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INFORMATION ON LULUCF ACTIONS

AUSTRIA



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1. Introduction

Agriculture and forestry in Austria have not only been the backbone of healthy rural areas for centuries, but also one of the main pillars in the country's historical and cultural traditions.

At the same time, agriculture and forestry are an indispensable part of Austria's overall economy as they provide comprehensive services in the interest of society.

It is precisely the amenability of Austria's system of land management that offers a number of opportunities: Austria has thus taken on an increasingly acknowledged pioneer role among EU Member States in the management of natural resources. This distinct image is borne in particular by the high environmental standards that apply in production, the high percentage of organic farms, modern animal transport regulations, and the beauties of the Alpine Republic's landscapes safeguarded by farmers. The work of men and women farmers is what warrants the intactness of rural areas, having positive effects on the environment and nature.

Certain land use activities have the potential to contribute positively to climate change mitigation. However, due to the fact that emissions associated with agriculture and forestry depend on many external factors e.g. weather, water or soil conditions, it is difficult to assess the potential of different climate related PAMs, in particular over a short period, such as the second commitment period of the Kyoto-Protocol.

The land sector is on one hand already addressed by a broad range of climate change policies and measures, in particular related to enhancing removals/reducing emissions and providing feedstock for renewable energy and material and on the other hand the demand for raw materials is rising worldwide. Austria managed to address these challenges so far in a holistic manner.

Nevertheless, it has to be noted that emissions reduction pathway of the land sector is quite different those of other sectors. The different scenarios of the 2050 low carbon Roadmap (European Commission 2011) show a reduction in Non-CO₂ emissions from agriculture of less than 50% in 2050, compared to a close to full decarbonisation in most of the other sectors. As LULUCF contributes net-emissions as well as net-removals, the EU currently lacks a long term vision with respect to the emissions of this sector. This shows that emissions reductions are limited in the land sector.

Sustainable Agricultural Policy

The official goals of the Austrian agricultural policy are set forth in the Agriculture Act of 1992. In consideration of the Common Agricultural Policy (CAP) of the European Union its objectives are

- to preserve a viable, economically sound, farm-based agriculture in an intact rural area;
- to promote the manifold earning and employment combinations between agriculture and other economic sectors;
- to encourage market-oriented production, processing and marketing;
- to support agriculture in order to enable it to balance natural disadvantages compared
- to other branches of the economy, to safeguard
 - optimum supply of the population with high quality food and raw materials and
 - the natural assets of soil, water and air, to preserve and
 - shape the cultural and recreational landscape and
 - to support the protection against natural hazards.

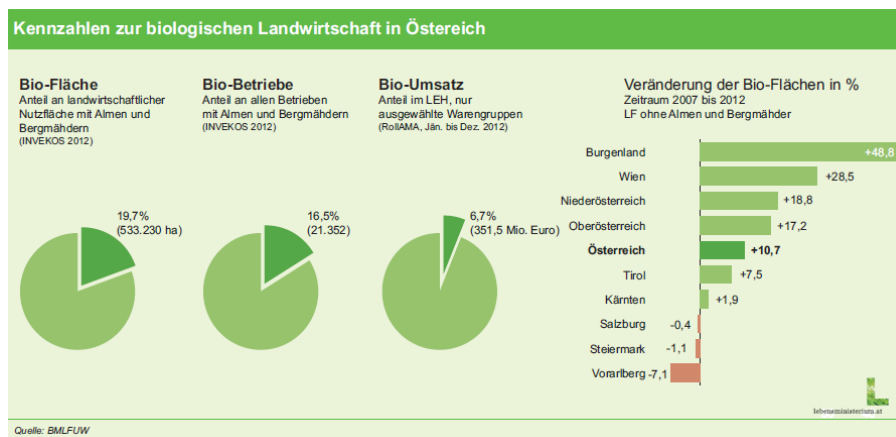
The guiding principle of the socio-ecological agricultural policy has initiated the conservation of an economically sound and well-functioning farm-based system of agriculture and forestry in an intact rural area. Agriculture is an important vector for Austria's ecologisation. Agriculture and forestry build on the principle of sustainability and have taken a series of consistent steps in recent years. Agriculture and forestry rely on multi-functionality and the full cultivation of arable land, while agriculture provides a variety of services.

In spite of the radical structural changes over the past few decades, which have affected all spheres of life - while almost one third of all gainfully employed persons were still working in agriculture in 1960, the share of people working in agriculture amounted to 3.9 per cent according to the 2001 census - rural areas are still characterised by the close relationship of farmers to their native land and to nature which has developed over centuries.

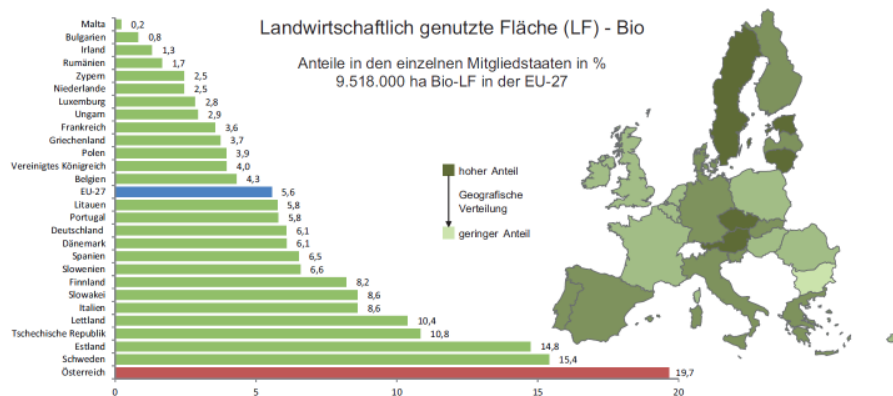
Holistic thinking, manageable units as well as socially and ecologically responsible action are important prerequisites in this regard.

With its traditional and modern ideas, farming as a form of production and lifestyle provides vital impulses for society as a whole and creates continuity in rural life. This is exemplified by the commitment to using renewable raw materials, which has given Austria a leading position in Europe.

Sustainability is therefore one of the major pillars of land management in Austria, with about 110.000 farms - comprising 76% of all farms and 89% of the agricultural area - taking part in the Austrian Agri-Environmental Programme, running under the Austrian Rural Development Programme (see PAM 8). Many of the 29 measures of ÖPUL are relevant for improving the soil status, e.g. measures addressing soil erosion, low-till agriculture or greening during winter season. One of the most important measure is organic farming, which contributed significantly to the increase of the share of agricultural land under organic farming in Austria to approx. 20% in 2012 (Grüner Bericht, 2013), representing an increase of 10% in the last five years (Graph 1). This constitutes the highest share of organic farming within the EU (Graph 2).



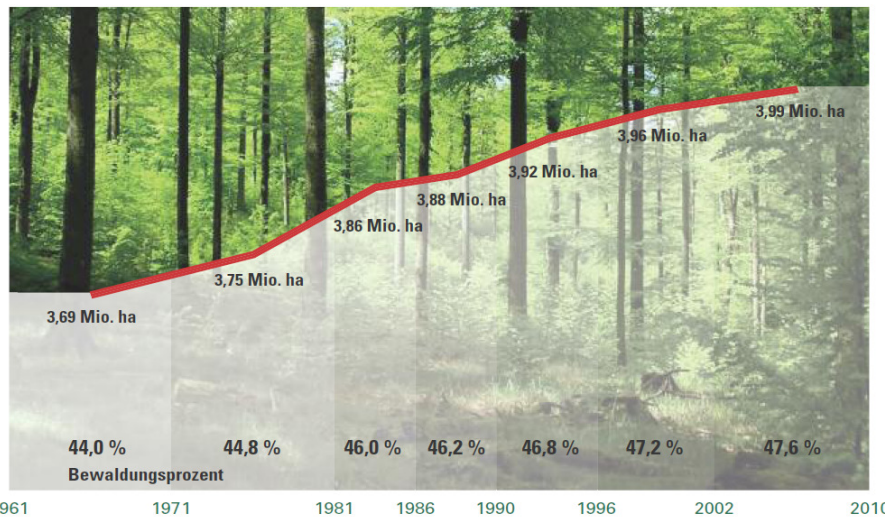
Graph 1 – Share of organic farming in Austria in 2012 [Grüner Bericht 2013]



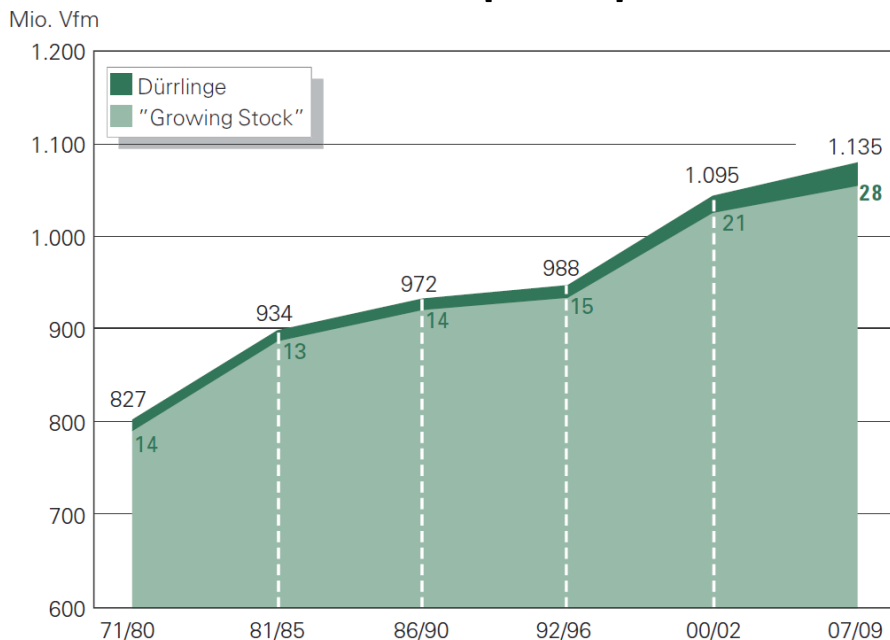
Graph 2 – Share of agricultural land under organic farming [Grüner Bericht 2013]

Sustainable Forestry Policy

Almost half of Austria's federal territory is covered by forests. Forestry and the timber industry are important economic factors in Austria and secure many "green jobs". Forests supply us with the environmentally benign, renewable resource of wood which is used as a substitute for fossil sources of energy; they offer us space for recreation, protect against natural hazards and, by storing carbon dioxide, contribute vitally to the fight against climate change. Due to the filtering function of its soil, forests also supply excellent spring water. The greater part of the Austrian forest is privately owned and thus represents an important source of income for many agricultural holdings. Moreover, forests offer habitats for animals and plants and therefore play a significant role in biodiversity maintenance. If we want to secure these services for future generations, we must use forests in a sustainable manner. For more than 100 years sustainable management has been integrated in a well-established legal institutional and economic framework. A range of regulatory, financial and informational tools are being applied to safeguard a sustainable management, conservation and development of the forests. Around 250.000 Austrians live directly (at least partly) or indirectly from the forest and its products, especially forest owners as well as people employed in the forest and wood-based industries. Raw wood remains the main source of income of the Austrian forest enterprises. Although Austria has a high share of forest area (see Graph 3) and forest carbon stocks (see Graph 4), its current share of renewable energy – ranked 4th within the EU (European Commission 2013a) – already exceeds the EU-target of 20% for 2020. With around 50% of renewable energy stemming from woody biomass (Statistik Austria 2013), the forest sector contributes substantially to reducing consumption of fossil fuels and to mitigate climate change.



Graph 3 – Share of forest area in Austria 1961-2010 [BFW 2011]



Graph 4 – Development of Forest Biomass Carbon Stocks in Austria 1971-2009 [BFW 2011]

The LULUCF Decision

According to Article 10 of Decision 529/2013/EU of the European Parliament and of the Council on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities Member States shall transmit information on their current and future LULUCF actions.

Austria welcomes the opportunity to share information on its policies and measures; this report is structured in accordance with Article 10 of the LULUCF Decision (European Union 2013).

2. Description of past trends of emissions and removals

The information is based on Austria's greenhouse gas inventory, submitted to the European Commission in March 2014 in accordance with Regulation 525/2013/EC (Umweltbundesamt 2014) and to the UNFCCC on April 2014 (BMLFUW 2014a) Chapter 7 of Austria's National Inventory Report 2014 summarises the net-emissions and net-removals from the sector Land use, land use change and forestry (LULUCF) as follows:

LULUCF is a net sink in Austria, with an exception in 2008. The most important sub-category is Forest Land (5.A), in particular its sub-category „Forest Land remaining Forest Land (5.A.1)”. For the years after 2002 the net-sink of the subcategory forest land remaining forest land decreased with substantial impacts on the emissions profile of the LULUCF sector. However, with the exception of 2007 and 2008 the sub-category Forest Land remaining Forest Land represented a net-sink in the period 1990-2012. The other sub-categories are net-sources, amounting to approximately 4–61% of the net-sink of the sub-category forest land during this period.

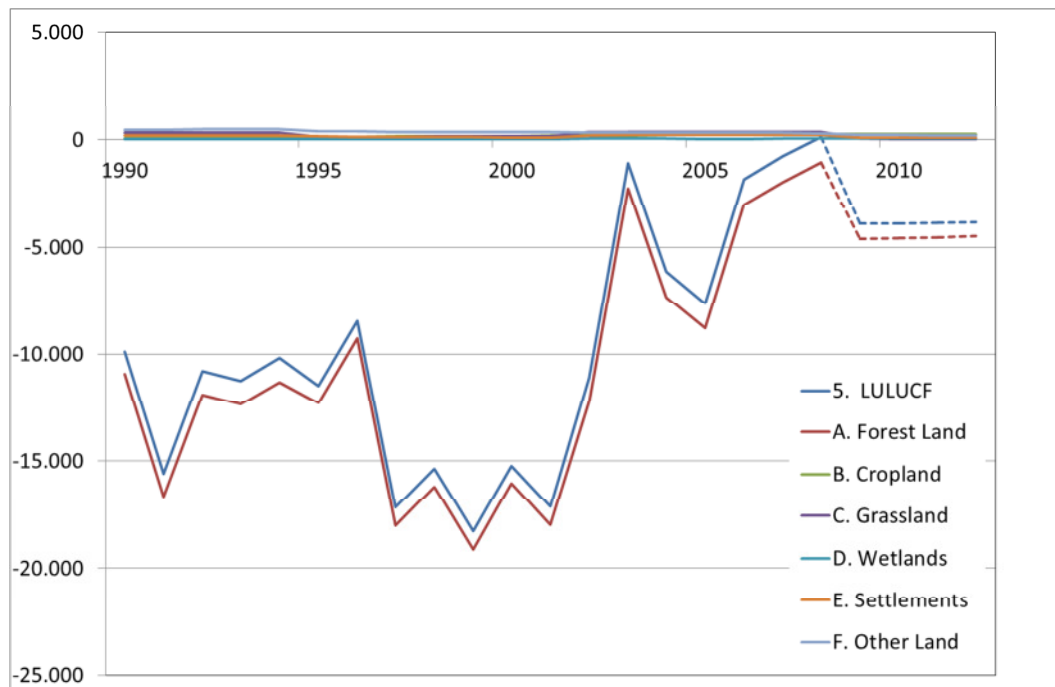
	Greenhouse gas emissions/removals [Gg CO ₂ equivalent]						
	5 Total	A Forest land	B Crop land	C Grass land	D Wet lands ²⁾	E Settlements ²⁾	F Other land ²⁾
1990	-9 877	-10 929	54	322	42	184	451
1991	-15 600	-16 659	54	317	42	187	460
1992	-10 806	-11 896	76	312	42	191	469
1993	-11 253	-12 368	94	307	42	195	477
1994	-10 185	-11 304	100	307	42	193	477
1995	-11 484	-12 296	114	140	36	144	378
1996	-8 454	-9 274	130	141	36	139	374
1997	-17 194	-18 024	147	143	36	134	369
1998	-15 375	-16 207	157	145	36	130	365
1999	-18 291	-19 124	160	145	36	128	365
2000	-15 231	-16 034	169	145	36	87	366
2001	-17 161	-17 985	177	145	36	99	368
2002	-11 095	-12 232	196	353	47	204	336
2003	-1 083	-2 244	207	349	47	220	338
2004	-6 143	-7 328	227	350	47	231	330
2005	-7 625	-8 783	223	353	37	222	323
2006	-1 807	-2 970	231	352	39	226	315
2007	-750	-1 945	251	354	51	230	308
2008	140	-1 053	253	355	49	235	300
2009	-3 904	-4 604	263	49	69	101	217
2010	-3 893	-4 565	247	46	73	97	210
2011	-3 871	-4 526	248	43	70	92	202
2012	-3 839	-4 487	250	41	75	88	194
<i>Trend BY-2012</i>	<i>-61.1</i>	<i>-58.9</i>	<i>365.0</i>	<i>-87.2</i>	<i>77.8</i>	<i>-52.1</i>	<i>-56.9</i>

¹⁾ Other GHG are also considered, therefore the totals are different compared to the totals in the CRF tables.

²⁾ Only land use conversions are reported

Table 1 – emissions and removals of the LULUCF sector 1990-2012; Table 213 of Austria's National Inventory Report 2014 [Gg CO_{2e}]

In 2012, net removals from sector 5 amount to 3 839 Gg CO_{2e} which corresponds 4.8% of total GHG in Austria (without LULUCF), compared to 13% in the base year. The removals of sector 5 decreased by 61.1% from the base year to 2012. The most important sub-category is Forest Land with net removals of 4 487 Gg CO_{2e} in 2012. The total net-emissions from the other sub-categories amount to 649 Gg CO_{2e} in 2012.



Graph 5 – net-emissions and net-removals of the LULUCF sub-sectors 1990-2012; Austria’s National Inventory Report 2014 [Gg CO_{2e}]

Forest Land

The net carbon stock changes in forest biomass in the sub-category Forest Land have a major impact on the overall emissions profile of the LULUCF sector. These changes vary considerably, as annual growth and harvest rates are strongly dependent on weather conditions, e.g. wind throws and also on developments in the timber market (e.g. very low increment in 2003, very high harvest rates in 2007 and 2008). This leads to high annual variations in the net removals of the sub category Forest Land.

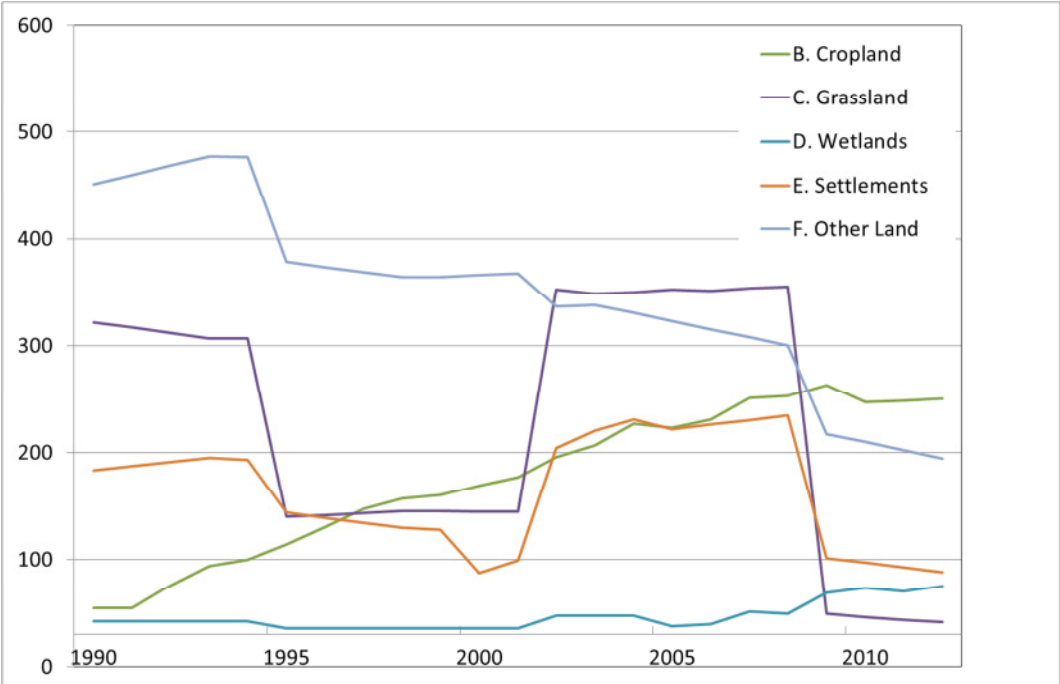
However the results of the national forest inventory (NFI) 2007/09 show that the annual harvest in the years after 2002 has been much (on average 38%) higher than in the NFI 2000/02. Consequently, the reported net sink of the sector for the years after 2002 is much lower than reported in the previous submissions before 2012 where the average for the NFI 2000/02 was used for the estimates.

The last available national forest inventory for the estimates in the sector 5.A.1 (forest land remaining forest land) is the NFI 2007/09. For the years after 2008 the mean results of the NFI 2007/09 for the forest biomass gains and losses are reported as proxy data (see dotted line in the Graph 5).

Other Sub-Categories

The total net-emissions from the sub-categories 5.B – 5.F amount to 649 Gg CO_{2e} in 2012, corresponding to a decrease of around 40% from 1 052 Gg CO_{2e} in 1990.

The trends are generally quite stable with the exception of the discontinuities in the years 1995/1996, 2001/2002 and 2008/2009. Net-emissions are highly dependent on the corresponding land use changes. The land use changes from Forest Land to other Land, in particular Grassland and Settlements, are derived from the NFIs. Due to the fact that the land use change rates are kept constant during the observation period of a NFI, the emission trends are quite constant during those years as well. Discontinuities occur in years, where observation periods change from one NFI to the next such as 1995/1996, 2001/2002 and 2008/2009.



Graph 6 – net-emissions and net-removals of the LULUCF sub-sectors, excluding 5.A Forest Land 1990-2012; Austria’s National Inventory Report 2014 [Gg CO_{2e}]

in 1 000 ha	Forest land	Cropland	Grass-land	Wetlands	Settlements	Other land	Total 2012
Forest land	3 817	18	104	12	11	51	4 013
Cropland	5	1 368	52				1 425
Grassland	37	29	1 724				1 790
Wetlands	3		24	121			148
Settlements	14	116	42		366		538
Other land	16		47			410	473
Total 1.1.1990	3 892	1 531	1 993	133	377	461	8 387

Table 2 – Land use and land-use change matrix for Austria 1990–2012; Table 216 of Austria’s National Inventory Report 2014

Activities subject to Article 3, Paragraph 3 and 4 of the Kyoto Protocol

Austria’s greenhouse gas inventory contains estimates for the activities afforestation, reforestation and deforestation under Article 3, Paragraph 3 of the Kyoto Protocol, resulting from a detailed assessment of net-emissions and net-removals which was carried out in the years 2011 to 2013.

On the basis of this assessment, the areas of land-use-changes to and from forests, the emission factors and the estimates of net-emissions and net-removals were determined, as well as emission estimates for lands subject to afforestation, reforestation and deforestation for the first commitment period of the Kyoto Protocol.

Over the last five years net-removals from afforestation and reforestation activities were quite stable with 2 023 Gg CO_{2e} p.a. on average. With deforestation contributing average net-emissions of 666 Gg CO_{2e} p.a., the total net-removals resulting from afforestation, reforestation and deforestation activities during the first commitment period amount to 6 787 Gg CO_{2e} (Table 3).

GREENHOUSE GAS SOURCE AND SINK ACTIVITIES	BY(5)	Net emissions/removals(1)					Accounting Parameters ⁽⁷⁾	Accounting Quantity ⁽⁸⁾
		2008	2009	2010	2011	2012		
(Gg CO ₂ equivalent)								
A. Article 3.3 activities								
A.1. Afforestation and Reforestation								-10.116,70
A.1.1. Units of land not harvested since the beginning of the commitment period ⁽²⁾		-1.947,59	-2.032,69	-2.039,08	-2.045,47	-2.051,86	-10.116,70	-10.116,70
A.1.2. Units of land harvested since the beginning of the commitment period ⁽²⁾								NO
<i>Austria</i>		NO	NO	NO	NO	NO	NO	NO
A.2. Deforestation		1.069,69	581,50	569,24	556,97	544,70	3.322,10	3.322,10
B. Article 3.4 activities								
B.1. Forest Management (if elected)		NA	NA	NA	NA	NA	NA	NA
3.3 offset ⁽³⁾								0,00
FM cap ⁽⁴⁾								11.550,00
B.2. Cropland Management (if elected)	0,00	NA	NA	NA	NA	NA	NA	0,00
B.3. Grazing Land Management (if elected)	0,00	NA	NA	NA	NA	NA	NA	0,00
B.4. Revegetation (if elected)	0,00	NA	NA	NA	NA	NA	NA	0,00

Table 3 - emissions and removals resulting from afforestation, reforestation and deforestation activities 2008-2012; Austria's GHG inventory 2014 [Gg CO_{2e}]

Austria did not elect any of the activities subject to Article 3, Paragraph 4 of the Kyoto Protocol for the first commitment period and therefore has no historic data for those activities.

3. Projections for emissions and removals from the LULUCF sector for the respective accounting period

Austria has submitted Information on projections in chapter 5 of its 6th National Communication (BMLFUW 2014b). As those data are based on the National Inventory Report submitted in 2013 (Umweltbundesamt 2013), they deviate slightly from the historic data reported in the chapter above. The data reported in this chapter below have been updated on the basis of the most recent information reported in Austria's GHG inventory 2014.

GHG Projections

The latest national greenhouse gas (GHG) emission projections have been developed in the years 2012/2013. They include results for a “with measures” scenario (WM) and a “with additional measures” scenario (WAM) up to 2030. The former takes account of climate change mitigation measures that were implemented and adopted before February 2012. The latter takes into account planned policies and measures (PaMs) with a realistic chance of being adopted and implemented in time to influence the emissions (see also Chapter 4). Both emission control scenarios presented in this

report are in line with the projections reported in March 2013 under the EU Monitoring Mechanism (Decision 280/2004/EC). Hence, for a more detailed description of the methodology used the following report should be consulted (Umweltbundesamt 2013b).

According to these projections, the share of renewables will further increase to around 34% in 2020, in line with the renewables target for Austria stipulated in the renewables directive.

The demand for woody biomass has increased by around 5% annually between 2005 and 2012. According to both the WM and WAM scenario the total domestic consumption of woody biomass will be around 190 PJ in 2020, corresponding to 24 Mio m³. According to the national renewable energy action plan for Austria (BMFW 2010), submitted in line with Art. 4 of the directive to promote the use of energy from renewable sources (2009/28 EC) mid 2010, in 2006 around 80 % of the biomass supply stemmed from domestic production, the remaining 20 % has been imported. Assuming that the imports will increase proportionally¹ in the same way up to 2020, the domestic demand for woody biomass for energy purposes will be around 19 Mio. m³.

LULUCF Projections (CRF 5)

Emissions from land use, land-use change and forestry (CRF 5) show an increasing trend until 2020 and are projected to change from a net sink of 3.8 Mt CO_{2e} in 2012 to a net source of 2.9 Mt CO_{2e} in 2015 and of 4.4 Mt in 2020 CO_{2e} (see Table 4). Modelled data is available for sub-sector 5.A.1 (“forest land remaining forest land”), which is quantitatively the most import sub-sector. This data is consistent with the information provided in the National Inventory Report 2014 on the Forest Management Reference level and based on the projections provided in the submission of the Austrian Forest Management Reference Level submitted in 2011 (BMLFUW, 2011) and in the 5th National Communication (BMLFUW 2010).

The reported values for sector 5.A.1 were significantly revised for the National Inventory Report submitted in 2012 (Umweltbundesamt, 2012) on the basis of the results provided in the NFI 2007/09, the introduction of estimates for forest soil carbon pools and several improvements in the estimates. The 5.A.1 projections were adjusted to ensure consistency with these improvements.

No projections are available for other subsectors; the net-emissions and net-removals reported in Austria’s GHG inventory 2014 for the year 2012 are carried forward for the years up to 2020.

	Inventory data				Projection		Comments
	1990	2000	2008	2012	2015	2020	
LULUCF	- 9.877	- 15.231	139	- 3.839	2.946	4.443	
A.1 Forest Land remaining Forest Land	- 7.848	- 13.613	1.038	- 2.608	4.176	5.674	Projection - Forest Management Reference Level
A.2 Land converted to Forest Land	- 3.081	- 2.421	- 2.091	- 1.879	-1.879	-1.879	net-emissions and net-removals reported for the year 2012 carried forward up to 2020 (methodology used in 6th national communication)
B. Cropland	54	169	253	250	250	250	
C. Grassland	322	145	355	41	41	41	
D. Wetlands	42	36	49	75	75	75	
E. Settlements	184	87	235	88	88	88	
F. Other Land	451	366	300	194	194	194	

Table 4 – Current and projected emissions from land use, land-use change and forestry (CRF 5) by gas, in Gg CO_{2e} (updated, based on Table 5.8 of the 6th national communication)

¹ Info Memo: According to the national renewable energy action plan for Austria (download at: http://ec.europa.eu/energy/renewables/transparency_platform/doc/national_renewable_energy_action_plan_austria_en.pdf), which was submitted in line with Art. 4 of the directive to promote the use of energy from renewable sources (2009/28 EC) mid 2010, in 2006 around 80 % of the biomass supply stemmed from domestic production, the remaining 20 % has been imported.

Detailed information on the respective sub-sectors / activities subject to Article 3, Paragraph 3 and 4 of the Kyoto Protocol can be found in the following chapters.

Forest Management (FM) / Forest Land Remaining Forest Land

This national projections show a further increase in emissions from Forest Management / Forest Land Remaining Forest Land from 1 038 Gg CO_{2e} in 2008² to 5 674 Gg CO_{2e} in 2020. This data is consistent with the information provided in the submission of the Austrian Forest Management Reference Level submitted in 2011 and the technical corrections reported in chapter 7.2.4.1.5 of the National Inventory Report 2012.

Paragraph 4 of the Austrian Forest Management Reference Level submission provides the following details on the construction of the Reference Level:

The construction of the forest management reference level is based on two data sources:

1. Field data from 1981 to 2002 including 4 full inventory cycles of Austrian National forest inventories (NFIs) conducted in 1981/1985, 1986/90, 1992/96 and 2000/02 covering the whole forest area of Austria (As the latest NFI conducted in 2007/2009 was concluded recently, preliminary results are provided in this submission for information purposes only).
2. Results from a “wood and biomass supply study” which was conducted in the years 2007 and 2008 and is based on NFI data referred to above. This study includes projections for 2020, using the growth and harvest models implemented in a simulation program called PROGNAUS. The results of this study were presented in a press release on 22 January 2009.

PROGNAUS (PROGNosis for AUStria) (Ledermann 2006) serves as the basis for the computation of the “silviculture scenario” of the wood and biomass supply study (The results of this scenario are the basis for the derivation of the reference level). This yield and silvicultural science-based model was developed and applied in 1995 for the first time and is updated continuously. PROGNAUS consists of several sub-models, basically a basal area increment model (Monserud and Sterba 1996), a height increment model (Nachtmann 2006), a tree recruitment model (Ledermann 2002) and a model describing tree mortality (Monserud and Sterba 1999). The performance of PROGNAUS was tested in several studies (e.g. Sterba and Monserud 1997, Sterba et al. 2002). Furthermore, PROGNAUS was applied to evaluate forest management regimes (Ledermann and Sterba 2006).

As a start for the calculations of the future harvesting rates, four different realistic timber price scenarios (71 €/m³, 81 €/m³, 100 €/m³, 162 €/m³) were defined, on the basis of historic development in biomass and fuel prices and under consideration of future domestic biomass demand.

According to the model the silvicultural relevance of tending activities was attached special importance by means of intensive preliminary cutting and thinning. As final cutting such stands were declared, which had a negative growth of the economic value. Additionally to the silvicultural aspects economic and ecological facts were considered in the calculations. The harvesting costs were estimated via different harvesting models and opposed to revenues gained from diverse price scenarios. Harvests on inventory plots with a positive profit margin free of harvesting costs were up-

² As mentioned above, the last available NFI for the estimates in the sector 5.A.1 (forest land remaining forest land) is the NFI 2007/09. For the years after 2008 the mean results for the NFI period 2007/09 are reported as proxy data for this sector. Those estimates will be revised, as soon as a new NFI is available.

³ 71 €: average biomass price in 2004-2006; 81 €: biomass price end of 2006; 100 €: assumption on moderate increase in biomass prices compared to 2004-2006; 162 €: assumption of doubling of biomass price (same development as oil price in period 1985-2005).

scaled to the attainable harvesting potential. Ecological aspects were concerned in the harvesting potential insofar, as the selection of the harvesting method and the parts of the trees to be harvested were determined.

Due to the kind of harvesting activities shown in the four timber price scenarios, it is assumed that an increase of the harvesting intensity due to higher prices does not cause changes in increment, which remained quite stable during the last decades. An increase in prices mainly leads to additional preliminary cuttings of the smaller dimensions in stands.

The reference level was derived as mean of the results of the four timber price scenarios referred to above, resulting in an expected timber price around 100 €/m³ in 2020⁴.

The harvest rates are the main driver for the CO_{2e} balance in the sub-sector 5.A.1. In its submission Austria also provided information on historical and projected harvest rates.

Historical harvest rates/Drain

The drain reported under the UNFCCC is based on the results of the Austrian NFIs (see table 5).

assessment cycle	observation period	Drain
NFI 1992/1996	1986-1996	19.5
NFI 2000/2002	1992-2002	18.8
NFI 2007/2009	2000-2009	25.9

Table 5 - historic drain, results from the last three NFIs [Mio. m³ o.b.]

The results show that the drain increased in the years after 2000 by 40% compared to the results of the NFI 2000/2000.

Assumed harvest rates

The model simulations which were the basis for the reference level are based on the status of the Austrian forests as assessed by the NFI2000/02. The simulation model PROGNAUS is an empirical model which was also derived from and validated for the Austrian forest conditions as indicated by the results of the Austrian NFI. The projected harvesting rates for 2010, 2015 and 2020 take into account the specific national circumstances (forest status and growth, available timber for harvesting, access to the forests etc.) and are subject to four different realistic price scenarios.

wood and biomass supply study	2010	2015	2020
	28.6	29.7	31.0

Table 6 - projected harvest rates, results from the wood and biomass supply study [Mio. m³ o.b.] (Table 7 of the Austrian Forest Management Reference Level submission)

In accordance with the conclusions and recommendations of the “Report of the technical assessment of the forest management reference level (FMRL) submission of Austria submitted in 2011” (UNFCCC, 2011), the following technical corrections were applied, as reported in the National Inventory Report 2012:

- 1) Inclusion of the litter and soil pools:

⁴ The timber price exceeded 90 €/m³ in 2010

According to Paragraph 30 of the “Report of the technical assessment of the forest management reference level submission of Austria submitted in 2011” Austria indicated to make a technical correction to its FMRL as soon as national estimates for the litter and soil pools are available. The new estimates for the 5.A.1 litter and soil C pool changes represent an increase in emissions of about 2 600 Gg CO_{2e} per year, which requires a technical correction to ensure consistency in the treatment of pools between the FMRL and the national reporting of the Austrian GHG inventory under the UNFCCC and Kyoto Protocol.

2) Updated expansion ratios:

The expansion ratios from stemwood to total tree biomass have been improved resulting in following changes:

The expansion ratios for increment decreased by around 8%, those for harvest by around 2%. As a result of these new expansion ratios the net removals of the historic time series decreased significantly in comparison to previous submissions. This adjustment leads to a decrease in FMRL removals of around 2 400 Gg CO_{2e} which requires a technical correction to ensure methodological consistency between the FMRL and the national reporting of the Austrian GHG inventory under the UNFCCC and Kyoto Protocol.

3) Updated data on ‘drain’:

Austria already indicated in the course of the technical assessment of its FMRL, that a certain “inconsistency” arises from the fact, that the projections used to calculate the FMRL only cover emissions resulting from the harvest of “useable” trees, whereas the NFI and subsequently the reporting under the UNFCCC covers all biomass drain, including biomass losses due to mortality, which were around 10 % of the total biomass drain in the forests in yield according to the latest NFI. The ERT concluded that the FMRL should in principle take account of the most recent data available at the time of estimation and suggested that Austria should assess whether including the NFI 2007–2009 data would make a significant difference to the FMRL. The losses due to mortality represent an increase in emissions of around 2 200 Gg CO_{2e}, which requires a technical correction to ensure methodological consistency between the FMRL and the national reporting of the Austrian GHG inventory under the UNFCCC and Kyoto Protocol.

4) Updated dead wood pool

The gains in the dead wood pool have been recalculated on the basis of the new NFI results. The annual removals in this pool changed from approx. 600 to 800 Gg CO_{2e}. The changes in the dead wood pool represent an increase in removals of around 200 Gg CO_{2e}, which requires a technical correction to ensure methodological consistency between the FMRL and the national reporting of the Austrian GHG inventory under the UNFCCC and Kyoto Protocol.

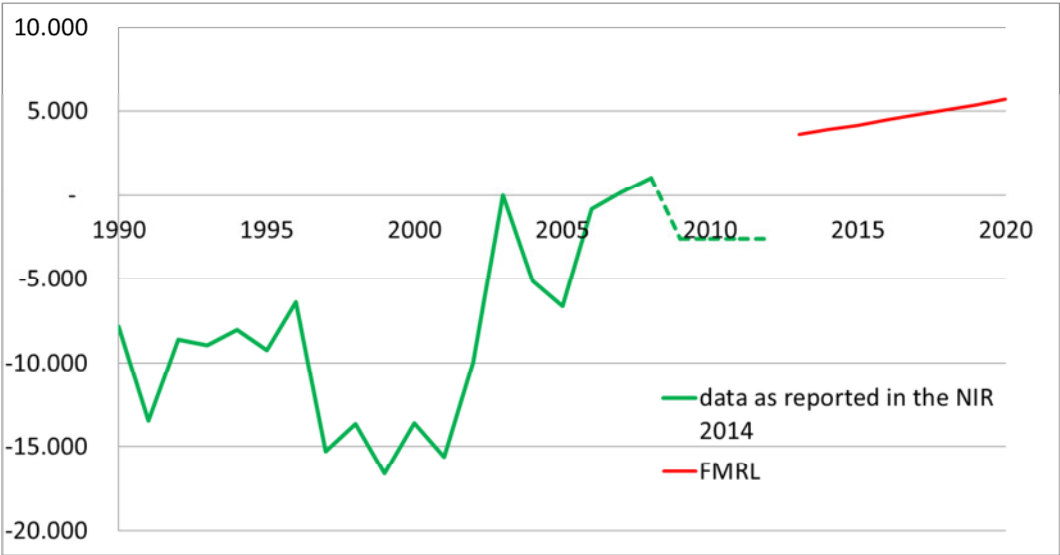
5) Corrections in the calculations of the ‘increment’

As indicated in the “Report of the technical assessment of the forest management reference level submission of Austria submitted in 2011” Austria assumed a constant stemwood increment of 29.8 Mio. m³ o.b. per year, based on the weighted average of the last NFIs available at the time of compiling the FMRL submission. An error occurred in this estimate, which requires a correction. In addition results of the new NFI 2007/09 were taken up in the calculation of the weighted average. This correction results in a change of the projected annual stemwood increment from 29.9 to 30.1 Mio m³ o.b. This change represents an increase in removals of around 200 Gg CO_{2e} which requires a technical correction to ensure methodological consistency in the calculations of the FMRL and the national forest inventory. The sum of all the technical corrections result in a ‘calculatory’ difference between

the FMRLs adopted for Austria pursuant to Decision 2/CMP.7 of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (as listed in FCCC/KP/CMP/2011/10/Add.1 to Decision 2/CMP.7 (UNFCCC 2012)) and the national reporting of the Austrian GHG inventory under the UNFCCC and Kyoto Protocol of 6 760 Gg CO_{2e} p.a.

If these technical corrections would be applied to the FMRLs referred to above, the FMRLs would need to be revised from -2 121 to 4 638 Gg CO_{2e} (with harvested wood products on basis of instantaneous oxidation).

Graph 7 and Table 7 show the historic net-emissions and net-removals from Sub-sector 5.A.1. Forest Land remaining Forest Land, as reported in Austria’s GHG inventory 2014 and the projected emissions and removals, consistent with the Forest Management Reference Level (with harvested wood products on basis of instantaneous oxidation). It should be noted that the reported values after 2008 (dashed line) are based on the average of the last NFI 2007/09 which represents the observation period between the NFI 2000/02 and 2007/09. So, the reported values for these last years are preliminary and will be updated based on the results of the next NFI.



Graph 7 – national data on Forest Management [Gg CO_{2e}]

Forest Management	2008	2009-2012	2013	2014	2015	2016	2017	2018	2019	2020
sub-sector 5.A.1 - forest land remaining forest land	1.04	-2.6								
Reference Level, HWP on the basis of instantaneous oxidation			3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7

Table 7 – national data on Forest Management, including HWP on the basis of instantaneous oxidation [Mt CO_{2e}]

Harvested Wood Products

Paragraph 9e of the Austrian Forest Management Reference Level submission provides the following information with regard to the harvested wood products pool:

To simulate the impacts of the policies and measures referred to in Para 11 on the domestic production of harvested wood products, the simulation model FOHOW (simulation model for the Austrian forest based economy) has been used, which is tailor made to represent the Austrian national circumstances. The performance of FOHOW which is a simulation model using the System-Dynamics (SD) language consisting of approx. 1500 equations was tested in several studies (e.g. Schwarzbauer 1989, Schwarzbauer 1991, Schwarzbauer 1993, Schwarzbauer and Rametsteiner 2001, Schwarzbauer and Stern 2010).

FOHOW consists of four types of modules:

- (1) General economy: includes only exogenous variables (GDP, population).
- (2) Forest industry and forest product markets: includes supply, demand, prices and trade for each semi-finished product.
- (3) Forestry: includes timber supply from three ownership categories: small private forest owners (< 200 ha), larger private forest owners (\geq 200 ha) and Austrian Federal Forests. Timber markets are at the border between (2) and (3).
- (4) Forest resources: includes forest area, growing stock and increment each broken into coniferous and non-coniferous forests, ownership categories and two age-classes.

In this model the forest sector is modelled as a whole (see Figure 1) assessing aspects related to supply and demand of wood in the forest based industries; hence the following product groups are included: coniferous logs, non-coniferous logs, coniferous pulpwood, non-coniferous pulpwood, sawmill residues, fuelwood, coniferous sawnwood, non-coniferous sawnwood, particle- and fibreboard, pulp, waste paper, paper and paperboard.

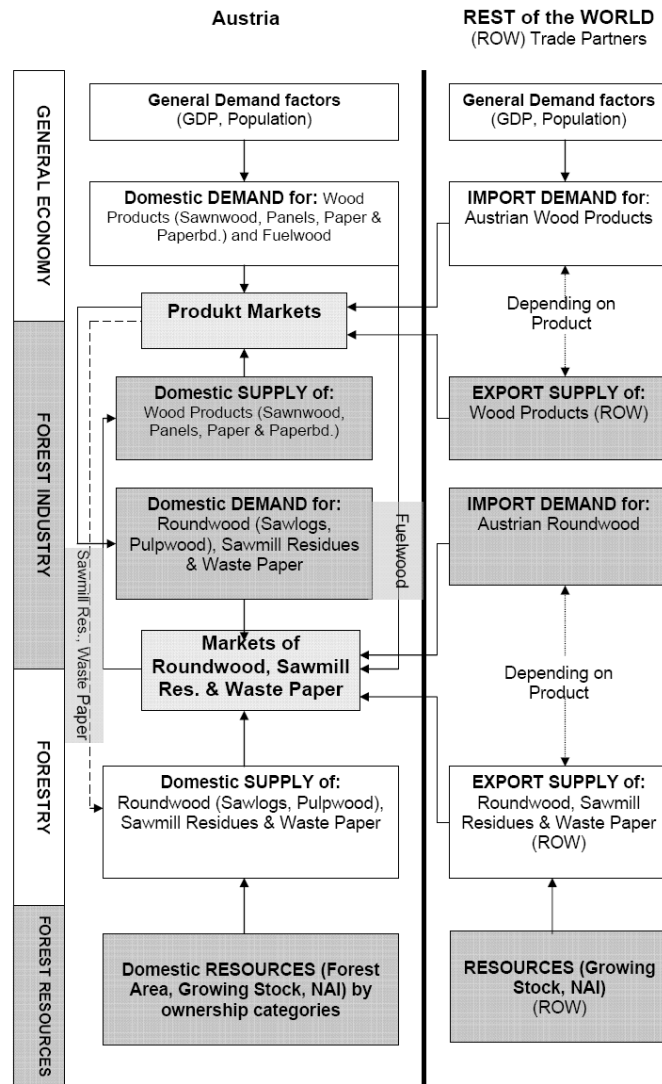


Figure 1 - General Structure of FOHOW

A few basic exogenous assumptions (Table 8) have been made in order to run the simulation model FOHOW.

Factors	2008	2009	2010	2011	2012-2015	2016-2020
GDP growth in Austria (%) ^{a)}	2.2	-3.9	2.0	1.9	2.5	2.1
GDP growth in OECD (%) ^{a)}	0.4	-3.4	2.2	2.2	2.5	2.0
	2008	2009	2010	2011	2015	2020
Crude oil price in \$ barrel ^{b)}	99.57	60.12	72.42	76.25	105.33	132.33

Table 8: Basic assumptions of general factors; Sources: a) 2008-2011: WIFO 2010; 2012-2020: OECD 2010; OECD Baseline Scenario; b) EIA 2010

In addition to those factors, the future demand for woody biomass for energy purposes has been taken from the GHG emissions projections referred to in Para 11, for consistency reasons.

Historic production data starting from 1961 has been taken from FAO statistics (sector 5 sawnwood, sector 6 wood-based panels and sector 10 paper and paperboard). In order to only estimate emissions from HWP removed from domestic forests which are accounted for under Art 3, it is assumed that mainly industrial round wood serves as raw material for the production of HWPs. Following equations

were used to calculate the production of saw wood, wood panel and paper stemming from domestically harvested wood:

$$\text{share}_{\text{roundwood,consumption}} = \frac{\text{Production}_{\text{roundwood}} - \text{Export}_{\text{roundwood}}}{\text{Production}_{\text{roundwood}} + \text{Import}_{\text{roundwood}} - \text{Export}_{\text{roundwood}}}$$

$$\text{Production}_{\text{HWP,domestic harvest}} = \text{share}_{\text{roundwood,consumption}} \times \text{Production}_{\text{HWP}}$$

For the years up to 2020 the results of the simulation model FOHOW (Table 9) have been used.

Production	2005	2006	2007	2008	2009	2020
saw wood (mio. m ³)	6.4	6.3	7.6	7.3	5.0	8.5
wood Panel (mio. m ³)	2.0	2.2	2.5	2.5	2.0	2.3
paper (mio. t)	2.9	3.1	3.3	3.5	2.7	4.1

Table 9: Production of saw wood, wood panels and paper, resulting from domestically harvested wood

According to the results of the model the domestic production will grow by 30% in total, compared to the historic average (2001 – 2009).

Net emissions and net removals from harvested wood products (Table 10) were calculated for wood removed from domestic forests only. For the calculations the IPCC default method (equation 12.1 of 2006 IPCC Guidelines) was used, based on the first-order decay function, using default half-lives as contained in Para. 27 of Annex I of the Draft decision -/CMP.6 Land use, land-use change and forestry (FCCC/KP/AWG/2010/CRP.4/Rev.4) of 2 years for paper, 25 years for wood panels and 35 years for saw wood.

1960	- 1.19	1976	- 2.21	1992	- 1.54		
1961	- 0.90	1977	- 2.39	1993	- 1.45		
1962	- 0.92	1978	- 2.02	1994	- 2.45	2008	- 4.65
1963	- 0.47	1979	- 2.26	1995	- 2.31	2009	- 0.77
1964	- 0.91	1980	- 2.22	1996	- 2.80	2010	- 4.28
1965	- 0.83	1981	- 2.13	1997	- 2.44	2011	- 4.37
1966	- 1.63	1982	- 1.49	1998	- 2.40	2012	- 4.46
1967	- 1.39	1983	- 1.86	1999	- 1.96	2013	- 4.56
1968	- 1.27	1984	- 2.13	2000	- 1.40	2014	- 4.67
1969	- 1.77	1985	- 1.35	2001	- 2.20	2015	- 4.77
1970	- 1.48	1986	- 1.37	2002	- 3.35	2016	- 4.55
1971	- 1.92	1987	- 1.20	2003	- 3.93	2017	- 4.37
1972	- 2.11	1988	- 2.11	2004	- 3.19	2018	- 4.21
1973	- 1.84	1989	- 2.77	2005	- 3.19	2019	- 4.08
1974	- 1.39	1990	- 2.98	2006	- 3.64	2020	- 3.95
1975	- 1.05	1991	- 1.71	2007	- 4.90	Ø 2013-2020	- 4.39

Table 10: Emissions and removals from the HWP Pool [Mt CO_{2e}]

The Forest Management Reference Level, including the harvested wood products pool on the basis of delayed emissions results in an emission of 0.2 Mt CO_{2e} over the period 2013 – 2020.

Forest Management	2013	2014	2015	2016	2017	2018	2019	2020
Reference Level, HWP on the basis of delayed emissions	-0.92	-0.75	-0.59	-0.08	0.41	0.86	1.30	1.72

Table 11 – national data on Forest Management, including HWP on the basis of delayed emissions [Mt CO_{2e}]

Afforestation, Reforestation, Deforestation

There are no modelled data on future afforestation, reforestation and deforestation activities in Austria. In the frame of the EUclimit project⁵ (European Commission 2013b) two LULUCF scenarios (baseline and reference) were calculated by the European Commission.

The scenarios show a slight increase in net-removals resulting from afforestation and reforestation activities up to 2020 and beyond, which stems fact that the area subject to afforestation and reforestation accumulates over time. However, the data is lower than the data reported in Austria's greenhouse gas inventory for the first commitment period submitted in 2014, corresponding to the fact that the area subject to afforestation and reforestation considered in the scenarios is lower (119 kha in 2010) than the area reported in the national greenhouse gas inventory (total area of 196 kha end of 2012).

Afforestation / Reforestation	2008	2009	2010	2011	2012	2015	2020
Kyoto-reporting	-1.95	-2.03	-2.04	-2.05	-2.05		
EUclimit - Baseline						-1,0	-1,5
EUclimit - Reference						-1,0	-1,4

Table 12 – data on afforestation and reforestation [Mt CO_{2e}]

The scenarios show a decline in areas as well as net-emissions from deforestation activities over time. However, those scenarios result in higher net-emissions up to 2020 than reported in Austria's greenhouse gas inventory for the first commitment period.

Deforestation	2008	2009	2010	2011	2012	2015	2020
Kyoto-reporting	1.1	0.6	0.6	0.6	0.5		
EUclimit - Baseline						1.4	0.8
EUclimit - Reference						1.4	0.8

Table 13 – data on deforestation [Mt CO_{2e}]

⁵ The results of the EUclimit scenarios for the LULUCF sector are provided for information purposes only, as they do not represent national data prepared by Austria.

The difference between the EUClimit baseline scenario and the reference scenario for afforestation, reforestation and deforestation gives evidence that the effects of the implementation of the climate and energy package appear to be negligible for these activities up to 2020.

Cropland Management / 5. B. Cropland

Austria did not elect Cropland Management for the first Commitment Period of the Kyoto Protocol and therefore has neither historic nor modelled data for that activity.

Although the reporting systems and the methodologies differ substantially between the UNFCCC and the Kyoto-Protocol, a rough estimate for the activity Cropland Management can be derived by subtracting the areas – and corresponding net-emissions – subject to 5.B.2.1. Forest Land converted to Cropland (i.e. net-emissions from deforestation) from the total area – and net-emissions – of sub-sector 5.B. Cropland.

The historic data show an increase in net-emissions over time, resulting from a decrease in perennial cropland areas and an increase in 5.B.2.2 Grassland converted to Cropland.

In the frame of the EUClimit project⁶ two LULUCF scenarios (baseline and reference) were calculated by the European Commission. As no information is available on the development of net-emissions and net-removals resulting from 5.B.2.1 Forest Land converted to Cropland, the results on 5.B. Cropland are provided for information purposes.

The results show that Cropland will remain a source of 0.1 Mt CO_{2e} p.a. up to 2020. However, the data show lower net-emissions compared to the data reported in Austria's national greenhouse gas inventory 2014 for the period 2008-2012 on sub-sector 5.B. Cropland, which show an increase in emissions from 0.05 Mt CO_{2e} p.a. in 1990 to 0.25 Mt CO_{2e} in 2012.

Cropland Management	1990	2000	2008	2009	2010	2011	2012	2015	2020
5.B. Cropland - 5.B.2.1 Forest Land converted to Cropland	-0.03	0.11	0.19	0.23	0.21	0.21	0.22		
5.B. Cropland	0.05	0.17	0.25	0.26	0.25	0.25	0.25		
EUClimit - Baseline								0.1	0.1
EUClimit - Reference								0.1	0.0

Table 14 – data on Cropland [Mt CO_{2e}]

As stated above, the difference between the EUClimit baseline scenario and the reference scenario for the sub sector 5.B Cropland gives evidence that the effects of the implementation of the climate and energy package appear to be negligible for this sub-sector up to 2020.

⁶ The results of the EUClimit scenarios for the LULUCF sector are provided for information purposes only, as they do not represent national data prepared by Austria.

Grassland / Grazingland Management

Austria did not elect Grazingland Management for the first Commitment Period of the Kyoto Protocol and therefore has neither historic nor modelled data for that activity.

Although the reporting systems and the methodologies differ substantially between the UNFCCC and the Kyoto-Protocol, a rough estimate for the activity Grazingland Management can be derived by subtracting the areas – and corresponding net-emissions – subject to 5.C.2.1. Forest Land converted to Grassland) from the total area – and net-emissions – of sub-sector 5.C Grassland. The historic data show a small net-sink during 1990-2012.

In the frame of the EUclimit project⁷ two LULUCF scenarios (baseline and reference) were calculated by the European Commission. As no information is available on the development of net-emissions and net-removals resulting from 5.C.2.1 Forest Land converted to Grassland, the results on 5.C Grassland are provided for information purposes.

The results show that Grassland will remain a source of 0.2 Mt CO_{2e} p.a. up to 2020 which will increase post 2020. The historic data reported in Austria's national greenhouse gas inventory 2014 show net-emissions in the range of 0.04 to 0.35 Mt CO_{2e} p.a.; however these data are highly dependent on the change in activity data related to 5.C.2.1 Forest Land converted to Grassland (i.e. Deforestation).

Grazingland Management	1990	2000	2008	2009	2010	2011	2012	2015	2020
5.C. Grassland - 5.C.2.1 Forest Land converted to Grassland	-0,05	-0,05	-0,05	-0,07	-0,08	-0,08	-0,09		
5.C. Grassland	0,32	0,15	0,36	0,05	0,05	0,04	0,04		
EUclimit - Baseline								0,2	0,2
EUclimit - Reference								0,2	0,2

Table 15 – data on Grassland [Mt CO_{2e}]

As stated above, the difference between the EUclimit baseline scenario and the reference scenario for the sub sector 5.C Grassland gives evidence that the effects of the implementation of the climate and energy package appear to be negligible for this sub-sector up to 2020.

Wetlands rewetting and drainage

As wetlands are protected in Austria, it is assumed that the activities wetlands rewetting and drainage do not occur in Austria (see PAM 21).

The historic data reported in Austria's national greenhouse gas inventory 2014 show net-emissions from the sub sector 5.D Wetlands of around 0,07 Mt CO_{2e} p.a.

⁷ The results of the EUclimit scenarios for the LULUCF sector are provided for information purposes only, as they do not represent national data prepared by Austria.

4. List of measures to be implemented in order to pursue the mitigation potential, including policies and timetable foreseen for their implementation

Domestic and regional Programmes, legislative Arrangements, enforcement and administrative Procedures

The Federal Ministry for Agriculture and Forestry, Environment and Water Management has a co-ordinating function with respect to the overall climate change policy in Austria. However, responsibility for measures to reduce greenhouse gas emissions and to fulfil other obligations of the UNFCCC and the Kyoto Protocol is distributed among several federal ministries and other territorial authorities (*Länder*, municipalities). In order to support the co-ordination of climate change related measures, different committees have been established in the past.

The *Interministerial Committee to Coordinate Measures to Protect Global Climate (IMK Climate)* was founded in 1991 during the preparations for the UNFCCC. It is established at the Federal Ministry of Environment and consists of representatives of the federal ministries concerned by the subject matter, representatives of the Austrian system of social partnership and a common representative of the *Länder*. The IMK serves to exchange information on national and international climate change issues and to discuss and agree on proposals that are intended for adoption by the council of ministers of the federal government. On an ad hoc basis the IMK is supplemented by expert groups for certain issues, for example for the preparation of the climate strategy.

After the negotiation of the Kyoto-Protocol and after Austria took over the commitment to reduce its GHG emissions by 13% within the EU burden sharing agreement for the first KP commitment period, the *Kyoto-Forum* was established at the Federal Ministry of Environment in 1999 as an initiative to combine the efforts of the different levels of state. The *Kyoto-Forum*, comprising high-level representatives of the *Länder* and of the associations of municipalities and towns, was set up to support and supervise the strategy for reaching the Kyoto-target in a combined effort of the provinces and the federation.

Based on the new *Climate Change Act* (see below), two new groups on climate change were founded by law in 2011: the *National Climate Change Committee (NKK)* and the *National Climate Change Council (NKB)*. The NKK comprises high level representatives of the *Länder*, six federal ministries involved in climate change (Environment, Finance, Economic, Transport, Health, Justice) and the four “Social Partners” (Trade Unions – ÖGB, Chamber of Labour – AK, Chamber of Commerce – WKÖ, Chamber of Agriculture – LKÖ). In practice, this new committee is taking over former functions of the IMK and the Kyoto-Forum, when it comes to design and elaboration of climate change plans and long-term strategies.

The NKK is supported by the so called *National Climate Change Council (NKB)*, which is composed of, i.a., representatives from science, energy and industry interest groups, environmental NGOs and the six political parties represented in the first chamber of the Parliament (Nationalrat).

Both groups are co-chaired by the Head of Environment Department of the Federal Ministry of Agriculture, Forestry, Environment and Water Management and one representative of the *Länder*, alternating on a rotation basis.

Programmes and Strategies

Austrian Climate Strategy

After extensive discussions in committees and in sectorial working groups, Austria's *Climate Strategy* for the first commitment period of the Kyoto Protocol was adopted by the federal government and the council of provincial governors in 2002, describing domestic measures with the aim to reach the national Kyoto target. After three years of implementation, the effects of the *Climate Strategy* have been evaluated, followed by an *Amendment to the Climate Strategy* that has been adopted by the Austrian Federal Government in 2007 (download at: http://www.bmlfuw.gv.at/publikationen/umwelt/archiv/anpassung_der_klimastrategie_oesterreichs_zur_erreichung_des_kyoto-ziels_2008-2012.html).

Most *Länder* (e.g. Vienna, Upper Austria, Lower Austria, Salzburg) have formulated their own regional climate change programmes, taking into account specific regional circumstances, needs and areas of responsibility. These programmes ideally supplement the national programme, which can only describe at an abstract level framework conditions and guidelines for provincial action.

Austrian Energy Strategy

The Minister for the Environment and the Minister for Economic Affairs initiated a stakeholder process to establish a new Energy Strategy for Austria in April 2009, in response to the legally binding European commitments on renewable energy and climate change (2020 targets). Numerous working groups, incorporating government institutions, social partners and other interest groups (including environment NGOs) were set up for elaboration of policies and measures, which shall ensure to improve energy efficiency, to increase the share of renewable energy sources to 34% by 2020 and to bring down greenhouse gas emissions to levels compatible with the European legal framework in the period 2013-2020. The Energy Strategy was presented by the two Ministers in March 2010 and adopted by the Federal Government thereafter, on time to deliver a National Renewable Energy Action Plan (NREAP) to the European Commission by end of June 2010, according to Directive 2009/28/EC.

The political will to mobilize additional forest biomass constituted an important pillar in preparing the policies and measures of this strategy (available at <http://www.energiestrategie.at/>).

Measure 6.6.3 of the Energy strategy reinforces one important goal of the Austrian Green Electricity Act (Ökostromgesetz, BGBl. I Nr. 104/2009) to increase the share of biomass in electricity production by 100 MW_{el} in 2015 (see M5).

According to measure 6.6.4 of the Energy strategy additional 50 PJ of forest biomass shall be mobilized between 2005 and 2020 to increase the renewables share – especially in heat production. Approximately half of this 50 PJ has already been mobilized by 2009, mainly due to the installation of new biomass CHP-plants in the framework of the Austrian Green Electricity Act. Austria projected in its NREAP a total demand for forest biomass for energy purposes of 21 Mio. m³ in 2020.

Austrian Adaptation Strategy

In recent years, at both the international and European levels, the issue of climate change adaptation has become a major focus of attention. The obligation to develop a national adaptation strategy can be found in the United Nations Framework Convention on Climate Change, as well as in Art. 10 (b) of the Kyoto Protocol, which came into force in 2005. Signatory parties are required to develop,

implement, and update national and (where appropriate) regional programmes that facilitate adequate adaptation to climate change.

With its Green Paper on adaptation to climate change in Europe (European Commission 2007b), the European Commission established the foundation for adaptation initiatives at the EU level. In early April 2009, a White Paper on adapting to climate change: Towards a European framework for action (European Commission 2009a) was presented by the Commission. This White Paper sets out an action framework outlining how the European Union and its Member States should prepare for the consequences of climate change. In its first phase (through 2012), the foundations for a Europe-wide adaptation strategy should be established, to be in place by 2013.

At the national level, the process of developing an Austrian adaptation strategy was launched in 2007. The government programme of the federal government for the 24th legislative period (Republic of Austria 2008) has provided for the formulation of a national adaptation strategy with the involvement of all relevant stakeholders and the consideration of international good practices. The objective is to prepare the population and the economy for the coming changes and to offer options for protection against negative consequences. The strategy (download at http://www.lebensministerium.at/umwelt/klimaschutz/klimapolitik_national/anpassungsstrategie/strategie-kontext.html), has been adopted by the Federal Government on 23 October 2012 and by the Conference of the Heads of Provincial Governments on 16 May 2013,

Overall aim of the strategy is

- to reduce anticipated **negative impacts** of climate change on Austria's society, economy and nature/ecosystems and
- to use **positive effects** of climate change and allow synergies .

The Austrian Strategy is one of the most comprehensive guiding documents of this kind and provides information on likely climate changes and sectorial impacts, an overview of ongoing adaptation initiatives, a portfolio of adaptation recommendations and guiding principles for prioritising actions. 132 recommendations for actions are related to 14 thematic areas, including agriculture and forestry (see below).

Nr.	Title	Objective	Key Actors
3.1.4.1	Sustainable soil composition and protection of soil fertility, structure, and stability	Protection of natural soil functions; Construction and long-term stabilization of optimal humus content in soils: Conservation of aggregate stability, promotion of soil life, and safeguarding of adequate water intake and water retaining capacity; Prevention of damage (especially soil compaction and erosion) and conservation of soil productivity through sustainable and site-adapted land use and a conservation tillage method.	Federal and state governments, interest groups (advice, information), academic and non-academic research institutions, farmers, Bio-Austria, b4 Corporate Soil Competence (AGES, BFW, Environment Agency Austria, BAW), agricultural schools, rural training institutes, apprenticeship and specialized training units
3.1.4.2	Enhanced establishment and promotion of water-saving irrigation systems and improvements in irrigation planning	Efficiency improvements in irrigation and water use through the introduction of modern technological developments permitting the optimization of irrigation in terms of timing and amount of water.	Federal and state governments, municipalities, interest groups, academic and non-academic research institutions, farmers, industry
3.1.4.3	Breeding and targeted use of water-saving, heat-tolerant plants (species/varieties) within the meaning of a regionally adapted management	Use of species and new varieties of plants that can tolerate changing climatic conditions. Especially heat-tolerant and water-saving crops and grasses and species with low susceptibility to pests shall be favoured.	Federal government (research funding), building and use of national and European networks, plant breeders, academic and non-academic research institutions, AGES, LFZ Raumberg-Gumpenstein, federal state experimental institutes, agricultural training institutes, farmers (implementation – changes in varieties)
3.1.4.4	Adjustment of fertilizer management to seasonal weather patterns	Need-based and site-specific plant nutrition as a contribution to plant quality, plant health, and yield security.	Federal government, academic and non-academic research institutions, interest groups, AGES, LFZ Raumberg-Gumpenstein, Committee for Soil Fertility and Soil Conservation, farmers
3.1.4.5	Provision of scientific advice on potential new agricultural diseases and pests	Improvement in the state of knowledge regarding emerging diseases and pests, in order to enable a quick and efficient response in case of need and optimization of plant protection measures.	Federal and state governments, interest groups, AGES, academic and non-academic research institutions, farmers, industry (producers)
3.1.4.6	Environmentally sound and sustainable use of plant protection products (pesticides)	Optimization of plant protection measures through changes in the timing and method of application and/or spectrum of pesticides and establishment of a systematic monitoring, with the goal of fostering environmentally friendly and sustainable agricultural practices.	Federal and state governments, interest groups, AGES, academic and non-academic research institutions, Committee for Soil Fertility and Soil Conservation, agricultural trade, farmers, industry
3.1.4.7	Review of site suitability based on changing climatic conditions and development of recommendations for the selection of a site-adapted crop	Selection of suitable crops for the respective site conditions.	Federal and state governments, water management authorities, AGES, LFZ Raumberg-Gumpenstein, interest groups, natural hazard insurance companies, academic and non-academic research institutions
3.1.4.8	Risk minimization and the development and extension of risk sharing instruments	Reduction of weather-related production risks and the development and extension of additional insurance models.	Federal and state governments, water management authorities, AGES, LFZ Raumberg-Gumpenstein, interest groups, natural hazard insurance companies, academic and non-academic research institutions
3.1.4.9	Integrated landscaping for soil protection and the improvement of agricultural ecology, including the conservation and management of landscape features	Improvement of the agro-ecological situation and conservation of natural biodiversity by reducing wind-exposed areas/wind speed and soil erosion and improving water retention.	Federal and state governments, interest groups (advice, information), farmers, nature conservation associations, tourism associations
3.1.4.10	Preservation of existing pastures and revitalization of abandoned pastures	Maintenance of the protective and recovery function, of feed production and the targeted revitalization and rehabilitation of abandoned pastures under consideration of nature conservation aspects.	Federal and state governments (funding of pasture management), interest groups, Landwirtschaft Österreich (Austrian Pasture Management), potentially tourism associations, farmers
3.1.4.11	Optimization of greenhouse cultivation in terms of energy, water, and cooling supply strategies	Efficiency improvements in energy and water consumption in greenhouse and plastic-sheet cultivation, in particular with regard to increasing heat stress in summer and potentially more frequent natural disasters.	Federal and state governments, academic and non-academic research institutions, interest groups, Bundesgemüsebauverband Österreichs (Austrian Vegetable Growers Association), municipalities, producer associations, industry, farm managers
3.1.4.12	Promotion of animal welfare and animal health under changing climatic conditions	Expansion of knowledge and evaluation of the effects of climate change on animal health, and the development of preventative measures and, if need be, necessary veterinary measures as a basis for decision-making of authorities and farmers.	Federal and state governments, research, veterinary authorities, AGES, interest groups, LFZ Raumberg-Gumpenstein, farmers, Austrian Animal Health Service (TGD) and animal health services of the federal states
3.1.4.13	Consideration of future requirements for the cooling of stables due to increasing thermal stress	Reduction of thermal stress on farm animals, appropriate and stress-free livestock rearing, and reduction of harmful pollutants in stables.	Federal and state governments, interest groups, (funding for stable adjustments), farmers, academic and non-academic research institutions (in particular, LFZ Raumberg-Gumpenstein, BOKU, VMU), municipalities
3.1.4.14	Optimization of adaptation and combat strategies for new diseases and pests	Further optimization and, if needed, extension of existing warning systems, improvement of information and data transfer (e.g., between meteorological units, science, and farmers), and the nationwide monitoring of potentially harmful organisms; Designation of particularly endangered areas and the development and adjustment of decision-making aids for measures.	Federal and state governments, academic and non-academic research institutions, interest groups, AGES, LFZ Raumberg-Gumpenstein, insurance companies, farmers

Table 16: Overview of recommendations for action in the agriculture sector

The recommendations for action in the agriculture sector focus on safeguarding food security, through improving soil fertility, the resilience of crops and the management of pests and plant nutrition. Improving the ecological situation, including conservation of natural biodiversity is another important area for actions.

Nr.	Title	Objective	Key Actors
3.2.4.1	Modification in the selection of tree species and provenance, including targeted promotion of diversity through appropriate silvicultural management and rejuvenation of over aged stock	Increase of stability and reduction of vulnerability of forest ecosystems to pests and diseases; Increase in diversity at all levels (genetic, species-specific, structural, diversity of habitat, etc.) adapted to the respective site-specific conditions; Increase of stability and reduction of susceptibility to disturbances, e.g., through the timely introduction of rejuvenation measures.	Forest owners, interest groups, academic and non-academic research institutions, federal and state governments, EU (responsibility lies with all listed)
3.2.4.2	Soil-protective cultivation	Preservation of the physical functions of the soil, in particular in terms of water retention and nutrient supply.	Forest owners, felling companies, authorities, interest groups, research institutions, federal and state governments, EU, water management, foresters, municipalities, forest leaseholders
3.2.4.3	Reduction of damage caused by game animals	Reduced damages caused by game animals for safeguarding rejuvenation and stock stability.	Hunters, forest owners, state governments (hunting legislation), federal government, interest groups
3.2.4.4	Development of an advisory concept for foresters with regard to adaptation of forests to climate change	Improvements in consulting, training, and further education of forest owners taking into account latest research results.	Federal government, forest authorities, Chamber of Agriculture and other advisory institutions, academic and non-academic research institutions
3.2.4.5	Adjustment and improvement of crisis and calamity management	Mitigation of damage from harmful events such as windfalls or bark beetle calamities.	Federal and state governments, forest authorities, further authorities (e.g., water authorities), interest groups, forest owners, forestry unions (forest management collaborations (WWGs), forest associations), transport industry, wood and paper industries, EU
3.2.4.6	Establishment of preventative measures with regard to the potential increase in forest fires	Development of preventative measures and systems for forest-fire monitoring and early-warning in order to minimize the risk of forest fires; Elaboration or revision of emergency plans to combat forest fires.	Federal and state governments, municipalities, interest groups, forest owners, forest management collaborations (WWGs), forest associations, academic and non-academic research institutions, EU
3.2.4.7	Forest pollution control - Integrated forest inventory and pollutant monitoring	Nationwide inventory of Austrian forests through improving the forest inventory with remote sensing methods (laser scanning, multi-spectral satellite imagery) for enhanced system knowledge, and the establishment of a pollution monitoring system.	EU, federal and state governments, Federal Research and Training Centre for Forests, Natural Hazards, and Landscape (BFW), Environment Agency Austria
3.2.4.8	Development of modified and innovative techniques for wood processing taking into account potential changes in wood quality and tree species	Development of efficient, innovative techniques for wood processing in order to increase the value added in the wood use chain.	Researchers, wood-working and -processing industry, interest groups, Cooperation Platform Forestry-Wood-Paper (FHP), federal government, EU (Forest Technology Platform)

Table 17: Overview of recommendations for action in the forestry sector

The recommendations for action in the forestry sector focus on safeguarding the multiple forest functions, in particular through enhancing soil productivity and the promotion of resilient tree species. It is also recommended to develop a monitoring system for the establishment of preventative measures with regard to calamities and forest fires.

The recommendations for actions are currently in the stage of implementation

Regular assessments of the progress of adaptation will be carried out. A first implementation report, providing detailed information on the current status of implementation of the strategy based on a broad survey is under preparation.

Further information can be found at <http://www.klimawandelanpassung.at/>

It should further be noted that all *Länder* are currently preparing regional Adaptation Strategies which focus on the regional priorities.

Austrian Biodiversity Strategy

On 3 May 2011, the European Commission adopted the EU 2020 Biodiversity Strategy which aims at halting the loss of biodiversity and improving the state of Europe's species, habitats, ecosystems and the services they provide over the next decade, while stepping up the EU's contribution to averting global biodiversity loss (more information can be found at: <http://www.biologischevielfalt.at>).

The EU strategy is built around six mutually supportive and inter-dependent targets which address the main drivers of biodiversity loss. Each target is accompanied by a set of actions to ensure these ambitions are fully realised.

Target 3 addresses the contribution of agriculture and forestry to biodiversity, with five actions to support its realisation.

Besides addressing the common agricultural policy as potential source for financing biodiversity conservation measures, forest holders are encouraged to integrate biodiversity aspects in their forest management plans.

In 1998 the national commission for biodiversity developed the first national adaptation strategy to implement the provisions of the Convention on Biological Diversity (CBD). This strategy which was updated in 2005 (download at: [is currently under review with a view to implement the provisions of the EU Biodiversity Strategy to 2020](#)). The review will in particular address biodiversity aspects in the agriculture and forestry sector, in line with target 3 of the EU strategy, and explore synergies with climate actions.

Austrian Strategy for Sustainable Development (NSTRAT)

In 2002 the Austrian Strategy for Sustainable Development was adopted by the Federal Government. The strategy is designed as a governmental level framework concept which sets the points for future sustainable development policies. It is designed as an umbrella strategy, to link existing strategies, programmes and action plans relating to sustainability topics under it, as well as to improve the horizontal and vertical co-ordination of individual policies and initiate the developments required for the years ahead (further information can be found at: <http://www.bmlfuw.gv.at/en/fields/environment/Sustainabledeve/Monitoring.html>)

The development of the strategy was chaired by the Ministry for the Environment, coordinated by a committee that included various Ministries, social partners and non-governmental organisations and built on multi-stakeholder processes, based on multi-faceted forms of participation.

The strategy itself defined four fields of actions and twenty specific key objectives within it. The four fields of actions (1) quality of life in Austria, (2) Austria as a dynamic business location, (3) living spaces in Austria, (4) the responsibility of Austria in the world, outlined challenges, distinguished trends in regard to sustainable development and addressed concrete steps and measures for its implementation.

The Strategy was designed as a learning strategy that can react to altered framework conditions in a flexible and dynamic way, thus representing the beginning of a continuous process of implementation, of monitoring progress and of evaluating the impact. So several measures were set so far, for instance: 1) since 2002, two work programmes have been published at federal level: the 2003 work programme presented 200 specific measures to be implemented in line with the objectives of the strategy. The second work programme (2004) presented 80 additional measures.

2) Bi-annual progress reports are foreseen to describe the results achieved in the implementation and to present new implementation measures. The last progress report was issued in 2006.

In 2011 the Federal Council of Ministers mandated to revise the federal strategy of 2002, which is still under way. The revision is being coordinated by the Federal Ministry of Agriculture, Forestry, Environment and Water Management together with the Federal Chancellery.

National Strategy for Sustainable Development (ÖSTRAT)

Starting with 2006, a joint national framework addressing both the federal and regional levels (ÖSTRAT) had been developed by the National and Regional SD Coordinators. The Council of “Länder” Governors adopted this joint strategy, as well as accompanying the first working programme in May 2009. In July 2010, the Federal Council of Ministers re-affirmed this decision, also adopting the national SD-strategy (ÖSTRAT), and adding new objectives within the jurisdiction of the federal level. In 2011, both political bodies adopted a new ÖSTRAT working programme and the interim progress report 2011ff. ÖSTRAT is the first joint SD strategy of a Federal Country addressing both the

national and regional level in Europe. It orients itself towards the Austrian Federal Strategy for Sustainable Development.

Further information in German can be found at <https://www.nachhaltigkeit.at/strategien>

Legislative Arrangements

The legislative arrangements for the implementation of the national Climate Strategy are different for each of the strategy's elements. As described in the first section, areas of responsibility are spread among ministries as well as between the Federation, *Länder* and municipalities. That is why there is no uniform legal basis for national measures to mitigate climate change. The legal basis for the multiple measures ranges from, e. g., the Environmental Support Act and the Green Electricity Law at Federation level to the Technical Construction Regulations for buildings on *Länder* level. Administrative procedures for implementation and monitoring are as well different for the diversity of measures. Some information is given on a measure by measure basis in the relevant subsections of this chapter. Enforcement rules are laid down in the respective legal acts as appropriate. All legal acts are published and made available to the public.

Some important pieces of legislation with respect to climate change mitigation are mentioned below.

Climate Change Act (Federal Law Gazette I Nr. 106/2011, as amended)

In November 2011, the Federal Parliament adopted a new Climate Change Act, which fixes sectoral targets and administrative responsibilities to fulfil international and European climate change commitments. The law defines processes on how to develop climate strategies and provides for appropriate (aforementioned) institutional arrangements.

In early 2012, after entry-into-force of the *Climate Change Act*, discussions on a new mitigation programme were launched under the NKK, aiming to bring forward policies and measures that can ensure compliance under the *EU Effort Sharing Decision*. According to that legally binding Union act, Austria is committed to reduce its GHG emissions up to 2020 in non-ETS sectors by 16% relative to 2005. The first part of that new programme has been adopted by the federal government and the *Länder* in June 2013, covering measures ready to implement in the course of 2013 and 2014. A follow-up of discussions on the programme is scheduled for 2014.

Emissions Trading Act (Federal Law Gazette I Nr. 118/2011, as amended)

In December 2011, the Federal Parliament adopted the revision of the national Emissions Trading Act, as the basis for the national implementation of the Emissions Trading Scheme (PAM 1).

Green Electricity Act (Federal Law Gazette I Nr. 75/2011, as amended)

The Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources was implemented in Austria via the Green Electricity Act, which entered into force in July 2012. The legal instrument does not only address the main issues raised by the Directive, but also incorporates the system for promoting electricity production from renewable energy sources by granting fixed feed-in tariffs for various forms of biomass transformation and other power production (see PAM 4).

Austrian Environmental Support Act (Federal Law Gazette Nr. 185/1993, as amended)

The Austrian Environmental Support Act was enacted in 1993. One of the four pillars of this legal instrument is the Domestic Environmental Support Scheme, which has the main objective to provide subsidies for companies to implement measures in the field of energy efficiency, climate and environment protection. The second climate change-related pillar of the law is the *Austrian JI/CDM Programme*, which aims to contribute to achieving the Austrian reduction commitment under the Kyoto Protocol through the application of the project-related flexible mechanisms, Joint Implementation, Clean Development Mechanism and (AAU-backed) Green Investment Schemes. The total budget available for purchase of emissions reductions amounts to 611 million €.

Kommunalkredit Public Consulting (KPC) is in charge of the management of the Environmental Support Scheme and the JI/CDM Programme (See PAM 2 and PAM 5).

Climate and Energy Fund Act (Federal Law Gazette I Nr. 40/2007, as amended)

With the Climate and Energy Fund Act, which was adopted by the Federal Parliament in 2007, the Climate and Energy Fund was established, with the objective to contribute to meeting Austria's climate change commitments by funding of climate and energy related projects (see PAM 3).

Forest Act (Federal Law Gazette I Nr. 1975/440, as amended)

The overall principles of the Forest Act, which are stipulated in § 1, are 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 attributes four functions to the forest: productive function (i.e., sustainable timber production), protective function (i.e., protection against erosion and natural hazards, welfare function (i.e., the protection of environmental goods like drinking water), and recreational function (use for recreation). (see PAM 10 - 17).

Agricultural Act (Federal Law Gazette I Nr. 375/1992, as amended)

The overall principles of the Agricultural Act is the preservation of a productive and sustainable agricultural sector in Austria, the increase in agricultural productivity and the value chain in this sector and the strengthening of the market orientation of agricultural production.

The Agricultural Act also forms the basis – together with several other legal acts – of the national implementation of the EU Common Agricultural Policy (see PAM 8 and 9).

However, legislative power over agriculture and energy policy is distributed among the Federation and the *Länder*; in particular responsibility related to land-use planning, soil protection and nature conservation lies with the *Länder*.

Energy related Policies and Measures

The measures referred to in this chapter are referenced in the indicative Annex IV (j) of the LULUCF Decision.

PAM 1 – Emissions trading Scheme

From 2013 onwards, an EU wide fully harmonised system for allocation of free allowances is being applied, based on the revision of the EU-ETS Directive (2009/29/EC), with strictly harmonised rules

on free allocation for stationary installations, 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.

In Austria, around 220 installations are covered by EU ETS from 2013 onwards. Free allocation amounts to 22.75 million allowances in 2013 and will go down to 18.46 million allowances in 2020, according to National Implementation Measures by Austria, which were accepted by the European Commission in late 2013 (together with those from all other Member States).

Due to increasing scarcity of allowances over time, a further increase in biomass demand – which is accounted for as CO_{2e}-neutral – can be observed. Biomass consumption increased during 2005 to 2012 by more than 20% to 53,000 TJ in 2012, corresponding to 20% of total energy use.

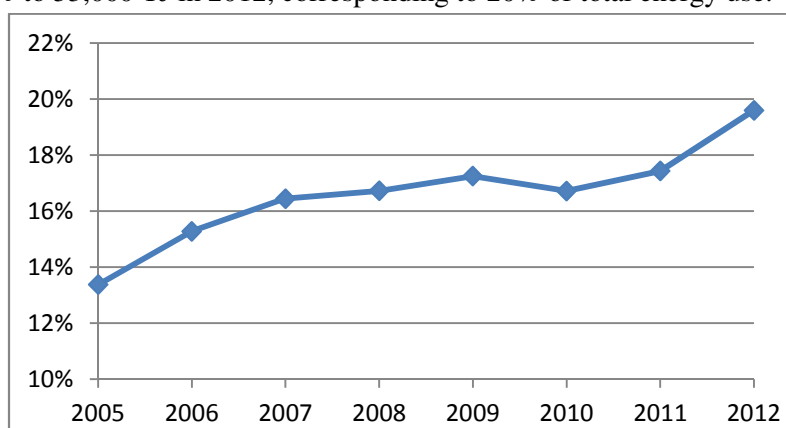


Table 18: Share of biomass consumed in ETS-installations 2005-2012

It is expected that this increasing trend will continue in the future, in particular with rising allowance prices.

PAM 2 – Environmental Support Scheme

The main objective of the Environmental Support Scheme (BGBl. Nr. 185/1993 as amended) is to provide economic incentives to promote the implementation of measures in the field of energy efficiency, climate and environmental protection. Funding according to the environmental support scheme in 2008–2012 has been provided for more than 12 000 entrepreneurial projects, whereof over 90 % were related to climate change. These projects have brought about an emission reduction of around 1.9 Tg CO_{2e} equivalents. The environment related investment costs for the years 2008-2012 amounted to € 2 353 million.

The Environmental Support Scheme is managed by *Kommunalkredit Public Consulting - KPC*, commissioned by BMLFUW. According to the last annual report (Umweltförderungen des Bundes 2012), companies received € 76.7 million of support for 2 316 projects in 2012, whereof € 66.3 million or 86 % were of relevance for GHG mitigation. 1 125 projects with a support of € 37.9 million fell into the category of renewable energy use and 1 141 projects (€ 25.9 million funding) involved energy efficiency measures.

Further information can be found on the webpage and in the annual reports of *Kommunalkredit Public Consulting* (<http://www.publicconsulting.at>).

Out of the 1 125 renewable energy projects, 70% promote the use of biomass for energy purposes. Those projects are calculated to bring about a total emissions reduction of 3.6 Mio. t CO_{2e} in the course of their service life.

	Number of projects	Environment related investment costs	Subsidy	total CO _{2e} -Emissions-reduction
		[million €]	[million €]	[t]
<i>Renewable Energy</i>	<i>1.125</i>	<i>247</i>	<i>38</i>	<i>5.664.199</i>
Biomass - Installations	538	22	5	537.970
Biomass - Microgrids	105	17	4	179.720
Biomass - District heating systems	129	118	14	1.399.205
Biomass - CHP	3	17	4	1.518.016

Table 19 - The domestic environmental support scheme 2012; Support for Biomass Installations (Umweltförderungen des Bundes 2012)

PAM 3 – Climate and Energy Fund (KLI.EN)

The Climate and Energy Fund relies on the power of role models. From 2007 to 2012 it has supported more than 57,000 climate mitigation projects and invested a total of € 730 million resulting in an economic impact of more than € 1.8 billion. The Climate and Energy Fund investments will deliver benefits in the short, medium (until 2030) or long (until 2050) term. The aim is a long-term transformation to a climate-friendly energy system. The projects supported by the Climate Fund have a direct impact on Austria's economy: every Euro invested results in € 2.50 of total investment. The Climate Fund spurs innovation and growth in areas that will determine Austria's energy and climate future.

The Climate and Energy Fund focuses on three key areas:

- research in and development of renewable energy systems,
- development and testing of new transport and mobility systems,
- acceleration of climate mitigation measures and their success on the market (market penetration).

New energy technologies and transport systems require public acceptance. The Climate and Energy Fund has developed the "Model Regions" concept to help climate-friendly energy and mobility systems to be successful at the regional level. The idea of its "Flagship Projects" funding programme is to help new technical developments to be actually tested and implemented. Model Regions and Flagship Projects have model character and prove that GHG mitigation is practicable for everyone. Sustainability and efficiency continue to be the cornerstones of all Climate Fund activities. The Fund has made its mission to continuously reduce greenhouse gas emissions and improve energy efficiency. The near-future challenge to face is to accelerate market efficiency.

With regard to promoting renewable energy sources, the Climate and Energy Fund focussed its subsidies in 2012 on the replacement of old fossil fuelled heating systems by highly efficient systems based on renewable energy, in particular solar and forest biomass.

2012	Number of projects	Environment related investment costs	Subsidy	total CO _{2e} -Emissions-reduction
		[million €]	[million €]	[t]
Modelregion - Biomass	16	0,7	0,1	11.140
replacement of old fossil fuelled heating systems by highly efficient systems based on renewable energy	3.188	56.3	3.2	564.940

Table 20 - The Climate and Energy Fund 2012: Support for Biomass Installations (Geschäftsbericht 2012)

Additional measures such as M7 “Improved building standards”, M8 “Financial Support for climate-friendly construction and renovation” and M9 “Renovation Cheque” promote the use of renewables in the buildings sectors.

PAM 4 – Promotion of Green Electricity

The Green Electricity Act from 2012 sets targets for additional electricity production from supported renewables for the year 2020 (compared to 2010). Besides Hydropower, Windpower and Photovoltaic, Biomass and Biogas should deliver additional 200 MW_{el} in 2020.

The prior Green Electricity Act set targets for additional electricity production from supported renewables for the year 2015 (compared to 2010). Biomass and Biogas should deliver additional 100 MW_{el} in 2015 with an increase in demand for forest biomass of 1.2 Mio m³ in 2015.

The former law also included the target to reach a share of 15 % of electricity from supported renewables in 2015, based on final electricity consumption. Depending on the final electricity consumption it is expected that around 17 % to 18 % of the final electricity consumption will be provided by supported renewable energy sources.

The financial incentive (average market price deducted) was € 350 million in 2010 and € 308 million in 2011. Under the new law, additional € 50 million were distributed over various technologies for 2012. In addition to feed-in-tariffs, investment grants for small and medium hydropower are provided via the law.

The feed-in-tariffs are set by the then Federal Ministry of Economy in cooperation with the BMLFUW and the Federal Ministry of Labour, Social Affairs and Consumer Protection. The tariffs can be set for two or more years and are being published by the Federal Ministry of Economy.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Biomass solid	99	313	553	1.086	1.631	1.900	1.958	1.987	1.969	1.983
Biogas	42	102	220	358	440	503	525	539	520	554
Biomass liquid	2	18	33	54	71	36	39	30	12	0
Total (without hydro)	598	1.445	2.212	3.304	4.230	4.496	4.503	4.647	4.464	5.057

Table 21: Supported green electricity 2003-2012 [GWh]

PAM 5 – District Heating from Renewables

The Environmental Support Scheme supported entrepreneurial projects in 2012 with a total budget of around € 78 million, of which € 35.8 million were spent for heating and cooling from renewable energy sources (without electricity production from renewable energy sources and manufacturing of bio-fuels). The fund focuses on biomass and biogas district heating, entrepreneurial biogas development (e.g. in agriculture), biomass central heating systems, solar panels and energy efficiency measures. The major share of finance (2012: € 33 million) is dedicated to biomass heating and district heating systems. Furthermore, in order to achieve high efficient projects, district heating systems, applying for investment aid have to run through a quality management system. In financial terms the district heating systems are co-financed by the regions and often also by the European structural funds.

PAM 6 – Klima:aktiv - Consumer awareness

As raising consumer awareness plays an essential role to strengthen dispersion and diffusion of those measures, the climate change initiative “klima:aktiv” (information available at: www.klimaaktiv.at) has been initiated by the Ministry of Environment in 2004. Several thematic programmes have been launched in the framework of klima:aktiv, which support inter alia:

- the mobilisation of woody biomass for energy purposes (“klima:aktiv” Energieholz, information available at: <http://www.klimaaktiv.at/erneuerbare/energieholz.html>) by market analysis and
- increasing the share of woody biomass used for the production of heat in the residential sector (klima:aktiv Erneuerbare Wärme, information available at: <http://www.klimaaktiv.at/erneuerbare/erneuerbarewaerme.html>)

The initiative combines various market-based measures and effectuates target-oriented implementation, e.g. by providing easier access to target groups and resources, by enhanced transfer of know-how with support in vocational training and networking of important actors, by the organisation and development of quality assurance and standards as well as by target group specific information and marketing. The impacts of these programmes are only implicitly included in the assumptions for the emission scenarios.

PAM 7 – Action Programme Timber Flow

In March 2009 the “Action Programme Timber Flow” (“Aktionsprogramm Holzfluss”) (download at: http://www.netzwerk-land.at/forstwirtschaft/downloads/copy_of_aktionsprogramm-holzfluss-2008-2013) was developed by the BMLFUW to support a number of concrete measures – laid down in the Austrian Forest Dialogue, such as the preparation of forest management plans, the construction of forest roads, the purchasing of equipment, or the cooperation with the forest-based sector. The Action

Programme has been endowed with 100 million Euros from the Austrian Rural Development Programm 2007-2013.

Policies and Measures in the Agriculture and Forestry Sector

Agricultural production primarily contributes to climate change with its CH₄ and N₂O emissions. Austrian greenhouse gas emissions from agricultural activities show a decreasing trend of 12.4% from 1990 until 2012. The main driving forces behind the decreasing trend were the steady decline of the number of animals (particularly cows) and the considerably reduced manure disposal. Mainly due to the Austrian Rural Development Programme, in particular its Agri-Environmental Programme (see PAM 8), the use of mineral fertilizer declined considerably. The measures of the Austrian Rural Development Programme also contribute to increasing the share of renewable energy and to increasing carbon sequestration in the LULUCF sector.

PAM 8 – Austrian Rural Development Programme

Period 2007-2013

In line with the objectives of Regulation (EC) No 1698/2005 and with the National Strategy the Austrian Rural Development Programme (RD 07-13) is organised by the following Axes:

Axis 1: Improving the competitiveness of the agricultural and forestry sector

Axis 2: Improving the environment and the countryside

Axis 3: Improving the quality of life in rural areas and diversification of the rural economy

Axis 4: Implementation of the Leader approach

According to the midterm evaluation (BMLFUW 2010) the Rural Development Programme RD 07-13 provides for approx. 8 billion € of government support. The highest shares of financial resources have been allocated to the Agri-Environmental Programme and measures M 211 and M 212 which earmark payments for the compensation of natural handicaps and mountain areas, respectively. These three measures account for some 70 % of the financial resources of the programme.

In the first three years of programme implementation a total of approx. 3 billion € has been spent. This corresponds to almost 40 % of the funds allocated for the programme period overall. The major beneficiaries of measures in Axes 1 and 2 are agriculture and forestry holdings whereas Axes 3 and 4 measures are also targeted to beneficiaries in all sectors. In the period 2007 to 2009 a total of 145,568 different applicants received at least one payment from the Programme RD 07-13.

M 214 & 215 – The Agri-Environmental Programme

The Austrian Agri-Environmental Programme (ÖPUL) brings together the programme measures M 214 and M 215. It offers 29 sub-measures to which farmers can subscribe and which aim to protect and enhance particular natural resources: soil, water, climate, and biodiversity. Among them are very specific measures such as the preservation of rare domestic breeds (to maintain genetic diversity as a part of biodiversity) but also measures which affect a whole range of protection goals, f.i. support to organic farming. In 2009 117,771 farms (73.1 % of all farms) who managed 89.2 % of the utilized agricultural area participated in ÖPUL. The areas on which agri-environmental measures were applied (including old commitments, excluding Alpine pastures) amounted to 2.2 million hectares in 2009. A comprehensive study of soil samples collected during the past 20 years confirmed positive effects of

the agri-environmental measure (M 214) and its predecessor programme on soil quality (humus, nutrient content, soil acidification) in Austria. The results show that the nutrient contents in the soils are moving from over-supply to “sufficient content” level. The content of humus in arable land is rising, thereby improving the soils and contributing to the abatement of climate change. The sub-measures which are crucial for this development are: greening of arable areas, mulch seed, direct seed and organic farming. The potential for reduction of soil erosion is great and is being exploited very well; due to the measures currently in place, soil erosion on utilized agricultural areas has been reduced by 10 % on average; this corresponds to savings of several hundred thousand tons of soil per year. Both mulch seed and direct seed are the most innovative approaches to decrease erosion and increase soil fertility.

The sub-measures “Organic farm management”, “Renunciation on arable land”, “Environmentally-friendly management of arable land and grassland”, and “Greening” lead to a buildup of humus in the soils and thus to the sequestration of 221,000 tons of CO_{2e} annually on 595,733 hectares of arable land in the period 2007-2009. Public expenditure for the period 2007 – 2012 can be found in table 22.

Many sub-measures of the Agri-environmental measure also have positive effects on complementary ecosystem services, such as biodiversity and habitat diversity. In this respect, the sub-measure “nature protection” of the Agri-environmental programme ÖPUL is most important, as confirmed by various thematic studies (e.g. Farmland Bird Index, animal-ecological studies, and studies on Natura 2000 areas). From 2007 to 2009 the areas participating in nature conservation increased by 19 %. In this respect, raising awareness and dissemination of the respective knowledge are key elements in the implementation of area-related nature protection measures. Positive effects also emanate from compliance conditions concerning biodiversity (e.g. “flowering strips”), especially if they refer to sub-measures which are broadly accepted (e.g. “environmentally-friendly management of arable land and grassland”). Organic farming improves biodiversity in the arable sector due to the renunciation of the use of pesticides and the application of specific crop rotations. Detailed results of evaluation studies confirm that the positive effects of agri-environmental measures on biodiversity can be enhanced through an adaptation of the eligibility conditions for support.

	2007	2008	2009	2010	2011	2012	total
organic farming	85.8	88.5	92.4	99.1	99.6	99.8	565.1
Environmentally-friendly management of arable land and grassland	99.5	116.7	114.7	112.2	111.3	109.1	663.5
Renunciation on arable land	2.3	1.1	0.8	0.7	0.7	0.6	6.3
Erosion protection in fruit and hop production	2.4	2.5	2.6	2.7	2.6	2.6	15.4
Erosion protection in vine production	5.2	5.3	5.3	5.3	5.3	5.3	31.7
regional programme “Ecopoints Lower Austria”	23.4	28.0	38.6	38.5	37.8	37.4	203.7
greening of arable areas	67.0	68.6	65.8	66.2	64.8	65.0	397.4
mulch seed. direct seed	6.1	5.8	5.4	5.6	5.5	5.7	34.1
nature protection	33.8	37.7	41.8	43.5	43.4	41.8	242.2
	325.5	354.3	367.5	373.7	371.1	367.2	2,159.4

Table 22: Overview of public expenditure related to the sub-measures Austrian Agri-Environmental Programme [Mio. €] (Grüner Bericht 2013)

A vocational training and information actions intend to increase the competitiveness of agricultural enterprises through the dissemination of knowledge and education, and raise the awareness for nature conservation and environmental protection. The measure supported educational programmes and projects during which were very comprehensive in terms of content and thus were very well accepted. M 111 forms the backbone of an educational offensive to enhance the so-called “human potential” of the people working in the field of agriculture and forestry, with the aim to train 700,000 farmers and forests during the period 2007-2013. During the first 3 years, already around 200,000 stakeholders participated in the training courses. M 331 strives to enhance the technical know-how of economic agents and, in connection therewith, the quality of life and a diversified economy in rural areas. The measure is part of an “educational offensive” in rural areas, with the funds spent mostly to providers of courses. During the period 2007-2009 already 13,000 stakeholders participated in the training courses, comprising 90% of the projected results for the full programming period, thus improving their capabilities to contribute to the objectives of axis 3. The measure “Skills acquisition, animation and implementation” (M 341) aims to contribute to an integrated rural development through participative processes. With more than 8,500 participants this measure received high acceptance during the first 3 years.

M 122 – Diversification of forestry

This measure supports the acquisition of machinery by associations of forest owners or members of a machinery pool association, thereby increasing productivity and efficiency, including in biomass harvest. During the first 3 years more than 5.000 projects were funded, comprising a forest area of 34,000 ha.

M 123 – Increased value added

The objective of measure 123 is to increase the value added chain of agricultural (123a & c) and forestry (123b & d) products by introducing new technologies and innovation, including promotion of renewable energy production, and thus to increase the competitiveness

M 124 – Cooperation for the development of new products, processes and technologies

From the extensive list of goals pursued by the measure “Cooperation for the development of new products, processes and technologies” (M 124) the most frequently supported one was “improvement of information transfer in the forestry sector”, followed by “improving efficiency” and “development of services for forest owner associations or their members”. The goal of sub-measures 124b to support 320 forest cooperatives by the end of the programme period will presumably be achieved. The goal according to which supported forest management associations should harvest and market an additional 2.5 million cubic metres of timber jointly has already been achieved.

M 125 – Construction of infrastructure

Within measure M 125 priority was assigned to the sub-measure (M 125a) construction of forest roads, to supports accessibility to forest resources while minimising damages resulting from timber extraction. The proper management of extreme weather events, such as wind breakage events after disastrous storms and the fight against the ensuing spread of bark beetles depends on the accessibility

of forests. During 2007-2009 more than 1,400 projects comprising in total 545 km of forest roads have been funded.

M 221 – Re/afforestation of agricultural lands

Although this measure is limited to some sparsely wooded regions, during the period 2007-2009 an area of around 161 ha has been afforested, mainly to protect lands from erosion, but also to improve biodiversity and to mitigate climate change.

M 224 & 225 – NATURA 2000 and payments for Forest-Environmental measures

M 224 aims at expanding NATURA 2000 areas in Austria by additional 35.000 ha of forest areas. This measure has so far not been accepted by the forest holders. Measure M 225 supports silvicultural activities such as natural regeneration and thinning with the aim to be applied to 35.000 ha of forest areas. During 2007-2009 in total more than 500 ha of forest areas have received financial support.

M 226 – Rehabilitation of the forestry potential and introduction of preventive measures

This broad measure is directed towards increasing resilience of forest ecosystems to natural disturbances and preventive pest control. In the period 2007-2009 around 10.000 projects have been administered, with one third (or 7.000 ha forest land) focussing on rehabilitation measures and two-third (comprising 37.000 ha) on preventive measures. The aim of these measures is to promote all forest functions in a sustainable manner, including adaptation to climate change.

Due to the storms “Paula” and “Emma” which struck in January and February 2008 in Styria and Carinthia and the following increase in bark beetle populations, this measure received high acceptance and was used intensively to mitigate the consequences of these disasters and to deal with the strong multiplication of harmful insects which followed in their wake.

M 311 – Diversification of the rural economy

This measure supports investments of rural enterprises toward the generation of income from non-agricultural activities, with an emphasis (sub-measure 311 a) on the promotion of small-scale renewable energy (e.g. local heat grids).

M 321 – Provision of basic services

This broad measure is established to ensure the supply of basic services for the economy and to improve living conditions of the population in rural areas; Sub-measure (M 321c) is dedicated to promote renewable energy facilities and infrastructure. This sub-measure is strongly connected with the consumer awareness programme klima:aktiv (see PAM 6 above).

	Financial support made available 2007-2009	Total investment volume triggered 2007-2009	public expenditure target for 2007-2013
M 111	22.7	-	70.9
M 122	24.3	53	48.3
M 123a & c	73	865.9	183.8
M 123b & d	3.3	11	10

M 124a	4.8	-	14
M 124b	4.8	6.1	18.9
M 125a	39.7	76	51.5
M 214 & 215	1,580.8	-	3,590
M 221	0.6	-	1.4
M 224	-	-	3.4
M 225	0.03	-	14.8
M 226	43.6	61.1	103.4
M 311	26.2	87	78.9
M 321c	63.7	135	289.2
M 331	7.3	-	42.9
M 341	1.3	-	6.5

Table 23: Overview of public expenditure and total investment related to the measures referred to above [Mio. €] (BMLFUW 2010)

The measures listed in the Austrian Rural Development Programme for the period 2007-2013 are referenced in the indicative Annex IV, in particular (a), (b), (g), (i) and (j) of the LULUCF Decision.

Period 2014-2020

The Austrian Rural Development Programme for the period 2014-2020 (BMLFUW 2014c) has been developed in a broad and inclusive stakeholder process during the last 12 months, with its final workshop on 18th February 2014. It was furthermore subject to a strategic environmental assessment, which concluded that the Austrian Rural Development Programme 2014-2020 will contribute to achieving the national Effort Sharing target, which is laid down in the Climate Change Act, (see above) and promote renewable resources including feedstock for energy.

After political consultation with the Austrian Parliament the programme was notified to the European Commission.

The Austrian Rural Development Programme 2014-2020 contributes to the 6 EU Rural development Priorities (acc. to Regulation (EU) 1305/2013, Art. 5) by implementing 14 measures and many sub-measures.

Relevant measures for mitigating climate change address priority 5 (promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors) and are listed below:

M 1 – Knowledge transfer and information actions (Art. 14, Regulation (EU) 1305/2013)

Knowledge Transfer and Information is an important basis for raising awareness concerning energy and resource efficiency as well as environment and climate policy. This measure will thus contribute to priority 5 in general.

M 4 – Investments in physical assets (Art. 17)

This measure supports investments in physical assets, e.g.

- in agricultural holdings with the aim to improve the overall performance by i.a. increasing resource and energy efficiency (and reduce demand for fossil fuels) thus contributing to focus area 5C and
- in infrastructure related to development of agriculture and forestry to support sustainable management by adaptation to climate change.

In particular sub-measure 4.4. „Support for non-productive investments linked to the achievement of agri-environment-climate objectives“, aims to improve the ecological conditions of wetlands, thus contributing to focus area 5E.

M 6 – Farm and business development (Art 19)

This measure supports

- business start-up aid for young farmers and
- investments in creation and development of non-agricultural activities.

In particular sub-measure 6.4 aims at supporting development of energy services based on renewable energy sources, reducing demand for fossil fuels and strengthening local energy supply, thus contributing to focus area 5C.

M 7 - Basic services and village renewal in rural areas (Art. 20)

In particular sub-measure 7.2 supports investments in renewable energy contributing to focus area 5C.

Support is provided for investments

- in biomass-heating systems, local heat grids, replacement of old heating systems by biomass district heating systems, CHP-installations, digesters and installations for the production of methane and
- in dedicated climate and energy projects on community level, focussing i.a. on renewable energy.

Sub-measure 7.6 supports activities to identify potential for torrent and avalanche control, and is thereby directed towards introducing preventive measures for the protection and stabilisation of ecosystems and their carbon stocks.

M 8 – Investment in Development and Improvement of Forests Ecosystems

This broad measure covering activities referred to in Articles 21, 22 and 24 – 26 of Regulation (EU) 1305/2013 aims at improving the stability and resilience of forest ecosystems, to i.a. safeguard the future supply of wood and forest biomass.

Sub-measure 8.1. supports afforestation activities using tree species based on natural forest communities.

Sub-measure 8.4. supports preventive actions to protect forests from forest fires, natural disasters and catastrophic events as well as actions to restore forest ecosystems after those events, with the aim to avoid subsequent pest outbreaks.

Sub-measure 8.5 aims at increasing the resilience and environmental value of forest ecosystems, by i.a. promoting the establishment of protective infrastructure measures and silvicultural measures focussing on biodiversity.

Sub-measure 8.6. supports investments in forestry technologies and in processing, mobilising and marketing of forest products with the aim to support forest cooperatives to jointly mobilise and market timber and forest biomass.

Measure 8 contributes to focus area 5C, D and E.

M 10 - Agri-Environment-Climate measures

This broad measure covers the following activities referred to in Article 28 of Regulation (EU) 1305/2013, which are relevant for climate change mitigation in the agricultural sector:

- Supporting environmentally friendly management and strengthening biodiversity: indirect impact on focus area 5E (carbon conservation and sequestration), which is addressed e.g. by preventing conversion of grassland, preserving landscape elements, install biodiversity sites, specific crop rotations).
- Renunciation of yield-increasing inputs: impact on focus area 5D (reducing emissions) by e.g. renunciation of mineral fertilizer.
- Renunciation of fungicides and plant growth regulators on areas dedicated to cereal cropping: indirect impact on focus area 5D (reducing emissions) by renunciation and therefore necessary reduced N-fertilisation.
- Greening of arable areas – catch crops cultivation: impact on focus area 5E (carbon conservation and sequestration) by greening between two main crops and renunciation of mineral N-fertilizer and tillage operations in the greening period.
- Greening of arable areas–evergreen: impact on focus area 5E (carbon conservation and sequestration) by all-season greening of at least 85% of arable land, catch crops cultivation and renunciation of mineral N-fertilizer and tillage operations in the greening period,
- Direct seeding and seeding on mulch (incl. strip-till): impact on focus area 5E (carbon conservation and sequestration) by direct seeding and seeding on mulch or. strip-till-seeding, renunciation of ploughing tillage.
- Low emission slurry and biogas spreading techniques: impact on focus area 5D (reducing emissions) by using trailing shoe and injection techniques.
- Erosion protection in fruit, vine and hop production: : impact on focus area 5E (carbon conservation and sequestration) by greening in all machine tracks.
- Preventive ground water protection: impact on focus area 5D (reducing emissions) and 5E (carbon conservation and sequestration) by reduced N-fertilisation, preventing conversion of grassland, education and advice measures.
- Cultivation of arable land at risk for leaching: impact on focus area 5D (reducing emissions) and 5E (carbon conservation and sequestration) by not using certain areas, greening, renunciation of fertiliser and conversion.
- Preventive surface water protection on arable land: impact on focus area 5D (reducing emissions) and 5E (carbon conservation and sequestration) by installing riparian stripes with reduced tillage, renunciation of fertiliser and conversion.
- Nature protection: indirect impact on focus area 5E (carbon conservation and sequestration), which is addressed by e.g. fertiliser reduction and renunciation, fallow land, preservation of landscape elements, soil preserving tillage systems, and others.

M 11 – organic farming

This measure will have an impact on focus area 5D (reducing emissions) and 5E (carbon conservation and sequestration) by different system immanent measures like no use of mineral fertilisers, conservation and partial build-up of soil organic carbon by manure management, greening of arable land and fodder cropping (leguminous crops).

M 15 – Forest-environmental and climate services and forest conservation (Art 34)

This broad measure aims at improving the environmental conditions of forest ecosystems, by providing payment for forest environment commitments and supporting the conservation and promotion of forest genetic resources. This measure will contribute to increasing resilience of forest ecosystems and to focus area 5E and will also contribute to the EU 2020 Biodiversity Strategy.

The measures listed in the Austrian Rural Development Programme for the period 2014-2020 are referenced in the indicative Annex IV, in particular (a), (b), (g), (i) and (j) of the LULUCF Decision.

The Indicator Plan accompanying the Austrian Rural Development Programme for the period 2014-2020 (BMLFUW 2014c) provides information on the total public expenditure provided for the respective measures listed above (see summary in Table 24), including assumptions on the total investment triggered.

	public expenditure target for 2014-2020	Total investment volume triggered 2014-2020
M 1	112	-
M 4	862	3,662
M 6	172	272
M 7	679	-
M 8	165	-
M 10	2.310	-
M 11	784	-
M 15	7	-

Table 24: Overview of public expenditure and total investment related to the measures referred to above [Mio. €] (BMLFUW 2014c)

PAM 9 – Transport Target of the Climate and Energy Package

According to the climate and energy package (mainly Directives 2009/28/EC and 2009/30/EC on the promotion of the use of energy from renewable sources), each Member State is obliged to achieve a transport target of 10% substitution of non-renewable energy sources by renewables in 2020 at the latest. These efforts will lead to a reduction in the use of fossil fuels. A central element of both Directives is the obligation to comply with specific sustainability criteria, to be able to count biofuels towards reaching the transport target. These criteria mandate that biofuels shall not be sourced from land with high biodiversity value, e.g. primary forests or areas designated for nature protection purposes, and from land with high carbon stock, e.g. wetlands or peatland.

This measure is referenced in the indicative Annex IV (d) and (j) of the LULUCF Decision

PAM 10 – Guiding Principles of Forest Management

It has been a guiding principle of Austrian forest management policy for more than 100 years to use forests in an economically sustainable manner, balancing the relevant ecological, economic and social functions. Austria is one of the most densely wooded countries in Central Europe with forests covering more than 47 % of the federal territory, which is almost two thirds higher than the European average. According to the Austrian Forest Inventory 2007/2009 (NFI 2007/2009) the forest as a characteristic

element of the Austrian landscape has grown to cover a total area of 4 million hectares. Ever since the beginning of the Austrian Forest Inventory in 1961 a continuous increase in forest cover has been observed in Austria. Compared with the first inventory period 1961/1970, the forest cover has increased by almost 300 000 hectares to date.

The principle of sustainable management is laid down in § 1 of the Austrian Forest Act. It furthermore provides a strict regulatory framework which should ensure that all forest functions are maintained (see PAMs 11 – 17).

Laws on nature conservation and landscape protection and on national parks have been enacted at *Länder* level (see chapter on legislative arrangements above).

In order to balance the various interests in forest utilisation and to assure the many benefits of the Austrian forest in the long term, the Federal Minister of Agriculture, Forestry, Environment and Water Management initiated the Austrian Forest Dialogue (see PAM 18 below), which prepared the Austrian Forest Programme. It contains specific political proposals for action with regard to all the major forest issues, with the aim of assuring and continuously optimising sustainable management, preservation and development of the Austrian forests. The programme's fields of action include inter alia "Contribution of Austrian Forests to Climate Protection", "Biological Diversity in Austrian Forests" and "Austria's International Responsibility for Sustainable Forest Management".

Forestry already plays a key role in the Austrian Climate policy, following the recommendations of the IPCC, which states that a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual yield of timber, fibre or energy from forest, will generate the largest sustained mitigation benefit.

In 2010 renewables contributed more than 30% to the gross domestic energy consumption in Austria (Statistik Austria, 2011), with approx. 40% originating from woody biomass. According to the WEM and WAM scenarios the total domestic consumption of woody biomass will further increase to around 200 TJ in 2030 respectively, resulting in a total biomass demand for energy purposes of around 25 Mio m³. However, sustainable production of biomass represents only one of the diverse functions of Austrian forestry, which contribute to climate change mitigation and adaptation.

This framing measure is already referenced in the 6th National Communication of Austria.

PAM 11 – General ban on forest clearance/Deforestation

§ 17 of the Forest Act stipulates that the use of forest (soil) for other purposes than for forest cultivation is prohibited. A permit for a forest clearance may be issued, if it is not in conflict with public interest in maintaining this area as forest area.

This measure is referenced in the indicative Annex IV (h) of the LULUCF Decision

PAM 12 – General ban on Forest Destruction

According to § 16 of the Forest Act any form of destruction of forests is prohibited, which might result in weakening or destruction of productivity, soil erosion or prevent Re/afforestation.

This measure is referenced in the indicative Annex IV (g) of the LULUCF Decision

PAM 13 – Immediate Re/Afforestation after felling

§ 13 of the Forest Act stipulates that areas that have been subject to clear felling have to be afforested in good time using locally suitable propagated material.

This measure is referenced in the indicative Annex IV (g) of the LULUCF Decision

PAM 14 – Forest Litter removal

According to § 38 of the Forest Act, ground litter such as leaf or needle etc. may only be obtained if the forest soil is protected. Obtaining twigs from standing trees (looping) is prohibited.

This measure is referenced in the indicative Annex IV (g) of the LULUCF Decision

PAM 15 – Forest Protection (from Fires and Pests)

§ 40-42 of the Forest Act contain provision, such as prohibition of lighting or maintaining fire by persons not authorised to do so, and incautious use of inflammable items in forests.

According to § 43-45 f the Forest Law, forest owners have to undertake preventive measures to avoid an impending risk from forest pests and report immediately to the authority if an increase in forest pests threatening to be a danger occurs. Forest pests are animal and plant pests such as insects, mice, fungi or viruses, which, if their incidence were to increase, could endanger the forest or substantially lower the value of the wood.

This measure is referenced in the indicative Annex IV (i) of the LULUCF Decision

PAM 16 – Provisions on Harvest haulage & Forest Roads

§ 58ff of the Forest Act stipulates that Haulage shall be carried out so that

- the forest soil suffers as little damage as possible, new runlets or watercourses do not come into being and the flow of water in existing runlets or watercourses are not impaired,
- the plant cover suffers as little damage as possible,
- it does not hinder prompt re-afforestation in accordance with § 13 and

wood stored at high-water level in the course of haulage is taken away as rapidly as possible or otherwise removed as an obstacle to high water flowing away.

PAM 17 – Sustainable Use of Forests

§ 80 of the Forest Act stipulates that felling of immature stands – in general stands with an age of less than 60 years – is prohibited.

According to § 82 clear felling is prohibited, if it permanently reduces the productivity of the forest soil, considerably impairs the prevalent water regime, supports soil erosion or endangers the effects of protection forests.

Other clear fellings exceeding 0.5 hectares have to be approved, with special supervision on fellings in protective forests.

This measure is referenced in the indicative Annex IV (g) of the LULUCF Decision

PAM 18 – Austrian Forest Dialogue

The Federal Minister for Agriculture, Forestry, Environment and Water Management initiated a multi stakeholder process in April 2003, to bring to the table all different interest groups and improve coordination of forest related activities. The first Austrian Forest Programme (download at: <http://www.lebensministerium.at/forst/walddialog/dokumente/walddialog-kurz.html>) was adopted end of 2005 and focusses on 7 thematic areas. One of the areas comprises policies and measures directly related to mitigation of climate change, e.g. forest biomass mobilisation for energy purposes and wood production for material substitution (incl. promotion of HWPs) and increase in forest area in regions with low forest cover. Another thematic area prioritises adaptation policies, e.g. R&D on impacts of climate change on Austrian Forests and on increasing resilience of forest ecosystems and policies and measures related to protection of forest ecosystems and their functions, in particular biodiversity.

To operationalise the Austrian Forest Programme, a Work Programme (download at: <http://www.lebensministerium.at/forst/walddialog/dokumente/walddialog-kurz.html>) was elaborated which contains concrete measures to support the objectives of the Forest Programme.

Following climate mitigation measures from the Austrian Rural Development Programme (PAM 8) have been identified to support the thematic issue “contribution of Austrian forests to climate Protection”:

- M 115.2 Arrangement of information campaigns and awareness raising to support the increased demand in woody biomass (cross reference to the Biomass Action Plan);
- M 115.3 – 115.9 Mobilisation of woody biomass, with respect to market development and environmental circumstances
- M 32 Initiation of the thematic window “klima:aktiv” Energieholz (information available at: <http://www.klimaaktiv.at/erneuerbare/energieholz.html>) for the mobilisation of woody biomass (see PAM 6 above)
- M 321.1 Realisation of the “wood and biomass supply study”, which forms the basis for establishing the Forest Management Reference Level, referred to above.
- M 321.2 Establishment of a “Task Force Renewable Energy” to evaluate the future supply of domestic biomass (see PAM 20 below)
- M 322.1 - 322.5 Information management and awareness raising, including initiation of regional contracting and transfer of know-how to forest holders and the forest-based sector

This measure is referenced in the indicative Annex IV (g) of the LULUCF Decision

PAM 19 – Forest Cooperatives

- Cooperative wood harvesting is an appropriate measure to increase wood mobilization especially from small scale forest holdings. A major actor is the Austrian Forest Owner Cooperative (<http://www.waldverband.at>), a dedicated organisation of the Austrian Chamber of Agriculture, providing a platform for 8 regional cooperatives for collective performance. The major goal is to increase the amount of wood harvested by means of joint production and joint marketing. The results of the latest NFI 07/09 show that the wood mobilisation from small scale forest holdings has been increased by more than 50%, compared to the former NFI 2000/02. The initiative is also closely linked to measures adopted within the frame of Austrian Forest Dialogue.

This measure is referenced in the indicative Annex IV (g) of the LULUCF Decision

PAM 20 – Task Force Renewable Energy

In 2006 Task Force Renewable Energy (see M 321.2 of the Austria Forest Dialogue) was established, comprising relevant experts and stakeholder, with the aim to define the domestic supply of different renewable energy sources, including forest biomass, and measures, which are necessary to mobilize the additional potential. The final report (http://www.energiestrategie.at/images/stories/pdf/02_bmlfuw_09_erneuerbare2020.pdf) also fed into the development of the Austrian Energy Strategy and reinforced the findings of the wood and biomass supply study, which forms the basis for establishing the Forest Management Reference Level.

This measure is referenced in the indicative Annex IV (j) of the LULUCF Decision

PAM 21 – Protection of Wetlands

Austria currently has an area of 126.000 ha wetlands, which are classified as “Ramsar-areas”. According to the Federal Constitution Act legislative power over issues related to natural protection lies with the *Länder*. The respective nature protection laws stipulate that wetlands, in particular its habitats and organisms, have to be protected.

This measure is referenced in the indicative Annex IV (d) of the LULUCF Decision

Annex 1 - Summary of policies and measures by sectors

Table 25: Summary of policies and measures by sectors

No. of PAM	Name of PAM	GHG affected	Type of instrument ⁸	Status ⁹	Implem. entity or entities	Estimate of mitigation impact by gas [Tg CO _{2e} equ.] ¹⁰			Policy instruments related
						2010	2015	2020	
PAM 1	Emissions Trading Scheme	CO ₂ , N ₂ O	Ec, Reg, flexible mechanism	impl.	EU, Federation	NE	NE	NE	Dir. 2003/87/EC Dir. 2008/101/EC Dir. 2009/29/EC BGBl. I Nr. 118/2011 (EZG 2011)
PAM 2	Environmental Support Scheme	CO ₂ , CH ₄ , N ₂ O	Fi	impl.	Federation	0.4	0.3	0.25	BGBl. I Nr. 185/1993 as amended
PAM 3	Climate and Energy Fund (KLI.EN)	CO ₂	Fi, Res	Impl.	Federation	NE	NE	NE	BGBl. I Nr. 40/2007
PAM 4	Promotion of Green Electricity	CO ₂	Ec, Reg	impl.	Federation	NE	0.4	0.4	Dir 2001/77/EC BGBl. I Nr. 149/2002 as amended Dir 2003/87/EC (Green Electricity Plants result in a reduced production in large fossil fuel plants affected by the ETS)
PAM 5	District Heating from Renewables	CO ₂	Fi	Impl.	EU, Federation, Länder	0.2 (Included in PAM 2)	NE	NE	BGBl. I Nr. 185/1993 as amended

⁸ Ec = Economic, Fi = Fiscal, Vo = Voluntary, Reg = regulatory, Inf = Information, Ed = Education, Res = Research, P = Planning, O = Other

⁹ Impl. = implemented, adopt. = adopted, planned

¹⁰ When there is no quantification available for the given measures: NE = not estimated; When an estimation cannot be applied to one of the years: NA = not available

No. of PAM	Name of PAM	GHG affected	Type of instrument ⁸	Status ⁹	Implem. entity or entities	Estimate of mitigation impact by gas [Tg CO _{2e} equ.] ¹⁰			Policy instruments related
						2010	2015	2020	
PAM 8	Austrian Rural Development Programme	CO ₂ , CH ₄ , N ₂ O	Fi, Ec	adopted	EU, Federation	¹¹	¹²	¹²	Reg.(EU) No. 1305/2013 Reg.(EU) No. 1306/2013 Reg.(EU) No. 1307/2013 Reg.(EU) No. 1308/2013
PAM 9	Transport Target of the C&E-Package	CO ₂ , N ₂ O	Fi, Ec	implemented	Federation	NA	NA	NA	BGBl. II Nr. 250/2010
PAM 10-17	Forest Management	CO ₂	Res, Reg, Inf	impl.	Federation, <i>Länder</i>	1.3 ¹³	NE	NE	BGBl. I Nr. 1975/440 as amended

¹¹ Information is provided for some sub-measures in the respective chapter above

¹² positive contribution to achieving the national Effort Sharing target for Austria

¹³ Data on net- emissions and net-removals resulting from the activities afforestation, reforestation and deforestation under Article 3, Paragraph 3 of the Kyoto Protocol

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