustainable livelihoods, Ethiopia
Ghana (241)	10,000	11,416	committed	ODA (10)	Standard Grant (110)	mitigation	Agriculture (311)	Development of a sustainable and profitable production of dried fruit by establishing a new and innovative drying center in Ghana
Ghana (241)	10,000	11,416	committed	ODA (10)	Standard Grant (110)	mitigation	Water and Sanitation (140)	Waste Management Expertise and Training in Ghana
Ghana (241)	388,073	443,006	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Supporting local communities in the Kintampo District, Ghana II, to reduce emissions from landuse
Ghana (241)	2,504	2,858	committed	ODA (10)	Standard Grant (110)	mitigation	Agriculture (311)	Supporting local communities in the Kintampo District, Ghana, to reduce emissions from landuse (Ghana)
Ghana (241)	2,500	2,854	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Support through doubling of donations for sustainable energy supply
Kenya (248)	13,220	15,091	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Photovoltaic system for the Helping Hands Community School
Mali (255)	15,000	17,123	committed	ODA (10)	Standard Grant (110)	cross-cutting	Water and Sanitation (140)	A water pump for Kouloukan
Mozambique (259)	500,000	570,776	committed	ODA (10)	Standard Grant (110)	adaptation	OTHER - Conflict prevention & resolution, peace & security (152)	DELPAZ Sofala - ADC Co-financing
Mozambique (259)	75,000	85,616	committed	ODA (10)	Standard Grant (110)	adaptation	OTHER - Government and civil society, general (151)	Provincial Development Plan Sofala: Evaluation and new Plan 2021-2030
Mozambique (259)	76,450	87,272	committed	ODA (10)	Standard Grant (110)	adaptation	OTHER - Disaster prevention and preparedness (740)	Strengthening Mozambique's Preparedness for Natural Disasters through investments and capacity building at community and national level
Mozambique (259)	30,319	34,610	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Sustainable rural development in Sofala Province, Mozambique

Mozambique (259)	1,300,000	1,484,018	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Sofala Province Water, Energy, and Food Security Project (SWEF)
Mozambique (259)	1,235,000	1,409,817	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Climate Smart Agriculture and Water in Sofala (CSAW Sofala)
Mozambique (259)	800,000	913,242	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Contribution Pronasar 2019 - 2021
Mozambique (259)	14,305	16,330	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Capacity building through repair of water pumps
Mozambique (259)	14,624	16,695	committed	ODA (10)	Standard Grant (110)	adaptation	OTHER - Post-secondary education (114)	Consultant for environmental management at the UCM Beira, Mozambique
Nigeria (261)	975,000	1,113,014	committed	OOF (21)	Subordinated loan (431)	mitigation	Energy (232)	Establishment of an industrial park in Nigeria
Nigeria (261)	4,230	4,829	committed	ODA (10)	Standard Grant (110)	mitigation	Water and Sanitation (140)	Support in the construction of a well with additional solar supply: Ichiribe – Eziorie Okwe in Okigwe
Senegal (269)	28,071	32,044	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Rural Development Senegal 19-22
Senegal (269)	25,176	28,740	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	PIDD II - Sustainable Agricultural & Local Development - SYMBIOSE, Senegal
Senegal (269)	23,665	27,015	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	RESECAL III - Food Security and Capacity Building - CARITAS KAOLACK, Senegal
Senegal (269)	23,470	26,792	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	RECARC II - Resilience and Adaptation to Climate Change - CAREM, Senegal
Senegal (269)	17,146	19,573	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	PRADER III Sustainable Agriculture & Entrepreneurship Organic Bananas - APROVAG, Senegal
Senegal (269)	11,994	13,692	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	PIRSA II - Food Security and Resilience - OFAD, Senegal
Senegal (269)	1,650	1,884	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Water well for increase of agricultural production
Eswatini (Swaziland) (280)	64,300	73,402	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Climate-smart interventions for improved livelihoods
Tanzania (282)	125,000	142,694	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Uluguru Spice Project II
Tanzania (282)	30,364	34,662	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Strengthening Food Security in Songwe, Tanzania
Tanzania (282)	11,959	13,652	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Enabling Rural Innovation im Östlichen Afrika / OWSL, Tanzania

Tanzania (282)	7,000	7,991	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Farming improvements through water management
Tanzania (282)	5,000	5,708	committed	ODA (10)	Standard Grant (110)	mitigation	Industry (321)	Installation of energy saving cooking stoves
Tanzania (282)	2,500	2,854	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Agricultural training for smallholders from the mountain villages of Morogoro
Tanzania (282)	2,117	2,417	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Support through doubling of donations for sustainable energy supply
Tanzania (282)	24,599	28,081	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Personnel deployment: Advisor for organic agriculture and fair trade in Bukoba
Uganda (285)	16,565	18,909	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	Enabling Rural Innovation im Östlichen Afrika , Uganda
Uganda (285)	11,959	13,652	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Enabling Rural Innovation im Östlichen Afrika / Caritas MADDO, Uganda
Uganda (285)	11,959	13,652	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Enabling Rural Innovation im Östlichen Afrika / Caritas Tororo, Uganda
Uganda (285)	11,959	13,652	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Enabling Rural Innovation im Östlichen Afrika / YARD, Uganda
Uganda (285)	8,887	10,145	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Promoting sustainable agriculture for improved livelihoods among school communities
Uganda (285)	421,878	481,596	committed	ODA (10)	Standard Grant (110)	cross-cutting	Forestry (312)	The Green Lung of Uganda III holistic reforestation project between Budongo and Bugoma Forest Reserves, Western Uganda
Uganda (285)	40,700	46,461	committed	ODA (10)	Standard Grant (110)	cross-cutting	Forestry (312)	Reforestation in Kasese district
Uganda (285)	28,000	31,963	committed	ODA (10)	Standard Grant (110)	mitigation	Forestry (312)	Sustainable timber management (reforestation) in Lira
Uganda (285)	16,500	18,836	committed	ODA (10)	Standard Grant (110)	mitigation	OTHER - Education, level unspecified (111)	Adaptation of the Girl's Primary School in Ngetta incl. photovoltaic system
Uganda (285)	10,000	11,416	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Green Energy and Nutrition
Uganda (285)	10,000	11,416	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	support for sustainable energy supply - solar/photovoltaic panels
Uganda (285)	43,132	49,237	committed	ODA (10)	Standard Grant (110)	cross-cutting	Energy (231)	Consultant for business Development for climate compensation project
Uganda (285)	14,287	16,310	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Consultant for Ecological Agriculture and the Development of Value Creation Chains

Burkina Faso (287)	5,790	6,610	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Light for schools and infirmary 2020
Burkina Faso (287)	5,300	6,050	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Light for Schools 2019
Burkina Faso (287)	1,625	1,855	committed	ODA (10)	Standard Grant (110)	mitigation	Water and Sanitation (140)	Well system with solar pump
Burkina Faso (287)	1,500	1,712	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Renewal and expansion of the main pump system in the village of Fakena
Zambia (288)	100,000	114,155	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Piloting of a new consumer financing model that allows financially excluded communities to afford solar energy systems
South of Sahara, regional/multi-country (289)	850,000	970,320	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Strengthening Coordination and Implementation of the Great Green Wall Initiative (UNCCD/GGWI)
South of Sahara, regional/multi-country (289)	750,000	856,164	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Support to the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) -BP2
South of Sahara, regional/multi-country (289)	659,000	752,283	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Support Programme for Women's Resilience in West Africa (PARFAO)
South of Sahara, regional/multi-country (289)	500,000	570,776	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Southern African Solar Training and Demonstration Initiative, Phase IV
Africa, regional/multi-country (298)	600,000	684,932	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Achieving Gender Equality through Climate Resilient Development of Water Infrastructure Investments
Africa, regional/multi-country (298)	500,000	570,776	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	African Water Facility Special Fund
Africa, regional/multi-country (298)	750,000	856,164	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Special Fund of the African Water Facility (AWF) 2020-2022
Africa, regional/multi-country (298)	21,937,500	25,042,808	committed	ODA (10)	Standard loan (421)	mitigation	Energy (232)	Credit for financing of (a) renewable energy-, energy and resource efficiency projects and (b) of infrastructure projects.
Africa, regional/multi-country (298)	16,475,000	18,807,078	committed	ODA (10)	Standard loan (421)	mitigation	Energy (232)	Credit for financing of small Independent Power Producers and Minigrids
Costa Rica (336)	10,000	11,416	committed	ODA (10)	Standard Grant (110)	mitigation	Forestry (312)	Voluntary contribution for the reforestation of the rainforest in La Gamba (COBIGA), Costa Rica
El Salvador (342)	34,020	38,836	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Strengthening agroecology in the Apaneca-Illamatepec Biosphere Reserve, El Salvador

El Salvador (342)	30,441	34,751	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Agroecological farming families in Morazán, El Salvador
El Salvador (342)	19,706	22,495	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Improving the food security of farming families in the suburbs of Ciudad Arce, El Salvador
El Salvador (342)	14,287	16,310	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Consultant for school management program in Kiun
Guatemala (347)	23,284	26,580	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Agricultural farming families in Atitlán, Guatemala
Guatemala (347)	21,495	24,538	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Food security for indigenous smallholder families in western Guatemala
Guatemala (347)	19,109	21,814	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Family and community farming in Quiché, Guatemala
Guatemala (347)	400,000	456,621	committed	ODA (10)	Standard Grant (110)	mitigation	Forestry (312)	Reducing deforestation through implementation of REDD+ (UNFCCC) by supporting the innovative sustainable community forest model of ACOFOP
Guatemala (347)	27,620	31,530	committed	ODA (10)	Standard Grant (110)	mitigation	Industry (321)	Wood saving stoves for 187 families in the villages of Laguna Seca, Pamixá and Xek'ich'elaj, Joyabaj municipality, Quiché
Nicaragua (364)	44,779	51,118	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Food security of the rural and indigenous families in the RACC, Nicaragua
Nicaragua (364)	1,900,931	2,170,013	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (410)	weADAPTogether - Climate change adaptation through sustainable community management and responsible use of coastal ecosystems
Nicaragua (364)	25,890	29,555	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Competence Centre for Alternative Energy - Phase 1 "New energy efficiency training branch"
Nicaragua (364)	24,599	28,081	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Consultant for Agroecology at FEM and UNAG
Nicaragua (364)	24,599	28,081	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Consultant for Agroecology at Fundación entre mujeres (FEM) and Unión Nacional de Agricultores y Ganaderos de Nicaragua (UNAG)
Nicaragua (364)	24,599	28,081	committed	ODA (10)	Standard Grant (110)	mitigation	Agriculture (311)	Consultant for agroecology in Nicaragua
Bolivia (428)	18,000	20,548	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Implementation of solar energy components

Bolivia (428)	16,000	18,265	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Photovoltaic system in Tojiluluni
Bolivia (428)	10,000	11,416	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	support for sustainable energy supply - solar/photovoltaic panels
Brazil (431)	29,000	33,105	committed	ODA (10)	Standard Grant (110)	cross-cutting	OTHER - Government and civil society, general (151)	Program to Secure Landrights and Usage Plans of the Indigenous Population in the Area of the Rio Negro, Amazonia
Brazil (431)	5,300	6,050	committed	ODA (10)	Standard Grant (110)	cross-cutting	OTHER - Government and civil society, general (151)	Land Rights and Usage Plans at Rio Negro. Brazil - Good Life at Rio Negro II
Brazil (431)	4,403	5,026	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Contribution to climate protection in Rio Negro
Brazil (431)	4,150	4,737	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Climate Alliance: Financial contribution to a project in Amazonia Regional Development RIO NEGRO
Brazil (431)	1,550	1,769	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (430)	Extra tuition in a children's home; development of solar energy-infrastructure; building up of animal husbandry
Colombia (437)	7,500	8,562	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Sustainable education in schools in the communities of La Maria and Agua Bonita
Colombia (437)	2,711	3,095	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (430)	Various Projects - Climate Alliance in Colombia
Paraguay (451)	152,940	174,589	committed	ODA (10)	Standard Grant (110)	cross-cutting	Forestry (312)	Exp: Local communities fight against climate change through sustainable forestry, agroecological production and protection of water sources. 3rd Part.
Peru (454)	301,579	344,268	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Damage-cost compensation for Austria's Development Bank: Risk sub-participation (net of guarantee premia)
America, regional/multi-country (498)	1,600,000	1,826,484	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	NDC Pipeline Accelerator Multi-Donor Trust Fund (ACL MDTF)
Lebanon (555)	125,000	142,694	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Improved Water, Sanitation and Hygiene (WASH) for Syrian refugees and host communities in Lebanon, Baalbek
Middle East, regional/multi-country (589)	500,000	570,776	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	EU Trust Fund in Response to the Syria Crisis (MADAD Fund) - 5th Contribution
Armenia (610)	500,000	570,776	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Local Empowerment of Actors for Development (LEAD4Shirk) - ADC Co-financing

Georgia (612)	500,000	570,776	committed	ODA (10)	Standard Grant (110)	cross-cutting	OTHER - Government and civil society, general (151)	Improving local governance through inclusive development approaches
Bhutan (630)	1,100,000	1,255,708	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Promotion of Renewable Energy and Energy Efficient Technologies in the Building Sector - Final Phase
India (645)	3,398,466	3,879,528	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Damage-cost compensation for Austria's Development Bank: Risk sub-participation (net of guarantee premia)
India (645)	103,301	117,924	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Damage-cost compensation for Austria's Development Bank: Financing of a credit (net of guarantee premia)
India (645)	82,160	93,790	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Energy Forever - Solar energy for the Don Bosco (DB) province of Hyderabad
India (645)	63,150	72,089	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Solar energy for Telangana and Andhra Pradesh
India (645)	20,000	22,831	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Exploration of resilience in agricultural alternatives
India (645)	7,500	8,562	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Agricultural training to improve the income situation of indigenous women in 18 villages in the districts of Hazaribagh and Ramgarh
India (645)	7,444	8,497	committed	ODA (10)	Standard Grant (110)	mitigation	OTHER - Education, level unspecified (111)	Modernisation and digitalisation of the village schools in Bakrou and Basadhi
India (645)	3,900	4,452	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (236)	AGP City Gas - analysis of E&S and ESAP development
Maldives (655)	63,920	72,968	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	LDD and contract documentation
Nepal (660)	185,800	212,100	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Reduce Impact of Climate Change
Nepal (660)	7,250	8,276	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Expansion and certification of organic vegetable production in Chyangsar and the surrounding area
South Asia, regional/multi-country (679)	171,889	196,220	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	IBRD - Donor Funded Staffing Program - Environment and Natural Resources Management Global Practice
Cambodia (728)	20,000	22,831	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Solarpower for the Island Koh Rong
Laos (745)	2,053,000	2,343,607	committed	OSEC (22)	Standard loan (421)	adaptation	Agriculture (311)	Frame II export credit: Agricultural Educational Training Center III

Laos (745)	1,039,500	1,186,644	committed	ODA (10)	Interest subsidy (210)	adaptation	Agriculture (311)	Interest subsidy for the project: Agricultural Educational Training Center III
Laos (745)	306,000	349,315	committed	ODA (10)	Interest subsidy (210)	adaptation	Agriculture (311)	Interest subsidy for the project: Agricultural Educational Training Center III
Mongolia (753)	7,000,000	7,990,868	committed	OSEC (22)	Standard loan (421)	mitigation	Energy (232)	Frame II export credit: LED Street Lighting
Mongolia (753)	5,000,000	5,707,763	committed	OSEC (22)	Standard loan (421)	mitigation	Energy (232)	Frame II export credit: LED Street Lighting
Mongolia (753)	2,466,000	2,815,068	committed	ODA (10)	Interest subsidy (210)	mitigation	Energy (232)	Interest subsidy for the project: LED Street Lighting
Mongolia (753)	1,762,000	2,011,416	committed	ODA (10)	Interest subsidy (210)	mitigation	Energy (232)	Interest subsidy for the project: LED Street Lighting
Mongolia (753)	597,917	682,553	committed	ODA (10)	Interest subsidy (210)	mitigation	Energy (232)	Interest subsidy for the project: LED Street Lighting
Mongolia (753)	427,083	487,538	committed	ODA (10)	Interest subsidy (210)	mitigation	Energy (232)	Interest subsidy for the project: LED Street Lighting
Far East Asia, regional/multi-country (789)	458,573	523,485	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Data Driven Agriculture for South East Asian Rice Farmers
Asia, regional/multi-country (798)	618,455	705,999	committed	ODA (10)	Standard Grant (110)	cross-cutting	OTHER - Disaster prevention and preparedness (740)	Cofinancing Agreement for supporting Adaptation Decision Making for Climate Resilient Investments
Asia, regional/multi-country (798)	500,000	570,776	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	Cofinancing Agreement for Accelerating Sanitation for All in Asia and the Pacific
Asia, regional/multi-country (798)	171,889	196,220	committed	ODA (10)	Standard Grant (110)	mitigation	Transport (210)	IBRD - Donor Funded Staffing Program - Transport and Digital Development Global Practice
Papua New Guinea (862)	13,344	15,233	committed	ODA (10)	Standard Grant (110)	adaptation	Agriculture (311)	Consultant for value chain development
Oceania, regional/multi-country (889)	70,000	79,909	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Voluntary contribution towards the Joint Committee with the Pacific Island States (PSIDS)
Oceania, regional/multi-country (889)	10,000	11,416	committed	ODA (10)	Standard Grant (110)	cross-cutting	Energy (232)	International Union for Conservation of Nature (IUCN) - Cooperation with PSIDS (Pacific Small Island Developing States) on sustainable energy
Bilateral unallocated (998)	28,303	32,310	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	IUCN Membership fee 2020 (100% ODA)

Bilateral unallocated (998)	2,000,000	2,283,105	committed	ODA (10)	Standard Grant (110)	mitigation	OTHER - Business and other services (250)	Competitiveness for Jobs and Economic Transformation (CJET) Multi-Donor Trust Fund
Bilateral unallocated (998)	2,000,000	2,283,105	committed	ODA (10)	Standard Grant (110)	adaptation	OTHER - Disaster prevention and preparedness (740)	City Resilience Program Multi-Donor Trust Fund
Bilateral unallocated (998)	2,000,000	2,283,105	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Energy Sector Management Assistance Program (ESMAP) Umbrella 2.0 Multi-Donor Trust Fund
Bilateral unallocated (998)	2,000,000	2,283,105	committed	ODA (10)	Standard Grant (110)	cross-cutting	Agriculture (311)	Enhanced Adaptation for Smallholder Agriculture Programme (ASAP+)
Bilateral unallocated (998)	1,000,000	1,141,553	committed	ODA (10)	Standard Grant (110)	cross-cutting	Water and Sanitation (140)	Global Water Security and Sanitation Program (GWSP)
Bilateral unallocated (998)	500,000	570,776	committed	ODA (10)	Standard Grant (110)	cross-cutting	OTHER - Banking and financial services (240)	ECA Climate Smart Finance Project
Bilateral unallocated (998)	300,000	342,466	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (430)	Middle East and North Africa (MENA) Cities Platform
Bilateral unallocated (998)	90,000	102,740	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (410)	Voluntary contribution to UNEP, Office Vienna, transboundary cooperation with a focus on specific countries
Bilateral unallocated (998)	50,000	57,078	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (430)	Austrian Contribution to the OECD/DAC Programme of Work and Budget 2019-2020
Bilateral unallocated (998)	32,652	37,274	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (410)	Contribution 2020 towards the Trust Fund of the Montreal Protocol on Substances that deplete the Ozone Layer
Bilateral unallocated (998)	24,000	27,397	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (410)	THE PEP (Transport, Health and Environment Pan-European Programme)
Bilateral unallocated (998)	24,000	27,397	committed	ODA (10)	Standard Grant (110)	mitigation	Cross-Cutting (410)	THE PEP (Transport, Health and Environment Pan-European Programme)
Bilateral unallocated (998)	500,000	570,776	committed	ODA (10)	Standard Grant (110)	adaptation	Cross-Cutting (410)	Restoring ecosystems to reduce drought risk and increase resilience
Bilateral unallocated (998)	350,000	399,543	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (231)	Vienna Energy Forum 2020/2021
Bilateral unallocated (998)	15,000,000	17,123,288	committed	ODA (10)	Standard loan (421)	mitigation	Energy (232)	Green Finance
Bilateral unallocated (998)	500,000	570,776	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Joint UNEP-UNIDO Programme to host and manage the Technology Center and Network (CTCN)

Bilateral unallocated (998)	300,000	342,466	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	ACE-AT - Strengthening Action for Climate Empowerment (ACE) within and beyond the UNFCCC process
Bilateral unallocated (998)	300,000	342,466	committed	ODA (10)	Standard Grant (110)	cross-cutting	Cross-Cutting (410)	Supporting the Enhanced Transparency Framework Readiness in Developing Country Parties
Bilateral unallocated (998)	92,964	106,123	committed	ODA (10)	Standard Grant (110)	adaptation	Water and Sanitation (140)	IBRD - Donor Funded Staffing Program: Water Global Practice
Bilateral unallocated (998)	63,000	71,918	committed	ODA (10)	Standard Grant (110)	mitigation	Energy (232)	Energy Efficiency Advisory and E&S Capacity Building for CIM
Total contributions through bilateral, regional and other channels	148,507,415	169,529,013						
Subtotal	118,234,415	134,970,794		ODA				
Subtotal	30,273,000	34,558,219		OOF				
Subtotal	45,723,415	52,195,679			Grants			
Subtotal	96,185,500	109,800,799			Conc. loans			
Subtotal	6,598,500	7,532,534			Other			
Subtotal	10,837,736	12,371,845					Agriculture	
Subtotal	96,501,734	110,161,797					Energy	
Subtotal	1,053,518	1,202,646					Forestry	
Subtotal	12,532,620	14,306,644					Industry	
Subtotal	171,889	196,220					Transport	
Subtotal	5,374,624	6,135,415					Water	
Subtotal	6,342,773	7,240,608					Other	
Subtotal	15,692,520	17,913,836					Cross-cutting	

Documentation Box

1: Core/general
Core contributions to multilateral organisations.
2: Climate-specific
Imputed multilateral shares of core contributions to multilateral organizations (inflows), based on most recent data provided by MDBs and published by OECD DAC.
3: Status
As defined under OECD DAC.
4: Funding source
As defined under OECD DAC.
5: Financial instrument
As defined under OECD DAC.
6: Type of support
As defined under OECD DAC.
7: Sector
As defined under OECD DAC.
Each Party shall provide an indication of what new and additional financial resources they have provided, and clarify how they have determined that such resources are new and additional. Please provide this information in relation to table 7(a) and (b).
Austria defines “new and additional” resources as a gradual scaling up of support over the years since the Convention and its Kyoto Protocol entered into force, with new programmes, projects and focus areas supplementing and/or extending existing initiatives over time, with the overall volume of support provided increasing in the longer term.

7.2 Technology development and transfer

57. Each Annex II Party shall provide information on measures taken to promote, facilitate and finance the transfer of, access to and the deployment of climate-friendly technologies for the benefit of non-Annex I Parties and for the support of the development and enhancement of endogenous capacities and technologies of non-Annex I Parties. Parties shall, where feasible, report activities related to technology transfer, including success and failure stories, using table 9 below.

58. Each Annex II Party shall provide, in textual and tabular formats (see table 10 below), information on measures and activities related to technology transfer implemented or planned since its previous national communication or biennial report. In reporting such measures and activities, Annex II Parties shall, to the extent possible, provide information on the recipient country, the targeted area of mitigation or adaptation, the sector involved and the sources of technology transfer from the public or private sectors, and shall distinguish between activities undertaken by the public and private sectors. As the ability of Parties to collect adequate information on private-sector activities is limited, Parties may indicate, where feasible, how they have encouraged private-sector activities and how those activities help Parties to meet their commitments under Article 4, paragraphs 3, 4 and 5, of the Convention.

Austria is a pioneer nation in environmental technologies. Austrian cutting-edge technologies in the fields of solar energy and photovoltaics (for hot water supply and supplementary heating, but also for environmentally sound refrigeration and the production of cold from heat), wind and hydropower for the generation of electricity, biomass (for the generation of electricity, heat and organic fuels), waste treatment, air and water purification as well as ecological construction are used world-wide. Austria's vision continues - not only to become a leading supplier of environmental technology and services - but also to increase the production and supply of energy from renewable sources as well as energy efficiency measures at home.

Austria is committed to a range of actions to advance technology development and transfer. Technology for mitigation and adaptation is a component of many of the programmes and projects supported by Austria's climate finance commitments.

Regarding the tracking of support for technology development and transfer the Austrian Development Agency has various instruments in place:

- OECD/DAC type of aid ("modality") codes – e.g. D01 and D02 identifying Free-standing Technical Cooperation (DAC terminology)
- Text search functions are available for identifying references to technology transfer.

Nevertheless, tracking technology development and transfer faces a number of challenges, one of them being quantification. While it can be easy for part of the portfolio (for financing extended directly by the donor agency in the form of stand-alone technical cooperation), it is very difficult for integrated activities where the finance is extended through an intermediary (e.g. a programme by a multilateral organisation), this being the greater share in the portfolio.

The Austrian Development Cooperation (ADC) has a strong focus on sustainable energy, in particular solar power as well as dissemination of decentralised renewable energy solutions and energy efficiency. Furthermore, ADC does support initiatives by Austrian enterprises in developing countries. Most often, the fields of interests are related to renewable energy, resource efficiency for sustainable consumption and production and energy efficient buildings. The granted funding by this “business partnerships programme” has to be matched by at least the same amount of the enterprises own funds. Therefore, business partnership projects, can serve as an incubator for private investments. The programme supports projects submitted by enterprises, which are simultaneously committed to pursue a developmental benefit for the beneficiary country’s common welfare as well as an entrepreneurial benefit.

ADC focuses on support to regional cooperation in the energy sector an often-neglected area of international energy cooperation. In 2009, the first contribution agreement to the regional “Energy and Environment Partnership” (EEP) in in the Southern and Eastern African Region was signed. Since then ADC’s regional energy portfolio gradually expanded both in geographical as well as thematic terms. ADC supports initiatives that enhance the development and dissemination of decentralised renewable energy solutions, help mitigate existing barriers to renewable energy and energy efficiency markets, investments and industries and promote south-south and triangular experience exchange. In this context, the ADC supports the establishment and the programmatic work of the Regional Centres for Renewable Energy and Energy Efficiency under the umbrella of the Global Network of Sustainable Energy Centres (GN-SEC). Therewith, the support of applied research and technology transfer gains importance within the energy portfolio.

The ADC focuses on key partner Least Developed Countries (LDCs) that are affected by a substantial energy gap, and where typically almost all of energy currently used is derived either from fossil fuel and gas, or from wooden biomass. In this regard, a switch to energy efficient solutions or any non-wood renewable energy source is a significant contribution to combatting deforestation, revert land degradation processes and therewith mitigating atmospheric GHG emissions while enhancing resilience towards climate change.

The ADC acknowledges and addresses the interlinkages between water, energy and food security. In the context of rural development projects and programs, which are following a multisector, interlinked and systemic approach, the entry points for climate change mitigation are correspondingly diverse. Here the ADC supports and implements activities

to avoid deforestation and degradation of vegetation and soils which are matched by the search for alternative energy sources respectively energy efficiency solutions for household, sustainable and climate-smart agricultural production (e.g. climate-resilient seeds, composting, intercropping, water harvesting) and small business activities. In the area of adaptation ADC further supports early warning systems and digitalization for climate smart agriculture. Also, as Austria being mountainous country itself, ADC supports the transfer and adaption to local circumstances of technologies in the areas of landslide and torrent control mechanisms.

Regarding endogenous technologies it has to be noted that the Technology Executive Committee (TEC) in its work observed a lack of common understanding among various stakeholders on what endogenous capacities and endogenous technologies are and what developing and enhancing them might mean. Austria does not have a specific strategic approach how to support the development and enhancement of endogenous capacities and technologies of developing countries. However, projects and activities are often developed jointly with the partner countries, and the work relies upon local experts and consultants. One example is the business partnership (supported by ADA and implemented by a consortium of Austrian and Turkish partners): “Wind Power Station Maintenance Training in Turkey”. The aim of the project is to contribute to increasing the share of renewable energies in Turkey and to ensure the production of wind energy in the long term. A wind turbine maintenance course to qualify maintenance personnel is being set up, certified, accredited and will be run by Turkish and Austrian partners in the long term. The training consists of three pillars: basic knowledge of wind energy and maintenance, specific knowledge, for example in electrical engineering and practical lessons, especially on safety issues.

- As part of the project, at least 15 trainers will be trained and at least 140 people will be trained to become wind turbine maintenance technicians.
- 110 jobs are created (10 trainers, 100 wind turbine maintenance technicians)
- 37 companies and institutions will benefit from the business partnership

Another important actor in Austria is OeEB, which acts as the official Development Bank of Austria. As a private sector financial institution it has been mandated by the Republic of Austria to promote economically, environmentally and socially sustainable development through financing and investing in profitable private sector projects in developing and transition countries and through the provision of advisory services. Renewable energy, energy and resource efficiency are areas of special focus. In addition, OeEB supports renewable energy and energy efficiency projects through local financial intermediaries.

The Federal Ministry of Finance (MoF) in its engagement with International Financial Institutions (IFIs) also places a strong emphasis on climate-related issues. The MoF continuously encourages IFIs to increase their climate ambition, set higher climate targets and work together with other IFIs to align all activities to the Paris Agreement. Furthermore, the Strategic Guidelines of the MoF for IFIs highlight sustainable energy and

climate protection as one of the four priority areas for its programmatic cooperation with IFIs. This support is key to deliver climate finance commitments both on mitigation and adaptation.

The MoF's contributions include core funding as part of capital increases (such as to the World Bank Group and regional development banks) and replenishments of funds (such as the International Development Association of the World Bank Group, the soft windows of the regional development banks, the Global Environment Facility, the International Fund for Agricultural Development, the European Development Fund).

In addition, bilateral programmatic support to IFIs, which was initiated in 2007, plays an essential role to deliver on national climate finance commitments. The MoF promotes technology development and transfer for climate change mitigation and adaptation through financial contributions to several Trust Fund programmes of IFIs. For example, the Global Facility for Disaster Reduction and Recovery (GFDRR) and the Climate Support Facility (CSF) of the World Bank, the ECA Climate Smart Finance program of the International Finance Corporation, the High Impact Partnership on Climate Action (HIPCA) of the European Bank for Reconstruction and Development and the NDC Pipeline Accelerator MDTF of the Inter-American Development Bank.

In addition to coordinating the reporting of Austria's climate finance contributions the Austrian Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology undertakes concrete cooperation projects in partner countries. The National Designated Entity (NDE) for the Climate Technology Centre and Network (CTCN) is located in the Ministry. Furthermore, the Ministry is actively following the work of the CTCN as well as the Technology Executive Committee (TEC).

Further initiatives of the Austrian government, such as the joint environmental-technologies initiative of the Climate Action, Environment, Energy, Mobility, Innovation and Technology and the Federal Economic Chamber, supports export oriented SMEs and hence supports technology transfer. It provides support and strengthens the export orientation of SMEs. Information events abroad present the offers and capacities of Austrian environmental technology and service providers. In addition to the opportunity of participating in various seminars in the target markets, participants present their environmental-technology products and services.

Austria is also member of institutions and initiatives that focus on technology development and transfer, e.g. Renewable Energy and Energy Efficiency Partnership (REEEP), Private Financing Advisory Network (PFAN), Sustainable Energy for All. REEEP (located in Vienna) is a public private partnership for scaling up clean energy business models in developing countries and emerging markets and collaborates with PFAN on business models for technology transfer.

Table 7.8: Description of selected projects or programmes that promoted practicable steps to facilitate and/or finance the transfer of, or access to, environmentally sound technologies

Project/programme title: Global Facility for Disaster Reduction and Recovery (GFDRR) of the World Bank

Purpose: The GFDRR is a global partnership that helps low- and middle-income countries better understand and reduce their vulnerability to natural hazards and climate change.

Recipient country	Sector	Total funding	Years in operation
Global (>140 countries)	Disaster Risk Reduction	USD >750mio since beginning from multiple donors	17 years (since 2006)

Description:

The Global Facility for Disaster Reduction and Recovery (GFDRR) is a multi-donor partnership that supports low and middle-income countries to understand, manage, and reduce their risks from natural hazards and climate change. Established in 2006, GFDRR is uniquely positioned to scale the resilience agenda in these countries by providing funding and expertise for policy advice on improving disaster risk management (DRM) at national and local levels, as it relates to land use, building codes, public health, transport, and education, agriculture, environmental protection, energy, water resources management, poverty reduction, fiscal risk management, and climate change adaptation, among others. This advice, in the context of the World Bank’s policy-based lending, creates both technical capacity and financial incentives that enables formalization of policy changes for improved DRM. The Program Management Unit, located within the World Bank, manages grant resources to carry out GFDRR’s mission. Through these actions, GFDRR supports countries to implement the Sendai Framework for Disaster Risk Reduction, the 2030 Agenda for Sustainable Development, and the Paris Agreement. Over the years, GFDRR has provided more than USD 750 million in technical assistance, analytics, and capacity building support for more than 140 countries through in-country, regional, and global activities. Austria has been a member of GFDRR since 2012 and has supported in particular activities in the Europe and Central Asia (ECA) region and Africa, as well as with a focus on urban resilience.

Indicate factors that led to project’s success:

- GFDRR has strategically focused its grant financing where there is high likelihood of mobilizing larger disaster and climate resilience operations.
- GFDRR has been an early investor in cutting-edge research, contributing to global knowledge on risk reduction and resilience as well as innovative approaches and best practice on DRM through flagship publications.
- Maximizing off its convening power as a global partnership, GFDRR forges cooperation between developing countries, donors, the private sector, development partners and international finance institutions (IFIs).

Technology transferred: Various types of technologies related to Disaster Risk Reduction and Recovery, such as: drones, satellite imagery, remote sensing and geospatial tools to provide risk assessments; flood damage and needs assessments; early-warning systems and hydromet services; etc.

Impact on greenhouse gas emissions: n/a

Project/programme title:

Contribution to the Trust Fund of the Energy and Environment Partnership in Southern and Eastern Africa

Purpose: The overall objective of the fund is to be a driver of sustainable and inclusive green growth and climate change mitigation by supporting countries across the SEA region toward the realisation of a climate resilient, zero-carbon future and contributing to the Sustainable Development Agenda and the targets of the Paris Climate Agreement

Recipient country	Sector	Total funding	Years in operation
15 countries in Southern and Eastern Africa	Direct clean energy financing	€ 5.000.000,-	5

Description: The fund will focus its operations on three linked and interrelated activities:

- Clean energy financing supporting early-stage energy access projects
 - Investment facilitation and Business Development Support
 - Knowledge, policy and partnerships,
- all with particular focus on supporting job growth and gender equality as well as underserved and vulnerable groups.
-

Indicate factors that led to project's success:

- EEP Africa provides early-stage grant and catalytic financing to innovative clean energy projects, technologies and business models
 - Project financing is supplemented by technical support, investment facilitation and knowledge sharing.
-

Technology transferred: PV Systems, Minigrids, Clean Cooking Stoves, Biogas

Impact on greenhouse gas emissions: Since 2018 275.000 tons CO₂eq. reduced or avoided

Project/programme title: Facility for Energy Inclusion (FEI)

Purpose: Financing of small IPPs and Minigrids

Recipient country	Sector	Total funding	Years in operation
Burkina Faso, Ivory Coast, Cameroon, Niger, Tchad	Renewable Energy	EUR 16.475.000 (Fund volume of 211 Mio. USD. (as of 31.12.2021).	2020 – 2021.

Description:

The objective of the project/partner is to provide green energy for households and companies in Africa by replacing energy obtained from diesel, kerosene or wood. As part of the objective, the project/partner supports small and medium-sized renewable energy projects by providing financing.

OeEB funds are used by the project/partner to finance independent power producers (up to 25 MW by means of new construction or modernization of existing plants). Furthermore decentralized energy solutions, such as projects to generate electricity for self-consumption by companies and mini-grid projects that contribute to electricity generation at the point of need and passed on to the respective end borrowers, are part of the activities. OeEB thus makes an important contribution to climate protection.

They aim to create up to 790 MW of additional sustainable renewable energy production capacities and thus save up to 12 million tonnes of CO₂.

The "On-Grid Window" supports renewable energy projects such as power plants (IPP2) up to 25 MW (new construction or modernisation of existing plants) that feed electricity into existing grids, on the other hand, decentralised energy solutions such as power generation projects for the Self-consumption of enterprises (CPp3/C&14) and mini-grid projects used for electricity generation to contribute to the location of demand (without the need for long transmission networks). The "Off-Grid Window" prioritizes Off-Grid/Energy Access projects with a focus on solar home systems (SHS with PAYGO solutions) or providers, operators and manufacturers of these technologies, but also providers financing for such schemes.

Indicate factors that led to project's success:

- ESMS: very good
 - E&S Standards in ESMS: compliant with EDFI requirements
 - E&S staff had separate E&S function
 - Annual E&S Monitoring: very good
 - Compliant with EDFI exclusion list
 - ILO core labour standards: full compliance.
 - ILO terms and conditions: full compliance
 - Human Resource Management: very good
 - Grievance mechanism (for external stakeholders and for employees): yes
 - Management of community health, safety and security: very good.
 - Community liaison officer (CLO): in place
-

Technology transferred:

There are two funding windows, the "On Grid Window" - FEI ONGRID and the "Off Grid Window".

The On-Grid Window supports, among other things, power plants -Independent Power Producers (IPP) up to 25 MW, the construction or modernization of existing plants, projects for power generation for self-consumption (CPP - Captive Power Plant/C&I - Commercial and Industrial Energy Users) and mini-grid projects. Off-Grid Window: Focus on solar home systems or on operators and manufacturers of these technologies and also providers who finance such systems.

Impact on greenhouse gas emissions: 22 GWh of power per year resulting in approx. 13.486 tons CO₂ saved p.a.

Project/programme title: Aten Solar Energy SAE (Alcazar 4)

Purpose: Financing of a solar power plant in order to react against climate change

Recipient country	Sector	Total funding	Years in operation
Egypt	Renewable Energy	USD 5 Mio.	2017 - 2020

Description:

Development, financing, construction, operation and maintenance of a solar PV plant in Egypt.

Egypt has amongst the best solar resource in the world with daily sunshine averaging 9 to 11 hours, low humidity, and global horizontal irradiation of around 2,230-2,330 kWh/m² per year. Installed RE capacity, however, is only around 700 MW of which mostly wind plants under public ownership. Given the strong solar and wind resources in the region, the dramatic fall in the RE new-build costs and the dominance of flexibly-dispatch gas and hydro generation in the energy mix, which is well suited to balancing the intermittent output of RE, the benefits and logic behind the Government of Egypt's (Go E) 20% RE target (currently 10%) by 2022 is obvious. Material additions of RE would also enhance Egypt's security of supply by diversifying the energy mix away from fossil fuels while simultaneously contributing to long-term power supply growth and sustainable development.

In September 2014, the GoE launched the Feed-in-Tariff programme (the FiT Programme) with a target to develop 2,300 MW of solar photovoltaic (PV) and 2,000 MW of wind power. The GoE explicitly designed the FiT Programme to encourage participation of the private sector. The current project is part of the FiT Programme in Egypt. In Round I the tariff was set at 14.3 USD Cents/kWh to encourage rapid development by the private sector. Over 175 companies submitted bids for prequalification in November 2014 and for solar PV 55 MoUs were eventually signed to secure the land plots. The land for all but one of the project sites was made available by the New and Renewable Energy Authority (NREA) across three different government-owned solar parks.

Indicate factors that led to project's success:

Sponsor ensured alignment of EPC's project specific ESMS and related plans and procedures with the FMC ESMS when this was developed to manage cumulative impacts of the projects. The Sponsor and EPC/O&M Contractor developed and implemented a project-specific environmental, social, and health and safety management system (ESHS MS) that conforms with Egyptian laws, and IFC Performance Standards (PSs). A qualified Environmental and Social manager was nominated.

- ESAP fully implemented. ESMS satisfactory.
 - E&S staff hat separate E&S function
 - Annual E&S Monitoring: through external, third party
 - Compliant with EDFI exclusion list
 - ILO core labour standards: full compliance.
 - Occupational Health and Safety Management & Human Resources Management: satisfactory/good.
 - Grievance mechanism (for employees): yes
 - Management of community health, safety and security: very good.
 - Community liaison officer (CLO): in place
-

Technology transferred: use of adequate technology for photovoltaic modules / plant

The proposed PV modules for the Project are the Risen RSM72-6-320P and RSM72-6-325P. We positively assess that the PV module has obtained the industry standard module certifications, including the IEC60068-2-68 (dust and sand resistance). The inverter proposed for the Project is the ABB PVS980-58-2000kVA-K. The mounting structure proposed for the Project is the NEXTracker, model NX Horizon, a horizontal single axis tracking system.

Impact on greenhouse gas emissions: reduction of Co₂ eq. emissions (t/a) - Calculated avoided GHG Y21 (tCO₂e/Y): 72.210

Project/programme title: TAQA Arabia for Solar Energy SAE

Purpose: Financing of a solar power plant in order to react against climate change

Recipient country	Sector	Total funding	Years in operation
Egypt	Renewable Energy	USD 9.683.000	Since 2017

Description:

Development, financing, construction, operation and maintenance of a solar PV plant in Egypt.

Projects are being allocated in the Benban Solar Park, located 40km northwest of Aswan City in Upper Egypt. Benban has an area 37.15 km² subdivided into 39 individual project plots collectively having a potential generating capacity of 1,800 MW when fully developed. This site is generally flat with no nearby structures that might cause any shading effects. The solar park is composed mainly of dry sandy surface. Access to the site is granted from the LuxorAswan road. The two dedicated asphalted access roads and the parallel road to the Luxor-Aswan road, which connects the four substations, have already been constructed under the CSA. The internal roads are made up of compacted soil and will provide access to each of the plots.

Indicate factors that led to project's success:

- + The Sponsor TAOA Arabia is experienced and financially strong.
- + The EPC Contractor is the 6th largest solar PV EPC contractor globally and the 1st outside the USA and China by IHS Research.
- + MoF provides a sovereign guarantee to back EETC's obligations under its PPAs.
- + The PPA has PPP elements with a comprehensive termination regime.
- + Loan tenor is 18 years; tenor of PPA is 25 years (starting from COD); tail of 7 years
- + Egypt has amongst the best solar resource in the world with daily sunshine averaging 9 to 11 hours, low humidity, and global horizontal irradiation of around 2,230-2,330 kWh/m² per year.
- + Convertibility Debt Service Reserve Account (CDSRA) provides additional comfort.
- + 70% of the PPA tariff is linked to USD.
- + One or more USD Interest Rate Swaps will be used to hedge the interest rate risk of at least

Environmental, Social Health and Safety Compliance:

- Compliance with relevant local environmental and social laws and regulations
 - IFC Performance Standards (IFC PS) and the relevant World Bank Group Environmental Health and Safety Guidelines - Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution
 - ILO Core labour Standards and Basic Terms and Conditions of Employment
 - EDFI/OeEB Exclusion List
 - Compliance with the Environmental and Social Action Plan (ESAP)
 - Maintained and continuously improved an Environmental Management System in accordance with ISO 14001 until project lifetime.
 - Maintained and continuously improved an Occupational Health and Safety Management System in accordance with IFC Performance Standards and OHSAS 18001
 - Developed, implemented and continuously improved a Human Resource Management System in accordance with IFC Performance Standards
 - Developed, implemented and continuously improved a Community Engagement and Development Plan in accordance with IFC Performance Standards 1 and 4
 - Developed, implemented and continuously improved and continuously improve workplace policies and guidelines in accordance with the key principles of the ILO Code of Practice on HIV / AIDS
-

Technology transferred: The proposed PV modules for the Project are the Risen RSM72-6-320P and RSM72-6-325P. The inverter proposed for the Project is the ABB PVS980-58-2000kVA-K. The mounting structure proposed for the Project is the NEXTracker, model NX Horizon, a horizontal single axis tracking system.

Impact on greenhouse gas emissions: reduction of Co2 eq. emissions (t/a) - Calculated avoided GHG Y21 (tCO2e/Y)
75.696

Project/programme title: Horus Solar Energy SAE (Alcazar 3)

Purpose: Financing of a solar power plant in order to react against climate change

Recipient country	Sector	Total funding	Years in operation
Egypt	Renewable Energy	USD 5 Mio.	2017 - 2020

Description:

Development, financing, construction, operation and maintenance of a solar PV plant in Egypt.

Egypt has amongst the best solar resource in the world with daily sunshine averaging 9 to 11 hours, low humidity, and global horizontal irradiation of around 2,230-2,330 kWh/m² per year. Installed RE capacity, however, is only around 700 MW of which mostly wind plants under public ownership. Given the strong solar and wind resources in the region, the dramatic fall in the RE new-build costs and the dominance of flexibly-dispatch gas and hydro generation in the energy mix, which is well suited to balancing the intermittent output of RE, the benefits and logic behind the Government of Egypt's (Go E) 20% RE target (currently 10%) by 2022 is obvious. Material additions of RE would also enhance Egypt's security of supply by diversifying the energy mix away from fossil fuels while simultaneously contributing to long-term power supply growth and sustainable development.

In September 2014, the GoE launched the Feed-in-Tariff programme (the FiT Programme) with a target to develop 2,300 MW of solar photovoltaic (PV) and 2,000 MW of wind power. The GoE explicitly designed the FiT Programme to encourage participation of the private sector. The current project is part of the FiT Programme in Egypt. In Round I the tariff was set at 14.3 USD Cents/kWh to encourage rapid development by the private sector. Over 175 companies submitted bids for prequalification in November 2014 and for solar PV 55 MoUs were eventually signed to secure the land plots. The land for all but one of the project sites was made available by the New and Renewable Energy Authority (NREA) across three different government-owned solar parks

Indicate factors that led to project's success:

Sponsor ensured alignment of EPC's project specific ESMS and related plans and procedures with the FMC ESMS when this was developed to manage cumulative impacts of the projects. The Sponsor and EPC/O&M Contractor developed and implemented a project-specific environmental, social, and health and safety management system (ESHS MS) that conforms with Egyptian laws, and IFC Performance Standards (PSs). A qualified Environmental and Social manager was nominated.

- ESAP fully implemented. ESMS satisfactory.
 - E&S staff hat separate E&S function
 - Annual E&S Monitoring: through external, third party
 - Compliant with EDFI exclusion list
 - ILO core labour standards: full compliance.
 - Occupational Health and Safety Management & Human Resources Management: satisfactory/good.
 - Grievance mechanism (for employees): yes
 - Management of community health, safety and security: very good.
 - Community liaison officer (CLO): in place
-

Technology transferred:

The proposed PV modules for the Project are the Risen RSM72-6-320P and RSM72-6-325P. We positively assess that the PV module has obtained the industry standard module certifications, including the IEC60068-2-68 (dust and sand resistance). The inverter proposed for the Project is the ABB PVS980-58-2000kVA-K. The mounting structure proposed for the Project is the NEXTracker, model NX Horizon, a horizontal single axis tracking system.

Impact on greenhouse gas emissions: reduction of Co2 eq. emissions (t/a) - Calculated avoided GHG Y21 (tCO2e/Y)
71.712

Project/programme title: ReNew Power

Purpose: 110 MW Windpower plant

Recipient country	Sector	Total funding	Years in operation
India	Renewable Energy	USD 11.070.209	2017 - 2022

Description:

Long term credit line in order to finance construction and operation of two wind parks in India. The wind power project (ReNew Wind Energy (Sipla) Private Limited ('ReNew') with an installed capacity of 11 OMW consists of two separate project sites (Batakurki 60MW, Bableshtar 50MW). The Project is sponsored by the Independent Power Producer (IPP) ReNew Power Ventures Private Limited (RPVPL), which is one of the largest players in the renewable power sector in India (operational capacity of 1.4GW, capacity under development of 1.8GW).

Indicate factors that led to project's success:

The Project benefits from experienced sponsors with a proven industry track record and good project execution skills. The borrower has appointed a developer and EPC contractor. The agreement was set up both wind farms covers procurement and supply of equipment including packaging, (un)loading, transportation and insurance as well as land acquisition and procurement of licences/permits up to commissioning of the projects. It is a fixed-price contract so the risk of cost overruns is limited.

Conditions precedent to signing of contract was: Agree upon ESAP (to be part of loan agreement; see Annex 2)

Conditions precedent to first disbursement was: Evidence of compliance with environmental, social and health requirements (permits, relevant action

items of ESAP etc.) Maintain environmental and social compliance manager

Conditions precedent to all other disbursements was: Compliance with E&S requirements stipulated in the agreement

- ESAP fully implemented. ESMS satisfactory.
 - E&S staff hat separate E&S function
 - *Compliant with EDFI exclusion list*
 - *ILO core labour standards: full compliance.*
 - *Community liaison officer (CLO): in place*
-

Technology transferred: Two wind farms including construction of power evacuation facilities; 1.) 60MW wind farm (30 x 2MW G97 WTGs), pooling substation, 110 KV transmission line to grid substation (11 km); 2.) 50MW wind farm (25 x 2MW G 114 WTGs), pooling substation, 220KV transmission lines to switching substation (22km)

The project encompasses the erection of 50 WTGs: 30 G97 2MW WTGs with a hub height of 104m and 97m rotor diameter for the Batakurki site and 20 G 114 2MW WTGs with a hub height of 106m and a rotor diameter of 114m for the Bableshtar site. ReNew has supplied valid type test certificates for both WTG types.

Impact on greenhouse gas emissions: avoidance of CO₂eq 38.569 (t/a)

Table 7.9 shows some examples of programmes and projects supporting development and transfer of technology.

Table 7.9 (CTF Table 8): Provision of support for technology development and transfer ^{a b}

<i>Recipient country and/or region</i>	<i>Targeted area</i>	<i>Measures and activities related to technology transfer</i>	<i>Sector ^c</i>	<i>Funding source</i>	<i>Activities undertaken by</i>	<i>Status</i>	<i>Additional information ^d</i>
	Mitigation / Adaptation / Mitigation and adaptation		Energy / Transport / Industry / Agriculture / Water and sanitation / Other	Private / Public / Private and public	Private / Public / Private and public	Implemented / Planned	
Global (> 140 countries)	Adaptation	Global Facility for Disaster Reduction and Recovery (GFDRR) of the World Bank	Disaster Risk Reduction	Public	Private and Public	Implemented	See Table 7.8
Southern and Eastern Africa	Mitigation	Contribution to the Trust Fund of the Energy and Environment Partnership in Southern and Eastern Africa	Energy	Public	Private and Public	Implemented	See Table 7.8
Burkina Faso, Ivory Coast, Cameroon, Niger, Tschad	Mitigation	Facility for Energy Inclusion (FEI) (provide green energy for households and companies in Africa by replacing energy obtained from diesel, kerosene or wood)	Energy	Public	Private and Public	Implemented	See Table 7.8
Egypt	Mitigation	Aten Solar Energy SAE (Development, financing, construction, operation and maintenance of a solar PV plant)	Energy	Public	Private	Implemented	See Table 7.8
Egypt	Mitigation	TAQA Arabia for Solar Energy SAE (Development, financing, construction, operation and maintenance of a solar PV plant in Egypt)	Energy	Public	Private	Impelented	See Table 7.8

Egypt	Mitigation	Horus Solar Energy SAE (Development, financing, construction and maintenance of a solar PV plant)	Energy	Public	Private	Implemented	See Table 7.8
India	Mitigation	ReNewPower (110 MW Windpower plant)	Energy	Public	Private	Implemented	See Table 7.8
South of Sahara, regional/multi-country	Mitigation	The focus of the Southern African Training and Demonstration Initiative, SOLTRAIN, is to support and contribute to the implementation of the renewable energy policies of the selected target countries that enhance the use of solar thermal systems (Demonstration systems, Trainings, awareness raising on Solar thermal, Heat pumps, Renewable Heating and Cooling systems)	Energy	Public	Private (CSO)	Implemented	(1)
Indonesia, Thailand; Cambodia	Adaptation	The deployment of a regional Agro-Meteorological IoT Network to enhance the advisory capacity to support Climate Smart Agriculture (CSA) adaptation. training and for trained technical advisors called Digital Farm Advisors (DFA)	Agriculture	Public and private	Private	Implemented	(2)
Georgia	Adaptation	Regional landslide hazard assessment Demonstration of Landslide Rehabilitation techniques including Geological and hydrogeological Exploration, Technical exploration (Drilling), Stability Calculations, Structural protection measures, Water management / torrent control and Revegetation management installation of rockfall barriers	Disaster Risk Reduction	Public and Private	Private	Implemented	(3)

Africa, regional/multi-country	Adaptation	Strengthen the resilience of communities to the impacts of increasingly severe and frequent climate disasters within well-managed and functioning river catchments	Water and sanitation	Public	Private	Implemented	
Armenia	Mitigation and adaptation	Modern fruit production methods and techniques to increase productivity in fruit production	Agriculture	Public	International organisation	Implemented	
Bhutan	Mitigation	Securing hydropower generation safeguarding and minimization of risks to plants through prudent foresight and early warning system.	Energy	Public	National government	Implemented	
Albania	Mitigation and Adaptation	Creating local forest expertise and know-how for sustainable forest management through best practice reforestation.	Forestry	Public	Private	Implemented	
Guatemala	Mitigation and Adaptation	Wood saving stoves for cooking and heating	Energy	Public	Private	Implemented	
Burundi	Adaptation	Techniques for sustainable agriculture in combination with erosion control and improved crop management.	Agriculture	Public	Private	Implemented	
Bhutan	Mitigation	Adoption of renewable energy and energy efficiency through demonstration and promotion of solar thermal systems to the wider public and industry.	Energy	Public	Government	Implemented	

(1) SOLTRAIN+ contributes to the transformation of predominantly fossil based energy systems to sustainable, affordable and carbon-free systems, by promoting the use of renewable heating and cooling (RHC) technologies such as solar thermal, heat pumps and energy efficiency measures. RHC demonstration systems in the buildings sector, industry/commerce, tourism and hospitals coupled with hands-on training are at the center of the initiative.

(2) The project will support to achieve crop and food security through

- a) supporting the sector to adopt intelligence based farming methods making use of accurate real-time field data that will manifestly improve decision-making across the supply chain as a whole; and
- b) working with the local community to develop a sustainable business model to support the maintenance and growth of data-driven system and help the farmers and communities develop market linkages.

(3) The outcome is the realization of a showcase project (Tskneti Landslide Rehabilitation) and capacity development in Georgia for engineering, design and construction of natural hazard mitigation and prevention systems.

^a To be reported to the extent possible.

^b The table should include measures and activities implemented or planned since the previous national communication or biennial report.

^c Parties may report sectoral disaggregation, as appropriate.

^d Additional information may include, for example, information on funding for technology development and transfer provided, a short description of the measure or activity and information on cofinancing arrangements.

7.3 Capacity-building

59. Each Annex II Party shall provide information, to the extent possible, on how it has provided capacity-building support that responds to existing and emerging capacity-building needs identified by non-Annex I Parties in the areas of mitigation, adaptation and technology development and transfer. Information should be reported in textual and tabular format (see table 11 below) as a description of individual measures and activities.

Capacity-building is a key component throughout Austrian programmes and projects that support developing countries in their transition to low-emissions climate resilient development pathways and implementing their NDCs. As capacity building is an integral part of most activities, and also in the absence of an agreed international methodology to track capacity building quantitatively, Austria is not able to quantify its support to capacity building.

Austria uses for the identification of climate finance projects that support capacity building a combination of the use of the OECD DAC Rio Markers for Adaptation and Mitigation with the Free-Standing Technical Cooperation (FTC) Flag. Some providers of capacity building support such as the Austrian Development Agency (ADA) refine this with the application of internally used key words. However, this approach only helps to identify programmes and projects that include considerable support to capacity building but does not allow to quantify in a reliable way the capacity building support. Against this backdrop, Austria will continue to qualitatively report on its support in the area of capacity building.

Adequate capacities are indispensable for country-owned and participatory policy and strategy development, systematic planning and result-oriented execution of interventions as well as the provision of efficient and effective climate and development finance. Austria understands capacity building as an endogenous change process that needs to be initiated and owned by the actors concerned, i.e. individuals, organizations and society as a whole in partner countries. In this comprehension, external partner organizations still play a major yet only supportive role by accompanying and promoting the internal process of change.

In order to be effective, capacity building measures need to be based on the articulated demand of the end-users and meet their needs, priorities and interests. Austria recognizes this fact by developing programmes, projects and initiatives with partner countries in such a way that capacity-building is an integral part of most of the projects it supports and encourages systematic capacity needs assessments (strengths and weaknesses of stakeholders) and the identification of capacity gaps including their often hidden causes in

all support activities. This allows to tailor funding to cater existing and emerging needs and interests expressed by developing countries. For example, the capacity building that ADA provides through its support of the Pacific Centre for Renewable Energy and Energy Efficiency is based on the gaps identified during a needs assessment concerning regional capacity building, knowledge management and business development.

Country ownership and support for capacity building at various levels including national, regional and local level are key elements of Austrian support. An example is the longstanding Austrian support to the NAP process in Moldova, which started with capacity building of national actors. Later the focus was on supporting the integration of adaptation into local level development plans and strengthening the capacities of local level actors including at municipal level. Currently Austrian support focusses on integration of adaptation in sectors e.g. by increasing the capacities for Ecosystem based Adaptation in the context supporting the protected areas management system.

Furthermore, Austria also recognizes the importance of supporting the strengthening of scientific and technical capacities in developing countries to be able to provide guidance and assistance to local authorities for policymaking and strategic planning, prepare students for their professional challenges related to climate change and develop innovative community based adaptation solutions, based on local scientific information.

The Austrian Partnership Programme in Higher Education and Research for Development (APPEAR) supports well-designed collaborative and innovative partnerships between Austrian and partner country universities that respond to identified needs and demands in the respective countries and in the partner institutions.

Table 7.10 provides a representative sample of the different types of projects that address capacity-building in a context-specific, results-oriented manner with different approaches and in cooperation with different types of actors.

Table 7.10 (CTF Table 9): Provision of capacity-building support

<i>Recipient country/region</i>	<i>Targeted area</i>	<i>Programme or project title</i>	<i>Description of programme or project</i>
Armenia	Adaptation / Multiple areas	Adolescents as Agents of Climate Change in their Communities	Adolescents become resilient agents of climate action and solutions contributing to create socially and environmentally sustainable communities in Armenia. The project will directly target, and benefit 28,058 adolescents aged 12-18 and engage them in exploring the impact of climate change on their wellbeing. 2,470 school teachers and administrators), 520 consolidated community staff and 10 regional administrators will be trained on learning methodologies on knowledge, skills and capacities to create safer environments for children and adolescents and enhance the resilience of communities against climate induced hazards

Moldova	Adaptation /	Enhancing climate resilience in the Biosphere Reserve "Prutul de Jos" (Lower Prut)	Climate resilience of the Natural Protected Area Biosphere reserve "Prutul de Jos" is enhanced and communities and local authorities have increased their capacities for climate change adaptation.
Armenia	Mitigation / Adaptation / Technology development and transfer / Multiple areas	Forest resilience of Armenia, enhancing adaptation and rural green growth via mitigation	Austrian co-financing to a GCF project (SAP-14) implemented by FAO. By Year 8, CO2 removals from the forest subsector are increased by at least 7% via sustainable climate adaptive forestry investments and fuelwood energy efficiency with effective involvement of communities. Component 1 is aligned with the Nationally Determined Contribution to increase the national forest cover to at least 20 per cent by year 2050. The project will support forest restoration to promote technology transfer and build the capacity of key stakeholders, in particular government and communities. Both mitigation and adaptation aspects are targeted to secure higher capacity of forests to store carbon and contribute to higher resilience of forests and dependent communities to climate risks.
Ethiopia	Adaptation	Semien Gonder Resilience Project, Ethiopia - SEGORP	The Project goal is to strengthen household and community resilience to climate change in three food insecure woredas (districts) in the Amhara region through the development of adaptive, absorptive, and transformative capabilities.
Vietnam	Adaptation/ Technology development and transfer	Digitalisation for Resilience	The project will work with hydromet services and local partners to facilitate the digitalisation process of CBRDM practices in the three target communes. Capacity of relevant stakeholders on digital technology application in disaster risk reduction and management will be improved.
Mozambique, Zimbabwe	Adaptation	Community-focused Flood Early Warning System for BuPuSa Transboundary River Basins	The programme aims to reduce the vulnerability of communities in the Buzi-Pungwe-Save (BuPuSa) Basins through preventive and cross-border flood-control-mechanisms in Mozambique and Zimbabwe. By exposing the targeted beneficiaries to the proposed awareness, tools and capacity building initiatives on flood monitoring and early warning they will be empowered and able to reduce their risks and vulnerabilities to floods and related challenges.
Eastern African Region	Adaptation	AQUAHUB II - Education and Research Hubs for the Sustainable Management of Freshwater Ecosystems in Eastern Africa	The overall project objective is to foster the sustainable management of freshwater ecosystems and to contribute towards increased climate resilience. Supported are capacity development processes at the individual and institutional level towards the sustainable management of freshwater ecosystems in Eastern Africa. Strengthened are HEST institutions in Eastern Africa, which educate professionals, carry-out relevant research/extension activities, contribute to the development of evidence-based policies and enhance regional and international networking.
Ethiopia, Uganda	Mitigation	Solar Skills Training and Environmental Education in Ethiopia and Uganda	Capacity building and the establishment of sustainable organisational structures for the extension and quality improvement of solar skills

			training and environmental education in Ethiopia and Uganda.
Sub Saharan Africa	Mitigation/ Technology development and transfer	Global Energy Transformation Programme (GET.pro)	The Global Energy Transformation Programme (GET.pro) aims to contribute to the achievement of the SDGs and the Paris Climate Agreement on sustainable energy and climate change. The Austrian contribution is earmarked to support GET.transform. Activity packages include: A) Transformation support (Implementing Power Sector Reforms in Selected Partner Countries and Regions) through comprehensive technical advice and capacity building; B) Knowledge for the energy transformation through the development of knowledge products and outreach activities.
Oceania multi country	Mitigation/ Technology development and transfer	Pacific Center for Renewable Energy and Energy Efficiency PCREEE - Second Operational Phase (2021-2025)	improved access to modern, affordable and reliable energy services, energy security and mitigation of negative externalities of the energy system by promoting renewable energy and energy efficiency (RE&EE) investments, markets and industries in Pacific Island Countries and Territories (PICTs).
Bhutan	Mitigation/ Technology development and transfer	Promotion of Renewable Energy and Energy Efficient Technologies in the Building Sector - Final Phase	Outcome 1: Contribution to the generation of 3 MegaWatt (MW) equivalent of energy from solar thermal systems by year 2025. Outcome 2: Application and testing of green and energy efficient measures in existing buildings based on the products, standards and capacity built [during Phase I (2017 – 2019)] towards the promotion of green and energy efficient buildings.
SADC Region	Mitigation/ Technology development and transfer	Southern African Solar Training and Demonstration Initiative, Phase IV	SOLTRAIN is a regional initiative on capacity building and demonstration of solar thermal systems in the SADC region. SOLTRAIN successfully raises awareness and demonstrates what can be done off-grid with solar thermal. SOLTRAIN in its fourth phase targets the SADC Member States Botswana, Lesotho, Mozambique, Namibia, South Africa and Zimbabwe.

8 Research and systematic observation

60. Pursuant to Articles 4, paragraph 1(g) and (h), 5 and 12, paragraph 1(b), of the Convention, Annex I Parties shall communicate information on their actions relating to research and systematic observation.

61. The national communication shall address both domestic and international activities (for example, the activities of the Intergovernmental Panel on Climate Change, the World Climate Research Programme, Future Earth and the Global Climate Observing System) and also reflect action taken to support related capacity-building in developing countries.

62. Parties shall provide summary information on global climate observing system activities in accordance with paragraph 67 below. To guide the reporting under sections A and C below, Parties should refer to the detailed guidance provided in the revised “UNFCCC reporting guidelines on global climate observing systems” (annex to decision 11/CP.13) and any relevant decisions subsequently adopted by the COP.

63. The national communication should report, in summary form, on action taken. For example, the results of research studies, model runs or data analysis should not be included in this section.

8.1 General policy on and funding of research and systematic observation

64. Parties should provide information on their general policy on and funding of research and systematic observation.

65. Parties should identify opportunities for and barriers to free and open international exchange of data and information and report on action taken to overcome such barriers.

8.1.1 Areas of competence and legal basis

- Basic infrastructure of universities and extra university research institutions is funded by the Federal Government.
- Public funds provide support for basic research as well as for applied research and technology development.

- Three federal ministries hold a central position in co-ordination, administration and financing of research. , they are responsible for industry-related research, technology development and innovation funding. The Federal Ministry of Education, Science and Research is responsible for matters relating to universities and for non-university research institutions in the area of basic research and general scientific research. The Federal Ministry of Climate Action, Environment, Energy, Transport, Innovation and Technology and the Federal Ministry of Labour and Economy are responsible for funding of industry-related research and respective funding organisations.
- Federal ministries and provincial governments bear responsibility for research issues within their own specialised fields of competence. Research on different aspects of agriculture and forestry, for example, is to a considerable extent funded by the Federal Ministry of Agriculture, Forestry, Regions and Water Management and also performed by its subordinate agencies.
- Basic legal acts:
 - Research and Technology Funding Act (Forschungs- und Technologie-förderungsgesetz), sets up different, publicly financed research funds, in order to support basic research projects and projects in the field of industry-related applied research and development;
 - Research Organisation Act (Forschungsorganisationsgesetz), determines principles and targets in publicly funded research and sets out legal and organisational rules for research activities by universities and federal scientific institutions; the act also defines status and tasks of the Central Institute for Meteorology and Geodynamics with respect to research and observation;
 - Universities Act (Universitätsgesetz 2002), defines the set-up and structures of Austrian universities and their status as legal entities which may independently avail of their budgets.
- There is no uniform competence or strategy related to systematic observation in general; several institutions own observation networks designed for their specific needs and mainly funded by the public.

8.1.2 Advisory boards and strategies

- The Council for Research and Technology Development has been established in 2000 as an independent institution with currently six members, who are appointed by the Federal Minister for Education, Science and Research and the Federal Minister for Climate Action, Environment, Energy, Transport, Innovation and Technology. The Research and Technology Funding Act provides the statutory basis for the Council. Its tasks are a. o. to provide advice to the Federal Government and the federal provinces on research, technology and innovation and to develop guidelines for a long-term Austrian RTD strategy and to monitor its implementation.
- The Austrian Science Council has been established in 2003 as an advisory body the aim of optimising the Austrian higher education and research system, in particular the

university system. The statutory basis for the Council is laid down in the Universities Act. The Austrian Science Council develops analyses, position papers and recommendations and reports every three years to the Parliament.

- Research and innovation strategies have been developed (overarching and for specific sectors and topics) by the Federal Government and by individual ministries, a. o.:
 - The *Research, Technology and Innovation Strategy 2030*¹⁹ has been approved by the Federal Government in 2020, it sets out objectives and key fields of activity with RTI for the achievement of the climate targets as one of these key fields; implementation is promoted by three-year RTI Implementation Pacts laying down details on measures in the various key fields of activity;
 - the *Bioeconomy Strategy*²⁰ as a framework for the reinforced use of renewable raw materials in order to replace fossil resources;
 - the *National Strategy Circular Economy*²¹ has been adopted by the Federal Government in 2022 and aims at the reduction of the demand for primary raw materials, an increase of resource productivity, an increase of the circular material use rate and a reduction of material consumption of households;
 - the *R&I Mobility Strategy*²² of the Federal Ministry for Climate Action targets four mission areas (climate-neutral urban mobility, mobilising and sustainably connecting rural areas, digitalisation for infrastructure, mobility and logistics services, development of environmentally friendly transport technologies) to reach climate neutrality in 2040;
 - the *Austrian Space Strategy 2030+*²³ of the Federal Ministry for Climate Action has been developed 2020/2021 in cooperation with experts and with public participation, goals are a. o. the support of sustainable development (including climate protection) and promotion of scientific excellence for earth exploration.

8.1.3 Funding

- Total research expenditure was estimated at € 12.95 billion in 2021, it has increased from below 2.91 % of GDP in 2012 to 3.21% in 2021.
- Domestic business sector contributes about half, the public sector more than one third to research expenditure, the rest stems mainly from abroad.
- Direct public funding of universities was € 3.91 billion (1.0 % of GDP), about half of it was related to research and development.

¹⁹ <https://www.bundeskanzleramt.gv.at/en/topics/rti-strategy.html>

²⁰ <https://www.bmk.gv.at/en/topics/climate-environment/climate-protection/bioeconomy/strategy.html>

²¹ https://www.bmk.gv.at/themen/klima_umwelt/abfall/Kreislaufwirtschaft/strategie.html (in German language)

²² <https://mobilitaetderzukunft.at/en/strategy/randi-mobility-strategy.php>

²³ https://austria-in-space.at/resources/pdf/V4_EN_Austrian-Space-Strategy-2030_0803_taggedv6_PAC2021Approved.pdf

- The day-to-day operation of the federal research institutions (predominantly the universities) and of independent institutions, such as the Academy of Sciences, and of umbrella organisations, is financed directly by public funding.
- Publicly endowed independent funds finance basic and application-oriented research and technology developments:
 - The Austrian Science Fund (FWF) is responsible for basic research funding; about 85% of the subsidies go to university researchers, mainly for basic research. Funding is provided for individual research projects, programmes, publications, grants, and awards. Applications for subsidies are subjected to stringent international peer-review. The total budget granted in 2021 was € 256 million.
 - The Austrian Research Promotion Agency (FFG) bears responsibility for financing of innovative projects in applied business-oriented research carried out by enterprises and co-operating scientific institutions. Support is given in the form of loans, interest rate subsidies and the assumption of liability. In 2021 € 640 million were granted for projects (114 million in the area of energy and environment, 130 for mobility); about two third go to enterprises.
- Detailed reporting in the Austrian Research and Technology Report²⁴

8.1.4 Research on environment and climate change

- Wide range of funding, ranging from the basic support of relevant university and extra-university institutes and specific, well-funded research programs to single projects commissioned by individual public authorities.
- Environmental issues are among the key areas of research commissioned by the Federal Ministry of Education, Science and Research, the Federal Ministry of Climate Action, Environment, Energy, Transport, Innovation and Technology and the Federal Ministry of Labour and Economy the Federal Ministry of Agriculture, Forestry, Regions and Water Management, and the Länder.
- Relevant contributions to climate research also by several extra-university institutions, which are part of, controlled by, or (partly) funded by public authorities (e. g. Central Institute for Meteorology and Geodynamics, Federal Environment Agency, Hydrographical Central Bureau, Federal Research and Training Centre for Forests, Natural Hazards and Landscape (BFW), Austrian Agency for Health and Food Safety (AGES), the Austrian Institute of Technology (AIT), Joanneum Research, as well as environmental departments of the provincial governments.
- The Earth System Sciences (ESS)²⁵ research programme, led by the Austrian Academy of Sciences, aims to research the earth as a system. ESS seeks to fill gaps in the

²⁴ https://www.bmbwf.gv.at/dam/jcr:430b8d7d-ea96-491a-8a1f-42d46834a73b/Austrian%20Research%20and%20Technology%20Report%202022_bf.pdf

²⁵ <https://www.oeaw.ac.at/en/foerderungen/foerderprogramme/subsites/earth-system-sciences>

Austrian research landscape, for instance with regard to interdisciplinary projects, long-term research projects and pioneering research. The three thematic orientations of the ESS programme are global change, geo/hydrosciences and UNESCO Man and the Biosphere. All three are administered by a national committee, which also represent Austria in international programmes like IGBP, WCRP and LTER.

- The Climate Change Centre Austria (CCCA, <https://ccca.ac.at/en/homepage>) has been established in 2011 as a coordinating facility to promote and support climate research in Austria:
 - Focus on strengthening the climate research landscape in Austria, facilitating the education of a new generation of researchers and supporting knowledge transfer and advising politics and society;
 - represents a network of 28 member organisations;
 - development of a science plan²⁶, which should support the strategic alignment of climate research in Austria
 - the CCCA Coordination Office provides administrative support and organizes annual climate research convention;
 - the CCCA Service Centre provides a clearing point for inquiries from the public and facilitates dissemination of information;
 - the CCCA Data Centre provides central national archive for relevant climate data and information (<https://data.ccca.ac.at/>);
- The Climate and Energy Fund supports RTD projects for the reduction of GHGs in Austria in the short, medium and long-term in several programmes with different focal areas (energy, mobility, etc., see also Section 4.3.1). Among these programmes is the “Austrian Climate Research Programme” (ACRP), funding basic climate system research as well as policy oriented projects, with about € 6 million annually.
- Starting with 2003, the comparable small programme *StartClim*²⁷ supports research on climate change impacts and adaptation options by annual calls with different topics. Calls of the last years covered topics like the measurability of adaptation, land use and land use conflicts, green space and its water demand, cost-optimized reduction pathways. The programme is financed by the Federal Ministry of Climate Action, Environment, Energy, Transport, Innovation and Technology together with the Climate and Energy Funds and further partners.

²⁶ https://ccca.ac.at/fileadmin/00_DokumenteHauptmenue/03_Aktivitaeten/Science_Plan/CCCA_Science_Plan_Englisch_2018111.pdf

²⁷ <https://www.startclim.at/> (German language only)

8.1.5 Exchange of information

- Barriers for the open exchange of data may result from e. g. missing or incomplete publication of the results of research and observation, costs for the access to journals or missing information on data which are already publicly available.
- Many funding institutions request the publication of project results, either on platforms of the funding institution²⁸ or via third parties.
- The Austrian Science Fund (FWF) has signed the *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities* in 2003 and has since then pursued a strategy of open access to scientific data; more than four fifth of the peer-reviews publications listed in the final project reports submitted in 2021 conformed to open access standards²⁹; from 2021 onwards revised open access guidelines are applied which have been aligned with the principles of the international Plan S initiative³⁰.
- In 2022 the Federal Government has taken a decision on the support of Open Science Policy in Austria³¹, as a follow-up to the *UNESCO Recommendation on Open Science* (adopted by the General Conference of UNESCO at its 41st session in November 2021) and taking into account the EU policy on Open Science.
- Observation data is increasingly shared in international networks and submitted to international data centres (cf. Section 8.3), which makes data more visible and easier to find compared to data which is just available at the website of a research institution or at request.
- Research cooperation in international context contributes to the exchange of information. Austria is a founding member of the International Energy Agency (IEA) and participates in many of IEA's Technology Collaboration Programmes relevant for climate change mitigation research.³²

8.2 Research

66. Parties should provide, inter alia, information on highlights, innovations and significant efforts made with regard to:

- (a) Climate process and climate system studies, including paleoclimatic studies;
- (b) Modelling and prediction, including global and regional climate models;
- (c) Research on the impacts of climate change;

²⁸ like <https://www.klimafonds.gv.at/projekte/projektberichte/>

²⁹ https://www.fwf.ac.at/fileadmin/files/Dokumente/Ueber_den_FWF/Publikationen/FWF-Selbstevaluation/FWF_OA-Monitoring_Report_2021.xlsx

³⁰ <https://www.fwf.ac.at/en/news-and-media-relations/news/detail/nid/20201210-2598>

³¹ <https://www.bmbwf.gv.at/dam/jcr:d0dad6b6-b94d-4e3e-8c4e-da12091be9b4/Open%20Science%20policy%20Austria%20eng..pdf>

³² <https://nachhaltigwirtschaften.at/en/iea/technologyprogrammes/>

(d) Socioeconomic analysis, including analysis of both the impacts of climate change and response options;

(e) Research and development of mitigation and adaptation approaches, including technologies.

Climate change related research activities in Austria comprise climate system research, research on impacts and socio-economic aspects of climate change and on adaptation measures and mitigation.

Relevant research results with respect to climate change scenarios, impacts, mitigation and adaptation options have been compiled in the “Austrian Assessment Report Climate Change 2014” (see Section 6.1).

8.2.1 Climate Process and Climate System Studies:

- Research performed with a wide spectrum of topics.
- Particular emphasis on processes influenced by topography, which is especially relevant for the Alps.
- Quite some emphasis on the hydrological cycle, including interaction with biosphere.

8.2.2 Modelling and Prediction, Including Global Circulation Models:

- Mainly regional climate modelling for Austria and subregions.
- Austrian researchers also participate in EU-funded European research projects.
- No GCM modelling by Austrian research institutions, but research activities that contribute to improving GCMs (e.g. remote sensing applications).

8.2.3 Research on the Impacts of Climate Change:

- Research focuses on topics that are of vital interest to the country, e.g. floods, forests, agriculture, lakes, glaciers.
- Research programs (ACRP, StartClim, and ProVision) have been established to foster interdisciplinary research on climate change impacts; physical impacts are investigated together with socio-economic impacts and potential adaptation options.
- Focus on the effects of climatic change in the Alpine region due to its specific situation (elevated and complex topography, sensitivity to minor shifts in the general circulation).

8.2.4 Socio-economic analysis, including analysis of both, the impacts of climate change and response options:

- Research on costs of climate change impacts for society (costs of inaction).
- Estimation of socio-economic impacts of mitigation technologies, e. g. costs and benefits related to the introduction of renewable energy systems.
- Development of regional response options aiming at reducing greenhouse gas emissions from energy generation plays a relevant role.
- Apart from energy related research topics also impacts and measures in other important sectors have been investigated, e.g. in agriculture and tourism.

8.2.5 Research and development on mitigation and adaptation technologies:

- Research on mitigation and adaptation options addresses a broad range of topics in Austria.
- Energy technologies play an important role, especially biomass utilization and solar energy technologies.
- Considerable research in the private sector, including small and medium enterprises.
- Specific funding programmes of the Federal Ministry for Climate Action stimulate research in the areas of energy, buildings, mobility, smart cities.

8.2.6 Support of developing countries:

The implementation of international cooperation measures in science and research belongs to the tasks of the OeAD-GmbH³³, which is a publicly owned entity. Measures should contribute to sustainable development in the partner countries according to the UN Sustainable Development Goals. Funding to OeAD is provided by the Federal Ministry of Education, Science and Research. The following programmes in the field of development research have been implemented by OeAD:

- Austrian-African Research Network *Africa-UniNet*³⁴ is financed by the Federal Ministry of Education, Science and Research und was initiated to create a long-term basis for cooperation between Austrian and African universities and research institutions with a focus on joint research projects related to the SDGs.
- *Cooperation Development Research*³⁵ is a funding programme to support application-oriented development research projects. Support is granted for mobility and material expenses in the context of one to three year research projects.

³³ <https://oead.at/en/>

³⁴ <https://africa-uninet.at/>

³⁵ <https://oead.at/en/cooperations/international-he-cooperations/cooperation-development-research/>

- The *Austrian Partnership Programme in Higher Education and Research for Development (APPEAR)*³⁶ is a programme by the Austrian Development Cooperation (ADC), focussed at priority countries of the ADC like some Eastern African countries or Bhutan. Protection of the environment and sustainable management of natural resources (including mitigating climate change and its impacts) is a thematic focus of the programme.

The former Commission for Development Research (KEF) had been founded in 1981 as a commission of the Austrian Academy of Sciences and had been integrated in OeAD-GmbH in 2009; it has been suspended at the end of 2018 in the course of a reorganisation of work in the OeAD.

8.3 Systematic observation

67. Parties should provide summary information on the current status of national plans, programmes and support for ground- and space-based climate observing systems, including long-term continuity of data, data quality control and availability, and exchange and archiving of data in the following areas:

- (a) Atmospheric climate observing systems, including those measuring atmospheric constituents;
- (b) Ocean climate observing systems;
- (c) Terrestrial climate observing systems;
- (d) Cryosphere climate observing systems;
- (e) Support for developing countries to establish and maintain observing systems and related data and monitoring systems.

The Austrian GCOS coordination unit³⁷ has been established at the Central Institute for Meteorology and Geodynamics (ZAMG), which is the national meteorological service. The national GCOS report has been updated in 2020³⁸. A selection of relevant observation parameters is listed below.

³⁶ <http://www.appear.at/>

³⁷ See <http://www.gcos.at>

³⁸ <https://www.zamg.ac.at/cms/de/dokumente/topmenu/gcos/gcos-report-2020>

8.3.1 Atmospheric climate observing systems

- **Meteorological parameters:**
 - Due to the complex topography of the Alps general model-based findings on climate change have limited applicability in Austria, and monitoring requires a quite dense network of stations.
 - The longest of Austria's instrumental time series of climate observations go back as far as to the 18th century and are among the longest that exist; due to the long experience with meteorological measurements, quality- and homogeneity control of the data are highly developed and long-time homogeneous datasets are available, like HISTALP³⁹ (historical instrumental climatological surface time series of the greater alpine region).
 - More than 1000 stations are measuring at least temperature and precipitation, the majority of these stations is managed by the Hydrographic Service (Dept. VII/3 of the Federal Ministry of Agriculture, Forestry, Regions and Water Management in co-operation with the federal provinces).
 - The Central Institute for Meteorology and Geodynamics (ZAMG) is one of the oldest public meteorological services of the world. It's network comprises 199 semi-automatic weather stations (TAWES) and 61 full automatic weather stations (VAMES, in cooperation with Austro Control), which gather a comprehensive set of meteorological data (air temperature, air pressure, wind speed and direction, water vapour, precipitation, relative humidity, sunshine duration) and about 164 climate stations, which additionally provide observer-based meteorological information; 150 of these stations are exchanged internationally within WIGOS, 3 stations are part of GSN.
 - Austria's global GAW station is located at "Hoher Sonnblick"⁴⁰ at 3106 m a.s.l.:
 - High altitude meteorological observatory operating continuously since 1886, longest continuous and homogeneous meteorological time series for high altitudes worldwide;
 - monitoring site with little influence by human activities, which is rare in Europe;
 - has been growing to a monitoring and research station covering several scientific disciplines since the late 20th century (atmosphere composition, radiation, cryosphere, ...).
 - Radiosonde data from the station at the ZAMG headquarter in Vienna is provided to GUAN.
- **Radiation measurement:**
 - Routine measurement is performed at the 250 meteorological stations of ZAMG (global radiation).

³⁹ <http://www.zamg.ac.at/histalp/>

⁴⁰ <https://www.sonnblick.net/en>

- Detailed and precise radiation data at the six monitoring stations of the Austrian Radiation Network ARAD, network started in 2010; the ARAD station at Hoher Sonnblick is part of BSRN.
- Hoher Sonnblick and 7 other stations report data to the World Radiation Data Center.
- Measurements of high-resolution spectral UV-radiation and stratospheric ozone at Hoher Sonnblick delivered to the NDACC.
- Several broadband UV monitoring stations are distributed over Austria and provide the population with UV index information; their data are reported to WOUDC.
- **Atmospheric constituents:**
 - For purpose of air quality monitoring (focus on human health and ecosystems) data are collected at more than 120 stations (responsibility of the Federal Environment Agency and the federal provinces), data from some stations are delivered to WDCRG.
 - Time series from Hoher Sonnblick comprise CO₂ and CO (since 2002) and CH₄ (since 2012) as well as surface ozone (since 1990), oxidised nitrogen compounds and aerosol, data are delivered to WDCGG and WDCRG/WDCA respectively.

8.3.2 Terrestrial climate observing systems

- **Hydrosphere:**
 - Complex terrain of Austria requires an extensive network of measurement stations.
 - 800 stations for the river discharge measurements and 3800 stations for the ground water storage in operation (Hydrographic Service).
 - More than 1100 stations with precipitation and 800 with snow depth measurements (Hydrographic Service and ZAMG).
 - River runoff data for more than 100 stations have been delivered to GRDC.
- **Biosphere:**
 - Forest inventory data, including parameters like above-ground biomass, has been collected since the 1960ies.
 - LTER network (as part of the ILTER network on “International Long Term Ecological Research”), about 40 LTER sites and platforms are established in Austria⁴¹.
 - Phenological observations are currently performed at about 100 sites, digitised time series date back to the early 20th century, data is available in the Paneuropean Phenological Database⁴² hosted by ZAMG.

⁴¹ <https://www.lter-austria.at/en/austrian-long-term-ecosystem-research-network/>

⁴² <http://www.pep725.eu/>

8.3.3 Cryosphere climate observing systems

- **Glaciers:**
 - Glacier length measurements of approximately 100 glaciers are performed continuously since the end of the 19th century.
 - Glacier mass balance measurements are currently performed at 12 glaciers, the earliest starting in the 1950ies.
 - Data reported internationally to WGMS/GTN-G;
- **Permafrost:**
 - Measurement of permafrost have started in 2007.
 - 3 sites reporting to GTN-P.

8.3.4 Space-based climate observing programs

- Austria is member of the European Space Agency (ESA) and of the European Meteorological Organisation EUMETSAT; Austria participates a. o. in ESA's programme for earth observation.
- Austria's space based activities are coordinated by the Austrian Space Agency, which is hosted in the Aeronautics and Space Agency (ALR) of the Austrian Research Promotion Agency (FFG).
- The agency's main focus is on managing the contributions of the Republic of Austria to the programmes of the European Space Agency (ESA) and is responsible for the management of the Austrian Space Programme ASAP⁴³.
- ASAP has been launched in 2002, since then many projects have dealt with the development of earth observation applications (including climate change related applications); projects of the last years covered topics like earth observation based support for GHG emission inventories, early stress detection in ecosystems with sun-induced chlorophyll fluorescence, land-slide monitoring in Austria or forest inventory services for supporting REDD+ activities in Africa.⁴⁴

8.3.5 Support of developing countries:

Some examples for the support of developing countries with respect to observation and monitoring systems are shown below:

- The *Systematic Observations Financing Facility*⁴⁵ (SOFF) has been jointly established by WMO, UNDP and UNEP in 2021, in order to facilitate closing the gaps in the *Global Basic Observing Network*. ZAMG will participate as peer advisor to strengthen the

⁴³ <https://austria-in-space.at/en/austria-in-space/national-space-programme.php>

⁴⁴ General project database: <https://boost.austria-in-space.at/>

⁴⁵ <https://alliancehydromet.org/soff/>

capacity of developing countries' National Meteorological and Hydrological Services, the Austrian Development Agency will provide resources for this task.

- ZAMG is going to sign a MoU with the Hydrometeorological Service of Kazakhstan in order to assist with their scientific, operational and observational infrastructure.
- The Federal Ministry for Climate Action supported a project for the development of a transparency framework for monitoring, reporting and verification of greenhouse gas emissions in Serbia, which is implemented by UNEP.

9 Education, training and public awareness

68. In accordance with Articles 4, paragraph 1(i), 6 and 12, paragraph 1(b), of the Convention, Annex I Parties shall communicate information on their actions relating to education, training and public awareness. In this section, Parties should report, inter alia, on public information and education materials, resource or information centres, training programmes and participation in international activities. Parties may report on the extent of public participation in the preparation or domestic review of the national communication.

69. The national communication may present information on such aspects as: (a) General policy on education, training and public awareness; (b) Primary, secondary and higher education; (c) Public information campaigns; (d) Training programmes; (e) Resource or information centres; (f) Involvement of the public and non-governmental organizations; (g) Participation in international activities; (h) Monitoring, review and evaluation of the implementation of Article 6 of the Convention.

9.1 Education

9.1.1 Principles of instruction

- Environmental Education (EE) has been a *principle of instruction* since 1979.
- EE has been integrated into the curricula of general education and of the vocational school system.
- First *Ministerial Decree "Environmental Education in Schools"* in 1985 with main aims of action competence and experiencing of democratic attitudes and behaviour in order to enable the learners to be active in political life.
- Latest development is the *Decree on environmental education for sustainable development* from 2014⁴⁶.
- Openness of the term "Education for Sustainable Development" provides space for innovations like interdisciplinary projects, community co-operation of schools in Local Agenda 21 processes, participatory programmes and developments, as well as research-based learning and impulses for local curriculum development.

⁴⁶ https://rundschriften.bmbwf.gv.at/download/2014_20_en.pdf

9.1.2 Strategies

- Two objectives of the *Austrian National Strategy for Sustainable Development (2002)*⁴⁷ focus on education (“A Sustainable Life Style” and “Solutions through Education and Research”).
- *Austrian Strategy for Education for Sustainable Development*⁴⁷ was tabled by three ministries and passed the Austrian Council of Ministers in 2008.
- As a follow-up to the European and national Youth Dialogue and the resulting Youth Goals⁴⁸ (Goal 10: Sustainable Green Europe), issues of education for sustainable development will get even more weight in the coming curricula, which will enter into force 2023/2024.

9.1.3 Agricultural education, training and extension institutions

- Contribute to Austrian efforts of stabilizing the earth’s climate.
- Guiding principle of socio-ecological agricultural policy.
- Soil protecting, organic farming, biomass and biogas production are part of agricultural education and training programmes.
- Austrian agricultural education, training and extension institutions create public awareness on ecological topics.

9.1.4 Initiatives and Networks

Several specific institutions, initiatives and networks promote sustainable education and topics relevant for climate change. They are in general supported by federal ministries and/or federal provinces. Some important examples are listed below:

- *Forum Umweltbildung*⁴⁹ (Forum Environmental Education) has, since 1983, been operating on behalf of both the Ministry of Education and the Ministry of Environment, developing and promoting educational programmes. *Forum Umweltbildung* organises specific programmes, provides schools with teaching materials and tools and offers workshops on relevant topics. Target group are educators in the formal and non-formal educational sector. *Forum Umweltbildung* also manages a funds, which provides small grants for school projects related to sustainable development.

⁴⁷ https://www.bmbwf.gv.at/dam/jcr:701bea45-5218-4c42-b123-fd251228b4b2/bine_strategie_e_18300.pdf (Executive summary)

⁴⁸ <https://youth-goals.eu/youthgoals>,

⁴⁹ <https://www.umweltbildung.at/> (German language only)

- *ÖKOLOG*⁵⁰ – Österreichs größtes Netzwerk für Schule und Umwelt (Network for Schools and Environment) is the first and main Austrian programme for schools at the interface of Environmental Education and School development. It is based on the approach of the International decentralised Network "Environment and School Initiatives/ENSI" to EE and ESD. Schools define ecological, technical and social conditions of their environment and, on the basis of these results, define objectives, targets and/or concrete activities and quality criteria, to be implemented and evaluated. The *ÖKOLOG*-programme is supported and supplemented at the level of the federal provinces with regional support teams in all provinces. More than 550 schools and 13 university colleges of teacher education participate in the network. Specific topics are supported by information material, in-service training and partly by local advising.
- The ecolabel for schools and teacher education⁵¹ was introduced in 2002, was later extended to other educational institutions and to nursery schools; about half of the 120 criteria relate to EE, school curriculum and school development. The other half refers to technical aspects like energy saving. The ecolabel is valid for four years after the obligatory external evaluation and has to be renewed afterwards.
- *Climate Alliance Austria* offers a network for schools and nursery schools; more than 760 schools and kindergartens in Austria participate in the network of Climate Alliance. These educational institutions take action in climate protection and deal with the topic of climate justice. *Climate Alliance Austria* supports schools and kindergartens by teaching materials, workshops, puppet shows and campaigns.
- *BINE – Bildung für Nachhaltige Entwicklung*⁵² (Education for Sustainable Development) is a nation wide university study course for in-service training for teacher educators for ESD. The aim is to promote ESD in teacher education, to foster innovative didactics, to encourage exchanging experiences and methods and to help teacher educators develop research competencies.
- *Hochschule für Agrar- und Umweltpädagogik Wien*⁵³ (University-level training institute for educational professions in agricultural and ecological affairs) is essentially supporting the development and dissemination of appropriate methods and practices of teaching, training and creation of awareness in ecological matters.

⁵⁰ <https://www.oekolog.at/> (German language only)

⁵¹ <https://www.umweltzeichen.at/en/education/schools>

⁵² <https://ius.aau.at/en/bine-education-for-sustainable-development-innovation-in-teacher-education-structure-and-contents/>

⁵³ <https://www.haup.ac.at/en/>

9.2 Training

9.2.1 General information

- Training and advice on energy saving is provided by the Federal Government and by federal provinces, partly in co-operation with other institutions like regional energy agencies⁵⁴.
- Advice, support (and partially grants) for measures related to environmental protection and energy efficiency are offered to small and medium enterprises as well as to consumers.
- Several stakeholders have taken their own initiatives, like the *Austrian Biomass Association*, which has established a certification-system for plumbers specialized in installing biomass-heating systems, and the *Austrian Federal Economic Chamber*, which founded the Business Energy Institute as a platform for facilitating implementation of energy efficiency measures for businesses.
- The *Austrian Energy Agency*⁵⁵ provides consulting and advice for decision makers in politics, administration and business; it has been founded as a non-profit organisation 40 years ago by the Republic of Austria, the federal provinces, important energy supply and energy technology companies, interest groups, and scientific organisations.

9.2.2 Klimaaktiv

- Is the central initiative of the Federal Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology since 2004; it's overall objective is to reduce energy consumption and to promote CO₂-neutral energy sources; target groups are companies, communities and private end-users.
- Four thematic clusters: Renewable energy, buildings, energy efficiency, mobility⁵⁶; several specific programmes provide a comprehensive and systematic approach in supporting the market penetration of climate-friendly technologies, services and activities by training and advising measures and subsidies.
- klimaaktiv provides targeted support for e.g. training of key players, for standard setting and quality management or for target-group specific information, motivation and marketing as well as building of networks.

⁵⁴ e. g. <https://www.enu.at/>, <http://www.energiesparverband.at/>, <https://www.salzburg.gv.at/themen/energie/energieberatung>, <https://www.ea-stmk.at/>, <http://www.energie-tirol.at/>, <https://www.energieinstitut.at/>

⁵⁵ <https://www.energyagency.at/> (German language only)

⁵⁶ <https://www.klimaaktiv.at/english/>

- klimaaktiv mobil programmes motivate and support stakeholders to develop and implement measures to reduce GHG in their transport and mobility activities.
- Programmes in the area of mobility promote clean fuels and vehicles, environmentally friendly transport modes, mobility management and improved transport efficiency.

9.2.3 Training for municipalities

- Training courses have been developed by *Climate Alliance Austria*; target groups are community representatives, mayors, regional and communal multipliers who can fall back on the emerging network of experts and participants.
- Main focus lies on spreading knowledge about the actual situation of climate change and adaption as well as the presentation of good-practice inputs from experts of communities, university and experts in their fields.
- Particular attention is paid to stimulate the creativity of participants to develop their own climate protection projects for their region or town.
- *Climate Alliance Austria* also offers specific trainings on the topics sustainable mobility and land use planning & soil protection, which should enable participants to develop projects in their community.

9.2.4 Training for farmers

- The Chambers of Agriculture (LKÖ), the Rural Adult Education Institutes (LFI), Bio Austria and the Austrian Council for Agricultural Engineering and Rural Development (ÖKL) are important institutions for extension related to climate protection issues.
- Agricultural extension and further training for adult farmers comprise the series of topics with regard to climate protection, ranging from the Austrian agri-environmental programme ÖPUL (e.g. reduced utilisation of nitrogen and nutrient balance) and organic farming to energy efficiency and renewable energy sources.

9.3 Public awareness

9.3.1 General information

- According to surveys of the last decade, climate change is the most important environmental problem for the Austrian population.
- Awareness programmes at federal, provincial and municipal level take account of these concerns and inform about everyone's possibilities to take part in the fight against climate change.

- Awareness measures comprise print (brochures, magazines), information and advertisements in media (newspapers, TV) as well as newsletters and websites⁵⁷.

9.3.2 Programmes, initiatives

- Programmes like klimaaktiv cover aspects of training and advising as well as aspects of public awareness; for example klimaaktiv mobil supports the Austrian national cycling strategy by awareness campaigns and awards in parallel to support for infrastructure improvements and consulting and advice for stakeholders.
- Public information and awareness plays an important role with respect to the advantages of organic farming and its products; information is published by the Federal Ministry of Agriculture, Forestry, Regions and Water Management as well as by Agrarmarkt Austria GmbH and by the joint platform of the associations for organic farmers, "BIO AUSTRIA".
- The European Carfree Day and the European Mobility Week is an international initiative fostering awareness for pollution free mobility; in 2022 532 Austrian communities did take part in these activities, which was the highest participation of all countries (<http://www.mobilityweek.eu>).
- The *Energy Globe Award* is a competition for initiatives in the fields of (a. o.) energy efficiency and renewable energy sources since 1999; the Austrian competitions take place annually at the level of the federal provinces as well as on national level; on international level projects from about 180 countries were submitted for this environmental award, which is organized by the Energy Globe Foundation based in Austria (<http://www.energyglobe.info>).

9.3.3 Activities of NGOs

- Environmental NGOs, organised in the umbrella organisations *Ökobüro* and *Umweltdachverband*, contribute to public awareness on climate change issues by various activities, covering articles in their members' magazines and specific public campaigns, information brochures and scientific studies, practical tools and GHG mitigation tips and many more activities.
- ENGOS' sources of finance are usually membership fees and donations; in some cases public subsidies are granted for definite projects.
- **Climate Alliance Austria:**
 - *Climate Alliance*⁵⁸ is a network with climate change and climate justice as its main topics; members are about 2000 municipalities and regions from more than 25

⁵⁷ e. g. <http://www.klimarettung.at/>, <http://www.ich-tus.steiermark.at/>, <https://www.energieautonomie-vorarlberg.at/de/>, <https://klimaschlau.wien.gv.at/site/>

⁵⁸ <https://www.climatealliance.org/about-us.html>

- European countries; partnership with Indigenous Peoples of the rainforest in the Amazon Basin is central part of the Climate Alliance.
- *Climate Alliance Austria*⁵⁹ has 1065 municipalities and the federal provinces, more than 1400 private companies and 760 educational institutions as members; members commit themselves to a continuous reduction of GHG emissions and support of the indigenous partners in Amazonia and further projects for the protection of the rainforest; Climate Alliance Austria considers itself as a network of local actors. Several projects of Climate Alliance Austria are supported by the Federal Ministry for Climate Action.
 - Climate action related activities with public participation are part of the commitment of municipalities; most member municipalities have therefore established working groups dealing with the implementation of measures in different areas (energy, transport, procurement, etc.).
 - Companies undergo an initial analysis by the Climate Alliance (regarding energy, mobility, awareness of employees, climate justice) and receive advice; they commit themselves to energy saving measures and to a CO₂-reduction target; performance with respect to the targets is evaluated regularly.
 - Climate Alliance Austria offers regional seminars on different topics as well as nation-wide activities like
 - a monthly newsletter and a yearly nation-wide meeting of the member municipalities (allowing for intensive discussion and exchange of opinions),
 - the coordination of the European Mobility Week,
 - the “Green Footprints Campaign – Kids in the Move for Climate”, which invites children to make their daily journeys in a climate-friendly way and to collect so-called “Green Footprints” (“Klimameilen”); it includes annual awards for schools with the highest number of green footprints and the presentation of the results of the Europe-wide campaign at the UNFCCC Climate Change Conference.
 - An important part of the activities of the Climate Alliance is the *partnership with indigenous rainforest peoples* and raising awareness for these issues in Austria. Representatives of indigenous peoples visit annually Austrian municipalities and every few years vice versa. Austria has contributed to the protection of the global climate system with a programme for sustainable development in the “Alto Rio Negro” region since 1993. The Alto Rio Negro is a tributary of the Amazon in the North-West of Brazil. In this region 23 indigenous peoples have joined together into the umbrella organisation FOIRN. Climate Alliance Austria supports the FOIRN in their efforts for economic and cultural autonomy and in preserving the tropical rainforests, these being the very basis of their existence, by granting them title of ownership and ensuring the sustainable use of their territories. The main principle is the integration of native people in measures for the protection of their

⁵⁹ <https://www.klimabuendnis.at/> (German language only)

- environment. Thanks to the support on communal, regional and federal level an area of rain forest 1.6 times the size of Austria has been declared as indigenous territory. This prepares the ground for many initiatives and projects of the indigenous peoples in the Rio Negro region.
- Another partnership exists between municipalities of Vorarlberg, the federal State of Vorarlberg and people of Chocó. It started as autonomy project and offered indigenous peoples legal advice according to territorial rights and supported a process of self-determination. At this point the work focusses on local partners and implementation of projects in the field of education, environmental protection as well as ecological agriculture.

9.4 Public participation

- In general, draft legal acts are published for comment and everyone may submit comments or suggestions; relevant institutions and interest groups are usually explicitly invited to comment.
- The National Energy and Climate Plan was subject to public consultation before it was adopted by the Federal Government at the end of 2019;
- The development of the Long Term Strategy 2050 in 2019 was based on a public consultation regarding targets and areas of action; three stakeholder workshops (with the participation of representatives of a. o. local governments, social partners, science and the civil society) were part of the development;
- The first National Adaptation Strategy, which had been adopted in 2012, was based on recommendations from science, which were used in a broad participatory process involving around 100 organizations (ministries, federal states, interest groups, environmental and other organizations) to formulate concrete recommendations in different areas of action; the update of the strategy in 2016/2017 has been developed in topic oriented stakeholder working groups, followed by a public consultation of the draft strategy; a comparable process is foreseen for the second update of the strategy which started in 2022.
- In 2021 an Austrian *Climate Assembly*⁶⁰ was installed, consisting of 100 citizens who were selected as a random sample by the statistical office to be representative for the Austrian population; the assembly held meetings on 6 weekends and discussed issues of climate action, assisted by scientist from various disciplines; a public online consultation was made on issues raised by the assembly; in mid 2022 the assembly's recommendations⁶¹ have been presented to the government.
- The national communication is a report produced at the level of the Federal Government; it is a tool to give account of the implementation of the Convention

⁶⁰ <https://klimarat.org/english/>

⁶¹ <https://klimarat.org/wp-content/uploads/Klimarat-Endbericht-WEB.pdf> (German language only)

towards the COP and the ERT and follows very specific and detailed guidelines related to the provisions of the Convention – against this background an involvement of the public is not considered particularly useful. Early NCs were quite elaborate and published in German language, but received virtually no attention of the public.

Annex A

Fifth Biennial Report

A.1 Information on greenhouse gas emissions and trends

2. Summary information from the national greenhouse gas (GHG) inventory on emissions and emission trends ... shall be prepared for the period from 1990 to the latest year in the most recent inventory submission available. The information provided in the biennial report should be consistent with that provided in the most recent annual inventory submission, and any differences should be fully explained.
3. Annex I Parties shall provide summary information on their national inventory arrangements in accordance with the reporting requirements related to national inventory arrangements contained in the UNFCCC Annex I inventory reporting guidelines, and on the changes to these national inventory arrangements since their last national communication or biennial report.

For information on greenhouse gas emissions and inventory arrangements please refer to Chapter 3 of Austria's NC8.

A.2 Quantified economy-wide emission reduction target

4. Each Annex I Party shall describe its quantified economy-wide emission reduction target, including any conditions or assumptions that are relevant to the attainment of that target, as communicated to the secretariat and contained in document FCCC/SB/2011/INF.1/Rev.1 or any update to that document.
5. The description of the Party's economy-wide emission reduction target shall include the following information, taking into consideration any relevant decisions of the Conference of the Parties (COP): (a) Base year; (b) Gases and sectors covered; (c) Global warming potential values ...; (d) Approach to counting emissions and removals from the LULUCF sector...; (e) Use of international market-based mechanisms in achieving its emission reduction target...; (f) Any other information, including relevant accounting rules, ..., where appropriate.

A.2.1 Joint target of the EU and its Member States

Austria is a Member State of the European Union. In 2010, the EU submitted a pledge to reduce its GHG emissions by 2020 by 20 % compared to 1990 levels (FCCC/SB/2011/INF.1/Rev.1 of 7 June 2011). In addition the EU provided additional

information relating to its quantified economy-wide emission reduction target in a submission as part of the process of clarifying the developed country Parties' targets in 2012 (FCCC/AWGLCA/2012/MISC.1). Summary information on the target can be found in Table 2.1. Detailed information on the EU target is given in CTF Table 2.

Table 2.1: Joint quantified economy-wide emission reduction target of the EU and its Member States

Parameter	Target
Base Year	1990
Target Year	2020
Emission Reduction target	-20% in 2020 compared to 1990
Gases covered	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆
Global Warming Potentials	AR4
Sectors Covered	Energy, Transport, Industrial processes, Agriculture, Waste (international aviation to the extent it is included in the EU ETS)
Land Use, Land-Use Change, and Forests (LU-LUCF)	Excluded
Use of international credits (JI and CDM)	Possible subject to quantitative and qualitative limits.

As this target under the convention has only been submitted by EU-28 and not by each of its Member States (MS), there are no specified convention targets for single MS. Austria as part of the EU-28 takes on a quantified economy-wide emission reduction target jointly with all Member States. The UK remains part of the joint EU 2020 target together with the 27 EU Member States.

A. 2.2 The EU target compliance architecture

The EU has jointly committed to its UNFCCC target and implemented it internally through EU legislation in the 2020 EU Climate and Energy Package. In this package, the EU introduced a clear approach to achieving the 20% reduction in total GHG emissions from 1990 levels, by dividing the effort between the sectors covered by the EU Emissions Trading System (EU ETS) and the sectors under the Effort Sharing Decision (ESD). Binding national targets were set for Member States under the Effort Sharing Decision. The achievement of EU internal compliance under the 2020 Climate and Energy Package including the national targets under the ESD is not subject to the UNFCCC assessment of the EU's joint commitment under the Convention.

Under the revised EU ETS Directive⁶², one single EU ETS cap covers the EU Member States and the three participating non-EU Member States (Norway, Iceland and Liechtenstein), i.e. there are no further differentiated caps by country. For allowances allocated to the EU ETS sectors, annual caps have been set for the period from 2013 to 2020; these decrease by 1.74 % annually, starting from the average level of allowances issued by Member States for the second trading period (2008–2012). The annual caps imply interim targets for emission reductions in sectors covered by the EU ETS for each year until 2020. For further information on the EU ETS and for information on the use of flexible mechanisms in the EU ETS see EU-BR chapter 2.1.

Non-ETS emissions are addressed under the Effort Sharing Decision (ESD)⁶³. The ESD covers emissions from all sources outside the EU ETS, except for emissions from international maritime, domestic and international aviation (which were included in the EU ETS from 1 January 2012) and emissions and removals from land use, land-use change and forestry (LULUCF). It thus includes a diverse range of small-scale emitters in a wide range of sectors: transport (cars, trucks), buildings (in particular heating), services, small industrial installations, fugitive emissions from the energy sector, emissions of fluorinated gases from appliances and other sources, agriculture and waste. Such sources currently account for about 60 % of total GHG emissions in the EU.

While the EU ETS target is to be achieved by the EU as a whole, the ESD target was divided into national targets to be achieved individually by each Member State. In the Effort Sharing Decision national emission targets for 2020 are set, expressed as percentage changes from 2005 levels. These changes have been transferred into binding quantified annual reduction targets for the period from 2013 to 2020 (EC 2013)⁶⁴⁺⁶⁵, expressed in Annual Emission Allocations (AEAs); in 2017 the allocations for the period 2017 to 2020 have been revised⁶⁶. The quantified annual reduction targets 2013-2020 for Austria are tightened from 52.6 million AEAs in 2013, decreasing to 47.7 Million AEAs in 2020. In Austria the share of ESD emissions is 63 % (2017: Total GHG emissions 82.3 Mt CO₂ equivalent without LULUCF, emissions covered by the ESD 51.7 Mt).

⁶² Directive 2009/29/EC of the European Parliament and of the Council amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community

⁶³ Decision No 406/2009/EC

⁶⁴ Commission decision of 26 March 2013 on determining Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the Council (2013/162/EU)

⁶⁵ Commission Implementing Decision of 31 October 2013 on the adjustments to Member States' annual emission allocations for the period from 2013 to 2020 pursuant to Decision No 406/2009/EC of the European Parliament and of the Council (2013/634/EU)

⁶⁶ Commission Decision (EU) 2017/1471 of 10 August 2017 amending Decision 2013/162/EU to revise Member States' annual emission allocations for the period from 2017 to 2020

The monitoring process is harmonized for all European MS. The use of flexible mechanisms is possible under the EU ETS and the ESD.

The ESD allows Member States to make use of flexibility provisions for meeting their annual targets, with certain limitations. There is an annual limit of 3% (of 2005 emissions) for the use of project-based Kyoto credits for each MS. For Austria the amount of credits possible to use is 2.77 million CERs and ERUs. If these are not used in any specific year, the unused part for that year can be transferred to other Member States or be banked for own use until 2020. As Austria (together with Belgium, Cyprus, Denmark, Finland, Ireland, Italy, Luxembourg, Portugal, Slovenia, Spain and Sweden) fulfils additional criteria as laid down in ESD⁶⁷ Article 5(5), an additional use of credits is possible from projects in Least Developed Countries (LDCs) and Small Island Developing States (SIDS) up to an additional 1 % of Austria's verified emissions in 2005. For Austria the additional amount of credits possible to use is 0.92 million CERs and ERUs. These credits are not bankable and transferable.

A.2.3 Other EU emission reduction targets

In addition to the EU target under the Convention, the EU also committed to a legally binding quantified emission limitation reduction commitment for the second commitment period of the Kyoto Protocol (2013–2020).

A further target has been pledged to the Convention through the EU's Nationally Determined Contribution submitted under the Paris Agreement, and has been adopted by the EU under the 2030 Climate and Energy Framework. For details see the EU's BR5.

A.3 Progress in achievement of quantified economy-wide emission reduction targets and relevant information

Mitigation actions and their effects

6. Each Annex I Party shall provide information on its mitigation actions, including on the policies and measures it has implemented or plans to implement since its last national communication or biennial report to achieve its economy-wide emission reduction target. To the extent appropriate, Parties shall organize the reporting of mitigation actions by sector (energy, industrial processes and product use, agriculture, LULUCF, waste and other sectors) and by gas (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride).

⁶⁷ Decision No 406/2009/EC

7. Each Annex I Party shall provide information on changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target.

8. Each Annex I Party is encouraged to provide, to the extent possible, detailed information on the assessment of the economic and social consequences of response measures.

The EU has substantially overachieved its reduction target under the Convention, which means that also its Member States and the United Kingdom have fulfilled their emission reduction obligations. As stated in the 2022 EU GHG inventory submission to the UNFCCC, the total GHG emissions, excluding LULUCF and including international aviation, decreased by 34% in the EU-27 + UK compared to the base year 1990 or 1.94 billion tons of CO_{2e} (carbon dioxide equivalent).

For information on national mitigation actions and their effects as well as on institutional arrangements please refer to Chapter 4 of Austria's NC8.

Estimates of emission reductions and removals and the use of units from the market-based mechanisms and land use, land-use change and forestry activities

9. For the base year, information reported on the emission reduction target shall include the following: (a) Total GHG emissions, excluding LULUCF; (b) Emissions and/or removals from the LULUCF sector (c) Total GHG emissions, including LULUCF.

10. For each reported year, information reported on progress made towards the emission reduction targets shall include, in addition to the information noted in paragraph 9(a–c) above, information on the use of units from market-based mechanisms.

For the quantification of the progress to 2020 targets, the development of GHG emissions is the key indicator. The Convention target of a reduction of emissions by 20% from 1990 to 2020 only refers to the emissions of the EU-28 as a whole. GHG emissions of EU-28 are calculated as the sum of MS emissions. With this, GHG emissions of Austria are part of EU-28 emissions with a percentage of 1.9% in the year 2017.

The development of GHG emissions in Austria is reported in CTF Table 4. Emissions in the sector of LULUCF are not included under the convention target, therefore they are not included in CTF Tables 4 and 4(a).

Austrian emissions falling under the ESD are shown in Figure 3.1 and Table 3.2 below.

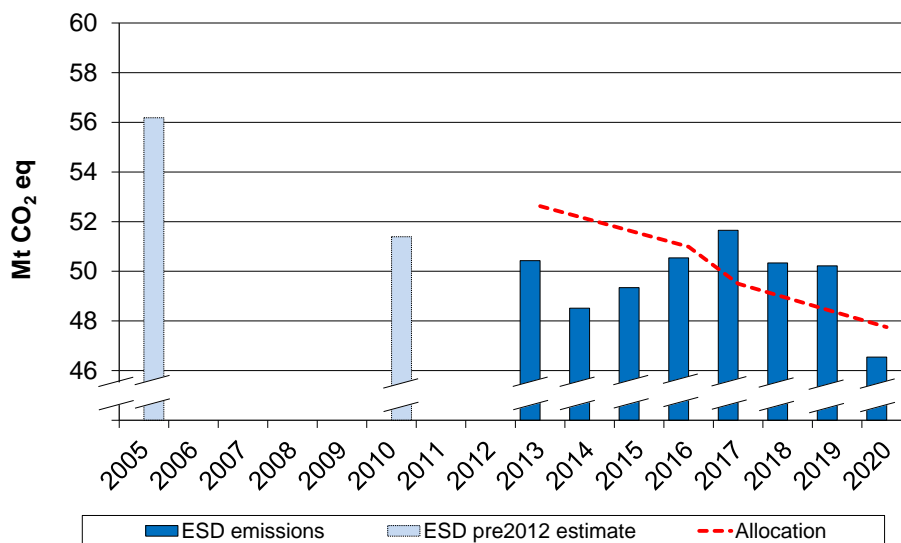


Figure 3.1: Austrian GHG emissions falling under the ESD

Table 3.2: Austrian GHG emissions falling under the ESD

	2005	2010	2013	2014	2015	2016	2017	2018	2019	2020
ESD emissions	56.18*	51.39*	50.43	48.51	49.34	50.54	51.65	50.34	50.22	46.54
Allocation			52.63	52.08	51.53	50.99	49.50	48.92	48.33	47.75

* Estimated (ETS reporting before 2013 was based on a different set of installations, total emissions of the installations under the current ETS regime can therefore only be estimated for the years before 2013)

The use of flexible mechanisms takes place on the one hand by operators in the EU ETS, on the other hand by governments for the achievement of ESD targets. For information on the use in the ETS please see the BR3 of the European Union. Compliance assessment under the ESD has been finished for the years 2013 to 2016; Austria did not make use of flexible mechanisms in these years. Austria makes use of the possibility to carry forward the part of its annual emission allocation of a given year that exceeds its greenhouse gas emissions in that year to the subsequent years. In the years 2013 to 2016 Austria had a surplus of 8.4 Mt CO₂ eq.

Austria did not make use of other flexibility provisions under the ESD. The ESD target was reached by domestic measures.

A.4 Projections

11. Each Annex I Party shall report the updated projections for 2020 and 2030 consistent with the “Guidelines for the preparation of national communications by Parties included in Annex I to the

Convention, Part II: UNFCCC reporting guidelines on national communications” (hereinafter referred to as the UNFCCC Annex I reporting guidelines on national communications).

12. Each Annex I Party should report on the changes since its most recent national communication in the model or methodologies used for the preparation of projections and should provide supporting documentation.

For information on GHG projections please refer to Chapter 5 of Austria’s NC8.

A.5 Provision of financial, technological and capacity-building support to developing country Parties

13. Parties included in Annex II to the Convention (Annex II Parties) shall provide information on the provision of financial, technological and capacity-building support to non-Annex I Parties consistent with the requirements contained in section VIII of the UNFCCC Annex I reporting guidelines on national communications following common reporting formats,² including information to show how this support is new and additional. In reporting such information, Parties should distinguish, to the extent possible, between support provided to non-Annex I Parties for mitigation and adaptation activities, noting the capacity-building elements of such activities, where relevant. For activities with multiple objectives, the funding could be reported as a contribution allocated partially to the other relevant objectives.

14. Each Annex II Party shall provide a description of its national approach for tracking of the provision of financial, technological and capacity-building support to non-Annex I Parties, if appropriate. This description shall also include information on indicators and delivery mechanisms used and allocation channels tracked. If this information was already reported in the national communication, the biennial report should only report changes to this information.

15. In reporting information in accordance with paragraphs 17 and 18 below, Annex II Parties shall use any methodology to be developed under the Convention, taking into account international experience. Annex II Parties shall describe the methodology used in their biennial reports. Annex II Parties shall report in a rigorous, robust and transparent manner the underlying assumptions and methodologies used to produce information on finance.

Finance

16. Each Annex II Party shall describe, to the extent possible, how it seeks to ensure that the resources it provides effectively address the needs of non-Annex I Parties with regard to climate change adaptation and mitigation.

17. Each Annex II Party shall provide information on the financial support it has provided, committed and/or pledged for the purpose of assisting non-Annex I Parties to mitigate GHG emissions and adapt to the adverse effects of climate change and any economic and social consequences of response measures, and for capacity-building and technology transfer in the areas of mitigation and adaptation, where appropriate. To that end, each Annex II Party shall provide summary information in textual and tabular format on allocation channels and annual

contributions for the previous two calendar or financial years without overlapping with the previous reporting periods, ...

18. Each Annex II Party shall provide the summary information, referred to in paragraph 17 above, for the previous two calendar or financial years in textual and tabular format on the annual financial support that it has provided for the purpose of assisting non-Annex I Parties, including the following: (a) The amount of financial resources; (b) The type of support; (c) The source of funding; (d) The financial instrument; (e) The sector; (f) An indication of what new and additional financial resources it has provided pursuant to Article 4, paragraph 3, of the Convention; Parties shall clarify how they have determined that such resources are new and additional.

19. Recognizing that the goal of mobilizing financial resources referred to in decision 1/CP.16, paragraph 98, includes private financial sources, Annex II Parties should report, to the extent possible, on private financial flows leveraged by bilateral climate finance towards mitigation and adaptation activities in non-Annex I Parties, and should report on policies and measures that promote the scaling up of private investment in mitigation and adaptation activities in developing country Parties.

For information on the provision of financial support to developing country Parties please refer to Chapter 7.1 of Austria's NC8.

Technology development and transfer

21. Each Annex II Party shall provide information on measures taken to promote, facilitate and finance the transfer of, access to and the deployment of climate-friendly technologies for the benefit of non-Annex I Parties and for the support of the development and enhancement of endogenous capacities and technologies of non-Annex I Parties. Parties may also provide information on success and failure stories.

22. Each Annex II Party shall provide, in textual and tabular formats, information on measures and activities related to technology transfer implemented or planned since its last national communication or biennial report. In reporting such measures and activities, Annex II Parties shall, to the extent possible, provide information on the recipient country, the targeted area of mitigation or adaptation, the sector involved and the sources of technology transfer from the public or private sectors, and shall distinguish between activities undertaken by the public and private sectors.

For information on the provision of technological support to developing country Parties please refer to Chapter 7.2 of Austria's NC8.

Capacity-building

23. Each Annex II Party shall provide information, to the extent possible, on how it has provided capacity-building support that responds to existing and emerging capacity-building needs identified by non-Annex I Parties in the areas of mitigation, adaptation and technology

development and transfer. Information should be reported in a textual and tabular format as a description of individual measures and activities.

For information on the provision of capacity-building support to developing country Parties please refer to Chapter 7.3 of Austria's NC8.

A.6 Other reporting matters

24. Annex I Parties are encouraged to report, to the extent possible, on the domestic arrangements established for the process of the self-assessment of compliance with emission reductions in comparison with emission reduction commitments or the level of emission reduction that is required by science. Annex I Parties are encouraged to report, to the extent possible, on the progress made in the establishment of national rules for taking local action against domestic non-compliance with emission reduction targets.

25. Annex I Parties are encouraged to report any other information that the Party considers relevant to the achievement of the objective of the Convention and suitable for inclusion in its biennial report.

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Annex B

Inventory Summary Tables

TABLE 10 EMISSION TRENDS
GHG CO₂ eq emissions
(Sheet 1 of 6)

Inventory 2020
Submission 2022 v3
AUSTRIA

GREENHOUSE GAS SOURCE AND SINK CATEG	1990	2000	2005	2010	2015	2019	2020	Change from base to latest reported year
	(kt CO ₂ eq)							%
Total (net emissions)⁽²⁾	66358.61	63523.56	81259.30	80372.54	76285.63	77111.43	72339.10	9.01
1. Energy	52804.84	55253.35	66867.73	59419.06	53071.38	54976.93	49929.24	-5.45
A. Fuel combustion (sectoral approach)	52102.84	54756.67	66430.38	58951.03	52646.78	54629.94	49600.29	-4.80
1. Energy industries	14011.18	12318.38	16031.95	13756.08	10511.17	10,177.39	8,807.30	-37.14
2. Manufacturing industries and construction	9845.39	10034.67	11541.17	11351.82	10227.61	10,855.78	10,549.50	7.15
3. Transport	13957.03	18804.83	24943.97	22585.07	22724.59	24,507.72	21,183.03	51.77
4. Other sectors	14253.37	13556.99	13868.71	11214.01	9144.59	9,054.35	9,026.80	-36.67
5. Other	35.87	41.80	44.58	44.05	38.82	34.70	33.67	-6.14
B. Fugitive emissions from fuels	702.00	496.68	437.35	468.03	424.60	346.99	328.94	-53.14
1. Solid fuels	333.22	27.19	0.13	NO,IE,NA	NO,IE,NA	NO,IE,NA	NO,IE,NA	
2. Oil and natural gas and other emissions from	368.78	469.48	437.21	468.03	424.60	346.99	328.94	-10.80
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	NO	NO	0.00
2. Industrial Processes	13573.52	14491.01	15439.63	15680.40	16729.61	16519.26	15489.29	14.11
A. Mineral industry	3092.46	2733.20	2888.79	2660.68	2737.56	2,808.73	2,820.61	-8.79
B. Chemical industry	1555.35	1623.74	943.31	782.79	782.17	842.69	784.65	-49.55
C. Metal industry	8179.92	8484.44	9630.79	10268.21	10808.40	10,346.09	9,459.92	15.65
D. Non-energy products from fuels and solvent use	348.94	198.33	174.34	169.37	133.37	145.73	153.92	-55.89
E. Electronic industry	133.87	419.96	352.34	149.77	107.05	89.38	57.96	-56.71
F. Product uses as ODS substitutes	NO	677.59	1041.98	1327.17	1854.08	1,846.99	1,753.51	100.00
G. Other product manufacture and use	262.98	353.75	408.07	322.41	306.98	439.64	458.73	74.43
H. Other	NA	NA	NA	NA	NA	NA	NA	0.00
3. Agriculture	8118.59	7375.64	6927.80	6926.14	7134.97	6984.71	6964.25	-14.22
A. Enteric fermentation	4513.02	4190.96	3934.90	3912.91	3854.92	3,763.68	3,733.10	-17.28
B. Manure management	1136.73	992.65	931.21	1001.27	1074.39	1,084.84	1,078.82	-5.09
C. Rice cultivation	NO	NO	NO	NO	NO	NO	NO	0.00
D. Agricultural soils	2381.25	2101.24	1964.80	1898.46	2059.52	1,984.85	2,002.91	-15.89
E. Prescribed burning of savannas	NO	NO	NO	NO	NO	NO	NO	0.00
F. Field burning of agricultural residues	1.66	1.45	1.35	1.15	0.65	0.56	0.47	-71.60
G. Liming	45.67	42.60	53.62	68.61	83.43	99.40	98.94	116.66
H. Urea application	9.60	19.36	21.89	28.85	34.90	26.77	24.54	155.72
I. Other carbon-containing fertilizers	30.66	27.37	20.03	14.89	27.15	24.61	25.47	-16.95
J. Other	NA	NA	NA	NA	NA	NA	NA	0.00
4. Land use, land-use change and forestry⁽²⁾	-12064.61	-16561.46	-10770.19	-3777.68	-2201.11	-2629.31	-1252.91	-89.61
A. Forest land	-10877.29	-15997.04	-8800.02	-2597.20	-2457.91	-2,430.13	-2,422.99	-77.72
B. Cropland	323.21	104.98	-1.78	56.88	209.66	356.20	401.56	24.24
C. Grassland	649.18	471.02	676.60	370.54	366.56	330.84	328.76	-49.36
D. Wetlands	42.08	35.80	47.33	68.79	58.52	59.58	59.09	40.43
E. Settlements	448.99	320.76	424.44	355.33	400.09	234.86	288.78	-35.68
F. Other land	457.03	379.73	333.09	407.03	461.76	266.04	249.27	-45.46
G. Harvested wood products	-3122.28	-1888.83	-3461.33	-2451.70	-1254.20	-1,461.69	-172.61	-94.47
H. Other	NO	NO	NO	NO	NO	NO	NO	0.00
5. Waste	3926.27	2965.02	2794.34	2124.63	1550.79	1259.84	1209.24	-69.20
A. Solid waste disposal	3643.89	2666.85	2437.75	1765.93	1185.48	882.50	831.07	-77.19
B. Biological treatment of solid waste	35.74	82.59	151.36	167.44	175.15	183.19	184.77	416.98
C. Incineration and open burning of waste	28.07	12.44	12.44	2.06	2.06	2.06	2.06	-92.67
D. Waste water treatment and discharge	218.57	203.15	192.79	189.21	188.10	192.09	191.33	-12.46
E. Other	NO	NO	NO	NO	NO	NO	NO	0.00
6. Other (as specified in summary I.A)	NO	NO	NO	NO	NO	NO	NO	0.00
Memo items:								
International bunkers	941.89	1789.63	2064.73	2143.28	2201.43	2980.31	1099.16	16.70
Aviation	899.77	1713.23	1980.31	2071.02	2149.11	2,931.03	1,052.98	18.34
Navigation	52.12	76.41	84.42	72.26	52.31	49.28	46.18	-11.40
Multilateral operations	NO	NO	NO	NO	NO	NO	NO	0.00
CO₂ emissions from biomass	10403.34	12758.15	15791.49	23538.18	23894.85	22,670.89	22,662.76	117.84
CO₂ captured	NO	NO	NO	NO	NO	NO	NO	0.00
Long-term storage of C in waste disposal sites	22778.82	27613.89	29341.30	29926.26	30170.26	30,330.25	30,373.26	33.34
Indirect N₂O	14.46	12.12	11.48	12.65	14.42	15.00	15.22	5.25
Indirect CO₂⁽³⁾	NO,NE,IE,NA	NO,NE,IE,NA	NO,NE,IE,NA	NO,NE,IE,NA	NO,NE,IE,NA	NO,NE,IE,NA	NO,NE,IE,NA	0.00
Total CO₂ equ without LULUCF	78423.22	80085.03	92029.50	84150.23	78486.74	79740.74	73592.02	-6.16
Total CO₂ equ with LULUCF	66358.61	63523.56	81259.30	80372.54	76285.63	77111.43	72339.10	9.01
Total CO₂ equ incl. indirect CO₂ without LULUCF	NA	NA	NA	NA	NA	NA	NA	0.00
Total CO₂ equ incl. indirect CO₂ with LULUCF	NA	NA	NA	NA	NA	NA	NA	0.00

TABLE 10 EMISSION TRENDS

CO₂
(Sheet 2 of 6)

Inventory 2020

Submission 2022 v3

AUSTRIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990	2000	2005	2010	2015	2019	2020	Change from base to latest reported year
	(kt)							%
1. Energy	51160.22	53997.46	65641.23	58120.79	51837.79	53773.00	48775.42	-4.66
A. Fuel combustion (sectoral approach)	51058.06	53832.75	65481.14	57937.19	51676.08	53654.75	48666.17	-4.68
1. Energy industries	13960.69	12263.19	15946.83	13623.27	10378.74	10,055.70	8,685.72	-37.78
2. Manufacturing industries and construction	9763.14	9899.45	11377.01	11189.53	10078.16	10,713.90	10,411.45	6.64
3. Transport	13756.18	18624.14	24743.13	22379.05	22476.62	24,207.51	20,919.08	52.07
4. Other sectors	13543.05	13005.16	13370.59	10702.21	8704.53	8,643.63	8,616.92	-36.37
5. Other	35.00	40.80	43.57	43.13	38.03	34.01	32.99	-5.75
B. Fugitive emissions from fuels	102.16	164.72	160.09	183.60	161.71	118.25	109.25	6.94
1. Solid fuels	NO,IE,NA	NO,IE,NA	NO,IE,NA	NO,IE,NA	NO,IE,NA	NO,IE,NA	NO,IE,NA	0.00
2. Oil and natural gas and other emissions from	102.16	164.72	160.09	183.60	161.71	118.25	109.25	6.94
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	NO	NO	0.00
2. Industrial processes	10871.19	12050.58	13328.93	13771.22	14363.50	14010.35	13111.03	20.60
A. Mineral industry	3092.46	2733.20	2888.79	2660.68	2737.56	2,808.73	2,820.61	-8.79
B. Chemical industry	643.53	674.08	643.55	675.12	688.42	715.02	682.91	6.12
C. Metal industry	6786.26	8444.97	9622.24	10266.05	10804.14	10,340.86	9,453.59	39.30
D. Non-energy products from fuels and solvent use	348.94	198.33	174.34	169.37	133.37	145.73	153.92	-55.89
E. Electronic industry								
F. Product uses as ODS substitutes								
G. Other product manufacture and use	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	0.00
H. Other	NA	NA	NA	NA	NA	NA	NA	0.00
3. Agriculture	85.92	89.33	95.54	112.35	145.49	150.78	148.94	73.35
A. Enteric fermentation								
B. Manure management								
C. Rice cultivation								
D. Agricultural soils								
E. Prescribed burning of savannas								
F. Field burning of agricultural residues								
G. Liming	45.67	42.60	53.62	68.61	83.43	99.40	98.94	116.66
H. Urea application	9.60	19.36	21.89	28.85	34.90	26.77	24.54	155.72
I. Other carbon-containing fertilizers	30.66	27.37	20.03	14.89	27.15	24.61	25.47	-16.95
J. Other	NA	NA	NA	NA	NA	NA	NA	0.00
4. Land use, land-use change and forestry ⁽²⁾	-12230.84	-16704.14	-10906.58	-3925.65	-2366.73	-2800.22	-1426.18	-88.34
A. Forest land	-10908.24	-16020.89	-8823.19	-2620.98	-2482.43	-2,456.00	-2,449.39	-77.55
B. Cropland	296.03	80.40	-25.74	24.57	169.58	312.52	357.21	20.67
C. Grassland	625.39	447.23	652.81	346.75	342.77	307.05	304.97	-51.24
D. Wetlands	42.08	35.80	47.33	68.79	58.52	59.58	58.98	40.15
E. Settlements	391.90	276.34	383.42	310.03	345.05	179.01	231.87	-40.83
F. Other land	444.28	365.82	320.12	396.89	453.99	259.30	242.80	-45.35
G. Harvested wood products	-3122.28	-1888.83	-3461.33	-2451.70	-1254.20	-1,461.69	-172.61	-94.47
H. Other	NO	NO	NO	NO	NO	NO	NO	0.00
5. Waste	27.92	12.40	12.40	2.05	2.05	2.05	2.05	-92.65
A. Solid waste disposal	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	0.00
B. Biological treatment of solid waste								
C. Incineration and open burning of waste	27.92	12.40	12.40	2.05	2.05	2.05	2.05	-92.65
D. Waste water treatment and discharge								
E. Other	NO	NO	NO	NO	NO	NO	NO	0.00
6. Other (as specified in summary 1.A)	NO	NO	NO	NO	NO	NO	NO	0.00
Memo items:								
International bunkers	926.34	1762.73	2034.38	2114.97	2174.91	2952.12	1086.77	17.32
Aviation	880.44	1695.58	1959.83	2049.55	2126.94	2,906.75	1,044.22	18.60
Navigation	45.90	67.15	74.55	65.42	47.97	45.37	42.55	-7.30
Multilateral operations	NO	NO	NO	NO	NO	NO	NO	0.00
CO₂ emissions from biomass	10403.34	12758.15	15791.49	23538.18	23894.85	22,670.89	22,662.76	117.84
CO₂ captured	NO	NO	NO	NO	NO	NO	NO	0.00
Long-term storage of C in waste disposal sites	22778.82	27613.89	29341.30	29926.26	30170.26	30,330.25	30,373.26	33.34
Indirect N₂O								
Indirect CO₂ ⁽³⁾	NO,NE,IE,NA	NO,NE,IE,NA	NO,NE,IE,NA	NO,NE,IE,NA	NO,NE,IE,NA	NO,NE,IE,NA	NO,NE,IE,NA	0.00
Total CO₂ equ without LULUCF	62145.25	66149.78	79078.11	72006.41	66348.82	67936.19	62037.45	-0.17
Total CO₂ equ with LULUCF	49914.41	49445.64	68171.53	68080.76	63982.10	65135.96	60611.27	21.43
Total CO₂ equ incl. indirect CO₂ without LULUCF	NA	NA	NA	NA	NA	NA	NA	0.00
Total CO₂ equ incl. indirect CO₂ with LULUCF	NA	NA	NA	NA	NA	NA	NA	0.00

TABLE 10 EMISSION TRENDS

CH₄

(Sheet 3 of 6)

Inventory 2020

Submission 2022 v3

AUSTRIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990	2000	2005	2010	2015	2019	2020	Change from base to latest reported year
	(kt)							%
1. Energy	48.58	29.67	25.79	27.03	24.28	22.23	21.77	-55.18
A. Fuel combustion (sectoral approach)	24.58	16.40	14.70	15.66	13.76	13.08	12.98	-47.18
1. Energy industries	0.33	0.39	0.62	1.00	1.03	0.98	1.00	199.56
2. Manufacturing industries and construction	0.54	0.65	0.82	0.86	0.82	0.77	0.76	41.48
3. Transport	2.97	1.25	1.11	0.75	0.68	0.86	0.76	-74.55
4. Other sectors	20.74	14.10	12.15	13.04	11.22	10.46	10.46	-49.54
5. Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-11.89
B. Fugitive emissions from fuels	23.99	13.28	11.09	11.38	10.52	9.15	8.79	-63.37
1. Solid fuels	13.33	1.09	0.01	NO,IE,NA	NO,IE,NA	NO,IE,NA	NO,IE,NA	
2. Oil and natural gas and other emissions from	10.66	12.19	11.08	11.38	10.52	9.15	8.79	-17.60
C. CO ₂ transport and storage								
2. Industrial processes	1.53	1.56	1.61	1.94	1.95	1.94	2.04	33.03
A. Mineral industry								
B. Chemical industry	1.40	1.40	1.45	1.87	1.88	1.86	1.97	40.21
C. Metal industry	0.13	0.16	0.16	0.08	0.08	0.08	0.07	-45.14
D. Non-energy products from fuels and solvent use	NA	NA	NA	NA	NA	NA	NA	0.00
E. Electronic industry								
F. Product uses as ODS substitutes								
G. Other product manufacture and use	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	0.00
H. Other	NA	NA	NA	NA	NA	NA	NA	0.00
3. Agriculture	203.16	187.10	175.37	176.46	176.24	172.86	171.50	-15.58
A. Enteric fermentation	180.52	167.64	157.40	156.52	154.20	150.55	149.32	-17.28
B. Manure management	22.58	19.41	17.93	19.90	22.02	22.30	22.16	-1.89
C. Rice cultivation	NO	NO	NO	NO	NO	NO	NO	0.00
D. Agricultural soils	NA	NA	NA	NA	NA	NA	NA	0.00
E. Prescribed burning of savannas	NO	NO	NO	NO	NO	NO	NO	0.00
F. Field burning of agricultural residues	0.05	0.05	0.04	0.04	0.02	0.02	0.02	-68.77
G. Liming								
H. Urea application								
I. Other carbon-containing fertilizers								
J. Other	NA	NA	NA	NA	NA	NA	NA	0.00
4. Land use, land-use change and forestry	0.97	0.96	0.95	0.96	0.96	0.96	0.96	-0.92
A. Forest land	0.02	0.00	0.00	0.00	0.01	0.00	0.01	-67.00
B. Cropland	IE,NO	IE,NO	IE,NO	IE,NO	NO,IE	NO,IE	NO,IE	0.00
C. Grassland	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00
D. Wetlands	NO	NO	NO	NO	NO	NO	0.00	100.00
E. Settlements	NO	NO	NO	NO	NO	NO	NO	0.00
F. Other land	NO	NO	NO	NO	NO	NO	NO	0.00
G. Harvested wood products								
H. Other	NO	NO	NO	NO	NO	NO	NO	0.00
5. Waste	151.16	110.66	101.74	74.88	51.68	39.54	37.47	-75.21
A. Solid waste disposal	145.76	106.67	97.51	70.64	47.42	35.30	33.24	-77.19
B. Biological treatment of solid waste	0.52	1.25	2.48	3.03	3.24	3.34	3.33	540.72
C. Incineration and open burning of waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-94.39
D. Waste water treatment and discharge	4.88	2.73	1.75	1.21	1.02	0.90	0.89	-81.73
E. Other	NO	NO	NO	NO	NO	NO	NO	0.00
6. Other (as specified in summary 1.A)	NO	NO	NO	NO	NO	NO	NO	0.00
Total CH₄ emissions without CH₄ from LULUCF	404.43	328.99	304.50	280.31	254.15	236.57	232.78	-42.44
Total CH₄ emissions with CH₄ from LULUCF	405.40	329.94	305.46	281.27	255.12	237.53	233.74	-42.34
Memo items:								
International bunkers	0.02	0.04	0.04	0.04	0.05	0.02	0.01	-49.91
Aviation	0.01	0.03	0.04	0.04	0.05	0.02	0.01	-46.09
Navigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-68.99
Multilateral operations	NO	NO	NO	NO	NO	NO	NO	0.00
CO₂ emissions from biomass								
CO₂ captured								
Long-term storage of C in waste disposal sites								
Indirect N₂O								
Indirect CO₂⁽³⁾								

TABLE 10 EMISSION TRENDS

N₂O
(Sheet 4 of 6)

Inventory 2020

Submission 2022 v3

AUSTRIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990	2000	2005	2010	2015	2019	2020	Change from base to latest reported year
	(kt)							%
1. Energy	1.44	1.72	1.95	2.09	2.10	2.18	2.05	41.68
A. Fuel combustion (sectoral approach)	1.44	1.72	1.95	2.09	2.10	2.18	2.05	41.68
1. Energy industries	0.14	0.15	0.23	0.36	0.36	0.33	0.32	129.18
2. Manufacturing industries and construction	0.23	0.40	0.48	0.47	0.43	0.41	0.40	73.00
3. Transport	0.42	0.50	0.58	0.63	0.77	0.94	0.82	93.54
4. Other sectors	0.64	0.67	0.65	0.62	0.54	0.50	0.50	-22.71
5. Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-22.44
B. Fugitive emissions from fuels	NA,NO,IE	NA,NO,IE	NA,NO,IE	NA,NO,IE	NO,IE,NA	NO,IE,NA	NO,IE,NA	0.00
1. Solid fuels	NO,IE,NA	NO,IE,NA	NO,IE,NA	NO,IE,NA	NO,IE,NA	NO,IE,NA	NO,IE,NA	0.00
2. Oil and natural gas and other emissions from	NA,NO,IE	NA,NO,IE	NA,NO,IE	NA,NO,IE	NO,IE,NA	NO,IE,NA	NO,IE,NA	0.00
C. CO ₂ transport and storage								
2. Industrial processes	3.38	3.51	1.14	0.38	0.30	0.41	0.30	-91.06
A. Mineral industry								
B. Chemical industry	2.94	3.07	0.88	0.20	0.16	0.27	0.18	-94.01
C. Metal industry	NO	NO	NO	NO	NO	NO	NO	0.00
D. Non-energy products from fuels and solvent use	NA	NA	NA	NA	NA	NA	NA	0.00
E. Electronic industry								
F. Product uses as ODS substitutes								
G. Other product manufacture and use	0.44	0.44	0.25	0.18	0.14	0.13	0.13	-71.39
H. Other	NA	NA	NA	NA	NA	NA	NA	0.00
3. Agriculture	9.91	8.75	8.21	8.06	8.67	8.43	8.48	-14.42
A. Enteric fermentation								
B. Manure management	1.92	1.70	1.62	1.69	1.76	1.77	1.76	-8.26
C. Rice cultivation								
D. Agricultural soils	7.99	7.05	6.59	6.37	6.91	6.66	6.72	-15.89
E. Prescribed burning of savannas	NO	NO	NO	NO	NO	NO	NO	0.00
F. Field burning of agricultural residues	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-83.56
G. Liming								
H. Urea application								
I. Other carbon containing fertilizers								
J. Other	NA	NA	NA	NA	NA	NA	NA	0.00
4. Land use, land-use change and forestry	0.48	0.40	0.38	0.42	0.47	0.49	0.50	5.12
A. Forest land	0.10	0.08	0.08	0.08	0.08	0.09	0.09	-13.90
B. Cropland	0.09	0.08	0.08	0.11	0.13	0.15	0.15	63.15
C. Grassland	NO	NO	NO	NO	NO	NO	NO	0.00
D. Wetlands	NO	NO	NO	NO	NO	NO	0.00	100.00
E. Settlements	0.19	0.15	0.14	0.15	0.18	0.19	0.19	-0.31
F. Other land	0.04	0.05	0.04	0.03	0.03	0.02	0.02	-49.19
G. Harvested wood products								
H. Other	NO	NO	NO	NO	NO	NO	NO	0.00
5. Waste	0.40	0.62	0.80	0.84	0.86	0.90	0.91	126.63
A. Solid waste disposal								
B. Biological treatment of solid waste	0.08	0.17	0.30	0.31	0.32	0.33	0.34	346.16
C. Incineration and open burning of waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-95.78
D. Waste water treatment and discharge	0.32	0.45	0.50	0.53	0.55	0.57	0.57	75.20
E. Other	NO	NO	NO	NO	NO	NO	NO	0.00
6. Other (as specified in summary I.A)	NO	NO	NO	NO	NO	NO	NO	0.00
Total direct N₂O emissions without N₂O from LULU	15.14	14.62	12.10	11.37	11.93	11.92	11.74	-22.46
Total direct N₂O emissions with N₂O from LULUCEF	15.62	15.01	12.48	11.79	12.40	12.41	12.24	-21.62
Memo items:								
International bunkers	0.05	0.09	0.10	0.09	0.09	0.09	0.04	-19.45
Aviation	0.03	0.06	0.07	0.07	0.07	0.08	0.03	-4.48
Navigation	0.02	0.03	0.03	0.02	0.01	0.01	0.01	-41.28
Multilateral operations	NO	NO	NO	NO	NO	NO	NO	0.00
CO₂ emissions from biomass								
CO₂ captured								
Long-term storage of C in waste disposal sites								
Indirect N₂O	0.05	0.04	0.04	0.04	0.05	0.05	0.05	5.25
Indirect CO₂⁽³⁾								

TABLE 10 EMISSION TRENDS
HFCs, PFCs, SF₆, and NF₃
 (Sheet 5 of 6)

Inventory 2020
 Submission 2022 v3
 AUSTRIA

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990	2000	2005	2010	2015	2019	2020	Change from base to latest reported year
	(kt)							%
Emissions of HFCs and PFCs - (kt CO₂ equivalent)	1185.22	770.23	1210.34	1407.27	1906.00	1889.47	1786.48	50.73
Emissions of HFCs - (kt CO₂ equivalent)	2.44	682.37	1047.06	1329.22	1856.45	1851.03	1756.59	71963.26
HFC-23	NO,NA	0.00	0.00	0.00	0.00	0.00	0.00	100.00
HFC-32	NO,NA	0.01	0.02	0.03	0.05	0.08	0.08	100.00
HFC-41	NA	NA	NA	NA	NA	NA	NA	0.00
HFC-43-10mee	NO,NA	0.00	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	0.00
HFC-125	NO,NA	0.03	0.07	0.11	0.17	0.17	0.16	100.00
HFC-134	NA	NA	NA	NA	NA	NA	NA	0.00
HFC-134a	NO,NA	0.28	0.36	0.36	0.48	0.54	0.53	100.00
HFC-143	NA	NA	NA	NA	NA	NA	NA	0.00
HFC-143a	NO,NA	0.02	0.05	0.08	0.11	0.09	0.07	100.00
HFC-152	NA	NA	NA	NA	NA	NA	NA	0.00
HFC-152a	NO,NA	0.60	0.20	0.13	0.00	NO,NA	NO,NA	0.00
HFC-161	NA	NA	NA	NA	NA	NA	NA	0.00
HFC-227ea	NO,NA	0.00	0.00	0.00	0.00	0.00	0.00	100.00
HFC-236cb	NA	NA	NA	NA	NA	NA	NA	0.00
HFC-236ea	NA	NA	NA	NA	NA	NA	NA	0.00
HFC-236fa	NA	NA	NA	NA	NA	NA	NA	0.00
HFC-245ca	NA	NA	NA	NA	NA	NA	NA	0.00
HFC-245fa	NO,NA	0.00	0.00	0.00	0.00	0.00	0.00	100.00
HFC-365mfc	NO,NA	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Unspecified mix of HFCs ⁽⁴⁾ - (kt CO ₂ equivalent)	2.44	4.78	5.03	2.05	2.37	4.04	3.08	26.29
Emissions of PFCs - (kt CO₂ equivalent)	1182.79	87.87	163.29	78.05	49.55	38.45	29.89	-97.47
CF ₄	0.14	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	
C ₂ F ₆	0.01	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	
C ₃ F ₈	NO,NA	NA,NO,IE	NA,NO,IE	NA,NO,IE	NO,IE,NA	NO,IE,NA	NO,IE,NA	0.00
C ₄ F ₁₀	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	NO,NA	0.00
c-C ₄ F ₈	NA	NA	NA	NA	NA	NA	NA	0.00
C ₅ F ₁₂	NA,NO	0.00	0.00	NA,NO	NO,NA	NO,NA	NO,NA	0.00
C ₆ F ₁₄	NA	NA	NA	NA	NA	NA	NA	0.00
C ₁₀ F ₁₈	NA	NA	NA	NA	NA	NA	NA	0.00
c-C ₃ F ₆	NA	NA	NA	NA	NA	NA	NA	0.00
Unspecified mix of PFCs ⁽⁴⁾ - (kt CO ₂ equivalent)	34.03	87.32	157.79	78.05	49.55	38.45	29.89	-12.16
Unspecified mix of HFCs and PFCs - (kt CO₂)	NA,NO	NA,NO	NA,NO	NA,NO	NO,NA	NO,NA	NO,NA	0.00
Emissions of SF₆ - (kt CO₂ equivalent)	470.61	574.53	493.63	335.87	309.55	436.42	438.63	-6.80
SF ₆	0.02	0.03	0.02	0.01	0.01	0.02	0.02	-6.80
Emissions of NF₃ - (kt CO₂ equivalent)	NO,NA	10.51	28.16	4.12	13.46	13.61	12.04	100.00
NF ₃	NO,NA	0.00	0.00	0.00	0.00	0.00	0.00	100.00

**TABLE 10 EMISSION TRENDS
SUMMARY
(Sheet 6 of 6)**

Inventory 2020
Submission 2022 v3
AUSTRIA

GREENHOUSE GAS EMISSIONS	1990	2000	2005	2010	2015	2019	2020	Change from base to latest reported year
	CO ₂ equivalent (kt)							(%)
CO ₂ emissions without net CO ₂ from LULUCF	62145.25	66149.78	79078.11	72006.41	66348.82	67936.19	62037.45	-0.17
CO ₂ emissions with net CO ₂ from LULUCF	49914.41	49445.64	68171.53	68080.76	63982.10	65135.96	60611.27	21.43
CH ₄ emissions without CH ₄ from LULUCF	10110.68	8224.69	7612.58	7007.82	6353.78	5914.33	5819.44	-42.44
CH ₄ emissions with CH ₄ from LULUCF	10134.93	8248.57	7636.44	7031.72	6377.88	5938.21	5843.47	-42.34
N ₂ O emissions without N ₂ O from LULUCF	4511.46	4355.29	3606.68	3388.73	3555.14	3550.73	3497.99	-22.46
N ₂ O emissions with N ₂ O from LULUCF	4653.43	4474.09	3719.20	3512.80	3696.65	3697.76	3647.23	-21.62
HFCs	2.44	682.37	1047.06	1329.22	1856.45	1851.03	1756.59	71963.26
PFCs	1182.79	87.87	163.29	78.05	49.55	38.45	29.89	-97.47
Unspecified mix of HFCs and PFCs	NA,NO	NA,NO	NA,NO	NA,NO	NO,NA	NO,NA	NO,NA	0.00
SF ₆	470.61	574.53	493.63	335.87	309.55	436.42	438.63	-6.80
NF ₃	NO,NA	10.51	28.16	4.12	13.46	13.61	12.04	100.00
Total (without LULUCF)	78423.22	80085.03	92029.50	84150.23	78486.74	79740.74	73592.02	-6.16
Total (with LULUCF)	66358.61	63523.56	81259.30	80372.54	76285.63	77111.43	72339.10	9.01
Total (without LULUCF, with indirect)	NA	NA	NA	NA	NA	NA	NA	0.00
Total (with LULUCF, with indirect)	NA	NA	NA	NA	NA	NA	NA	0.00

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990	2000	2005	2010	2015	2019	2020	Change from base to latest reported year
	CO ₂ equivalent (kt)							(%)
1. Energy	52804.84	55253.35	66867.73	59419.06	53071.38	54976.93	49929.24	-5.45
2. Industrial processes and product use	13573.52	14491.01	15439.63	15680.40	16729.61	16519.26	15489.29	14.11
3. Agriculture	8118.59	7375.64	6927.80	6926.14	7134.97	6984.71	6964.25	-14.22
4. Land use, land-use change and forestry ⁽⁵⁾	-12064.61	-16561.46	-10770.19	-3777.68	-2201.11	-2629.31	-1252.91	-89.61
5. Waste	3926.27	2965.02	2794.34	2124.63	1550.79	1259.84	1209.24	-69.20
6. Other	NO	NO	NO	NO	NO	NO	NO	0.00
Total (including LULUCF)⁽⁵⁾	66358.61	63523.56	81259.30	80372.54	76285.63	77111.43	72339.10	9.01

Annex C

Supplementary information under Article 7, paragraph 2, of the Kyoto Protocol

D. National systems in accordance with Article 5, paragraph 1

30. Each Party included in Annex I shall provide a description of how it is performing the general and specific functions defined in the guidelines for national systems under Article 5, paragraph 1.

Detailed information on the national inventory system has been reported in Austria's Initial Report⁶⁸ according to Decision 13/CMP.1. The Austrian national system was reviewed during the in-country review of the initial report of Austria (February 2007). Para 10 of the review report⁶⁹ states that the national system has been developed in line with the relevant guidelines and can fulfil the requirements of the Kyoto Protocol as well as other obligations regarding its air emissions inventory that Austria has to comply with. Information on the current status of the national inventory system is listed in Section 3.3 of the NC8, more details of the inventory arrangements can be found in Section 1.2 of the Austrian National Inventory Report 2022.⁷⁰

E. National registries

32. Each Party included in Annex I shall provide a description of how its national registry performs the functions defined in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1,11 and complies with the requirements of the technical standards for data exchange between registry systems as adopted by the COP/MOP.

The registry administrator designated by Austria to maintain the national registry is Umweltbundesamt GmbH. Contact details:

⁶⁸ http://unfccc.int/files/national_reports/initial_reports_under_the_kyoto_protocol/application/pdf/at-initial-report-200611-corr.pdf

⁶⁹ <http://unfccc.int/resource/docs/2007/irr/aut.pdf>

⁷⁰ <https://www.umweltbundesamt.at/fileadmin/site/publikationen/rep0811.pdf>

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The registry is operational since June 2005 and was described in Austria's Initial Report. In June 2012 the national registry migrated to the Consolidated System of EU Registries (CSEUR), which is a common platform for the EU registry and the national registries of the EU member states plus Iceland, Liechtenstein and Norway. Detailed information on this change has been reported in Chapter 13 of the Austrian National Inventory Report 2013⁷¹. The latest changes are described in Chapter 14 of the Austrian National Inventory Report 2022.⁷⁰

F. Supplimentarity relating to the mechanisms pursuant to Articles 6, 12 and 17

33. Each Party included in Annex I shall provide information on how its use of the mechanisms is supplemental to domestic action, and how its domestic action thus constitutes a significant element of the effort made to meet its quantified limitation and reduction commitments under Article 3, paragraph 1, in accordance with the provisions of decision 5/CP.6.

Austria did not make use of the mechanisms under the Kyoto Protocol in the second commitment period. Austria still received some CP2 CERs based on a contract signed in 2003, these CERs have not been used. No new purchasing contracts have been signed for CP2.

G. Policies and measures in accordance with Article 2

34. In providing information under part II, section V, of the guidelines for the preparation of national communications by Parties included in Annex I to the Convention (FCCC/CP/1999/7), each Party included in Annex I shall specifically address policies and measures implemented and/or further elaborated as well as cooperation with other such Parties in achieving its quantified emission limitation and reduction commitment under Article 3, in order to promote sustainable development. Such reporting shall take into account any relevant decision by the COP and the COP/MOP resulting from the process for further consideration of the issue of policies and measures (decision 13/CP.7).

35. With respect to aviation and marine bunker fuels, each Party included in Annex I shall, in pursuit of Article 2, paragraph 2, of the Kyoto Protocol, identify the steps it has taken to promote

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http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/aut-2013-nir-15apr.zip

and/or implement any decisions by the International Civil Aviation Organization and the International Maritime Organization in order to limit or reduce emissions of greenhouse gases not controlled by the Montreal Protocol from aviation and marine bunker fuels.

36. Each Party included in Annex I shall also provide information not reported elsewhere under these guidelines on how it strives to implement policies and measures under Article 2 of the Kyoto Protocol in such a way as to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties and in particular those identified in Article 4, paragraphs 8 and 9, of the Convention, taking into account Article 3 of the Convention.

Sustainable development has been a guiding principle for policy-making in Austria for a long time. An explicit strategy document of the Federal Government has been adopted in 2002 (“Austrian Strategy for Sustainable Development 2002”⁷²). Building upon that document and upon the EU’s sustainable development strategy, the Federal Government and the *Länder* have developed a common strategy, which has been adopted in 2010⁷³. It takes into account the UN Millenium Development Goals and is intended as guidance for policy and administration. The work programme contains topics like “global responsibility” and “sustainable production, consumption and transport”. In 2019, the Federal Ministry for Sustainability and Tourism published the SDG Action Plan 2019+⁷⁴, summarizing its measures which contribute to achieving the SDGs. The first voluntary progress report⁷⁵ was developed in 2019/2020 and was presented⁷⁶ at the UN High-Level Political Forum on Sustainable Development in 2020.

At EU level, the Sustainable Development Goals (SDGs) are an intrinsic part of the President’s political guidelines for the European Commission 2019–2024. The European Green Deal is one of the building blocks for the implementation of the SDGs into policies of the EU and its Member States, especially with respect to environment and climate change.

Austria is aware of the need to reduce **GHG emissions from aviation and shipping**. Austria supports EU work on that subject in ICAO and IMO. The EU, with active support from Austria, succeeded to include aviation CO₂ emissions into the EU emissions trading scheme from 2012 onwards, resulting in a limitation of emissions below historic levels in 2004-2006. The EU scheme includes emissions from flights European Economic Area. Agreements with Switzerland, Iceland, Norway and the UK have been signed since 2017 to link the EU ETS with the respective trading scheme. Phase-out of free ETS allowances for airlines could be completed by 2026 if a political agreement on the current legislative proposal will be reached in due time while free permits are foreseen for airlines using sustainable aviation

⁷² https://www.nachhaltigkeit.at/assets/customer/Downloads/Strategie/strategie020709_en.pdf

⁷³ <https://www.nachhaltigkeit.at/strategien> (in German language)

⁷⁴ https://www.bmk.gv.at/dam/jcr:97bfd2ad-d6b6-4928-aa1b-ec64535fc294/SDG_Aktionsplan2019plus.pdf
(German language only)

⁷⁵ <https://sdgs.un.org/basic-page/austria-24738>

⁷⁶ https://www.youtube.com/watch?v=bz_iGaoLHX0

fuels (SAF). Furthermore, co-legislators are currently in the process of negotiating a blending mandate for SAF that is expected to require fuel suppliers to blend a certain amount of SAF when supplying fuel in Europe. The EU has also been the driving force behind the ICAO agreement on a global market-based measure to limit GHG emissions from international aviation (Carbon Offsetting Scheme for International Aviation – Corsia), which is in place since 2021. Austria, together with all Member States of the EU, was among those countries participating in the voluntary pilot phase. Even though in 2021 no compensation obligations arose due to the crisis induces reduction in emissions, European airlines are expected to actually compensate CO₂ emissions for 2022 and compensation obligations are supposed to significantly increase in 2027 when CORSIA will become legally binding at global level. On the national level, Austria has publicised a new aviation strategy, which focuses on mitigating CO₂ emissions.⁷⁷ and will soon be accessible in English here: <https://www.bmk.gv.at/themen/verkehr/luftfahrt/roadmap.html> As part of the implementing its aviation strategy, Austria is currently developing SAF road map to facilitate the ramp-up of SAF in Austria in line with European legislation.

For maritime transport, appropriate action has also been implemented at European level (monitoring and reporting on GHG emissions of ships).⁷⁸ Especially the proposal for a regulation on the use of renewable and low-carbon fuels in maritime is another important step in the right direction; in this context, Austria supports ambitious targets for reducing CO₂ emissions in the maritime sector. The Barcelona Convention and Statute signed in Barcelona on 20 April 1921 ensure access to the sea for land-locked states and recognise that a land-locked state could be a maritime flag state that could register ships and sail them on the sea under its own flag. Austria signed the most important international Agreements and is member of the International Maritime Organisation (IMO). Due to the high administrative burden for a land-locked state to provide a modern administration, in compliance with the provisions of the EU Regulations concerned, to register maritime ships and authorise them to sail under Austrian flag, the Austrian maritime navigation act was adopted in 2012. Since then no maritime shipping registry exists in Austria anymore. Despite that, the Austrian membership to the IMO and its legal instruments continues but the practical effect is limited in scope.

In accordance with the Kyoto Protocol, Austria strives to implement policies and measures reported in the NC8 in such a way that **adverse effects** in other countries are minimised. However, Austria is of the view that its contributions to international climate efforts do not have adverse effects in other countries. On the contrary, the reduction of emissions of greenhouse gases due to the Austrian commitments under the Protocol will in fact contribute to avert and minimize dangerous climate change impacts in all countries worldwide. Projects of the Austrian Development Cooperation support developing

⁷⁷ <https://www.bmk.gv.at/themen/verkehr/luftfahrt/roadmap.html> (English version under development)

⁷⁸ https://ec.europa.eu/clima/policies/transport/shipping_en

countries in reducing dependence on fossil carbon and adapting to impacts of climate change (see Chapter 7). Austria also seeks to ensure that policies and measures designed and implemented entirely at the national level are as targeted and effective as possible – regarding impact assessment, see the beginning of Chapter 4.

H. Domestic and regional programmes and/or legislative arrangements and enforcement and administrative procedures

37. Each Party included in Annex I shall report any relevant information on its domestic and regional legislative arrangements and enforcement and administrative procedures, established pursuant to the implementation of the Kyoto Protocol, according to its national circumstances. This information shall include:

- (a) A description of any domestic and regional legislative arrangements and enforcement and administrative procedures the Party has in place to meet its commitments under the Kyoto Protocol, including the legal authority for such programmes, how they are implemented, and procedures for addressing cases of non-compliance under domestic law
- (b) A description of any provisions to make information on these legislative arrangements and enforcement and administrative procedures (e.g. rules on enforcement and administrative procedures, action taken) publicly accessible
- (c) A description of any institutional arrangements and decision-making procedures that it has in place to coordinate activities relating to participation in the mechanisms under Articles 6, 12 and 17, including the participation of legal entities.

38. Each Party included in Annex I shall provide a description of any national legislative arrangements and administrative procedures that seek to ensure that the implementation of activities under Article 3, paragraph 3, and any elected activities under Article 3, paragraph 4, also contribute to the conservation of biodiversity and sustainable use of natural resources.

For information on legislative arrangements and enforcement and administrative procedures please refer to Section 4.1 of Austria's NC8.

I. Information under Article 10

39. Each Party included in Annex I shall report its activities, actions and programmes undertaken in fulfilment of its commitments under Article 10.

40. Each Party included in Annex I shall report on the steps it has taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity, taking into account Article 4, paragraphs 3, 5 and 7, of the Convention, in order to facilitate the implementation of Article 10 of the Kyoto Protocol.

For information on the implementation of commitments under Art. 10 please refer to the following parts of Austria's NC8:

- Art. 10a: Section 3.3

- Art. 10b: Chapter 4 and Section 6.4
- Art. 10c: Section 7.2
- Art. 10d: Chapter 8
- Art. 10e: Chapter 9

J. Financial resources

41. Each Party included in Annex II shall provide information on the implementation of Article 11 of the Kyoto Protocol, in particular information on what new and additional financial resources have been provided, in what way these resources are new and additional, and how that Party has taken into account the need for adequacy and predictability in the flow of these resources.

42. Each Party included in Annex II shall provide information on its contribution to the entity or entities entrusted with the operation of the financial mechanism.

43. Any Party included in Annex I that has provided funding for the adaptation fund established in accordance with decision 10/CP.7 shall report on its financial contributions to this fund. In doing so, the Party shall take into account the information reported in accordance with paragraph 6 of decision 10/CP.7.

For information on financial resources provided please refer to Chapter 7 of Austria's NC8.

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