



**MINISTERIUM  
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**PROGRESS REPORT  
ON LULUCF ACTIONS  
AUSTRIA**

**IN ACCORDANCE WITH  
ARTICLE 10 (4) OF  
DECISION 529/2013/EU**

VIENNA, Dec. 2016



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# 1 INTRODUCTION

According to Article 10 (1) 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 has submitted its report in mid-2014 which can be downloaded at [https://www.bmlfuw.gv.at/umwelt/klimaschutz/klimapolitik\\_national/klimaziele\\_2020.html](https://www.bmlfuw.gv.at/umwelt/klimaschutz/klimapolitik_national/klimaziele_2020.html)

According to Article 10 (4) of this decision, Member States shall submit to the Commission, by the date halfway through each accounting period a report describing the progress in the implementation of their LULUCF actions.

Austria welcomes the opportunity to submit up to date information; 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

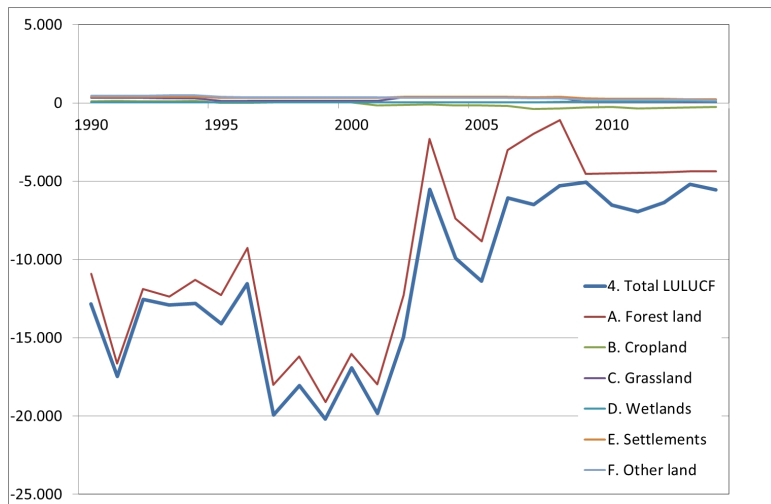
The information is based on Austria's greenhouse gas inventory, submitted to the UNFCCC on 15 June 2016 (BMLFUW 2016). Chapter 6 summarises the net-emissions and net-removals from the sector Land use, land use change and forestry (LULUCF) as follows:

LULUCF is a net-sink in Austria. The most important category is Forest land (4.A), in particular its sub-category Forest land remaining Forest land (4.A.1) which is a net-sink. In the years 2007 and 2008 the sub-category Forest land remaining Forest land turned into a net-source. For the second commitment period (2013-2020), harvested wood products (4.G) are reported as well. This category is the second biggest net-sink. The category Cropland (4.B) also represents a net-sink in the last years, whereas the other sub categories are sources of GHG emissions.

TABLE 1: NET-EMISSIONS AND NET-REMOVALS OF THE LULUCF CATEGORIES 1990-2014;  
TABLE 210 OF AUSTRIA'S NATIONAL INVENTORY REPORT 2016 [Gg CO<sub>2e</sub>]

Year	Greenhouse gas emissions and removals [kilotons CO <sub>2e</sub> ]							
	4. Total LULUCF	A. Forest land	B. Crop land	C. Grass land	D. Wetlands	E. Settlements	F. Other land	G. Harvested Wood Products
1990	-12.853	-10.929	130	324	42	390	444	-3.253
1991	-17.488	-16.659	138	319	42	392	454	-2.174
1992	-12.541	-11.896	129	314	42	395	463	-1.988
1993	-12.901	-12.368	126	309	42	397	473	-1.880
1994	-12.819	-11.304	139	309	42	394	473	-2.872
1995	-14.110	-12.284	9	142	30	339	375	-2.721
1996	-11.554	-9.265	24	144	36	333	372	-3.198
1997	-19.927	-18.016	38	145	36	328	368	-2.826
1998	-18.058	-16.200	51	147	36	322	364	-2.778
1999	-20.184	-19.118	56	147	36	320	365	-1.990
2000	-16.918	-16.028	50	147	36	317	366	-1.805
2001	-19.845	-17.980	-141	146	36	315	367	-2.588
2002	-14.987	-12.285	-108	354	47	397	335	-3.728
2003	-5.521	-2.292	-68	352	47	399	336	-4.296
2004	-9.929	-7.373	-140	352	47	396	328	-3.539
2005	-11.378	-8.825	-138	353	47	393	320	-3.529
2006	-6.080	-3.010	-174	353	37	389	312	-3.987
2007	-6.504	-1.982	-383	356	39	366	304	-5.205
2008	-5.281	-1.088	-333	348	51	399	296	-4.953
2009	-5.080	-4.524	-265	49	68	300	211	-920
2010	-6.525	-4.490	-231	46	69	270	204	-2.392
2011	-6.525	-4.455	-348	49	73	249	196	-2.697
2012	-6.351	-4.421	-315	44	70	257	188	-2.175
2013	-5.201	-4.386	-269	49	101	215	181	-1.093
2014	-5.558	-4.356	-228	48	71	220	173	-1.487

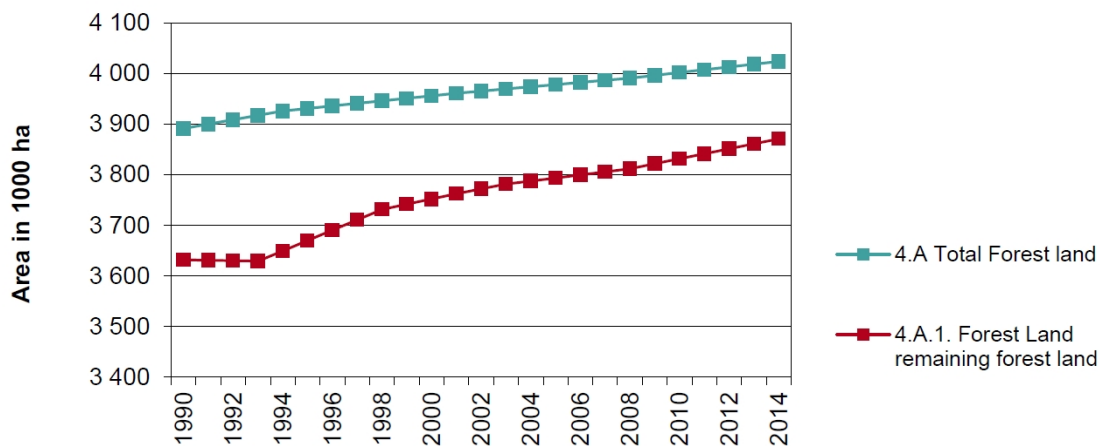
In 2014, net-removals from LULUCF amount to 5.558 Gg CO<sub>2e</sub> which corresponds to 7,3% of total GHG in Austria (without LULUCF), compared to 16,3% in 1990. Net-removals of the LULUCF sector decreased by 56,8% between 1990 and 2014. The most important category is Forest land (4.A) with net-removals of 4.356 Gg CO<sub>2e</sub> in 2014, followed by harvested wood products with net-removals of 1.487 Gg CO<sub>2e</sub>. The total emissions and removals from the other categories amount to 284 Gg CO<sub>2e</sub> in 2014 (Graph 1).



Graph 1: net-emissions and net-removals of the LULUCF categories 1990-2014 [Gg CO<sub>2e</sub>]

## FOREST LAND (CATEGORY 4.A)

In Austria, the area of Forest land has been constantly increasing in the past (Graph 2). The Land converted to Forest land sub-categories (4.A.2) show a decreasing trend with exception of Other Land converted to Forest land which is stagnating.



Graph 2: Trend of total Forest land and Forest land remaining Forest land [1 000 ha]

The annual net-removals of category 4.A of the period 1990–2014<sup>1</sup> range from 1.088 Gg CO<sub>2e</sub> to 19.118 Gg CO<sub>2e</sub> (mean: 10.706 Gg CO<sub>2e</sub>). The most important sub-category is Forest land remaining Forest land (4.A.1), whereas land use changes to Forest land (4.A.2) and from Forest land to other categories (4.B.2 to 4.F.2) only have minor influence on the net GHG balance.

2008 is the median year of the last national forest inventory period, which was carried out between 2007 and 2009. For the years since 2008 the means for the last period (2007 to 2009) of the National Forest Inventory (NFI) have been reported (except for the land use changes to and from forests for which the ARD NFI 2011 to 2013 provided accurate figures for the last years up to 2013).

Changes in the Austrian forest biomass resulted in a net-sink in the years before 1990. In the period 1961 to 1989 the mean annual net-sink amounted to 11.081 kt CO<sub>2e</sub> (from 4.324 Gg CO<sub>2e</sub> to 16.385 Gg CO<sub>2e</sub>). Between 1990 and 2014 the net-sink of this category ranges between 6% and 25% of the national total CO<sub>2e</sub> emissions without LULUCF in this period.

For the reported period 1990 to 2014 the total annual net CO<sub>2e</sub> removals (biomass, dead wood, litter and soil) from land use changes to forest range from about 1.771 Gg CO<sub>2e</sub> to 3.412 Gg CO<sub>2e</sub>. The total annual emissions (biomass, dead wood, litter and soil) from land use changes from forests (conversion of Forest land) vary between 530 Gg CO<sub>2e</sub> and 1.204 Gg CO<sub>2e</sub>.

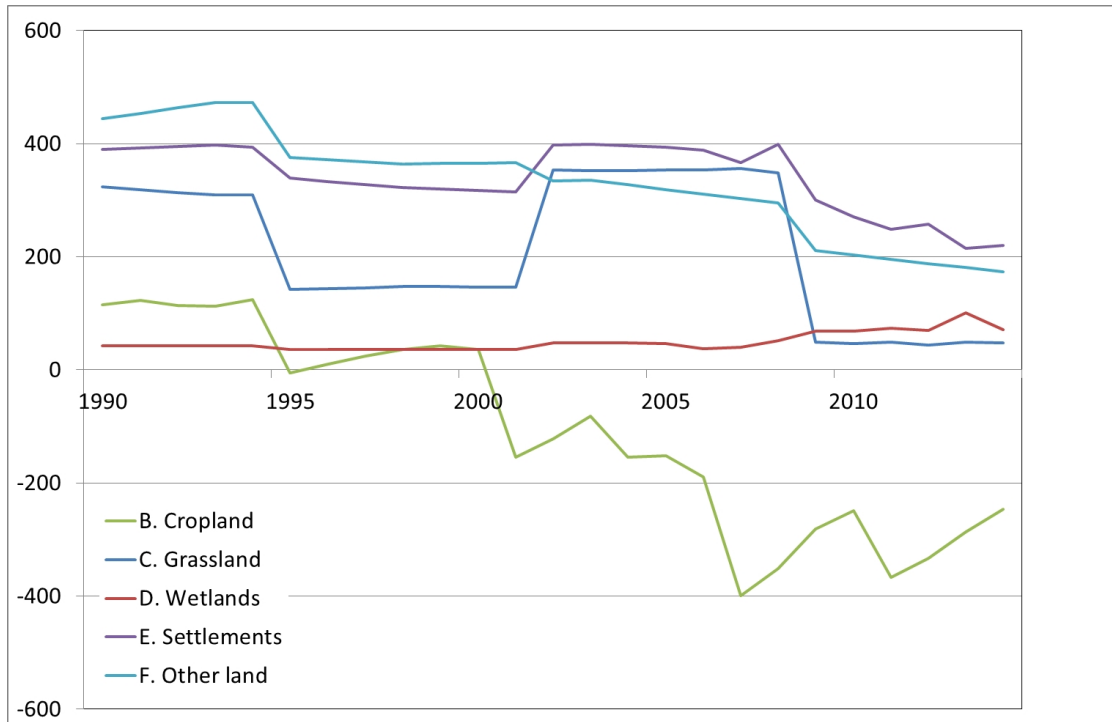
The net carbon stock changes of category 4.A vary considerable between single years and outliers exist. The reason is that the figures for annual growth and for annual harvest differ significantly year by year due to variations of influencing factors like weather conditions, timber demand and prices or wind throws (e.g. very low increment in 2003, very high harvest rates in 2007 and 2008). The forest biomass changes in sub-category 4.A.1 have a major impact on the overall results in category 4.A (and total sector 4). Therefore, such reasons for different growth and different harvest in single years explain the high annual variations as well as single outlier years in the CO<sub>2</sub> net-removals of this sector. The rather constant values from 2009 onwards are due the use of averages of the last NFI (2007/09) for the estimates of the years after 2008.

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<sup>1</sup> For the years since 2009 the means for the last period (2007 to 2009) of the National Forest Inventory (NFI) have been reported.

## OTHER CATEGORIES

The total net-emissions from the categories 4.B – 4.F amount to 284 Gg CO<sub>2e</sub> in 2014, corresponding to a decrease of around 80% from 1 329 Gg CO<sub>2e</sub> in 1990 (Graph 3).



Graph 3: net-emissions and net-removals of the LULUCF categories 1990-2014, excluding 5.A Forest land 1990-2014; Austria's National Inventory Report 2016 [Gg CO<sub>2e</sub>]

The trends for the categories 4.C Grassland – 4.F Other land are generally quite stable with the exception of the discontinuities in the years 1995/1996, 2001/2002 and 2008/2009 for 4.C Grassland. 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.

As a result of the latest recalculation, the category 4.B Cropland has been a net-sink since 2001, mainly caused by an increase of soil carbon in Cropland remaining Cropland, due to specific management measures implemented by the Austrian Agri-Environmental Programme (ÖPUL). This programme was introduced as part of the national Rural Development Programme (see PAM 8) in 1995, after Austria had joined the EU.

Graph 3 shows discontinuities in the historic time series for the category 4.B Cropland every 6 years corresponding with the starting point of the different Rural Development programmes, in particular the respective programmes, which ran from 1995-2000, 1998-2000, 2000/2001-2007, 2007/2008-2013/2014 and 2015-2020. The shift from one programming period to the other quite often resulted in changes of the areas under management by the respective measures and hence in the corresponding emissions profile, as a result of changes in EU provisions or further improvement of the measures.



## 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<sub>2e</sub> p.a. on average. With deforestation contributing average net-emissions of 664 Gg CO<sub>2e</sub> p.a., the total net-removals resulting from afforestation, reforestation and deforestation activities during the first commitment period amount to 6.794 Gg CO<sub>2e</sub> (Table 2).

**TABLE 2: NET-EMISSIONS AND NET-REMOVALS RESULTING FROM AFFORESTATION, REFORESTATION AND DEFORESTATION ACTIVITIES IN 2008-2012; AUSTRIA'S GHG INVENTORY 2014 [Gg CO<sub>2e</sub>]**

Greenhouse Gas Source and Sink Activities	Net emissions and removals							Accounting Parameters	Accounting Quantity
	Base Year	2008	2009	2010	2011	2012	Total		
	(Gg CO <sub>2</sub> equivalent)								
<b>A. Article 3.3 activities</b>									
<b>A.1. Afforestation and Reforestation</b>									-10.116,70
A.1.1. Units of land not harvested since the beginning of the commitment period		-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									NO
<i>Austria</i>		NO	NO	NO	NO	NO	NO		NO
<b>A.2. Deforestation</b>		1.069,69	581,50	569,24	556,97	544,70	3.322,10		3.322,10
<b>B. Article 3.4 activities</b>									
<b>B.1. Forest Management (if elected)</b>		NA	NA	NA	NA	NA	NA		NA
3.3 offset								0,00	NA
FM cap								11.550,00	NA
<b>B.2. Cropland Management (if elected)</b>	0,00	NA	NA	NA	NA	NA	NA	0,00	0,00
<b>B.3. Grazing Land Management (if elected)</b>	0,00	NA	NA	NA	NA	NA	NA	0,00	0,00
<b>B.4. Revegetation (if elected)</b>	0,00	NA	NA	NA	NA	NA	NA	0,00	0,00



In the years after 2012 net-removals from afforestation and reforestation activities slightly increased to around 2.072 Gg CO<sub>2e</sub> p.a. With deforestation contributing net-emissions of 517 Gg CO<sub>2e</sub> p.a. on average, the total annual net-removals resulting from afforestation, reforestation and deforestation activities are currently around 1.555 p.a. Gg CO<sub>2e</sub> (Table 3).

For Forest Management the most recent data show a net-removals of 3.575 Gg CO<sub>2e</sub> p.a. However we would like to note that for the years since 2009 the means for the last period (2007 to 2009) of the National Forest Inventory (NFI) have been reported. This information will be updated as soon as the results from the next NFI are available.

TABLE 3: NET-EMISSIONS AND NET-REMOVALS RESULTING FROM AFFORESTATION, REFORESTATION, DEFORESTATION AND FOREST MANAGEMENT ACTIVITIES IN 2013 AND 2014; AUSTRIA'S GHG INVENTORY 2016 [Gg CO<sub>2e</sub>]

Greenhouse Gas Source and Sink Activities	Base Year	Net emissions and removals			Accounting Parameters	Accounting Quantity
		2013	2014	Total		
(Gg CO <sub>2</sub> equivalent)						
<b>A. Article 3.3 activities</b>						
<b>A.1. Afforestation/Reforestation</b>		-2.067,71	-2.076,39	-4.144,10		-4.144,10
Excluded emissions from natural disturbances						
Excluded subsequent removals from land subject to natural disturbances						
<b>A.2. Deforestation</b>		524,23	509,60	1.033,83		1.033,83
<b>B. Article 3.4 activities</b>						
<b>B.1. Forest Management</b>				-7.148,47		-5.762,47
Net emissions/removals		-3.397,55	-3.750,92	-7.148,47		
Excluded emissions from natural disturbances		NA	NA	NA		NA
Excluded subsequent removals from land subject to natural disturbances		NO	NO	NO		NO
Any debits from newly established forest (CEF-ne)						
Forest management reference level (FMRL)					-6.516,00	
Technical corrections to FMRL					5.823,00	
Forest management cap						-5.762,47
<b>B.2. Cropland Management (if elected)</b>						
<b>B.3. Grazing Land Management (if elected)</b>						
<b>B.4. Revegetation (if elected)</b>						
<b>B.5. Wetland Drainage and Rewetting (if elected)</b>						

### 3 PROJECTIONS FOR EMISSIONS AND REMOVALS FROM THE LULUCF SECTOR FOR THE RESPECTIVE ACCOUNTING PERIOD

Austria has submitted “GHG projections and assessment of policies and measures in Austria” in accordance the EU Monitoring Mechanism Regulation (EU) No. 525/2013 (Umweltbundesamt 2015) on 15 March 2015. This report only included projections for sector 4.

Austria has updated its information for the complete LULUCF sector in January 2016 and submitted an additional report (Umweltbundesamt 2016) in accordance with the provisions of Art. 14 of the EU Monitoring Mechanism Regulation (EU) No. 525/2013 and Art. 23 of the Implementing Regulation (EU) No. 749/2014. These data are methodologically consistent with the data reported in Austria’s GHG inventory submitted in 2015 under the UNFCCC.

#### GREENHOUSE GAS PROJECTIONS

The projections for national GHG emissions include a scenario “with existing measures” (WEM) and a scenario “with additional measures” (WAM). The former takes into account climate change mitigation measures that were implemented under the Austrian Climate Strategy 2002 (as amended in 2007) before 1<sup>st</sup> May 2014. The WAM scenario is also based on policies and measures which are planned for that adoption and implementation. In addition to the WEM scenario, it contains further planned policies and measures which, according to the view of experts and in agreement with the Austrian Ministry of Agriculture, Forestry, Environment and Water Management, are expected to be implemented and become effective until 2035 and will have effects on LULUCF.

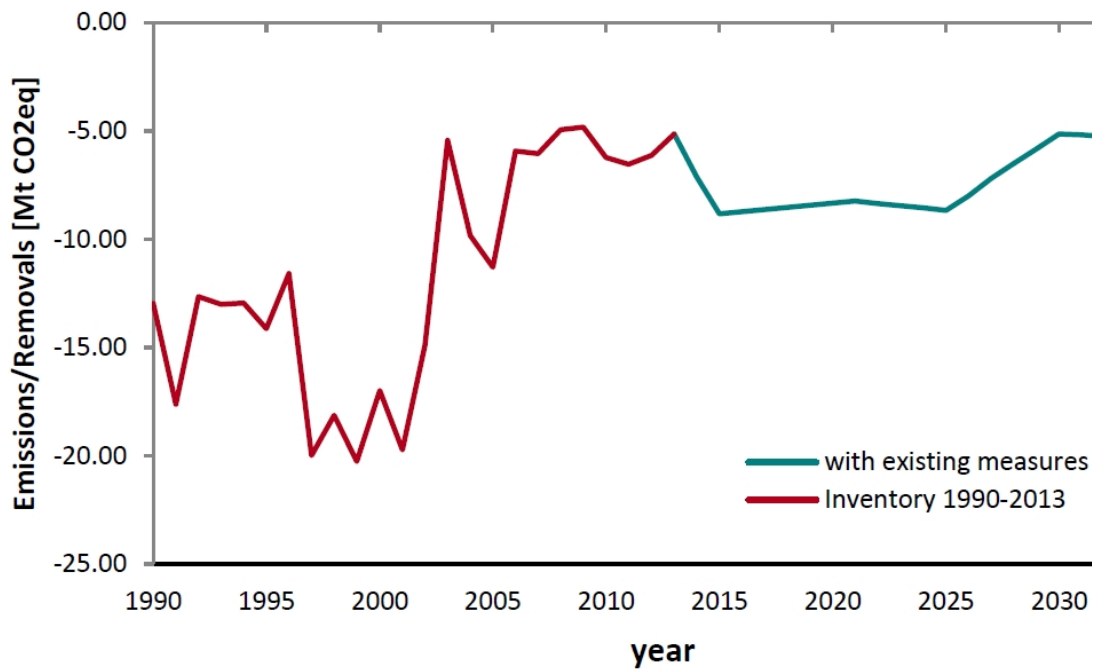
The Projections for Greenhouse Gases are consistent with the historic emission data of the Austrian GHG Inventory of 2015.

According to these projections, the share of renewables will be around 38-42 % in 2030. Although the demand for woody biomass has increased in the past, both – the WEM and WAM scenario – project a further increase in the total domestic consumption of woody biomass to around 200 PJ in 2030.

#### LULUCF

Sector 4 LULUCF has been a net-sink in the past and is projected to remain a net-sink until 2020. The profile is mostly dominated by the projected development of the net-removals between 2013 and 2015. Total net-removals increased by approximately 3.500 Gg CO<sub>2e</sub> mostly resulting from the increase in the net-sink in Category 4.G HWP (Graph 4).

The projection assumes no changes in policies and that the wood demand in terms of quantity and composition corresponds with the trend in the past years. Likewise market participants do not change behaviour.



Graph 4: historic and projected net-emissions and net-removals from LULUCF [Gg CO<sub>2</sub>e]

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

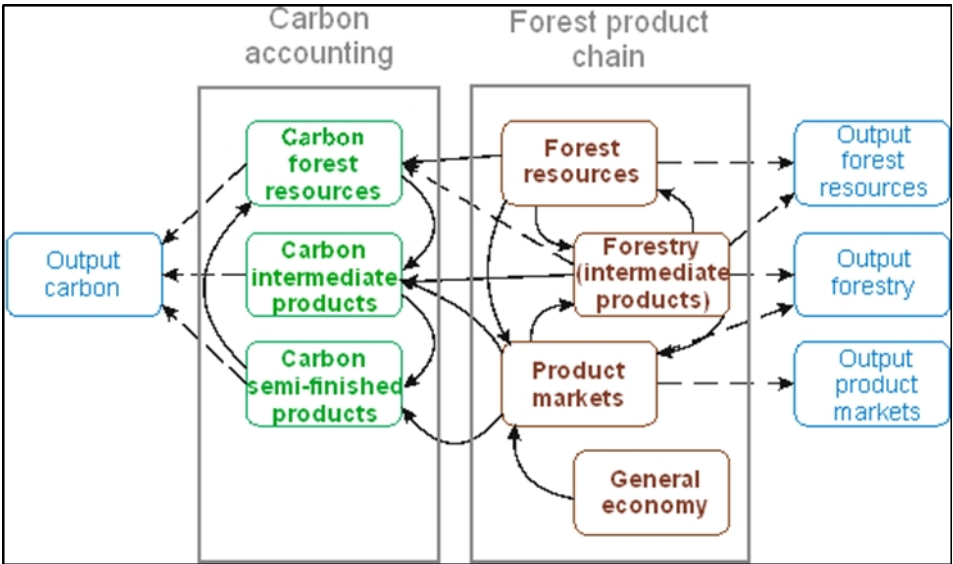
## FOREST LAND (4.A)

The projection has been established based on historic field data from the Austrian national forest inventory (NFI) 2007/09 which served as input to the CALDIS model. CALDIS is a climate-sensitive single individual-tree based forest growth model (Kindermann, 2010; Gschwantner et al., 2010; Ledermann, 2002) that simulates forest development on behalf of using the increment of single trees. It is based on a derivative of the PROGANUS model. The model applies a various set of tree species specific, mathematical-statistical equations which describe growth of diameter and height of single individual trees. In addition, temperature and precipitation data was fed into the model to simulate climatic conditions. Models for salvage cutting and incidental fellings have been integrated as well. An ingrowth model estimates the renewal of forest stands. On this basis, above and below ground biomass was calculated on a single tree level. To integrate the economic aspects of wood harvest in the CALDIS model, the NFI areas were classified in categories in terms of harvesting technology. Within the context of the wood biomass supply study (BFW, 2009) simple models were developed which estimate harvest costs in relation to tree diameters (DBH) and harvest technology. These models were also applied in the present study to estimate the harvest cost for the different NFI areas. For each area the margin was estimated and the areas were ranked accordingly. Based on the historical assumptions that the forest owners do not change their behaviour it was assumed that wood in economically favourable areas will be harvested first.

For estimating soil organic carbon the YASSO 07 model (Liski et al., 2009, 2005) has been applied (BFW, 2015).

The timber volume and increment have been calibrated iteratively between the CALDIS model and the Forest Sector Model FOHOW2.

The FOHOW2 model (Schwarzbauer and Stern, 2010; Schwarzbauer and Rametsteiner, 2001; Braun et al., 2015) is an economic model which covers the entire forest-based sector from forestry over intermediate products to end products under consideration of market mechanisms and economic circumstances. The model simulates carbon stocks and flows across the whole wood production chain. Historic trade statistics, production statistics and the wood flow diagram (Lang and Nemestothy, 2012) served as model input data on wood consumption. The FOHOW2 model includes the elements of the forest product chain that are shown in the brown boxes of Figure 1, such as general economy, product markets, forestry (intermediate products) and forest resources.



Graph 5: General structure of the FOHOW2 model, Source: Braun et al 2015

Based on this, the model simulates all carbon fluxes of Harvested Wood Products (sawn wood, wood panels and paper), in Austria and calculates the carbon stocks and fluxes in accordance with the 2006 IPCC guidelines for GHG inventories.

The projection shows that the category Forest land will be a net-sink of around 3.000 Gg CO<sub>2e</sub> in 2020. This is in the range of reported net-removals from this sub-category during the last years, which were around 1.000 to 4.500 Gg CO<sub>2e</sub> since 2006 (Table 4).

TABLE 4: HISTORIC AND PROJECTED NET-EMISSIONS AND NET-REMOVALS FROM FOREST LAND [Gg CO<sub>2e</sub>]

Forest land	2006	2007	2008	2009	2010	2011	2012	2013	2014	2020
NIR 2016	-3.010	-1.982	-1.088	-4.524	-4.490	-4.455	-4.421	-4.386	-4.356	
projection										-3.066

## HARVESTED WOOD PRODUCTS (4.G)

The FOHOW2 model was used to simulate the domestic production of harvested wood products (HWP), consistent with the projections for category 4.A above. Historic production data starting from 1961 has been taken from FAO statistics (sawnwood, wood-based panels and paper and paperboard).

For HWPs the projections show an increase of the net-removals to around 5.800 Gg CO<sub>2e</sub> in 2020

TABLE 5: HISTORIC AND PROJECTED NET-EMISSIONS AND NET-REMOVALS FROM HWPs [Gg CO<sub>2e</sub>]

HWP	2006	2007	2008	2009	2010	2011	2012	2013	2014	2020
NIR 2016	-3.987	-5.205	-4.953	-920	-2.392	-2.697	-2.175	-1.093	-1.487	
projection										-5.775

## AFFORESTATION, REFORESTATION, DEFORESTATION

There are no modelled data on future afforestation, reforestation and deforestation activities in Austria. The European Commission calculated emission scenarios for all EU-Member States (European Commission 2016), including Reference Scenarios for LULUCF.

According to this scenario, net-removals from afforestation and reforestation activities are assumed to remain stable up to 2020, at current levels.

TABELLE 6: HISTORIC AND PROJECTED NET-EMISSIONS AND NET-REMOVALS FROM AFFORESTATION AND REFORESTATION [Gg CO<sub>2e</sub>]

Afforestation and Reforestation	2013	2014	2020
NIR 2016	-2.068	-2.076	
EC - Reference Scenario			-2.218

According to this scenario, net-emissions from deforestation activities are assumed to remain stable up to 2020, at current levels.

TABELLE 7: DATA ON DEFORESTATION [Gg CO<sub>2e</sub>]

Deforestation	2013	2014	2020
NIR 2016	524	510	
EC - Reference Scenario			591

## CROPLAND (4.B)

According to the most recent recalculations, total Cropland has been a net-sink since 2001, mainly caused by an increase in soil carbon in Cropland remaining Cropland, due to specific management measures implemented by the Austrian agri-environmental programme. This programme was introduced in 1995, as Austria joined the EU.

According to the 2006 IPCC Guidelines the effects of changes in management practices on the soil carbon stocks are reported during a 20-years transition period per default, after which the stocks are assumed to reach a new equilibrium state. This implies that for the reporting under the UNFCCC the implemented measures do not lead to further soil carbon stock increases after 20 years.

Consequently, the effect of the 20-years period is strongly related with the starting date of the implementation of past agri-environmental measures. With the phase out of these management driven Carbon sequestration effects in Cropland soil due to reaching the new equilibrium stock, the Cropland category is projected to turn back into a net-source in the future, mostly driven by significant - but rather stable - emissions due to biomass losses in perennial Cropland and soil carbon losses from land-use changes from Grassland to Cropland.

An evaluation of around 40.000 soils samples shows that the humus content increased in all regions by 0,1 to 0,4% during 15 years as a result of the agri-environmental measures referred to above. According to the data many of the soil samples lie within the optimum humus range, a part of them on the upper end of this range and a part of them on the lower end. There are also sites where the humus content did not yet reach this optimum range. In case the further soil monitoring shows a different emissions profile - compared to the current estimates based on the 20-years transition period - in the longer term, Austria will reconsider moving to a country specific methodology in deriving the transition period.

After 2030, most of these areas will have passed the 20 years transition period and the soil carbon stocks will – even if the agri-environmental measures are continued – no longer increase. This leads to a reversal of the emission trend in 2030. At that time areas under Cropland will turn into a net-source due to the stable losses in perennial biomass and soil Carbon stocks as a consequence of land-use changes and decreases in perennial Cropland.

TABLE 8: DATA ON CROPLAND [Gg CO<sub>2e</sub>]

Cropland	2006	2007	2008	2009	2010	2011	2012	2013	2014	2020
NIR 2016	-189	-399	-351	-282	-249	-367	-333	-287	-247	
projection										48

## GRASSLAND (4.C)

The past trend shows that the category Grassland is a net-source since 1990. Due to the fact that the land use changes to Grassland are kept constant during the observation period of a NFI-cycle, the emission trends are quite constant during those years. The shift from one NFI cycle to the other (1994/1995, 2001/2002 and 2008/2009) leads to discontinuities between those years. According to the WEM scenario the Grassland category remains a net-source up to 2020. The estimated reduction of the land-use change area in particular of annual Cropland converted to Grassland which is a net-sink, leads to an increase of the net-emissions of the total Grassland category from 2025 to 2030.

TABLE 9: DATA ON GRASSLAND [Gg CO<sub>2e</sub>]

Grassland	2006	2007	2008	2009	2010	2011	2012	2013	2014	2020
NIR 2016	354	357	348	49	46	49	44	49	48	
projection										27

## 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 category 5.D Wetlands of around 70 Gg CO<sub>2e</sub> p.a.



## 4 LIST OF MEASURES TO BE IMPLEMENTED IN ORDER TO PURSUE THE MITIGATION POTENTIAL, INCLUDING POLICIES AND TIMETABLE FORESEEN FOR THEIR IMPLEMENTATION

### ENERGY RELATED POLICIES AND MEASURES

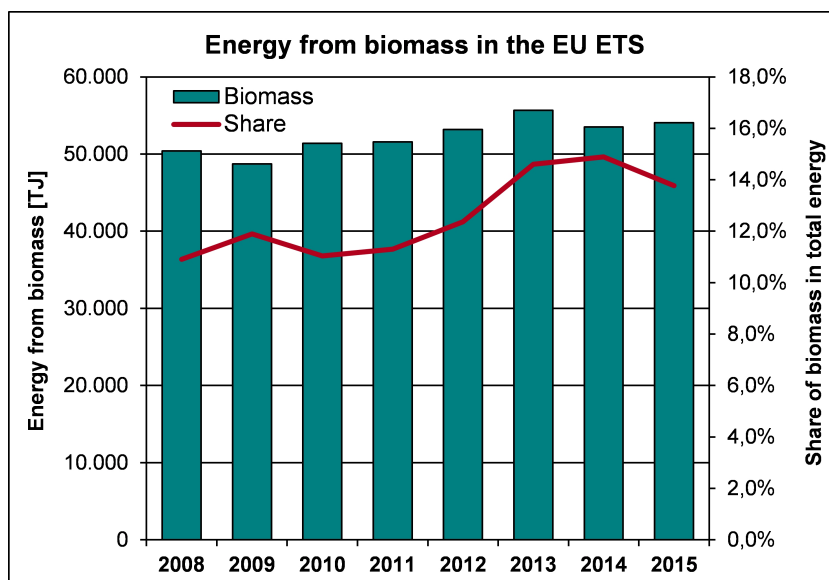
The measures referred to in this chapter are referenced in the indicative Annex IV (j) of the LULUCF Decision.

#### PAM 1 – EMISSIONS TRADING SCHEME

Since 2013, 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 200 installations are currently covered by EU ETS. Free allocation amounts to 21,91 million allowances in 2014 and will go down to 18,13 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<sub>2c</sub>-neutral – can be observed. Biomass consumption increased from below 11% of total energy use in 2008 to almost 15% in 2014 which was followed by slight drop of about 1% 2015.



Graph 6: Share of biomass consumed in ETS-installations 2008-2015

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<sub>2</sub> equivalents. The environment related investment costs for the years 2008-2012 amounted to 2.353 million Euro.

The Environmental Support Scheme is managed by *Kommunalkredit Public Consulting - KPC*, commissioned by BMLFUW. According to the last annual report (Umweltinvestitionen des Bundes 2015), 62 million Euro of support were granted to companies for 1.972 projects in 2015, whereof 55.8 million euro or around 90% were of relevance for GHG mitigation. 763 projects with a support of 31,7 million Euro fell into the category of renewable energy use and 1.181 projects (24.1 million Euro funding) involved energy efficiency measures.

Further information can be found on the webpage and in the annual reports of Federal ministry for Agriculture, Forestry, Environment and Water Management.

<https://www.bmlfuw.gv.at/umwelt/klimaschutz/ufi/ufi.html>

Out of the 763 renewable energy projects, 78% promote the use of biomass for energy purposes. Those biomass projects with investment costs of approximately 190 million Euro are calculated to bring about a annual CO<sub>2e</sub> emissions reduction of 0,18 million tons (which means 4,2 million tons CO<sub>2e</sub> in the course of their service life).

TABLE 10: THE DOMESTIC ENVIRONMENTAL SUPPORT SCHEME 2015; SUPPORT FOR BIOMASS INSTALLATIONS (UMWELTINVESTITIONEN DES BUNDES 2015)

	Number of projects	Environment related investment costs [million Euro]	Subsidy [million Euro]	Annual CO <sub>2e</sub> -Emissions-reduction [tons]	Total CO <sub>2e</sub> -Emissions-reduction [tons]
Renewable Energy	763	208,0	31,7	187.648	4.350.916
Biomass - Installations	339	16,6	3,7	31.079	621.578
Biomass - Microgrids	49	13,4	3,7	11.755	235.096
Biomass - District heating systems	124	106,0	13,3	71.989	1.439.775
Biomass – distribution network	79	53,4	7,0	63.011	1.890.315

### 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 Euro resulting in an economic impact of more than 1.8 billion Euro. 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 Euro 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 2015 on the replacement of old fossil fuelled heating systems by highly efficient systems based on renewable energy, in particular solar and forest biomass.

TABLE 11: THE CLIMATE AND ENERGY FUND 2015: SUPPORT FOR BIOMASS INSTALLATIONS (GESCHÄFTSBERICHT 2015)

	<b>Number of projects</b>	<b>Environment related investment costs [million Euro]</b>	<b>Subsidy [million Euro]</b>
Modelregion - Biomass	5	0,40	0,03
replacement of old fossil fuelled heating systems by highly efficient systems based on renewable energy	4.900	68,30	6,50

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 2012 (BGBl I Nr. 75/2011) 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<sub>el</sub> in 2020.

The Act sets targets for additional electricity production from supported renewables for the year 2015 (compared to 2010). Biomass and Biogas should deliver additional 100 MW<sub>el</sub> in 2015 with an increase in demand for forest biomass of about 1,2 million cubic metres in 2015. According to the “Green Electricity Report 2015” issued by Energy Control Austria, the biomass-target might be hard to reach.

The Act also includes a 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 Euro in 2010 and 631 million Euro in 2014. In addition to feed-in-tariffs, investment grants for small and medium hydropower are provided.

The feed-in-tariffs are set by the then Federal Ministry of Economy in cooperation with the Federal ministry for Agriculture, Forestry, Environment and Water Management and the Federal Ministry for Social Affairs.

TABLE 12: SUPPORTED GREEN ELECTRICITY 2009-2015 [GWh]

	2009	2010	2011	2012	2013	2014	2015
Biomass solid	1.958	1.987	1.969	1.983	2.013	1.941	2.043
Biogas	525	539	520	554	544	543	559
Biomass liquid	39	30	12	0	0	0	0
Total (without hydro)	4.503	4.647	4.464	5.057	5.768	6.498	7.650

## PAM 5 – DISTRICT HEATING FROM RENEWABLES

The Environmental Support Scheme supported entrepreneurial projects in 2012 with a total budget of around 78 million Euro, of which 35.8 million Euro 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 Euro) is dedicated to biomass heating and district heating systems. Furthermore, in order to ensure 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 to a certain extent 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](http://www.klimaaktiv.at)) has been initiated by the Federal ministry for Agriculture, Forestry, Environment and Water Management 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>)

This 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”) 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 Euro from the Austrian Rural Development Programme 2007-2013. A comparable budget has been reserved in the new programme period 2014+.

# POLICIES AND MEASURES IN THE AGRICULTURE AND FORESTRY SECTOR

Agricultural production primarily contributes to climate change with its CH<sub>4</sub> and N<sub>2</sub>O emissions. In the year 2014 the sector agriculture contributed 9,3% to the total of Austria's greenhouse gas emissions (without LULUCF). The trend of GHG emissions from 1990 to 2014 shows a decrease of 12,7% for this sector due to various measures taken. 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 carbon sequestration in the LULUCF sector.

## **PAM 8 – AUSTRIAN RURAL DEVELOPMENT PROGRAMME**

### **PERIOD 2007-2013/14**

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 2007-2013/14 provides for approx. 8 billion Euro of government support. Part of it – 6,71 billion Euro - went to 141.800 farms, 142 million Euro to about 3.700 collective interest groups and 850 million Euro to other initiatives. The focus of financial resources has 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. In 2013 these three measures accounted for 76% of the financial resources of the programme.

The share dedicated for Austria in the EU finance plan was fulfilled. 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.

### **M 214 & 215 – THE AGRI-ENVIRONMENTAL PROGRAMME**

This programme brings together measures M 214 and M 215. It offers 29 sub-measures to which farmers can subscribe and which aim to protect and enhance the natural resources soil, water, climate, and biodiversity. Among them are very specific measures such as the nature conservation measure or the preservation of rare domestic breeds (to maintain genetic diversity as a part of biodiversity) but also measures which affect a whole range of goals, e.g. support of organic farming. In 2013 108,991 farms (73,1% of all farms) who managed 2.097.295 hektar (91% of the utilized agricultural area) participated in this programme. 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 reducing the loss of soil organic matter (SOM). So the results give a good indication that SOM in Austrian arable lands is not declining and that the agri-environmental measures have a positive contribution to promote an even slight increase in the level of SOM in mineral soils.

The sub-measures which are crucial for this development are: greening of arable land, direct seed and seeding on mulch and organic farming. The potential for reduction of soil erosion is great and is being very well received; due to the measures currently in place, soil erosion on utilized agricultural areas has been reduced by 10% on average; this corresponds to estimated savings of several hundred thousand tons of soil per year. Both direct seed and seeding on mulch are the most innovative approaches to decrease erosion and increase soil fertility.

The sub-measures “Organic farming”, “Renouncement on arable land”, “Environmentally-friendly management of arable land and grassland”, and “Greening of arable land” lead to a buildup of humus in the soils and thus to the sequestration of 218.600 tons of CO<sub>2e</sub> annually on 600.000 hectares of arable land in the period 2007-2013/14. Public expenditure for the period 2007 – 2014 can be found in table 13.

Besides the positive influence on the level of SOM in arable land, these measures also contribute to curbing greenhouse gas emissions.

**TABLE 13: OVERVIEW OF PUBLIC EXPENDITURE RELATED TO THE SUB-MEASURES AUSTRIAN AGRI-ENVIRONMENTAL PROGRAMME [MILLION EURO] (GRÜNER BERICHT 2015)**

	2007	2008	2009	2010	2011	2012	2013	2014	total
Organic farming	85,8	88,5	92,4	99,1	99,6	99,8	97,8	95	758
Environmentally-friendly management of arable land and grassland	99,5	116,7	114,7	112,2	111,3	109,1	106,3	101,6	871,4
Renouncement on arable land	2,3	1,1	0,8	0,7	0,7	0,6	0,6	0,5	7,3
Erosion protection for fruit and hops	2,4	2,5	2,6	2,7	2,6	2,6	2,5	2,3	20,2
Erosion protection for vineyards	5,2	5,3	5,3	5,3	5,3	5,3	5,1	4,6	41,4
Regional programme “Ecopoints Lower Austria”	23,4	28	38,6	38,5	37,8	37,4	36,8	35,4	275,9
Organic farming	67	68,6	65,8	66,2	64,8	65	64,8	62	524,2
Environmentally-friendly management of arable land and grassland	6,1	5,8	5,4	5,6	5,5	5,7	5,6	5,3	45



## M 111, M 331 & M 341 – TRAINING AND INFORMATION

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 farmers and foresters; 64,2 million Euro were provided for this measure during 2007-2014. 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 42,4 million Euro spent. The measure “Skills acquisition, animation and implementation” (M 341) aims to contribute to an integrated rural development through participative processes. With payment of 9,9 million Euro this measure received high acceptance during the programme period.

## 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 hektar. In the period 2007 – 2014 about 40,8 million Euro were spent for this measure.

## 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. In the period 2007 – 2014 about 173,7 million Euro were spent for this measure.

## 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 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 support 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. In total during 2007 – 2014 about 77,1 million Euro were spent for this measure.

## 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 hektar has been afforested, mainly to protect lands from erosion, but also to improve biodiversity and to mitigate climate change. In the period 2007 – 2014 about 1,4 million Euro were spent for this measure.

## 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 hektar of forest areas. This measure gained only little acceptance by forest holders. Measure M 225 supports silvicultural activities such as natural regeneration and thinning with the aim to be applied to 35.000 hektar of forest areas. During 2007-2009 in total more than 500 hektar of forest areas have received financial support. In the period 2007 – 2014 about 0,3 million Euro were spent in this measure.

## 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 hektar Forest land) focussing on rehabilitation measures and two-third (comprising 37.000 hektar) on preventive measures. The aim of these measures is to promote all forest functions in a sustainable manner, including adaptation to climate change. In the period 2007 – 2014 about 104,2 million Euro were spent in this measure.

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 ar) on the promotion of small-scale renewable energy (e.g. local heat grids). In the period 2007 – 2014 about 85,5 million Euro were spent in this measure.

## M 321 – PROVISION OF BASIC SERVICES

This broad measure is established to ensure the supply of basic services for the economy and too 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).

TABLE 14: OVERVIEW OF PUBLIC EXPENDITURE AND TOTAL INVESTMENT RELATED TO THE MEASURES REFERRED TO ABOVE [MILLION EURO] (GRÜNER BERICHT 2015)

	Financial support made available 2007-2014	Total investment volume triggered	public expenditure target
M 111	64,2	-	70,9
M 122	40,8	53,0	48,3
M 123a & c	173,7	865,9	183,8
M 123b & d		11,0	10,0
M 124a	14,5	-	14,0
M 124b		6,1	18,9
M 125a	77,1	76,0	51,5
M 214 & 215	4.233,8	-	3.590,0
M 221	1,4	-	1,4
M 111	64,2	-	70,9
M 122	40,8	53,0	48,3
M 123a & c	173,7	865,9	183,8
M 123b & d		11,0	10,0
M 124a	14,5	-	14,0
M 124b		6,1	18,9
M 125a	77,1	76,0	51,5

The measures listed in the Austrian Rural Development Programme for the period 2007-2013/14 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 2014) has been developed in a broad and inclusive stakeholder process during a period of 12 months, with its final workshop on 18<sup>th</sup> 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 the production of sustainable renewable resources including feedstock for energy.

After political consultation with the Austrian Parliament the Programme was notified to the European Commission. As the Rural Development Programme 2014-2020 came rather late for the farmer's decisions, 2014 continued with the former Programme under the same conditions. 2014 was an interim year between the RD-Programme of 07-13 and the Programme 14-20, which effectively started in 2015.

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 (promoting renewable energy) 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 (soil carbon conservation and sequestration).

## 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 (promoting renewable energy).

## 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 (promoting renewable energy, D (reducing GHG emissions and ammonia) and E (soil carbon conservation and sequestration).

## M 10 - AGRI-ENVIRONMENT-CLIMATE MEASURES (ART. 28)

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:

- (sub measure 1) Environmentally sound and biodiversity promoting management: indirect impact on focus area 5E (soil carbon conservation and sequestration), which is addressed e.g. by preventing conversion of Grassland, preserving landscape elements, install biodiversity sites, specific crop rotations).
- (2) Limitation of yield-increasing inputs: impact on focus area 5D (reducing GHG emissions and ammonia) by e.g. renunciation of mineral fertilizers.
- (3) Renouncement of fungicides and growth regulators on areas dedicated to cereal cropping: indirect impact on focus area 5D (reducing GHG emissions and ammonia) by renunciation and therefore necessary reduced N-fertilisation.
- (6) Greening of arable land – intermediate crops: impact on focus area 5E (soil carbon conservation and sequestration) by the active greening of land between two main crops and renunciation of mineral N-fertilizers and pesticides and tillage operations throughout the greening period.
- (7) Greening of arable land – “evergreen” system: impact on focus area 5E (soil carbon conservation and sequestration) by all-season greening of at least 85% of arable land (by growing main and intermediate crops) and renunciation of mineral N-fertilizer and pesticides and tillage operations throughout the greening period,
- (8) Direct seeding and seeding on mulch (incl. strip-till): impact on focus area 5E (soil carbon conservation and sequestration) by direct seeding and seeding on mulch or strip-till-seeding, renunciation of ploughing tillage.
- (9) Low emission slurry and biogas spreading techniques: impact on focus area 5D (reducing GHG emissions and ammonia) surface-near spreading of at least 50% of the liquid farm manure on arable land and grassland, e.g. by using trailing hose spreaders or liquid manure injection techniques.
- (10) Erosion protection in fruit, vine and hop production: impact on focus area 5E (soil carbon conservation and sequestration) by active area-wide greening of all machine tracks in vineyards, fruits and hops.
- (16) Preventative ground water protection (regional): impact on focus area 5D (reducing GHG emissions and ammonia) and 5E (soil carbon conservation and sequestration) Arable land: reduced use of fertilizers, renouncement of selected pesticides; documentation on the use of nitrogen fertilizer, specific consultation and training. Grassland: preventing the conversion of grassland (ban on the ploughing up or renewal).
- (17) Management of arable areas particularly threatened by leaching (regional): impact on focus area 5D (reducing GHG emissions and ammonia) and 5E (soil carbon conservation and sequestration) by the establishment of a permanent green cover mixture on arable land at risk of leaching, renunciation of fertiliser and pesticides on these area and conversion.
- (18) Preventative surface water protection on arable land (regional): impact on focus area 5D (reducing GHG emissions and ammonia) and 5E (soil carbon conservation and sequestration) by land set aside by establishing a minimum 12-metre buffer strip adjacent to rivers or streams or by preserving existing, greened buffer strips along rivers or streams.
- (19) Nature conservation: indirect impact on focus area 5E (carbon conservation and sequestration), which is addressed by extensive, near-to nature management e.g. fertiliser reduction and renunciation, fallow land, preservation of landscape elements, soil preserving tillage systems, and others.

## M 11 – ORGANIC FARMING

This sub measure will have an impact on focus area 5D (reducing emissions) and 5E (soil carbon conservation and sequestration) by different system immanent measures like the renouncement of mineral fertilisers and chemical synthetical pesticides, preservation of landscape elements and the maintainance of grassland, conservation and partial build-up of soil organic carbon by manure management, the greening of arable land and humus promoting crop rotations (e.g. fodder cropping and 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 2014) provides information on the total public expenditure provided for the respective measures listed above (see summary in Table 15), including assumptions on the total investment triggered.

**TABLE 15: OVERVIEW OF PUBLIC EXPENDITURE AND TOTAL INVESTMENT RELATED TO THE MEASURES REFERRED TO ABOVE [MILLION EURO] (GRÜNER BERICHT 2015)**

	<b>public expenditure target for 2014-2020</b>	<b>Total investment volume triggered 2014-2020</b>
<b>M 1</b>	112	-
<b>M 4</b>	862	3.662
<b>M 6</b>	172	272
<b>M 7</b>	679	-
<b>M 8</b>	165	-
<b>M 10</b>	2.310	-
<b>M 11</b>	784	-
<b>M 15</b>	7	-

The following table (table 16) shows the development of the programme in terms of areas, expenditures and numbers of participating enterprises for the years 2014 and 2015. The numbers show a decline in areas as well as enterprises participating in those measures. In this context it should be noted that the programme is an evolution from the ÖPUL 2007-2013/14 programme, with adjustments made to the strategic orientation and the content-related processing. Raising the level of legally required environmental standards has impacts on the eligibility of the activities to be supported within the frame of the ÖPUL-programme, which have to go beyond the minimum legal requirements.



Nevertheless the participation in the ÖPUL-programme remained high, demonstrating the great support of climate and environment measures by Austrian farmers. We would like to note that only some measures of the ÖPUL programme have direct relevance for the emissions profile of the LULUCF sector.

TABLE 16: PARTICIPATION IN THE YEAR 2014 AND 2015

		2014	2015	2014	2015	2014	2015
		areas participating in the measures [hektar]		enterprises participating		financial support [million Euro]	
1	Umweltgerechte Bewirtschaftung	1.180.281	1.124.603	60.433	52.749		
2	Einschränkung Betriebsmittel	343.298	297.594	31.140	26.727		
3	Verzicht Fungizide/ Wachstumsregulatoren	108.283	78.735	10.615	9.726		
4	Anbau seltener Kulturpflanzen	8.929	12.217	2.191	2.775		
5	Erhaltung gefährdeter Nutztierassen	30.294	33.533	3.636	4.800		
6	Begrünung - Zwischenfruchtanbau	408.979	249.832	44.103	26.441		
7	Begrünung - System Immergrün	-	156.272	0	12.277		
8	Mulch- und Direktsaat (inkl. Strip-Till)	134.163	118.185	12.592	11.720		
9	Bodennahe Gülleausbringung	2.142.252	1.953.054	2.565	3.045		
10	Erosionsschutz Obst, Wein, Hopfen	41.722	37.173	7.165	5.286		
11	Pflanzenschutzmittelverzicht Wein/Hopfen	-	16.143	0	1.475		
12	Silageverzicht	106.308	115.574	9.125	11.615		
13	Nützlingseinsatz im geschützten Anbau	217	173	155	110		
14	Bewirtschaftung von Bergmähwiesen	137.514	15.707	36.422	24.126		
15	Alpung und Behirtung	333.808	332.643	7.424	7.316		
16	Vorbeugender Grundwasserschutz	178.038	214.955	5.790	6.263		

		2014	2015	2014	2015	2014	2015
17	Auswaschungsgefährdete Ackerflächen	50	219	20	50		
18	Vorbeugender Oberflächengewässerschutz auf Ackerflächen	-	459	0	431		
19	Naturschutz	74.384	64.574	20.195	17.216		
20	Biologische Wirtschaftsweise	392.946	403.642	19.208	19.678		
21	Tierschutz - Weide	510.056	599.064	32.220	39.086		
22	Natura 2000 - Landwirtschaft	-	58	0	20		
23	Tierschutz – Auslauf *)	50.252	-	2.005	0		
24	Integrierte Produktion Zierpflanzen *)	-	-	0	0		
25	Integrierte Produktion Ackerflächen *)	68.153	-	6.514	0		
26	Integrierte Produktion Obst und Hopfen *)	7.362	-	1.054	0		
27	Integrierte Produktion Wein*)	29.730	-	4.699	0		
28	Ökopunkte *)	125.289	-	5.975	0		
29	Grundförderung und Erhaltung Streuobst *)	-	-	0	0		
30	Reduktion Betriebsmittel Grünland *)	-	-	0	0		
31	Reduktion Betriebsmittel Acker *)	-	-	0	0		
	<b>ÖPUL-Fläche</b>	1.921.214	1.754.745				
	<b>ÖPUL-Fläche mit Almfutterfläche</b>	2.255.022	2.087.388				
	<b>Teilnehmende Betriebe</b>			102.260	91.137		
	<b>Zahlungen</b>					<b>503</b>	<b>383</b>

\*) no longer parts of the programme

Measures for greening arable land between crop rotations existed already in the programme period 2007 – 2013/14. In the period 2014-2020 the provisions were expanded, i.a. due to the provision to set aside 5% of land for ecological purposes. As the greening of arable land is now more targeted, this should lead to an improved soil carbon sequestration on farm land. Table 17 shows such improvement by the area figures for 2014 and 2015.

TABLE 17: DATA OF “GREENING THE CAP” VIA DIRECT PAYMENT (PILLAR 1) AND THE AGRI-ENVIRONMENTAL-CLIMATE MEASURES WITH “VARIANTEN 1-6” TO GREENING ARABLE LAND

<b>Agrarumweltmaßnahme (ÖPUL) - Untermaßnahme Begrünung von Ackerflächen nach den Begrünungsvarianten (in hektar)</b>				
<b>Variante</b>	<b>Anzahl der Betriebe 2014</b>	<b>Fläche im Herbst 2014</b>	<b>Anzahl der Betriebe 2015</b>	<b>Fläche im Herbst 2015</b>
Variante 1 - ÖPUL			351	3.135
Variante 2 - ÖPUL			494	3.431
Variante 3 - ÖPUL	12.976	94.420	13.732	99.428
Variante 4 - ÖPUL	4.113	15.455	3.853	15.258
Variante 5 - ÖPUL	2.277	7.144	1.522	5.488
Variante 6 - ÖPUL	1.612	7.176	1.303	4.890
Variante 4 mit MZ - ÖPUL	10.176	112.037	10.394	105.957
Variante 5 mit MZ - ÖPUL	3.422	27.471	3.226	24.218
Variante 6 mit MZ - ÖPUL	728	6.109	949	7.219
Variante 1 - Greening			11	63
Variante 2 - Greening			16	59
Variante 3 - Greening			240	828
Variante 4 - Greening			54	171
Variante 5 - Greening			52	194
Variante 1 - Greening + ÖPUL			10	25
Variante 2 - Greening + ÖPUL			26	101
Variante 3 - Greening + ÖPUL			767	2.831
Variante 4 - Greening + ÖPUL			170	510
Variante 5 - Greening + ÖPUL			96	337
Variante 4 mit MZ - Greening + ÖPUL			575	2.117
Variante 5 mit MZ - Greening + ÖPUL			108	429

## **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.

The Austrian national system for agricultural feedstock operated by Agrarmarkt Austria (AMA) is the first national scheme which has been assessed and approved at EU level by the European Commission in its implementing decision (EU) 2016/708 of 11 May 2016. This decision states the compliance of the ‘Austrian Agricultural Certification Scheme’ with the conditions set out in Directives 98/70/EC and 2009/28/EC of the European Parliament and of the Council.

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 a 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 has adopted the Austrian Forest Strategy 2020+ in 2016, which was prepared within the frame of the Austrian Forest Dialogue (see PAM 18 below). It contains specific visions, goals and targets with regard to all the major forest issues. 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 2013 renewables contributed around 30% to the gross domestic energy consumption in Austria (Statistik Austria 2013), with approx. 47% 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 million cubic metres. 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 6<sup>th</sup> National Communication of Austria.

## **PAMS 11 – 17 RELEVANT PROVISIONS OF THE FOREST ACT**

The relevant provisions of the Forest Act have remained largely unchanged since the submission of the Information on LULUCF Actions in June 2014. The respective PAMs remain effective.

This measures are referenced in the indicative Annex IV (g) to (i) of the LULUCF Decision

## **PAM 18 – AUSTRIAN FOREST DIALOGUE**

The Austrian Forest Dialogue is a policy development process initiated in 2001 that is open, continuous and participatory in nature. It has become a much lauded example of good governance both nationally and internationally.

As the first Austrian Forest Programme was adopted in 2005 it was decided in 2013 to develop a new Austrian Forest Programme. In 2014 working groups were established to cover 7 thematic action areas, one of those specifically targets climate change. After intense consultations and discussions, the Programme was adopted by all stakeholders on May 12<sup>th</sup> 2016

([https://www.bmlfuw.gv.at/forst/oesterreich-wald/waldstrategie-2020/waldstrategie\\_detail.html](https://www.bmlfuw.gv.at/forst/oesterreich-wald/waldstrategie-2020/waldstrategie_detail.html)).

Climate Change is a core element of the Austrian Forest Strategy 2020+, which states that the forest and wood-based sector plays a pivotal role not only in tackling climate change but also in increasing resilience of our forest ecosystems.

Building on the first Forest Programme, the Forest Strategy 2020+ defines forest-political milestones for the years to come that were developed in a consensus-driven process by the different groups of society. The Austrian Forest Strategy 2020+ takes also into account the policy specifications of current national and international forest-related strategies, programmes and processes. These include the Austrian Biodiversity Strategy 2020+, the Austrian Forest Ecology Programme (ÖWÖP), the Austrian Strategy for Adaptation to Climate Change, the LE 2020 "Forest.Water" programme and the EU Forest Strategy, the EU Biodiversity Strategy, the Forest Europe Process, the United Nations Forum on Forests (UNFF), the Sustainable Development Goals of the United Nations (SDGs), the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD).

The Austrian Forest Strategy 2020+ was jointly developed by 85 organisations involved in forest policy within the scope of the Austrian Forest Dialogue. These organisations include forest

proprietors, beneficial owners as well as interest representatives and their compass ranges from government and non-governmental organisations all the way to local authorities.

The primary objective of the Austrian Forest Strategy 2020+ is to ensure and optimise all dimensions of sustainable forest management in a balanced way, paying special attention to the added value and the potential of the Austrian forestry and timber sectors. With this in mind, the Forest Strategy 2020+ is intended to help ensure the multifunctional services that forests render for present and future generations.

To operationalise the Austrian Forest Strategy 2020+, a Work Programme is elaborated which contains concrete measures to support the objectives of this strategy. One broad package of measures is called “Using wood is good for the climate – making forests climate-fit”. This initiative aims to raise awareness of the broad public on one hand and to address forest owners on the other hand by fostering the use of wood in order to increase climate protection and by adapting forests to climate change. Additionally this initiative acknowledges the role forests play, implementing the Paris Agreement and the EU Climate and Energy Package.

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](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 hektar 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 18: SUMMARY OF POLICIES AND MEASURES BY SECTORS (TABLE UPDATED WITH INFORMATION SUBMITTED AS PART OF THE 2<sup>nd</sup> BIENNIAL REPORT OF AUSTRIA [BMLFUW 2015])

No. of PAM	Name of PAM	GHG affected	Type of instrument	Status	Mitigation [Gg CO <sub>2e</sub> ] 2020
PAM 1	Emissions Trading Scheme	CO <sub>2</sub> , N <sub>2</sub> O	Economic	impl.	n.q.
PAM 2	Domestic Environmental Support Scheme	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O	Economic	impl.	1.000
PAM 3	Austrian Climate and Energy Fund (KLI.EN)	CO <sub>2</sub>	Research	impl.	n.q.
PAM 4	Promotion of Green Electricity	CO <sub>2</sub>	Regulatory	impl.	n.q.
PAM 5	renewable energy in energy supply and district heating	CO <sub>2</sub>	Regulatory	impl.	5.300
PAM 8	Austrian Rural Development Programme	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O	Economic	impl.	n.q.
PAM 9	clean energy sources in road transport	CO <sub>2</sub>	Economic Fiscal Regulatory Research	impl.	2.363
PAM 10-17	Forest Management	CO <sub>2</sub>	Regulatory	impl.	n.q.
PAM 21	Protection of Wetlands	CO <sub>2</sub>	Regulatory	impl.	n.q.



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