



SLOVAK REPUBLIC

Report on progress in implementation of LULUCF actions to the European Commission

according to the Article 10 of Decision No 529/2013/EU of the European Parliament and of the Council of 21 May 2013 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

Ministry of Agriculture and Rural Development of the Slovak Republic
Ministry of Environment of the Slovak Republic

Bratislava, December 2016

The report on progress in implementation of LULUCF actions of the Slovak Republic was prepared and is submitted pursuant to the Article 10 of Decision No 529/2013/EU of the European Parliament and of the Council of 21 May 2013 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. Data on emissions is based on the official GHG inventory submitted on June 15, 2016.¹

Report contains information on LULUCF actions required by the Article 10, para 2 of the Decision No 529/2013/EU, while describing the progress in the implementation of LULUCF actions in the Slovak Republic pursuant to the Article 10, para 4 of the Decision.

DETAILS OF PREPARING THIS SUBMISSION

COUNTRY:	SLOVAK REPUBLIC
Date of completion:	22 December, 2016
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¹ http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/9492.php

1. INFORMATION ACCORDING TO ARTICLE 10.1

The key data source of information on land use categories in Slovakia is the annual report of the Geodesy, Cartography and Cadastre Authority of the Slovak Republic (the GCCA). According to the last report, describing situation in the year 2014, the LULUCF sector in Slovakia is characterized by following structure of land use:

Forest Land (F)	41.1%
Cropland (C)	31.3%
Grassland (G)	17.7%
Wetlands (W)	1.9%
Settlements (S)	4.8%
Other land (O)	3.2%

Slovak Republic (the SR) is a party to the Convention on Wetlands (Ramsar, Iran, 1971) (www.ramsar.org). Monitoring of wetlands in Slovakia takes place since 1992. State Nature Conservancy of the SR is responsible for the monitoring.

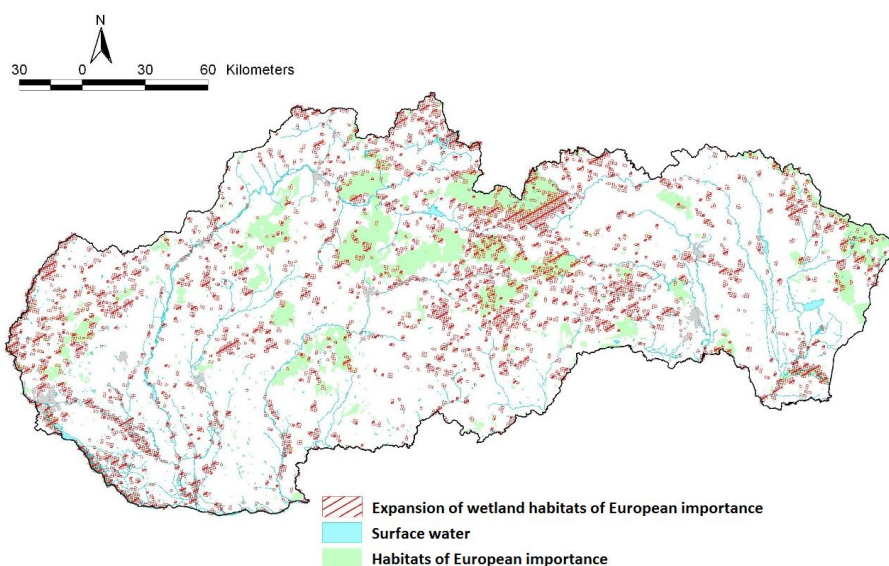
The results of monitoring of plants and habitats in Slovakia and its assessment can be found at <http://www.biomonitoring.sk/CMS/Publication/ListGallery>.

Information on wetland habitats can be found on the following website: <http://www.biomonitoring.sk/Monitoring/StatisticalData/HabitatList>

The report on the conservation status of habitats and species of community interest in the period of 2007 – 2012 can be found at <http://www.sopsr.sk/natura/index.php?p=15&lang=en>.

According to the data from the cadastre, category of wetlands represents 1.9% of the Slovak territory (94 kha). This proportion has not changed since 1990.

Figure 1 *Extension of wetland habitats of European importance²*



According to the results of the National Forest Inventory and Monitoring (the NFIM) of the Slovak Republic 2006, which also included the so-called “White areas” (forest according to the definition of the NFIM observed non-forest land), the forest cover in the SR was $44.3 \pm 0.4\%$. The forest land has the highest share of all land use categories, however, its distribution over the country territory is uneven, showing high concentration in mountain areas. All five carbon pools (living biomass – above and below ground, dead organic matter – dead wood and litter, soil carbon) are linked to this category. The processes connected with the land use and land use change have impact mostly on the CO₂ balance.

This report was prepared in coordination with:

- Kyoto requirements
- Low Carbon Development Strategies (under the MM Regulation 525/2013/EU)
- National Communications to the UNFCCC
- Forest Management Reference Level submissions
- National Emission Ceiling Directive 2001/81/EC
- Common Agricultural Policy (the CAP)
- Rural Development Programmes under the CAP Pillar 2
- Implementation of measures under the CAP Pillar 1
- Cross-compliance standards for Good Agricultural and Environmental Condition (the GAEC)
- Integrated Administration and Control (the IACS) system

The report builds on consultations and cooperation between the Ministry of Agriculture and Rural Development and the Ministry of Environment and the exchange of information on foreseen activities.

² Saxa, A., Černecký, J. 2010, *Mokrad'ové biotopy na Slovensku v ohrození (Slovak Wetland habitats in danger)*. In: *Enviromagazín*, 15/2010. p. 10-11.

2. INFORMATION ACCORDING TO ARTICLE 10.2

a) a description of past trends of emissions and removals including, where possible, historic trends, to the extent that they can reasonably be reconstructed

Information about the past emissions and removals were extracted from the National Inventory Reports (CRF tables) provided under UNFCCC on June 15, 2016. The Afforestation corresponds to Land converted to Forest land (*Table 1*), Deforestation corresponds to the Forest land converted to other land categories (*Table 2*) and Forest management corresponds to Forest land remaining Forest land (*Table 3*). The Reforestation is not considered due to limited occurrence. In general, the removal due to afforestation is recently twice higher than emissions from deforestation, however, the most significant is removal due to forest management.

Table 1: *Afforestation (Land converted to Forest land) - net emissions/removals*

YEAR	CO ₂ (Gg)	YEAR	CO ₂ (Gg)	YEAR	CO ₂ (Gg)
1990	-2 210.41	1999	-1 388.66	2008	-475.25
1991	-2 166.79	2000	-886.11	2009	-361.09
1992	-2 132.79	2001	-824.22	2010	-351.22
1993	-2 080.47	2002	-797.27	2011	-337.93
1994	-1 947.63	2003	-789.48	2012	-343.43
1995	-1 609.60	2004	-768.66	2013	-352.82
1996	-1 540.73	2005	-737.97	2014	-363.03
1997	-1 527.18	2006	-538.82		
1998	-1 463.79	2007	-514.28		

Table 2: *Deforestation (Forest land converted to other land categories) - net emissions/removals*

YEAR	CO ₂ (Gg)	YEAR	CO ₂ (Gg)	YEAR	CO ₂ (Gg)
1990	475.59	1999	239.37	2008	176.14
1991	519.76	2000	176.54	2009	240.61
1992	301.40	2001	233.72	2010	170.46
1993	309.03	2002	146.52	2011	66.75
1994	298.93	2003	208.95	2012	81.60
1995	210.07	2004	137.70	2013	69.93
1996	314.30	2005	300.89	2014	90.48
1997	284.91	2006	155.03		
1998	269.25	2007	234.22		

Table 3: *Forest management (Forest land remaining Forest land) - net emissions/removals*

YEAR	CO ₂	CH ₄	N ₂ O	NO _x	CO	YEAR	CO ₂	CH ₄	N ₂ O	NO _x	CO
	Gg						Gg				
1990	-6 088	0.30	0.02	0.19	6.73	2003	-6 751	0.51	0.03	0.33	11.71
1991	-7 348	0.24	0.01	0.15	5.36	2004	-6 087	0.43	0.02	0.27	9.75
1992	-8 091	0.24	0.01	0.15	5.38	2005	-2 194	0.62	0.03	0.39	14.05
1993	-8 085	0.30	0.02	0.19	6.81	2006	-5 026	0.49	0.03	0.31	11.09
1994	-7 343	0.22	0.01	0.14	4.90	2007	-4 783	0.55	0.03	0.35	12.44
1995	-7 020	0.24	0.01	0.16	5.55	2008	-3 773	0.55	0.03	0.35	12.41
1996	-7 036	0.28	0.02	0.18	6.28	2009	-4 320	0.57	0.03	0.37	13.09

YEAR	CO ₂	CH ₄	N ₂ O	NO _x	CO	YEAR	CO ₂	CH ₄	N ₂ O	NO _x	CO
	Gg						Gg				
1997	-6 691	0.28	0.02	0.18	6.48	2010	-3 493	0.60	0.03	0.38	13.59
1998	-7 471	0.28	0.02	0.18	6.38	2011	-4 056	0.60	0.03	0.38	13.55
1999	-7 240	0.53	0.03	0.34	12.15	2012	-5 922	0.49	0.03	0.31	11.10
2000	-7 083	0.43	0.02	0.28	9.85	2013	-6 481	0.36	0.02	0.23	8.21
2001	-7 138	0.36	0.02	0.23	8.20	2014	-4 270	0.69	0.04	0.44	15.61
2002	-7 217	0.40	0.02	0.25	9.04						

Emissions from cropland and grazing land management are annually estimated for the National Inventory Reports, according to the IPCC Guidelines, Chapter N₂O emissions. National Inventory Reports, see: <http://ghg-inventory.shmu.sk/documents.php>.

The annual balance of emissions and removals regarding LULUCF for croplands and grazing land will be provided from the year 2022. From the year 2016, Slovakia will report on the systems in place to estimate emissions and removals from cropland management and grazing land management in a separate report.

The SR does not have a database of past trends of emissions and removals from wetland drainage and rewetting activities. State Nature Conservancy of the SR maintains a database of wetlands in Slovakia, but without data on emissions and removals.

The SR does not include information on CO₂ emissions from peatlands (organic soils) in the National Inventory Report to the UNFCCC, because the current size of peatlands is negligible (2 773 ha)³ and it is located mostly in protected areas. The area of wetlands in Slovakia is not huge enough to significantly affect the balance of emissions and removals of greenhouse gases. Moist forest soils are classified as peatlands and therefore protected and without active management. In Slovakia, the fertilizers are not used in forests.⁴

b) projections for emissions and removals for the accounting period

The emission and removal projections in the LULUCF sector were based on sectoral strategy document Rural Development Programme of the Slovak Republic 2007 – 2013, taking into account adopted National Forest Program (NFP) of the SR as well as the Action Plan of NFP for 2009 – 2013. Emission and sink projections consider all scenarios (without measures, with existing measures and with additional measures) and projection parameters (area of managed forest). The base year for projection was the year 2010. Projections of emissions and removals in the LULUCF sector were published in [Second biennial report of the Slovak Republic](#). Updated emission projections will be available in March 2017.

³ Stanová, V. et al. 2000. *The Central European Peatland Project – National Report for Slovak Republic – Final Report, May 2000. Report to Wetlands International, prepared by DAPHNE Centre for Applied Ecology in co-operation with Slovak Environmental Agency.*

⁴ *Report of the individual review of the annual submission of Slovakia submitted in 2012 – FCCC/ARR/2012/SVK*

Projections of GHG emissions/removals in sector LULUCF were prepared based upon following measures:

- Afforestation of non-forested areas,
- Grassing of arable soil,
- Increasing protection against forest fires.

Scenario without measures (WOM) – corresponds to the current status of forest management and land use in the context of current legislation. The development of forests is estimated according to effective forest management plans without an introduction of any specific measure.

Scenario with existing measures (WEM) – represents the effect of considered measures realized by the year 2010. The scenario is practically equal with the scenario without measures. In 2004 – 2006, only minimal specific mitigating measures were implemented in forest management and land use. In this period the afforestation of agricultural land was supported by the Rural Development Programme and Sector Operational Programme Agriculture and Rural Development. The conversion of agricultural land to forest land (afforestation) was approved within these programmes for 15 projects covering 100 ha in total. Such kind of conversion was not of interest for farmers due to unbalanced application of direct support schemes between agricultural and forestry sectors. Further limitation was in forestry legislation setting obligations related to forest management without any compensation of related expenses.

Scenario with additional measures (WAM) – corresponds to the measures foreseen after the year 2010. The Rural Development Programme (2007 – 2013) can be considered as the main instrument for mitigation measures of which following have been reflected in the scenario:

- Afforestation of 800 ha of low productive soil by fast growing trees and the first afforestation of 600 ha of agricultural land by 2015;
- Grassing of 50 000 ha of arable land by 2015;
- Afforestation of 23 000 ha of agricultural land by 2020;
- Effect of Regulation No 2152/2003/EC Forest Focus in relation to forest fires estimates the reduction of risk of forest fires to 90% compared to the period of 2000 – 2003.

Methodical procedure used for calculations has been based on mathematical relations as defined in the basic instrument for balance of greenhouse gas emissions – The IPCC Good Practice Guidance for Land Use, Land Use Change and Forestry, 2003 – IPCC 2003 GPG LULUCF. The procedures referred to in Chapter 3 and sub-chapters 3.2 Forest land, 3.3 Cropland, 3.4 Grassland, 3.6 Settlements and 3.7 Other Land were used for calculation of GHG. The values of the emission factors and conversion/expansion factors used for the projections are identical with the values applied in the emission inventories for the LULUCF sector in the 2012 and published in the Slovak National Inventory Report 2014.

Figure 2: *Projections of CO₂ (in Gg) emission/removal from land converted to forest land (afforestation)*

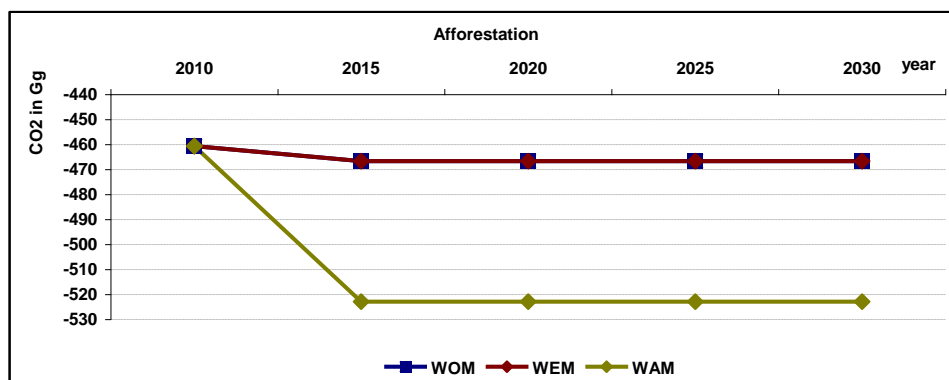


Figure 3: *Projections of CO₂ (in Gg) emission/removal from forest land remaining forest land (forest management)*

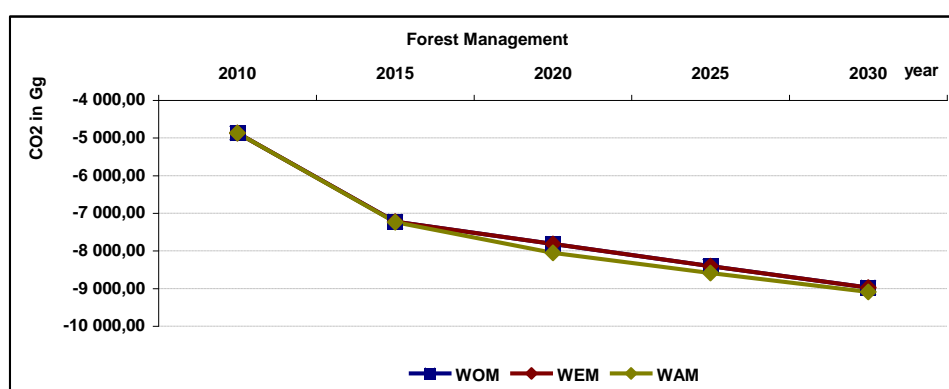


Table 4 shows results of modelling CO₂ emission/removal in LULUCF sector. The scenarios without measures and with existing measures do not differ as there are not considered any significant measures and the evolution of emissions and removals by sinks of CO₂ has the same course as the LULUCF sector reports in the period from 1990 to 2012, when the whole period shows a sink of CO₂ in the range 4 600-9 000 Gg of CO₂. The increase of CO₂ removal in 2015 compared to 2010 is due to the decrease in the harvest volume in particular planned for this year and unchanged area of forest plantations. Projections of CO₂ removals in the period 2015 – 2030 show increasing trend. Scenario with additional measures reflects the development of emissions after the afforestation of 23 000 ha of grassland by 2020 and grassing 50 000 ha of cropland by 2015. Based on such assumption the scenario shows a rise of CO₂ removals in forests and in cropland and slight decrease in meadows and pastures and likewise an increase of emissions from Settlements and Other land categories.

Table 4: *Projections of CO₂ emission/removal in LULUCF sector (Gg)*

WOM	2010*	2015	2020	2025	2030
Land Use, Land-Use Change and Forestry	-6 115.98	-8 461.40	-9 052.62	-9 643.77	-10 211.41
Forest Land	-5 332.61	-7 688.69	-8 279.91	-8 871.05	-9 438.70
Forest Land remaining Forest Land	-4 872.00	-7 222.08	-7 813.31	-8 404.45	-8 972.09
Land converted to Forest Land	-460.61	-466.60	-466.60	-466.60	-466.60
Cropland	-714.79	-721.59	-721.59	-721.59	-721.59
Cropland remaining Cropland	-853.69	-859.60	-859.60	-859.60	-859.60
Land converted to Cropland	138.90	138.01	138.01	138.01	138.01

WOM	2010*	2015	2020	2025	2030
Grassland	-325.94	-324.72	-324.72	-324.72	-324.72
Settlements	119.44	124.47	124.47	124.47	124.47
Other Land	137.92	149.13	149.13	149.13	149.13
WEM	2010*	2015	2020	2025	2030
Land Use, Land-Use Change and Forestry	-6115.98	-8 461.40	-9 052.62	-9 643.77	-10 211.41
Forest Land	-5332.61	-7 688.69	-8 279.91	-8 871.05	-9 438.70
Forest Land remaining Forest Land	-4872.00	-7 222.08	-7 813.31	-8 404.45	-8 972.09
Land converted to Forest Land	-460.61	-466.60	-466.60	-466.60	-466.60
Cropland	-714.79	-721.59	-721.59	-721.59	-721.59
Cropland remaining Cropland	-853.69	-859.60	-859.60	-859.60	-859.60
Land converted to Cropland	138.90	138.01	138.01	138.01	138.01
Grassland	-325.94	-324.72	-324.72	-324.72	-324.72
Settlements	119.44	124.47	124.47	124.47	124.47
Other Land	137.92	149.13	149.13	149.13	149.13
WAM	2010*	2015	2020	2025	2030
Land Use, Land-Use Change and Forestry	-6 115.98	-8 529.25	-9 404.26	-9 936.50	-10 442.23
Forest Land	-5 332.61	-7 703.06	-8 578.07	-9 110.31	-9 616.04
Forest Land remaining Forest Land	-4 872.00	-7236.46	-8 055.22	-8 587.46	-9 093.19
Land converted to Forest Land	-460.61	-466.60	-522.85	-522.85	-522.85
Cropland	-714.79	-721.59	-721.59	-721.59	-721.59
Cropland remaining Cropland	-853.69	-859.60	-859.60	-859.60	-859.60
Land converted to Cropland	138.90	138.01	138.01	138.01	138.01
Grassland	-325.94	-324.72	-324.72	-324.72	-324.72
Settlements	119.44	124.47	124.47	124.47	124.47
Other Land	137.92	149.13	149.13	149.13	149.13

* Base year for projections, not corresponded to the inventory year 2010 submitted in 2016

Projections of CH₄ emissions from forest fires: The same procedure was used in modelling CH₄ emissions as it was used in the projections of CO₂ sinks. The projections of CH₄ emissions from forest fires are shown in the following table.

Table 5: Projections of CH₄ emissions in sector LULUCF from forest fires (Gg)

WOM	2010*	2015	2020	2025	2030
Land Use, Land-Use Change and Forestry	1.09	0.92	0.92	0.92	0.92
Forest Land	1.09	0.92	0.92	0.92	0.92
Forest Land remaining Forest Land	1.09	0.92	0.92	0.92	0.92
WEM	2010*	2015	2020	2025	2030
Land Use, Land-Use Change and Forestry	1.09	0.92	0.92	0.92	0.92
Forest Land	1.09	0.92	0.92	0.92	0.92
Forest Land remaining Forest Land	1.09	0.92	0.92	0.92	0.92
WAM	2010*	2015	2020	2025	2030
Land Use, Land-Use Change and Forestry	1.09	0.88	0.87	0.87	0.87
Forest Land	1.09	0.88	0.87	0.87	0.87
Forest Land remaining Forest Land	1.09	0.88	0.87	0.87	0.87

* Base year for projections, not corresponded to the inventory year 2010 submitted in 2016

Projections of N₂O emissions from forest fires: Projections of N₂O emissions have been modelled similarly to the projections of CO₂ emission/removal, results are in following table.

Table 6: Projections of N₂O emissions in sector LULUCF from forest fires (Gg)

WOM	2010*	2015	2020	2025	2030
Land Use, Land-Use Change and Forestry	0.015	0.012	0.012	0.012	0.012
Forest Land	0.015	0.012	0.012	0.012	0.012
Forest Land remaining Forest Land	0.015	0.012	0.012	0.012	0.012
WEM	2010*	2015	2020	2025	2030
Land Use, Land-Use Change and Forestry	0.015	0.012	0.012	0.012	0.012
Forest Land	0.015	0.012	0.012	0.012	0.012
Forest Land remaining Forest Land	0.015	0.012	0.012	0.012	0.012
WAM	2010*	2015	2020	2025	2030
Land Use, Land-Use Change and Forestry	0.015	0.011	0.011	0.011	0.011
Forest Land	0.015	0.011	0.011	0.011	0.011
Forest Land remaining Forest Land	0.015	0.011	0.011	0.011	0.011

* Base year for projections, not corresponded to the inventory year 2010 submitted in 2016

Projections for CH₄ and N₂O emissions, which are caused by biomass burning after logging show decreasing trend in the scenario with the additional measures, especially as a result of increasing share of shelterwood system in forestry.

Slovakia has not so far estimated emissions and removals from activities wetland drainage and rewetting, there is a lack of information on which the projections of emissions and removals for the accounting period could be modelled.

c) an analysis of the potential to limit or reduce emissions and to maintain or increase removals

There is some potential for removals increase in relation to **forestry activities**. It is mainly related to:

- afforestation of agricultural land with low productivity and/or on steep slopes,
- support of agro-forestry (which is still very limited),
- extension of wood production on agricultural land (cropland, grassland) for energy purposes.

Potential for afforestation of agricultural land is currently limited mainly by parcels ownership fragmentation which, in many cases, blocks the land use conversion. Land consolidation projects realised according to the Act. No 330/1991 would make the conversion easier, however, their implementation is slow. According to the latest research, there is 420-450 kha of abandoned agricultural land in Slovakia, which could be potentially used for agro-forestry, production of bioenergy or afforestation.

Cropland and grazing land: There is a potential of emission reduction and removal increase in the LULUCF sector in implementing new measures of Common agricultural policy in 2014 – 2020 (Rural Development Program 2014 – 2020, the Governmental Regulation No 342/2014 establishing rules for the provision of support in agriculture in connection with schemes for decoupled direct payments). There is also potential in emissions reduction by implementing the Act No 394/2015 coll. that amends previous act on fertilizers and states the obligations for storage, handling and application of manure, fertilizers and compost.

Wetland: So far, the SR has not specifically evaluated the impact of wetlands on the quantity of emitted, respectively removed greenhouse gases. According to the available data, it could be assumed that there will be no significant change in the potential of wetlands in relation to the formation of emissions in the future. An increase in seizures could be rather expected with regard to the management and localities.

d) a list of the most appropriate measures to take into account national circumstances, including, as appropriate, but not limited to the indicative measures specified in Annex IV, that the Member State is planning or that are to be implemented in order to pursue the mitigation potential, where identified in accordance with the analysis referred to in point (c)

Measures related to **forestry activities** are to be implemented in line with the strategic policy documents that are in place at a national level. Identified measures with their relationship to existing policies are described in **Table 7**.

Table 7: *Identified forestry measures with their relationship to existing policies*

MEASURE	NATIONAL POLICY DOCUMENT	DESCRIPTION OF RELATIONSHIP
Implementing sustainable forest management, including close-to-nature management, through optimising tree species composition, tending and thinning, and thus enhancing production of goods and services in existing forests.	National Forest Programme Action Plan of National Forest Programme 2015 – 2020 Action Plan of National Programme for Wood Potential Utilization 2014 – 2020	Fundamental objectives of the NFP are to implement sustainable forest management (SFM) and to enhance multi-functionality of forests. The NFP defines overall objectives and priority areas for action.
To increase the GHG removals by implementation of forest management measures into management models, including changes in tree species composition, forest stand structure, regeneration periods and conversion of low-productive stands	Action Plan of National Forest Programme 2015 – 2020	Action plan defines specific measures, terms and financial sources.
Adjusting the tree species composition and spatial structure of forest stands to the expected scenarios of climate change	Action Plan of National Forest Programme 2015 – 2020	More resilient forests do not lose their biomass production functions.
Protection of existing forests against natural disturbances (as an integral part of sustainable forest management)	National Forest Programme National Rural Development Programme 2014 – 2020	More resilient forests do not lose their biomass production functions.
Development of effective system for support, financing and implementation of the projects for forest restoration after disturbances	Action Plan of National Forest Programme 2015 – 2020	Restoration of the forest potential for GHG removals
Preventing deforestation (as an integral part of sustainable forest management)	National Forest Programme	Fundamental objectives of the NFP are to implement the SFM and to enhance multi-functionality of forests. The NFP defines overall objectives and priority areas for action.
Optimisation of forestry road network	Action Plan of National Forest Programme 2015 – 2020	Prevention of erosion, protection of soil carbon stock, enhancing wood production. Action plan defines specific measures, terms and financial sources.

MEASURE	NATIONAL POLICY DOCUMENT	DESCRIPTION OF RELATIONSHIP
Identifying agricultural land not suitable for agricultural production (marginal agricultural land), i.e. land potentially suitable for afforestation To develop financial mechanism for conversion of low-productive agricultural land to forest land Enhancing production and consumption of wood products, thus promoting substitution of intensive GHG materials with wood Prevention of illegal logging. Increasing complex utilization of forest biomass for energy purposes	National Programme for Wood Potential Utilization Action Plan of National Programme for Wood Potential Utilization 2014 – 2020	The Programme identifies 5 main objectives in the area of promoting better utilization of wood for industrial and energy purposes in a framework of sustainable forest management. Action Plan has been prepared for the period 2014 – 2020.

The measures applied in cropland and grazing management are summarised in **Table 8**.

Wetland: Measures proposed for the period 2015 – 2018 are included in the Action Plan to the Program for Wetlands Management in Slovakia of the updated Program for Wetlands Management in Slovakia for 2015 – 2021 (**Table 9**)⁵. Further measures will be included in the action plans for the next periods.

⁵ Action Plan for Wetlands 2015 – 2018 of the updated Program for Wetlands Management in Slovakia for 2015 – 2021

Table 8: Planned measures regarding Article 3, 2 (a) – (b)-Cropland, grazing land

MEASURE	OBJECTIVE	TYPE OF MEASURE	IMPLEMENTING BODY	QUANTITATIVE IMPACT ON EMISSIONS
Measures friendly for climate and environment	Diversity of crops, maintenance of existing permanent grassland, maintenance of areas of ecological interest (including short rotation tree crops, buffer strips, grass plus main crop) - so called greening.	Government Regulation No 342/2014	MPRV SR	Increase of removals of emissions from agricultural land and plant production.
Cross-cutting tools – Good agricultural and environmental conditions (GAEC)	Protection of soil by suitable measures (minimal soil cover from 1 st November to 1 st March) Minimalizing technologies, soil protection against erosion. Maintenance of organic matter in soil (diversified crop rotation, preventing stubble field burning) Minimal soil cover. Minimal intensity of breeding, protection of permanent grassland, maintenance of landscape elements, preventing penetration of undesirable vegetation on cropland. Water protection against nitrogen pollution and run-off. Groundwater protection against pollution, environment protection when using sewage sludge and nitrates from agriculture. Creating of buffer strips along water streams.	Government Regulation No 342/2014	MPRV SR	Lower emissions N ₂ O a CH ₄ – reducing or optimising use of fertiliser, plant protection products. Increase of removals.
Agro environmental climatic measure – Integrated farming	To ensure whole year green cover of soil by herbal or grassy mixtures, straw, hay or mulch material.	Rural Development Program 2014-2020	MPRV SR	Lower emissions N ₂ O a CH ₄ – reducing or optimising use of fertiliser, plant protection products.
Agro environmental climatic measure - Integrated farming in vineyards	To ensure whole year green cover of soil using grass, flowers.	Rural Development Program 2014-2020	MPRV SR	Lower emissions N ₂ O a CH ₄ – reducing or optimising use of fertiliser, plant protection products.
Agro environmental climatic measure - Protection of biotopes of natural and non-natural grassland	Reducing or optimising use of nitrogen fertiliser, plant protection products, haying 1-2 per year, mild pasture and paddock manuring of pastures.	Rural Development Program 2014-2020	MPRV SR	Lower emission N ₂ O a CH ₄ – reducing or optimising use of fertiliser, plant protection products.
Preventing erosion – creating buffer strips	Dividing the field to small areas by 10m wide stripes distant form each other max. 200m (sown by grass, trifolium, lucern on level lines). Minimal area of stripe – 0,3 ha.	Rural Development Program 2014-2020	MPRV SR	Lower emissions N ₂ O a CH ₄ – reducing or optimising use of fertiliser, plant protection products.
Agro environmental climatic measure - Multifunctional field edges	All year green 200 m wide bio stripes on cropland without fertilisers, mechanisation, plant protection without mowing.	Rural Development Program 2014-2020	MPRV SR	Higher removals
Agro environmental climatic measure - Protection of water resources	Monitoring of N, P, K, pH in and nutrients in soil. Annually update the plan of application of fertilizers. Precise application of fertilizers with GPS.	Rural Development Program 2014-2020	MPRV SR	Lower emissions N ₂ O a CH ₄ – reducing or optimising use of fertiliser, plant protection products.
Agro environmental climatic measure - Protection of endangered species of animals	Keeping good conditions of permanent grasslands, no application of plant protection products, avoid any application of fertilizers. No drainage of permanent grasslands.	Rural Development Program 2014-2020	MPRV SR	Higher removals

MEASURE	OBJECTIVE	TYPE OF MEASURE	IMPLEMENTING BODY	QUANTITATIVE IMPACT ON EMISSIONS
Organic farming	Maintenance of biodiversity and natural state of soil and water.	Rural Development Program 2014-2020	MPRV SR	Lower emission N ₂ O a CH ₄ – reducing or optimising use of fertiliser, plant protection products.
Animal welfare	Keeping good animal welfare and conditions (capacity of stables, amount of animals, feeding system, good care especially of milky cows, sow and poultry).	Rural Development Program 2014-2020	MPRV SR	Lower emissions N ₂ O a CH ₄ – reducing or optimising use of fertiliser, plant protection products.
Protection of NATURA 2000 areas	No application of plant protection products, no fertilizers except by freely grazed animals, no buildings on permanent grasslands.	Rural Development Program 2014-2020	MPRV SR	Lower emissions N ₂ O a CH ₄ – reducing or optimising use of fertiliser, plant protection products.
Manure management	Separate storage of individual fertilizers, keep registry on intake and outgo and amount of fertilizers, build sufficient storage capacity, protect stored solid organic fertilizers (also in stables and free range) against slurry leakage into environment. Prohibit to applicate manure on frozen, waterlogging or snow-covered soil.	Act No 394/2015 Coll.	MPRV SR, UKSUP (The Agricultural Central Control and Testing Institute)	Reduced emissions (nitrogen) from organic fertilizers.
Application of nitrogen fertilizers in law favourable areas	Application of organic fertilizers is prohibited during periods mentioned in the Act Annex II. Max. doses of mineral N fertilizers 40- 80 kg/ha . Max. doses of organic fertilizers 170 kg/ha/year. Appropriate soil application techniques Provisions of application of fertilizers on fields neighbouring to water sources	Act No 394/2015 Coll.	MPRV SR, UKSUP (The Agricultural Central Control and Testing Institute)	Reduced emissions (nitrogen) from organic and mineral fertilizers.

Table 9: Strategic goals and targets of the Action Plan for Wetlands 2015 – 2018 of the updated Program for Wetlands Management in Slovakia for 2015 – 2021⁵

STRATEGIC GOAL 1 – ADDRESSING THE DRIVERS OF WETLAND LOSS AND DEGRADATION	
Target 1	Wetland benefits and ecosystem services are integrated in national, regional and local policies, strategies and plans relating to key sectors such as water management, energy, mining, agriculture, tourism, urban development, infrastructure, etc. at all levels. <i>9 measures</i>
Target 2	Sustainable use of waters respecting wetland ecosystem needs and river basins. <i>5 measures</i>
Target 3	The public and private sectors apply guidelines and good practices for the wise/sustainable use of water and wetlands. <i>5 measures</i>
Target 4	Invasive alien species and pathways of introduction and expansion are identified and prioritized, invasive species are controlled or eradicated, and management responses are prepared and implemented to prevent their introduction and establishment. <i>3 measures</i>
STRATEGIC GOAL 2 – EFFECTIVELY CONSERVING AND MANAGING THE RAMSAR SITE NETWORK	
Target 5	The ecological character of Ramsar sites is maintained through effective planning and integrated management. <i>6 measures</i>
Target 6	Significant increase in numbers in the Ramsar site network, in particular under-represented types of wetlands and transboundary sites. <i>1 measure</i>
Target 7	Sites that are at risk of change of ecological character have threats addressed. <i>1 measure</i>
STRATEGIC GOAL 3 – WISELY/SUSTAINABLY USING ALL WETLANDS	
Target 8	Wetland inventory is completed and results disseminated and used for promoting the conservation and effective management of all wetlands. <i>5 measures</i>
Target 9	The wise/sustainable use of wetlands through integrated resource management within a river basin scale. <i>7 measures</i>
Target 10	Wetland services and benefits are demonstrated and documented. <i>5 measures</i>
Target 11	Restoration is in progress or finalized in degraded wetlands, with priority to wetlands that are relevant for biodiversity conservation, disaster risk reduction, livelihoods and/or climate change mitigation and adaptation. <i>4 measures</i>
Target 12	Enhanced sustainability of fishery, agriculture and eco-tourism, contributing to biodiversity conservation and human livelihoods. <i>3 measures</i>
STRATEGIC GOAL 4 – ENHANCING IMPLEMENTATION	
Target 13	Scientific guidance and technical methodologies are developed on relevant topics and are available to policy makers and practitioners in an appropriate format and language. <i>1 measure</i>
Target 14	Ramsar Regional Initiatives with the active involvement and support of the Parties in each region are reinforced and developed into effective tools to assist in the full implementation of the Convention. <i>1 measure</i>
Target 15	Wetlands conservation and wise use are mainstreamed through communication, education, participation and awareness. <i>5 measures</i>
Target 16	Financial and other resources for effectively implementing the Ramsar Strategic Plan 2016 – 2021 (and the Programme of Wetland Management in Slovakia) from various available sources are increased. <i>4 measures</i>
Target 17	International cooperation is strengthened at all levels. <i>4 measures</i>
Target 18	Capacity building for implementation of the Ramsar Convention, the Ramsar Strategic Plan 2016 – 2021 (and the Programme of Wetland Management in Slovakia) is enhanced. <i>4 measures</i>

e) existing and planned policies to implement the measures referred to in point (d), including a quantitative or qualitative description of the expected effect of those measures on emissions and removals, taking into account other policies and measures relating to the LULUCF sector

Existing policies and legislative acts:

- The **Act No 326/2005 Coll.** on forests as amended is the main national legislative act defining rules for forest management and some related activities. According to the act, forest land is protected against conversion to other land use. Moreover, the act lays down rules for forest management, including protection, harvesting, and forest regeneration. Competences and responsibilities of state (Governmental) forest authorities are defined as well. The main aim of the act is to implement sustainable forest management (the SFM). The SFM concept is defined in the paragraph 2 of the act. The definition of SFM is identical with the international definition as agreed by the Ministerial Conference on the Protection of Forests in Europe (MCPFE).
- The **National Forest Program (the NFP)** and its Action Plans (2008 – 2013 and 2015 – 2020). The NFP was adopted by the Government on 27th June 2007 (Resolution No 549/2007). The NFP is based on the current relevant forest policy documents, processes and commitments that have been adopted at national and international levels. It updated forest policy priorities and provides a framework for relations and impacts of other sectors on forests and forestry. Fundamental objectives of the NFP are to implement the SFM and to enhance multi-functionality of forests in the Slovak Republic. Sustainable forest management, as defined by the pan-European forest policy process (MCPFE/Forest Europe), is a fundamental principle of the programme. The Action Plan of the National Forest Program identifies concrete measures and actions to implement overall objectives and priorities of the National Forest Program. The new action plan was prepared for period 2015 – 2020 and adopted by the Government on 16th December 2015 (Resolution No 697/2015).

The NFP and its **Action Plan** provide the overview of specific measures for forestry sector, inter alia, in relation to climate change mitigation:

- the increase of carbon stocks in forest ecosystems
- the energetic use of wooden biomass specifically in rural regions
- support of cooperation and organization of small-sized forest owners , including education activities on forest management oriented to climate change mitigation and its benefits,
- protecting forests and thus enhancing provision of forest ecosystem services (including carbon sequestration in forest ecosystem),
- complex forest monitoring.

- The **National Programme for Wood Potential Utilization in the SR** and its Action Plan (2014 – 2020)⁶ provide an overview of foreseen trends in measures for forestry and wood industry sector. Comprises of 5 objectives:
 - wood supply in changing climatic and social conditions based on sustainable management of forests (includes measures on adaptation of forests on changing climate conditions, support of better structure of forests, diversification of forest management supporting intensive plantations on forest land, reconstruction of forests with low productivity, forest protection against pests, analysis of use of existing forest stands on non-forested land, program of afforestation of marginal agricultural land, revision of protected areas;
 - effective use of wood and support of employment in forestry and wood-industry sector (includes measures for profitable and competitive forestry, technological development, support of innovations, research for Forest-based Sector Technology Platform, diversification in forestry and payments/compensations for ecological and social services, increasing added value through industrial processing of wood in the rough, support for domestic wood processing, improvement of cross-sector relations, improvement of relations between forestry and wood-industry sector),
 - support of wood potential valuation in the local SMEs (conception for hardwood processing, complex wood processing);
 - improvement of domestic demand on wood products (support of wood products, extension of certification, eliminating illegal logging, public procurement policies for wood and wood products, promotion of forestry and wood-processing sector, improvement of forestry information system, specific education);
 - increasing utilization of woody biomass for energy purposes (complex use of wood, support of sustainable production of energetic biomass , support of energy production from wooden biomass, strategy of wooden biomass use).
- The **Rural Development Program (the RDP)** for the period of 2014 – 2020. The program is in the phase of publishing calls.

Above mentioned forest-related policies support implementation of sustainable forest management in existing forests and, where appropriate, create conditions for extending forest land. Thus, they support increasing overall forest production, protection of forests against natural disturbances, building infrastructure in forests and intensification of utilizing wood products and have positive impact on GHGs removals by forestry sector.

Measures for cropland and grazing land management are listed in **Table 8**. For wetlands, in Slovakia, there are a number of documents dealing with the objectives and measures concerning maintenance of wetlands (**Table 10**).

⁶ The Programme is available on the website: <http://www.mpsr.sk/index.php?navID=913&navID2=913&sID=37&id=7913>

Protection, management, sustainable use and restoration of wetlands and their renaturation was taken into account, and is also being taken into account when preparing the new strategic documents (e.g. National Strategy for Invasive Alien Species, the Rural Development Program for 2015 – 2020).

Qualitative and quantitative effects of such policies on emissions and removals of greenhouse gases have not been evaluated in Slovakia yet.

Table 10: Policies and measures in the field of wetlands maintenance

DOCUMENT	LEGAL FRAMEWORK	OBJECTIVES AND MEASURES
Updated Program for Wetland Management in Slovakia for 2015 – 2021 and Action Plan for Wetlands 2015 – 2018	approved by the Resolution of the Government of the Slovak Republic No 304/2015, June 3, 2015 (http://www.rokovania.sk/Rokovanie.aspx/BodRokovaniaDetail?idMaterial=24653)	4 strategic goals, 18 targets, 73 measures (<i>Table 9</i>)
Prioritized action framework for financing of Natura 2000 in the Slovak Republic in the EU programming period 2014 – 2020	State Nature Conservancy of the Slovak Republic and the Ministry of Environment of the Slovak Republic published it according to the format approved by the European Commission (Bratislava, April 15, 2013, updated version June 25, 2015; http://www.minzp.sk/sekcie/temy-oblasti/ochrana-prirody-krajiny/uzemna-ochrana-prirody/natura-2000/priority-akcny-ramec-financovania-natura-2000-slovenskej-republike-eu-programove-obdobie-2014-2020/)	Improvement of habitats' condition, especially grasslands habitats, bogs, fens and spring areas, as well as selected forest habitats; preservation of wetland habitats of Slovakia; support and restoration of green infrastructure by encouraging appropriate land management and revitalization of degraded ecosystems.
Operational Program Environment Quality for 2014 – 2020	approved by the Resolution of the Government of the Slovak Republic No 175/2014, April 16, 2014 (http://www.rokovania.sk/Rokovanie.aspx/BodRokovaniaDetail?idMaterial=23421) http://www.opzp.sk/po-2014-2020/operacny-program-kvalita-zivotneho-prostredia/ http://www.op-kzp.sk/	Specific objective: To provide conditions for the conservation of biodiversity and improvement of the ecosystems' condition in the country: conservation and restoration of biodiversity and ecosystems and their services through their revitalization, rehabilitation and construction of green infrastructure and the elimination of non-native and invasive species. Specific objective: To reduce the negative impacts of climate change by implementation of adaptation measures, particularly preventive measures for flood Protection: preventive measures for flood protection connected with a watercourse preventive measures to protect against floods realized outside of watercourses in the rural areas.
Updated National Strategy for the Protection of Biodiversity by 2020 (2014)	approved by the Resolution of the Government of the Slovak Republic No 12/2014, January 8, 2014 (http://www.rokovania.sk/Rokovanie.aspx/BodRokovaniaDetail?idMaterial=23161)	Ensure integrated management of significant areas based on an ecosystem approach through the development and implementation of management plans and their integration into sectoral policies and strategies; develop a strategic framework for setting priorities for ecosystem restoration and to prepare and implement a program of revitalization of wetlands and river ecosystems as a contribution to reduction of the climate change effects; ensure full coordination of the implementation of actions the implementation of the Water Framework Directive order to create conditions for the development of aquatic habitats and species and revitalization of river ecosystems.
SR Strategy for Adaptation to the Adverse Effects of the Climate Change	approved by the Government in March 26, 2014 (http://www.rokovania.sk/Rokovanie.aspx/RokovanieDetail/737)	Restoration of degraded wetlands (bogs revitalization, restoration of water regime) and floodplains, allowing the natural flow dynamics; creation of wetlands.

DOCUMENT	LEGAL FRAMEWORK	OBJECTIVES AND MEASURES
Action plan for the implementation of measures resulting from an updated National Strategy for the Protection of Biodiversity by 2020	approved by the Resolution of the Government of the Slovak Republic No 442/2014, September 10, 2014 (http://www.rokovania.sk/Rokovanie.aspx/BodRokovaniaDetail?idMaterial=23843)	
Updated Program for Wetland Management in Slovakia for 2015 – 2021 and Action Plan for Wetlands 2015 – 2018	approved by the Resolution of the Government of the Slovak Republic No 304/2015, June 3, 2015 (http://www.rokovania.sk/Rokovanie.aspx/BodRokovaniaDetail?idMaterial=24653)	4 strategic goals, 18 targets, 73 measures (<i>Table 9</i>)
Prioritized action framework for financing of Natura 2000 in the Slovak Republic in the EU programming period 2014 – 2020	State Nature Conservancy of the Slovak Republic and the Ministry of Environment of the Slovak Republic published it according to the format approved by the European Commission (Bratislava, April 15, 2013, updated version June 25, 2015; http://www.minzp.sk/sekcie/temy-oblasti/ochrana-prirody-krajiny/uzemna-ochrana-prirody/natura-2000/priority-akcny-ramec-financovania-natura-2000-slovenskej-republike-eu-programove-obdobie-2014-2020/).	Improvement of habitats' condition, especially grasslands habitats, bogs, fens and spring areas, as well as selected forest habitats; preservation of wetland habitats of Slovakia; support and restoration of green infrastructure by encouraging appropriate land management and revitalization of degraded ecosystems.
Operational Program Environment Quality for 2014 – 2020	approved by the Resolution of the Government of the Slovak Republic No 175/2014, April 16, 2014 (http://www.rokovania.sk/Rokovanie.aspx/BodRokovaniaDetail?idMaterial=23421) http://www.opzp.sk/po-2014-2020/operacny-program-kvalita-zivotneho-prostredia/ http://www.op-kzp.sk/	Specific objective: To provide conditions for the conservation of biodiversity and improvement of the ecosystems' condition in the country: conservation and restoration of biodiversity and ecosystems and their services through their revitalization, rehabilitation and construction of green infrastructure and the elimination of non-native and invasive species. Specific objective: To reduce the negative impacts of climate change by implementation of adaptation measures, particularly preventive measures for flood Protection: preventive measures for flood protection connected with a watercourse preventive measures to protect against floods realized outside of watercourses in the rural areas.
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SR Strategy for Adaptation to the Adverse Effects of the Climate Change	approved by the Government in March 26, 2014 (http://www.rokovania.sk/Rokovanie.aspx/RokovanieDetail/737)	Restoration of degraded wetlands (bogs revitalization, restoration of water regime ...) and floodplains, allowing the natural flow dynamics; creation of wetlands.
Action plan for the implementation of measures resulting from an updated National Strategy for the Protection of Biodiversity by 2020	approved by the Resolution of the Government of the Slovak Republic No 442/2014, September 10, 2014 (http://www.rokovania.sk/Rokovanie.aspx/BodRokovaniaDetail?idMaterial=23843)	

f) indicative timetables for the adoption and implementation of the measures referred to in point (d)

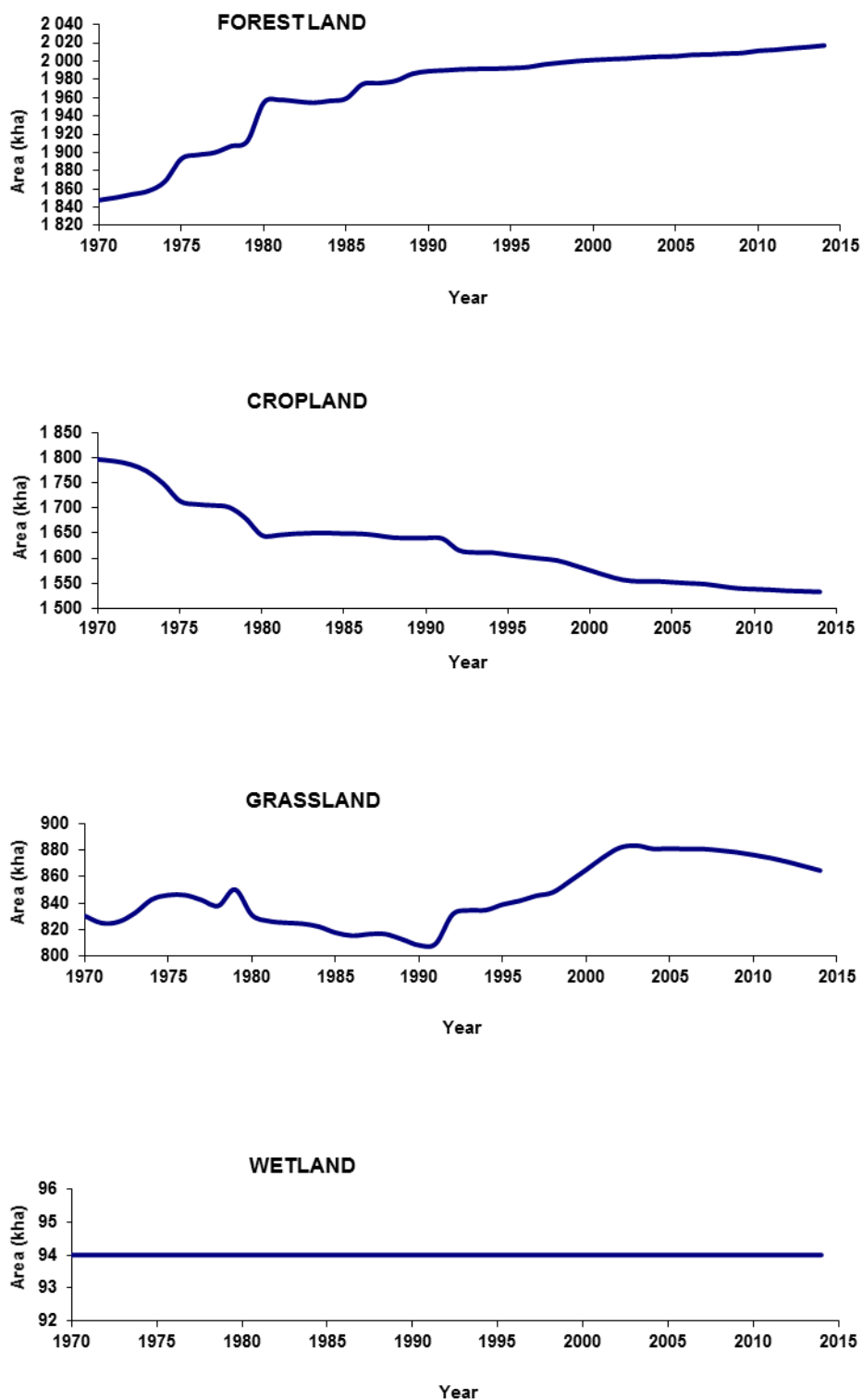
The measures are expected to be applied in the period 2014 – 2020. The financing sources are limiting factors for the prioritization, intensity and time of application of measures.

Timetables of the measures for cropland and grassland follows the timetables determined in the Rural Development Program 2014 – 2020 and legislation mentioned above.

Timelines for each action for wetlands are drawn up in the Action Plan to the Program for Wetland Management in Slovakia.

3. ANNEX

Figure 4 Overall trends in the areas of the land-use categories from 1970 – 2014
(based on information from the GCCA of the Slovak Republic)



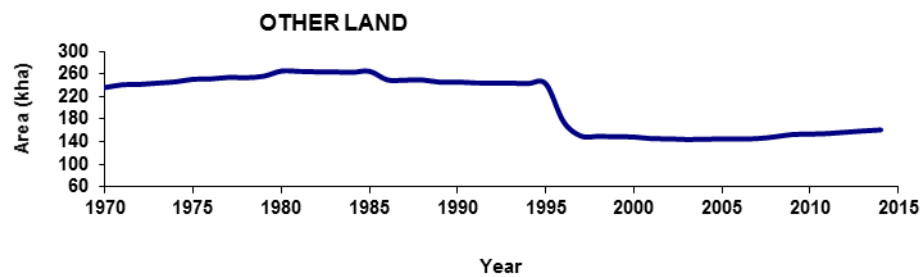
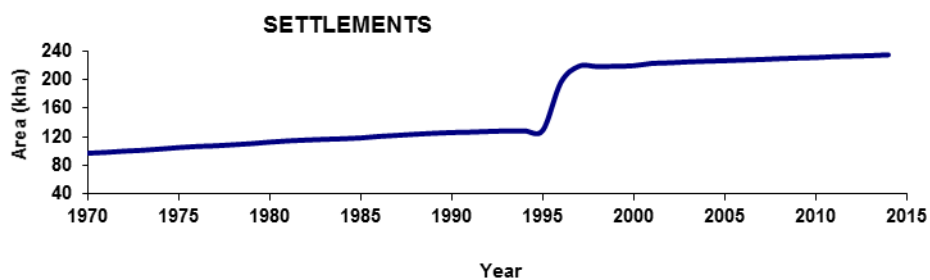


Table 11: Summary of GHG emissions and removals (in Gg) according to the categories in the period 1990 – 2014 submitted on June 15, 2016

Year	Net CO ₂					CH ₄	N ₂ O	
	(Gg)							
	Forest land	Cropland	Grassland	Settlements	Other land	LULUCF		
1990	-8 298	-489	-202	96	285	-9 078	0.30	0.27
1991	-9 515	-447	-99	84	169	-9 806	0.24	0.25
1992	-10 224	-426	-445	84	163	-10 510	0.24	0.24
1993	-10 165	-359	-307	86	147	-10 523	0.31	0.24
1994	-9 290	-420	-235	60	137	-9 829	0.22	0.22
1995	-8 629	-565	-259	61	103	-9 349	0.24	0.20
1996	-8 577	-574	-166	66	104	-9 306	0.28	0.19
1997	-8 218	-652	-190	74	115	-9 185	0.28	0.17
1998	-8 935	-626	-157	45	112	-10 232	0.28	0.16
1999	-8 628	-537	-243	59	143	-10 065	0.55	0.16
2000	-7 969	-728	-311	54	103	-9 770	0.44	0.14
2001	-7 962	-551	-307	60	123	-8 912	0.36	0.12
2002	-8 014	-697	-326	47	84	-9 503	0.40	0.10
2003	-7 541	-803	-248	66	80	-9 260	0.52	0.10
2004	-6 856	-804	-303	71	94	-8 958	0.43	0.09
2005	-2 932	-751	-209	61	177	-5 650	0.62	0.10
2006	-5 565	-842	-257	63	103	-8 375	0.49	0.09
2007	-5 298	-756	-236	62	136	-8 103	0.55	0.09
2008	-4 248	-804	-238	117	126	-6 985	0.55	0.08
2009	-4 681	-805	-270	226	124	-6 866	0.58	0.08
2010	-3 844	-839	-221	100	87	-6 052	0.60	0.08
2011	-4 394	-844	-275	69	79	-6 449	0.60	0.08
2012	-6 265	-890	-217	81	114	-7 657	0.49	0.08
2013	-6 834	-799	-204	96	95	-8 102	0.36	0.07
2014	-4 633	-803	-185	81	104	-6 166	0.69	0.09

Figure 5: CO₂ removal balance (in Gg) of the Forest Land category in 1990 – 2014

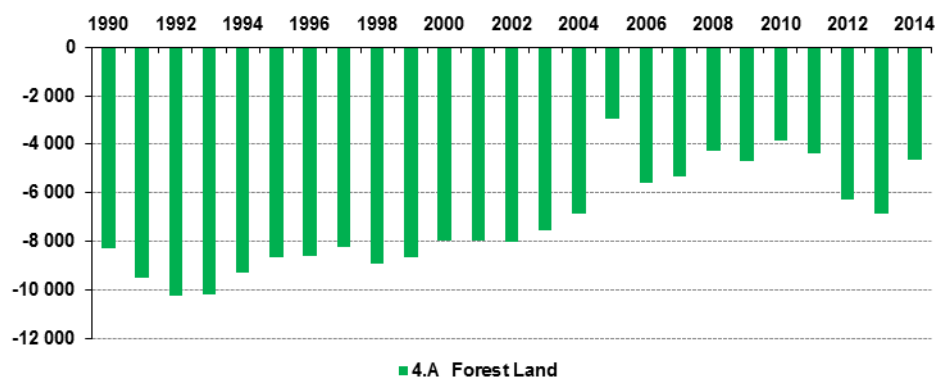


Table 12: Areas (kha/year) of land-use categories remaining into category since 1990

YEAR	AREA (KHA) PER CRF CATEGORIES				
	5.A.1 FL REMAINING FL	5.B.1 CL REMAINING CL	5.C.1 GL REMAINING GL	5.E.1 S REMAINING S	5.F.1 OL REMAINING OL
1990	1 809.15	1 492.15	685.50	94.69	190.37
1991	1 813.81	1 500.32	687.96	95.96	193.47
1992	1 817.65	1 481.32	692.53	97.65	193.26
1993	1 822.29	1 480.45	702.51	98.89	195.59
1994	1 833.68	1 486.41	718.62	100.62	198.07
1995	1 861.77	1 502.19	740.79	102.63	203.45
1996	1 868.44	1 505.90	746.10	104.18	137.04
1997	1 873.39	1 512.27	750.71	105.02	113.93
1998	1 881.17	1 517.60	754.25	106.05	115.15
1999	1 887.29	1 512.20	769.54	107.60	118.79
2000	1 929.76	1 517.42	766.82	109.57	128.14
2001	1 935.71	1 513.24	765.36	111.25	126.23
2002	1 938.38	1 508.33	764.87	112.30	126.71
2003	1 939.25	1 509.34	765.49	113.71	126.29
2004	1 941.98	1 510.76	762.43	114.28	126.43
2005	1 945.13	1 513.92	762.47	116.75	128.01
2006	1 961.95	1 517.26	763.01	118.47	127.15
2007	1 963.90	1 517.84	765.72	119.96	128.59
2008	1 968.27	1 517.13	767.44	119.40	130.27
2009	1 978.45	1 513.16	768.00	116.96	130.66
2010	1 981.89	1 511.70	766.40	116.85	130.80
2011	1 983.77	1 510.36	766.97	117.40	130.65
2012	1 985.11	1 508.36	786.60	117.59	131.46
2013	1 985.74	1 507.23	787.84	117.18	131.36
2014	1 986.15	1 505.97	785.35	117.37	131.13

FL = Forest land, CL = Cropland, GL = Grassland, OL = Other land, S = Settlements