REPUBLIC OF CROATIA
MINISTRY OF ENVIRONMENTAL AND NATURE PROTECTION

SECOND BIENNIAL REPORT OF THE REPUBLIC OF CROATIA UNDER THE UN FRAMEWORK CONVENTION ON CLIMATE CHANGE

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TABLE OF CONTENTS

LIST OF FIGURES 4

LIST OF TABLES 5

ABBREVIATIONS 8

EXECUTIVE SUMMARY 9

1. GREENHOUSE GAS EMISSION INVENTORIES 10

1.1. SUMMARY INFORMATION ON GHG EMISSIONS TRENDS 10

1.2. NATIONAL INVENTORY ARRANGEMENTS 30

1.2.1. CHANGES TO NATIONAL INVENTORY ARRANGEMENTS SINCE THE LAST BIENNIAL REPORT 32

2. QUANTIFIED ECONOMY-WIDE EMISSION REDUCTION TARGET 33

2.1. THE EU TARGET UNDER THE CONVENTION 33

2.2. THE EU TARGET COMPLIANCE ARCHITECTURE 35

2.2.1. THE 2020 CLIMATE AND ENERGY PACKAGE 35

2.3. THE CROATIAN EMISSION REDUCTION TARGETS 38

2.3.1. KYOTO PROTOCOL LIMIT 2008-2012 38

2.3.2. ESD TARGET UNTIL 2020 39

3. POLICIES AND MEASURES 43

3.1. EMISSIONS TRADING SYSTEM 43

3.2. SECTORAL POLICIES AND MEASURES: ENERGY 45

3.3. SECTORAL POLICIES AND MEASURES: TRANSPORT 51

3.4. SECTORAL POLICIES AND MEASURES: INDUSTRY / INDUSTRIAL PROCESSES 53

3.5. SECTORAL POLICIES AND MEASURES: AGRICULTURE 55
3.6. SECTORAL POLICIES AND MEASURES: FORESTRY / LULUCF 56
3.7. SECTORAL POLICIES AND MEASURES: WASTE MANAGEMENT / WASTE 58
3.8. OTHER (CROSS-CUTTING) POLICIES AND MEASURES 61
3.9. ASSESSMENT OF THE ECONOMIC AND SOCIAL CONSEQUENCE OF RESPONSE MEASURES 76
3.10. ESTIMATES OF EMISSION REDUCTIONS AND REMOVALS AND THE USE OF UNITS FROM MARKET-BASED MECHANISMS AND LULUCF ACTIVITIES 77

4. PROJECTIONS 82

4.1. PROJECTIONS OF GREENHOUSE GAS EMISSIONS BY SECTORS 83
4.2. PROJECTIONS OF GREENHOUSE GAS EMISSIONS BY Gases 87
4.3. TOTAL PROJECTIONS 88
4.4. EMISSIONS OF ETS AND NON-ETS SECTORS 90
4.5. QUANTIFIED PROGRESS TO 2020 TARGETS 93
4.6. DESCRIPTIONS OF METHODOLOGIES, MODELS, UNDERLYING ASSUMPTIONS AND KEY INPUT AND OUTPUT PARAMETERS FOR PROJECTIONS 94

5. PROVISION OF FINANCIAL, TECHNOLOGICAL AND CAPACITY BUILDING SUPPORT TO DEVELOPING COUNTRIES 104

LITERATURE 112

LIST OF FIGURES

Figure 1-1: Trend of GHG emissions, by sectors 12

Figure 1-2: Trend of GHG emissions, by gases 14

Figure 2-1: GHG targets under the 2020 climate and energy package.....36

Figure 2-2: National 2020 GHG emission limits under the ESD, relative to 2005 emissions levels 37

Figure 2-3: Comparison with Kyoto Protocol limit.....39

Figure 4-1: Historical and projected greenhouse emissions by sectors, 'without measures' scenario 85

Figure 4-2: Historical and projected greenhouse emissions by sectors, 'with measures' scenario 85

Figure 4-3: Historical and projected greenhouse emissions by sectors, 'with additional measures' scenario.....86

Figure 4-4: Historical and projected removals by sinks in the LULUCF sector, 'with measures' scenario 86

Figure 4-5: Projections of greenhouse emissions by gases 87

Figure 4-6: Total projections of greenhouse gas emissions (without LULUCF) for period until 2035 88

Figure 4-7: Historical emissions and projections of emissions within ETS and non-ETS, scenario 'without measures' 91

Figure 4-8: Historical emissions and projections of emissions within ETS and non-ETS, scenario 'with measures' 91

Figure 4-9: Historical emissions and projections of emissions within ETS and non-ETS, scenario 'with additional measures' 92

LIST OF TABLES

Table 1-1: Emissions/removals of GHG by sectors for the every five years from 1990 to 2005 (kt CO_2-eq)....11

Table 1-2: Emissions/removals of GHG by sectors for the period from 2010-2013 (kt CO_2-eq)..11

Table 1-3: Emissions/removals of GHG by gases for the every five years from 1990 to 2005 (kt CO_2-eq)....13

Table 1-4: Emissions/removals of GHG by gases for the period from 2010-2013 (kt CO_2-eq)...13

CTF Table 1 Greenouse Gas emissions (kt CO_2 eq)....15

CTF Table 1 Greenouse Gas emissions (kt CO_2 eq), cont.....16

CTF Table 1 Greenouse Gas emissions (kt CO_2 eq), cont.....16

CTF Table 1(a) Emission trends (CO_2). 18

Emission trends (CO_2), cont 19

CTF Table 1(a) Emission trends (CO_2), cont.....19

CTF Table 1(b) Emission trends (CH_4)....21

CTF Table 1(b) Emission trends (CH_4), cont.....22

CTF Table 1(b) Emission trends (CH_4), cont.....23

CTF Table 1(c) Emission trends (N_2O)....24

CTF Table 1(c) Emission trends (N_2O), cont.....25

CTF Table 1(c) Emission trends (N_2O), cont.....26

CTF Table 1(d) Emission trends (HFCs, PFCs and SF_6)....27

CTF Table 1(d) Emission trends (HFCs, PFCs and SF_6), cont.....28

CTF Table 1(d) Emission trends (HFCs, PFCs and SF_6), cont.....29

Table 2-1: Key facts of the Convention target of the EU-28....34

Table 2-2: The difference to the Kyoto Protocol target, kt CO_2 eq (AR 2)....38

Table 2-3: Annual emission allocations for the Republic of Croatia for the period 2013-2020 [t CO_2eq]....39

CTF Table 2(a) Description of quantified economy-wide emission reduction target: base year..40

CTF Table 2(b) Description of quantified economy-wide emission reducing target: gasses and sectors covered 40

CTF Table 2(c) Description of quantified economy-wide emission reducing target: global warming....41

CTF Table 2(d) Description of quantified economy-wide emission reducing target: approach to counting emissions and removals from LULUCF sector....41

CTF Table 2(e)I Description of quantified economy-wide emission reducing target: market-based mechanisms under the Convention 41

CTF Table 2(e)II Description of quantified economy-wide emission reducing target: market-based mechanisms under the Convention 42

CTF Table 2(f) Description of quantified economy-wide emission reducing target: any other information 42

CTF Table 3 Progress in achievement of the quantified economy-wide emission reduction target: information on mitigation actions and their effects 63

CTF Table 4: Reporting on progress 78

CTF Table 4(a)I_2013: Progress in achieving the quantified economy-wide emission reduction targets-further information on mitigation actions relevant to the contribution of the land use, land-use change and forestry sector in 2013 79

Table 4-1: Historical emissions and projections of greenhouse gas emissions, kt CO_2 eq 89

Table 4-2: Historical emissions and projections of greenhouse gas emissions in ETS and non-ETS sectors, kt CO_2 eq 90

Table 4-3: Projected development in relation to the national annual quota in period 2013 – 2020 [t CO_2eq] 93

Assumptions for projections by sector – energy and transport 95

Assumptions for projections by sector – industry 97

Assumptions for projections – agriculture 98

Assumptions for projections – waste management 98

Assumptions for projections – LULUCF 99

CTF Table 5 Summary of key variables and assumptions used in the projections analysis 100

CTF Table 6(a) Information on updated greenhouse gas projections under a 'with measures' scenario 101

CTF Table 6(b) Information on updated greenhouse gas projections under a 'without measures' scenario 102

CTF Table 6(c) Information on updated greenhouse gas projections under a 'with additional measures' scenario 103

CTF Table 7: Provision of public financial support: summary information in 2013 105

CTF Table 7: Provision of public financial support: summary information in 2014 106

CTF Table 7 (a): Provision of public financial support: contribution through multilateral channels in 2013 107

CTF Table 7 (a): Provision of public financial support: contribution through multilateral channels in 2014 108

CTF Table 7 (b): Provision of public financial support: contribution through bilateral, regional and other channels in 2013.....109

CTF Table 7 (b): Provision of public financial support: contribution through bilateral, regional and other channels in 2014.....110

CTF Table 8: Provision of technology development and transfer support.....111

CTF Table 9: Provision of capacity-building support 111

ABBREVIATIONS

CCS	Carbon capture and storage
EC	European Commission
EE	Energy efficiency
ESIF	European structural and investment funds
EU	European Union
EU ETS	EU emission trading system
GDP	Gross domestic product
GHG	Greenhouse gas
IPCC	Intergovernmental Panel on Climate Change
RC	Republic of Croatia
RES	Renewable energy sources
UNFCCC	United Nations Framework Convention on Climate Change

EXECUTIVE SUMMARY

This Second Biennial Report of the Republic of Croatia was prepared according to Decision 2/CP.17. For preparation of second biennial report (BR), UNFCCC reporting guidelines was used. According to Decision 19/CP.18 for reporting and submitting BR tables of the common tabular format (CTF), electronic reporting application was used. The CTF consists of 27 tables designed to facilitate the provision of information on:

- Greenhouse gas (GHG) emission trends (table 1)
- Description of quantified economy-wide emission reduction target (tables 2a-f)
- Progress in achievement of this target (tables 3,4a-b)
- GHG projections (5,6a-c)
- Provision of financial, technological and capacity building support (tables 7a-b, 8 and 9)

In regard to greenhouse gas (GHG) emissions, this Report covers the period from 1990-2013. Emission projections are based on conditions and projections of macroeconomic parameters from 2012.

1. GREENHOUSE GAS EMISSION INVENTORIES

This Biennial Report presents the inventory of greenhouse gas emissions and removals in the Republic of Croatia in the period from 1990 to 2013. The inventory includes direct greenhouse gases: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3) as well as indirect greenhouse gases: carbon monoxide (CO), oxides of nitrogen (NOx), non-methane volatile organic compounds (NMVOCs) and sulphur dioxide (SO_2).

The emission data presented in Biennial Report is based on the Croatian national greenhouse gas inventory 1990-2013, submitted to the UNFCCC on 06 November 2015. The inventory is in line with the UNFCCC reporting guidelines on annual inventories for Parties included in Annex I to the Convention (Decision 24/CP.19) and with Regulation (EU) No 525/2013 on mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing decision No 280/2004/EC.

1.1. SUMMARY INFORMATION ON GHG EMISSIONS TRENDS

The total GHG emissions in 2013, excluding removals by sinks, amounted 24,492.8 mil. t CO_2-eq (equivalent CO_2 emissions), which represents 30.3 percent emission reduction compared to GHG emission in the year 1990.

Overall decline of economic activities and energy consumption in the period 1991-1994, which was mainly the consequence of the war in Croatia, had directly caused the decline in total emissions of greenhouse gases in that period. With the entire national economy in transition process, some energy intensive industries reduced their activities or phased out certain productions (e.g. blast furnaces in Sisak, primary aluminium production in Šibenik, coke plant in Bakar), which was considerably reflected in GHG emissions reduction. Emissions have started to increase in the 1995 at an average rate of 3 percent per year, till 2008. Due to decreasing of economic activity within the period 2008-2013, emission has been reduced by 10.9 percent in 2011, 8.1 percent in 2012 and 21.3 percent in 2013, regarding 2008.

The main reasons of GHG emission increase in the period 1995-2007 was in Energy (Public electricity and Heat production and Transport), Industrial processes (Cement production, Lime production, Ammonia production, Nitric acid production and Consumption of HFCs) and Waste. Increase in Public electricity and Heat production sector is mostly due to higher consumption of liquid fuels. Lately, cement, lime, ammonia and nitric acid producers reached their highest producing capacity which has reflected on emission levels. Waste disposal on land, as well as Wastewater treatment and discharge, have the greatest impact on emission increase in Waste sector.

The reasons of GHG emission decrease in 2013 was economic crisis and also implementation of measures. During this period implementation of energy efficiency measures, use of renewable energy sources and use of biofuels started. Because of above motioned reasons there was decrease in industrial production and consequently, decrease in fuel consumption

(greatest reduction in fuel consumption was in Manufacturing industries and construction sector and also in Transport sector), and it was contributed to the GHG emission decrease.

A decrease of economic activities after 2007 influenced a reduction in cement, lime, and steel productions. In 2013, overall emissions from industrial processes dropped by 9.0 percent, regarding 2012 and by 30.9 percent, regarding 2008.

The results of the greenhouse gas (GHG) emission calculation are presented for the period from 1990 to 2013. Total emissions/removals of GHG and their trend in sectors are given in Tables 1-1, 1-2 and in Figure 1-1 while the contribution of the individual gases is given in Tables 1-3, 1-4 and Figure 1-2.

Table 1-1: Emissions/removals of GHG by sectors for the every five years from 1990 to 2005 (kt CO_2-eq)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	1990	1995	2000	2005
	CO_2 equivalent (kt)			
1. Energy	24,902.6	17,858.2	19,739.1	22,953.6
2. Industrial processes and product use	4,852.6	2,572.9	3,291.6	3,776.9
3. Agriculture	4,766.5	3,486.6	3,208.7	3,088.9
4. Land use, land-use change and forestry[5]	-5,536.7	-8,431.5	-7,162.1	-6,996.6
5. Waste	594.2	673.5	799.8	909.9
6. Other	NO	NO	NO	NO
Total (including LULUCF)	**29,579.3**	**16,159.6**	**19,877.0**	**23,732.6**
Total (excluding LULUCF)	**35,116.0**	**24,591.1**	**27,039.1**	**30,729.3**

Table 1-2: Emissions/removals of GHG by sectors for the period from 2010-2013 (kt CO_2-eq)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	2010	2011	2012	2013
	CO_2 equivalent (kt)			
1. Energy	21,035.3	20,559.4	18,685.7	18,122.7
2. Industrial processes and product use	3,591.3	3,361.9	3,092.0	2,812.6
3. Agriculture	2,526.1	2,587.1	2,512.6	2,318.0
4. Land use, land-use change and forestry	-6,260.3	-5,187.8	-5,036.4	-5,125.2
5. Waste	1,173.3	1,211.0	1,214.8	1,239.5
6. Other	0.0	0.0	0.0	0.0
Total (including LULUCF)	**22,065.7**	**22,531.5**	**20,468.7**	**19,367.6**
Total (excluding LULUCF)	**28,326.1**	**27,719.3**	**25,505.1**	**24,492.8**

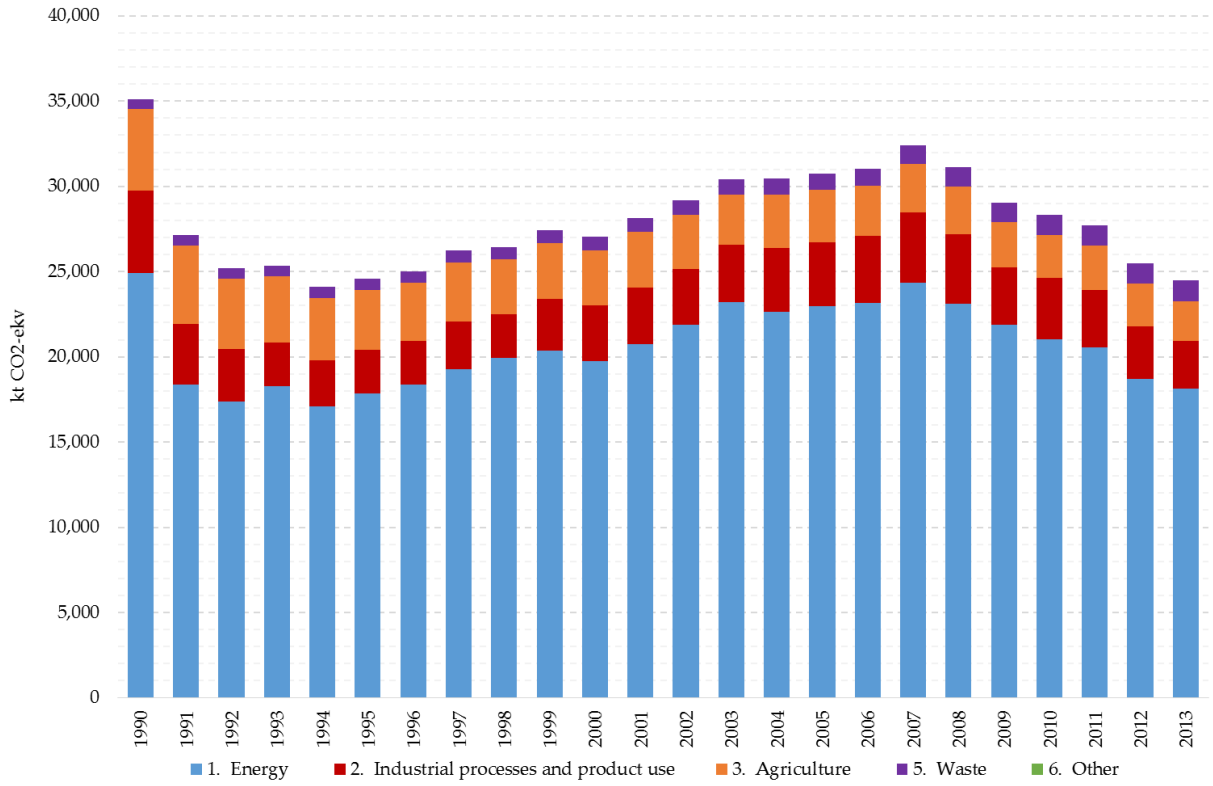


Figure 1-1: Trend of GHG emissions, by sectors

Tables 1-1, 1-2 and Figure 1-1 represents the contribution of the individual sectors to total emissions and removals of the GHGs. The largest contribution to the GHGs emission in 2013 excluding LULUCF has the Energy sector with 74.0 percent, followed by Industrial Processes and product use with 11.5 percent, Agriculture with 9.5 percent and Waste with 5.0 percent. This structure is with minor changes consistent through all the observed period from 1990 to 2013. In the year 2013, the total GHG emissions in Croatia was 24,492.8 kt CO_2-eq excluding LULUCF sector while the total emission was 19,367.6 kt CO_2-eq including the LULUCF sector which represents removals by sink from 20.9 percent in that year.

Table 1-3: Emissions/removals of GHG by gases for the every five years from 1990 to 2005 (kt CO_2-eq)

GREENHOUSE GAS EMISSIONS	1990	1995	2000	2005
	CO_2 equivalent (kt)			
CO_2 emissions without net CO_2 from LULUCF	24,074.3	17,326.5	20,073.7	23,753.5
CO_2 emissions with net CO_2 from LULUCF	18,530.9	8,878.4	12,743.6	16,746.5
CH_4 emissions without CH_4 from LULUCF	6,952.9	4,951.9	4,359.5	4,153.5
CH_4 emissions with CH_4 from LULUCF	6,954.1	4,959.5	4,456.4	4,156.2
N_2O emissions without N_2O from LULUCF	2,838.1	2,244.2	2,395.0	2,423.1
N_2O emissions with N_2O from LULUCF	2,843.6	2,253.3	2,466.1	2,430.7
HFCs	NO	57.3	199.2	386.1
PFCs	1,240.2	NO	NO	NO
Unspecified mix of HFCs and PFCs	NO	NO	NO	NO
SF_6	10.5	11.1	11.6	13.0
NF_3	NO	NO	NO	NO
Total (without LULUCF)	**35,116.0**	**24,591.1**	**27,039.1**	**30,729.3**
Total (with LULUCF)	**29,579.3**	**16,159.6**	**19,877.0**	**23,732.6**
Total (without LULUCF, with indirect)	**35,116.0**	**24,591.1**	**27,039.1**	**30,729.3**
Total (with LULUCF, with indirect)	**29,579.3**	**16,159.6**	**19,877.0**	**23,732.6**

Table 1-4: Emissions/removals of GHG by gases for the period from 2010-2013 (kt CO_2-eq)

GREENHOUSE GAS EMISSIONS	2010	2011	2012	2013
	CO_2 equivalent (kt)			
CO_2 emissions without net CO_2 from LULUCF	21,432.0	20,866.5	19,022.8	18,620.8
CO_2 emissions with net CO_2 from LULUCF	15,160.5	15,637.4	13,911.1	13,482.0
CH_4 emissions without CH_4 from LULUCF	4,036.7	3,914.6	3,688.9	3,581.0
CH_4 emissions with CH_4 from LULUCF	4,038.5	3,933.2	3,727.8	3,582.9
N_2O emissions without N_2O from LULUCF	2,304.4	2,365.7	2,219.2	1,706.6
N_2O emissions with N_2O from LULUCF	2,313.8	2,388.4	2,255.6	1,718.3
HFCs	544.0	563.1	565.0	577.7
PFCs	0.0	0.0	0.0	0.1
Unspecified mix of HFCs and PFCs	NO	NO	NO	NO
SF_6	9.0	9.4	9.2	6.6
NF_3	NO	NO	NO	NO
Total (without LULUCF)	**28,326.1**	**27,719.3**	**25,505.1**	**24,492.8**
Total (with LULUCF)	**22,065.7**	**22,531.5**	**20,468.7**	**19,367.6**
Total (without LULUCF, with indirect)	**28,326.1**	**27,719.3**	**25,505.1**	**24,492.8**
Total (with LULUCF, with indirect)	**22,065.7**	**22,531.5**	**20,468.7**	**19,367.6**

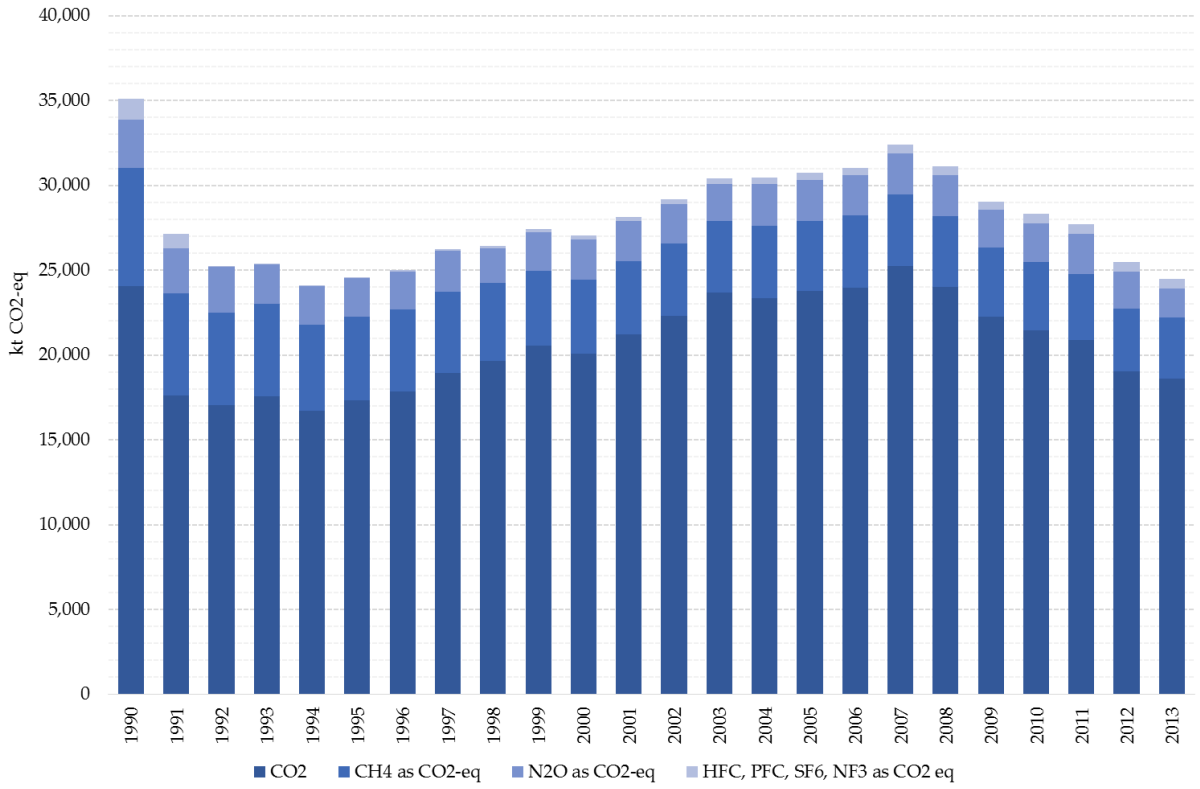


Figure 1-2: Trend of GHG emissions, by gases

Tables 1-3, 1-4 and Figure 1-2 represents the contribution of the individual gasses to total emissions and removals of the GHGs. The largest contribution to the GHGs emission in 2013 excluding LULUCF has CO_2 emission with 76.0 percent, followed by CH_4 with 14.6 percent, N_2O with 7.0 percent and HFCs, PFCs and SF6 with 2.4 percent.

In continuation Table 1 from Common Tabular Format is presented.

CTF Table 1 Greenouse Gas emissions (kt CO_2 eq)

Table 1 HRV_BR2_v0.1

Emission trends: summary [(1)]
(Sheet 1 of 3)

GREENHOUSE GAS EMISSIONS	Base year[a]	1990	1991	1992	1993	1994	1995	1996	1997
	kt CO_2 eq								
CO_2 emissions without net CO_2 from LULUCF	24,074.30	24,074.30	17,630.76	17,050.12	17,565.03	16,706.04	17,326.48	17,870.74	18,952.39
CO_2 emissions with net CO_2 from LULUCF	18,530.88	18,530.88	10,515.59	9,611.10	9,557.33	8,844.06	8,878.42	9,726.37	11,449.44
CH_4 emissions without CH_4 from LULUCF	6,952.89	6,952.89	5,985.15	5,432.99	5,467.80	5,058.67	4,951.94	4,824.60	4,777.23
CH_4 emissions with CH_4 from LULUCF	6,954.12	6,954.12	5,988.33	5,448.14	5,502.19	5,070.18	4,959.49	4,841.13	4,794.86
N_2O emissions without N_2O from LULUCF	2,838.10	2,838.10	2,675.25	2,706.63	2,312.50	2,311.87	2,244.23	2,222.14	2,412.90
N_2O emissions with N_2O from LULUCF	2,843.63	2,843.63	2,681.93	2,721.60	2,340.04	2,323.83	2,253.28	2,237.33	2,428.63
HFCs	NO	NO	NO	NO	NO	NO	57.28	80.07	106.14
PFCs	1,240.24	1,240.24	850.75	NO	NO	NO	NO	NO	NO
Unspecified mix of HFCs and PFCs	NO	NO	NO	NO	NO	NO	NO	NO	NO
SF_6	10.45	10.45	10.33	10.42	10.53	10.64	11.12	11.57	11.43
NF3	NO	NO	NO	NO	NO	NO	NO	NO	NO
Total (without LULUCF)	35,115.98	35,115.98	27,152.25	25,200.15	25,355.86	24,087.23	24,591.06	25,009.12	26,260.09
Total (with LULUCF)	29,579.31	29,579.31	20,046.94	17,791.26	17,410.09	16,248.71	16,159.59	16,896.47	18,790.50
Total (without LULUCF, with indirect)	35,115.98	35,115.98	27,152.25	25,200.15	25,355.86	24,087.23	24,591.06	25,009.12	26,260.09
Total (with LULUCF, with indirect)	29,579.31	29,579.31	20,046.94	17,791.26	17,410.09	16,248.71	16,159.59	16,896.47	18,790.50

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	Base year[a]	1990	1991	1992	1993	1994	1995	1996	1997
	kt CO_2 eq								
1. Energy	24,902.63	24,902.63	18,377.40	17,387.43	18,279.75	17,071.15	17,858.17	18,381.27	19,274.66
2. Industrial processes and product use	4,852.60	4,852.60	3,553.90	3,064.65	2,554.54	2,735.06	2,572.87	2,540.13	2,787.46
3. Agriculture	4,766.50	4,766.50	4,617.29	4,131.18	3,890.74	3,627.46	3,486.55	3,405.23	3,487.46
4. Land Use, Land-Use Change and Forestry[b]	-5,536.67	-5,536.67	-7,105.31	-7,408.89	-7,945.77	-7,838.52	-8,431.47	-8,112.65	-7,469.59
5. Waste	594.24	594.24	603.66	616.89	630.84	653.56	673.47	682.49	710.51
6. Other									
Total (including LULUCF)	29,579.31	29,579.31	20,046.94	17,791.26	17,410.09	16,248.71	16,159.59	16,896.47	18,790.50

CTF Table 1 Greenouse Gas emissions (kt CO_2 eq), cont.

Table 1 HRV_BR2_v0.1

Emission trends: summary [(1)]
(Sheet 2 of 3) *CTF Table 1*

GREENHOUSE GAS EMISSIONS	*1998*	1999	2000	2001	2002	2003	2004	2005	2006	2007
CO_2 emissions without net CO_2 from LULUCF	19,654.34	20,532.83	20,073.72	21,211.51	22,309.20	23,666.57	23,330.04	23,753.49	23,980.14	25,238.58
CO_2 emissions with net CO_2 from LULUCF	12,093.35	12,789.51	12,743.58	13,977.37	14,921.84	16,663.60	16,600.92	16,746.51	17,131.30	18,887.63
CH_4 emissions without CH_4 from LULUCF	4,574.82	4,435.26	4,359.53	4,302.17	4,285.11	4,257.84	4,288.56	4,153.50	4,272.22	4,238.49
CH_4 emissions with CH_4 from LULUCF	4,619.94	4,441.17	4,456.44	4,321.17	4,291.50	4,297.40	4,291.47	4,156.24	4,278.28	4,270.26
N_2O emissions without N_2O from LULUCF	2,061.88	2,270.43	2,395.00	2,381.82	2,292.65	2,173.88	2,467.30	2,423.13	2,344.61	2,423.51
N_2O emissions with N_2O from LULUCF	2,097.26	2,278.24	2,466.14	2,399.16	2,301.25	2,206.05	2,474.70	2,430.75	2,354.94	2,451.99
HFCs	139.06	166.70	199.21	224.96	261.93	304.77	347.89	386.12	422.70	469.51
PFCs	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Unspecified mix of HFCs and PFCs	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
SF_6	11.99	11.99	11.62	11.69	12.01	12.28	12.57	13.03	13.01	13.05
NF3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Total (without LULUCF)	26,442.09	27,417.21	27,039.08	28,132.15	29,160.89	30,415.34	30,446.35	30,729.27	31,032.68	32,383.15
Total (with LULUCF)	18,961.59	19,687.62	19,876.99	20,934.36	21,788.53	23,484.09	23,727.54	23,732.64	24,200.23	26,092.44
Total (without LULUCF, with indirect)	26,442.09	27,417.21	27,039.08	28,132.15	29,160.89	30,415.34	30,446.35	30,729.27	31,032.68	32,383.15
Total (with LULUCF, with indirect)	18,961.59	19,687.62	19,876.99	20,934.36	21,788.53	23,484.09	23,727.54	23,732.64	24,200.23	26,092.44

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*1998*	1999	2000	2001	2002	2003	2004	2005	2006	2007
1. Energy	19,928.93	20,371.09	19,739.09	20,737.32	21,888.91	23,220.31	22,647.89	22,953.63	23,160.52	24,365.81
2. Industrial processes and product use	2,548.27	3,027.51	3,291.57	3,307.97	3,278.44	3,333.13	3,725.83	3,776.88	3,937.39	4,112.71
3. Agriculture	3,238.47	3,253.04	3,208.67	3,270.34	3,140.60	2,976.42	3,144.30	3,088.88	2,936.96	2,831.11
4. Land Use, Land-Use Change and Forestry [b]	-7,480.49	-7,729.60	-7,162.09	-7,197.80	-7,372.36	-6,931.24	-6,718.80	-6,996.63	-6,832.45	-6,290.70
5. Waste	726.42	765.56	799.76	816.53	852.94	885.47	928.32	909.89	997.82	1,073.51
6. Other										
Total (including LULUCF)	18,961.59	19,687.62	19,876.99	20,934.36	21,788.53	23,484.09	23,727.54	23,732.64	24,200.23	26,092.44

Greenouse Gas emissions (kt CO_2 eq), cont.

Table 1 HRV_BR2_v0.1

Emission trends: summary [(1)]
(Sheet 3 of 3)

GREENHOUSE GAS EMISSIONS	*2008*	2009	2010	2011	2012	2013	Change from base to latest reported year
							(%)
CO_2 emissions without net CO_2 from LULUCF	24,024.90	22,241.22	21,432.05	20,866.49	19,022.78	18,620.85	-22.65
CO_2 emissions with net CO_2 from LULUCF	17,594.45	15,720.67	15,160.49	15,637.40	13,911.07	13,481.96	-27.25
CH_4 emissions without CH_4 from LULUCF	4,150.28	4,094.73	4,036.71	3,914.58	3,688.94	3,581.00	-48.50
CH_4 emissions with CH_4 from LULUCF	4,159.86	4,099.83	4,038.47	3,933.20	3,727.82	3,582.93	-48.48
N_2O emissions without N_2O from LULUCF	2,451.74	2,223.46	2,304.36	2,365.71	2,219.17	1,706.58	-39.87
N_2O emissions with N_2O from LULUCF	2,465.59	2,234.63	2,313.81	2,388.40	2,255.63	1,718.35	-39.57
HFCs	490.33	495.65	543.95	563.13	564.96	577.71	
PFCs	NO	0.26	0.03	0.02	0.03	0.06	-100.00
Unspecified mix of HFCs and PFCs	NO	NO	NO	NO	NO	NO	
SF_6	11.98	8.03	8.95	9.37	9.21	6.58	-37.03
NF3	NO	NO	NO	NO	NO	NO	
Total (without LULUCF)	31,129.23	29,063.35	28,326.05	27,719.29	25,505.09	24,492.78	-30.25
Total (with LULUCF)	24,722.21	22,559.06	22,065.71	22,531.52	20,468.71	19,367.59	-34.52
Total (without LULUCF, with indirect)	31,129.23	29,063.35	28,326.05	27,719.29	25,505.09	24,492.78	-30.25
Total (with LULUCF, with indirect)	24,722.21	22,559.06	22,065.71	22,531.52	20,468.71	19,367.59	-34.52

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*2008*	2009	2010	2011	2012	2013	Change from base to latest reported year
							(%)
1. Energy	23,119.75	21,894.64	21,035.31	20,559.37	18,685.67	18,122.71	-27.23
2. Industrial processes and product use	4,073.01	3,350.43	3,591.27	3,361.89	3,092.03	2,812.59	-42.04
3. Agriculture	2,789.11	2,633.75	2,526.14	2,587.06	2,512.58	2,317.95	-51.37
4. Land Use, Land-Use Change and Forestry [b]	-6,407.02	-6,504.29	-6,260.34	-5,187.77	-5,036.37	-5,125.18	-7.43
5. Waste	1,147.35	1,184.53	1,173.33	1,210.97	1,214.81	1,239.53	108.59
6. Other							
Total (including LULUCF)	24,722.21	22,559.06	22,065.71	22,531.52	20,468.71	19,367.59	-34.52

CTF Table 1(a) Emission trends (CO_2).

Table 1 (a) HRV_BR2_v0.1

Emission trends (CO_2)

(Sheet 1 of 3)

Data

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*Base year* [a]	1990	1991	1992	1993	1994	1995	1996	1997
	kt								
1. Energy	21,219.16	21,219.16	15,591.70	14,836.41	15,660.54	14,680.04	15,492.70	16,039.92	16,916.62
A. Fuel combustion (sectoral approach)	20,248.04	20,248.04	14,708.90	13,962.33	14,572.22	13,704.59	14,381.82	14,969.77	15,896.54
1. Energy industries	7,166.75	7,166.75	4,835.34	5,499.07	6,030.66	4,694.84	5,226.83	5,054.87	5,557.44
2. Manufacturing industries and construction	5,501.67	5,501.67	3,919.00	3,114.89	3,031.80	3,202.34	2,954.66	2,998.35	3,026.43
3. Transport	3,936.62	3,936.62	2,892.28	2,788.08	2,961.47	3,171.46	3,343.51	3,659.57	4,004.29
4. Other sectors	3,642.99	3,642.99	3,062.28	2,560.29	2,548.29	2,635.95	2,856.82	3,256.98	3,308.37
5. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Fugitive emissions from fuels	971.12	971.12	882.80	874.08	1,088.31	975.45	1,110.88	1,070.15	1,020.08
1. Solid fuels	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Oil and natural gas and other emissions from energy production	971.12	971.12	882.80	874.08	1,088.31	975.45	1,110.88	1,070.15	1,020.08
C. CO2 transport and storage	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Industrial processes	2,804.58	2,804.58	1,987.58	2,147.66	1,851.82	1,977.89	1,786.96	1,777.85	1,965.56
A. Mineral industry	1,280.88	1,280.88	863.47	938.79	804.89	976.59	759.97	844.58	954.10
B. Chemical industry	771.87	771.87	682.27	850.24	729.48	749.67	770.84	712.81	756.12
C. Metal industry	338.56	338.56	273.84	118.53	58.10	80.11	38.37	19.30	40.11
D. Non-energy products from fuels and solvent use	413.27	413.27	167.99	240.10	259.34	171.51	217.78	201.16	215.23
E. Electronic industry									
F. Product uses as ODS substitutes									
G. Other product manufacture and use	NO	NO	NO	NO	NO	NO	NO	NO	NO
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Agriculture	50.02	50.02	50.95	65.51	52.14	47.57	46.29	52.44	68.39
A. Enteric fermentation									
B. Manure management									
C. Rice cultivation									
D. Agricultural soils									
E. Prescribed burning of savannas									
F. Field burning of agricultural residues									
G. Liming	NO	NO	NO	NO	NO	NO	NO	NO	NO
H. Urea application	50.02	50.02	50.95	65.51	52.14	47.57	46.29	52.44	68.39
I. Other carbon-containing fertilizers	NA	NA	NA	NA	NA	NA	NA	NA	NA
J. Other									
4. Land Use, Land-Use Change and Forestry	-5,543.42	-5,543.42	-7,115.18	-7,439.02	-8,007.70	-7,861.98	-8,448.06	-8,144.37	-7,502.95
A. Forest land	-5,628.11	-5,628.11	-7,758.27	-8,186.62	-8,528.92	-8,281.22	-8,814.07	-8,565.32	-7,868.69
B. Cropland	217.98	217.98	214.29	221.14	208.74	224.35	229.48	226.36	243.47
C. Grassland	-103.97	-103.97	-76.80	-83.63	-86.55	-94.08	-99.94	-104.68	-113.41
D. Wetlands	30.00	30.00	30.17	31.89	33.60	35.32	37.04	38.76	40.47
E. Settlements	240.31	240.31	250.75	251.11	251.47	260.78	252.79	252.84	254.85
F. Other land	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Harvested wood products	-299.62	-299.62	224.69	327.10	113.96	-7.13	-53.35	7.68	-59.65
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Waste	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	1.82
A. Solid waste disposal	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
B. Biological treatment of solid waste									
C. Incineration and open burning of waste	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	1.82
D. Waste water treatment and discharge									
E. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
6. Other (as specified in the summary table in CRF)									
Memo items:									
International bunkers	493.99	493.99	68.88	57.20	140.58	329.86	291.72	268.66	266.50
Aviation	346.76	346.76	68.88	57.20	140.58	190.08	188.64	177.80	192.09
Navigation	147.23	147.23	NO	NO	NO	139.78	103.08	90.86	74.41
Multilateral operations	C	C	C	C	C	C	C	C	C
CO2 emissions from biomass	2,540.16	2,540.16	1,751.68	1,520.96	1,447.04	1,462.72	1,514.24	1,807.68	1,869.84
CO2 captured	NO	NO	NO	NO	NO	NO	NO	NO	NO
Long-term storage of C in waste disposal sites	NE	NE	NE	NE	NE	NE	NE	NE	NE
Indirect N2O									
Indirect CO2 (3)	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
Total CO2 equivalent emissions without land use, land-use change and forestry	35,115.98	35,115.98	27,152.25	25,200.15	25,355.86	24,087.23	24,591.06	25,009.12	26,260.09
Total CO2 equivalent emissions with land use, land-use change and forestry	29,579.31	29,579.31	20,046.94	17,791.26	17,410.09	16,248.71	16,159.59	16,896.47	18,790.50
Total CO2 equivalent emissions, including indirect CO2, without land use, land-use change and forestry	24,074.30	24,074.30	17,630.76	17,050.12	17,565.03	16,706.04	17,326.48	17,870.74	18,952.39
Total CO2 equivalent emissions, including indirect CO2, with land use, land-use change and forestry	18,530.88	18,530.88	10,515.59	9,611.10	9,557.33	8,844.06	8,878.42	9,726.37	11,449.44

on Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry and Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry are not correcty transferred from CRF table. For correct data please use last National Inventory Report of Republic of Croatia (NIR 2015) submited to UNFCCC on 6 November 2015

Emission trends (CO_2), cont

Table 1 (a) HRV_BR2_v0.1

Emission trends (CO_2)

(Sheet 2 of 3)

Data on

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*1998*	1999	2000	2001	2002	2003	2004	2005	2006	2007
1. Energy	17,748.42	18,258.06	17,657.09	18,661.04	19,823.80	21,150.61	20,577.33	20,964.40	21,063.78	22,250.01
A. Fuel combustion (sectoral approach)	16,833.30	17,368.96	16,718.48	17,656.47	18,798.68	20,173.62	19,555.45	19,963.05	20,026.59	21,242.62
1. Energy industries	6,212.63	6,439.06	5,816.84	6,381.66	7,273.79	7,946.52	6,830.91	6,853.44	6,674.57	7,806.63
2. Manufacturing industries and construction	3,313.18	2,980.25	3,103.13	3,196.99	3,057.13	3,136.78	3,583.00	3,723.73	3,855.12	3,853.05
3. Transport	4,139.75	4,370.68	4,380.15	4,442.09	4,744.72	5,137.72	5,276.57	5,487.76	5,838.23	6,255.70
4. Other sectors	3,167.75	3,578.95	3,418.37	3,635.73	3,723.03	3,952.60	3,864.98	3,898.12	3,658.66	3,327.24
5. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Fugitive emissions from fuels	915.12	889.11	938.61	1,004.58	1,025.12	976.98	1,021.88	1,001.35	1,037.20	1,007.39
1. Solid fuels	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Oil and natural gas and other emissions from energy production	915.12	889.11	938.61	1,004.58	1,025.12	976.98	1,021.88	1,001.35	1,037.20	1,007.39
C. CO2 transport and storage	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
2. Industrial processes	1,857.97	2,219.90	2,349.61	2,451.68	2,400.86	2,443.37	2,676.41	2,703.47	2,834.95	2,898.59
A. Mineral industry	1,027.37	1,284.91	1,423.08	1,643.76	1,638.10	1,619.95	1,731.21	1,785.37	1,917.28	1,948.84
B. Chemical industry	606.29	722.89	724.36	633.80	562.20	577.51	664.88	664.65	662.17	693.88
C. Metal industry	28.85	26.86	26.78	6.56	5.86	9.88	15.36	11.81	13.85	13.10
D. Non-energy products from fuels and solvent use	195.46	185.24	175.40	167.57	194.71	236.02	264.96	241.64	241.65	242.78
E. Electronic industry										
F. Product uses as ODS substitutes										
G. Other product manufacture and use	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Agriculture	44.25	50.49	60.87	92.09	80.76	71.79	75.94	85.46	80.67	89.32
A. Enteric fermentation										
B. Manure management										
C. Rice cultivation										
D. Agricultural soils										
E. Prescribed burning of savannas										
F. Field burning of agricultural residues										
G. Liming	NO	NO	NO	NO	NO	NO	NO	14.49	17.48	16.60
H. Urea application	44.25	50.49	60.87	92.09	80.76	71.79	75.94	70.97	63.19	72.72
I. Other carbon-containing fertilizers	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J. Other										
4. Land Use, Land-Use Change and Forestry	-7,560.99	-7,743.32	-7,330.15	-7,234.14	-7,387.35	-7,002.97	-6,729.12	-7,006.98	-6,848.84	-6,350.95
A. Forest land	-7,856.58	-7,986.62	-7,683.24	-7,672.26	-7,791.63	-7,462.63	-7,211.81	-7,291.19	-7,108.06	-6,550.79
B. Cropland	256.21	243.55	294.42	322.75	305.38	293.71	279.75	225.94	201.63	113.17
C. Grassland	-117.99	-121.64	-110.96	-148.78	-145.24	-143.30	-137.97	-91.05	-103.91	-88.74
D. Wetlands	42.19	43.91	45.63	36.33	34.40	32.46	30.53	28.59	26.66	24.72
E. Settlements	271.45	260.85	289.31	330.11	364.64	363.97	404.34	413.93	417.75	435.50
F. Other land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Harvested wood products	-156.26	-183.37	-165.29	-102.28	-154.89	-87.19	-93.96	-293.19	-282.92	-284.81
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Waste	3.70	4.38	6.15	6.68	3.78	0.80	0.35	0.16	0.74	0.65
A. Solid waste disposal	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
B. Biological treatment of solid waste										
C. Incineration and open burning of waste	3.70	4.38	6.15	6.68	3.78	0.80	0.35	0.16	0.74	0.65
D. Waste water treatment and discharge										
E. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6. Other (as specified in the summary table in CRF)										
Memo items:										
International bunkers	290.77	265.95	228.73	261.50	238.64	232.48	263.12	308.25	293.77	316.13
Aviation	208.92	199.58	171.11	171.19	164.63	163.09	189.29	228.43	232.14	239.68
Navigation	81.85	66.37	57.62	90.31	74.01	69.39	73.83	79.82	61.63	76.45
Multilateral operations	C	C	C	C	C	C	C	C	C	C
CO2 emissions from biomass	1,750.22	1,559.35	1,751.41	1,432.17	1,450.59	1,864.85	1,861.07	1,723.86	1,778.82	1,563.68
CO2 captured	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Long-term storage of C in waste disposal sites	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Indirect N2O										
Indirect CO2 (3)	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
Total CO2 equivalent emissions without land use, land-use change and forestry	26,442.09	27,417.21	27,039.08	28,132.15	29,160.89	30,415.34	30,446.35	30,729.27	31,032.68	32,383.15
Total CO2 equivalent emissions with land use, land-use change and forestry	18,961.59	19,687.62	19,876.99	20,934.36	21,788.53	23,484.09	23,727.54	23,732.64	24,200.23	26,092.44
Total CO2 equivalent emissions, including indirect CO2, without land use, land-use change and forestry	19,654.34	20,532.83	20,073.72	21,211.51	22,309.20	23,666.57	23,330.04	23,753.49	23,980.14	25,238.58
Total CO2 equivalent emissions, including indirect CO2, with land use, land-use change and forestry	12,093.35	12,789.51	12,743.58	13,977.37	14,921.84	16,663.60	16,600.92	16,746.51	17,131.30	18,887.63

Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry and Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry are not correcty transferred from CRF table. For correct data please use last National Inventory Report of Republic of Croatia (NIR 2015) submited to UNFCCC on 6 November 2015

CTF Table 1(a) Emission trends (CO_2), cont.

Table 1(a) HRV_BR2_v0.1

Emission trends (CO_2)

(Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*2008*	2009	2010	2011	2012	2013	Change from base to latest reported year
							%
1. Energy	21,103.70	19,946.87	19,112.82	18,767.45	17,103.43	16,605.25	-21.74
A. Fuel combustion (sectoral approach)	20,202.28	19,115.65	18,317.65	17,977.62	16,436.54	15,949.64	-21.23
1. Energy industries	6,789.87	6,403.19	5,904.99	6,152.17	5,499.87	5,109.51	-28.71
2. Manufacturing industries and construction	3,872.78	3,157.36	3,015.80	2,779.55	2,409.07	2,380.65	-56.73
3. Transport	6,097.85	6,100.75	5,890.70	5,764.05	5,585.99	5,679.83	44.28
4. Other sectors	3,441.78	3,454.34	3,506.16	3,281.84	2,941.62	2,779.65	-23.70
5. Other	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	901.42	831.22	795.17	789.83	666.88	655.61	-32.49
1. Solid fuels	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	901.42	831.22	795.17	789.83	666.88	655.61	-32.49
C. CO2 transport and storage	NO	NO	NO	NO	NO	NO	
2. Industrial processes	2,823.93	2,217.23	2,239.13	2,000.68	1,822.81	1,945.57	-30.63
A. Mineral industry	1,856.99	1,460.61	1,432.29	1,220.06	1,191.09	1,291.40	0.82
B. Chemical industry	677.48	524.80	594.74	571.33	478.93	485.96	-37.04
C. Metal industry	24.15	11.56	27.55	29.45	1.76	16.60	-95.10
D. Non-energy products from fuels and solvent use	265.30	220.27	184.55	179.84	151.03	151.60	-63.32
E. Electronic industry							
F. Product uses as ODS substitutes							
G. Other product manufacture and use	NO	NO	NO	NO	NO	NO	
H. Other	NA	NA	NA	NA	NA	NA	
3. Agriculture	96.60	76.96	80.05	98.31	96.45	69.99	39.92
A. Enteric fermentation							
B. Manure management							
C. Rice cultivation							
D. Agricultural soils							
E. Prescribed burning of savannas							
F. Field burning of agricultural residues							
G. Liming	20.78	11.92	13.47	14.45	9.60	9.60	
H. Urea application	75.83	65.04	66.58	83.86	86.85	60.39	20.73
I. Other carbon-containing fertilizers	NA	NA	NA	NA	NA	NA	
J. Other							
4. Land Use, Land-Use Change and Forestry	-6,430.45	-6,520.55	-6,271.55	-5,229.09	-5,111.71	-5,138.88	-7.30
A. Forest land	-6,609.15	-6,824.05	-6,583.46	-5,509.41	-5,411.54	-5,491.49	-2.43
B. Cropland	118.33	60.66	135.03	114.66	191.56	160.55	-26.35
C. Grassland	-146.85	-98.32	-110.91	-94.55	-134.54	-103.50	-0.45
D. Wetlands	22.79	20.86	18.92	17.32	15.73	14.13	-52.90
E. Settlements	474.00	482.95	502.38	501.34	534.71	545.56	127.02
F. Other land	NO	NO	NO	NO	NO	NO	
G. Harvested wood products	-289.58	-162.65	-233.51	-258.46	-307.63	-264.12	-11.85
H. Other	NO	NO	NO	NO	NO	NO	
5. Waste	0.67	0.16	0.05	0.05	0.08	0.04	-92.11
A. Solid waste disposal	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	
B. Biological treatment of solid waste							
C. Incineration and open burning of waste	0.67	0.16	0.05	0.05	0.08	0.04	-92.11
D. Waste water treatment and discharge							
E. Other	NO	NO	NO	NO	NO	NO	
6. Other (as specified in the summary table in CRF)							
Memo items:							
International bunkers	335.71	251.31	264.29	330.90	262.10	290.71	-41.15
Aviation	268.20	229.46	244.66	254.92	262.10	290.71	-16.16
Navigation	67.50	21.85	19.64	75.97	NO	NO	
Multilateral operations	C	C	C	C	C	C	
CO2 emissions from biomass	1,555.91	1,709.23	1,872.38	2,129.98	2,402.65	2,249.66	-11.44
CO2 captured	NO	NO	NO	NO	NO	NO	
Long-term storage of C in waste disposal sites	NE	NE	NE	NE	NE	NE	
Indirect N2O							
Indirect CO2 (3)	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	
Total CO2 equivalent emissions without land use, land-use change and forestry	31,129.23	29,063.35	28,326.05	27,719.29	25,505.09	24,492.78	-30.25
Total CO2 equivalent emissions with land use, land-use change and forestry	24,722.21	22,559.06	22,065.71	22,531.52	20,468.71	19,367.59	-34.52
Total CO2 equivalent emissions, including indirect CO2, without land use, land-use change and forestry	24,024.90	22,241.22	21,432.05	20,866.49	19,022.78	18,620.85	-22.65
Total CO2 equivalent emissions, including indirect CO2, with land use, land-use change and forestry	17,594.45	15,720.67	15,160.49	15,637.40	13,911.07	13,481.96	-27.25

Data on Total CO_2 equivalent emissions, including indirect CO_2, without land use, land-use change and forestry and Total CO_2 equivalent emissions, including indirect CO_2, with land use, land-use change and forestry are not correcty transferred from CRF table. For correct data please use last National Inventory Report of Republic of Croatia (NIR 2015) submited to UNFCCC on 6 November 2015

CTF Table 1(b) Emission trends (CH_4)

Table 1(b) HRV_BR2_v0.1

Emission trends (CH_4)

(Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*Base year* [a]	1990	1991	1992	1993	1994	1995	1996	1997
	kt								
1. Energy	142.51	142.51	107.84	98.82	101.18	92.13	91.27	89.02	89.14
A. Fuel combustion (sectoral approach)	9.68	9.68	6.37	5.22	4.94	5.15	5.32	6.25	6.32
1. Energy industries	0.22	0.22	0.16	0.18	0.20	0.13	0.16	0.16	0.18
2. Manufacturing industries and construction	0.39	0.39	0.28	0.22	0.21	0.19	0.19	0.19	0.21
3. Transport	1.65	1.65	1.24	1.11	1.09	1.18	1.24	1.33	1.41
4. Other sectors	7.43	7.43	4.69	3.71	3.45	3.65	3.73	4.57	4.53
5. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Fugitive emissions from fuels	132.83	132.83	101.47	93.60	96.23	86.97	85.95	82.76	82.82
1. Solid fuels	2.39	2.39	2.13	1.65	1.58	1.42	1.13	0.91	0.67
2. Oil and natural gas and other emissions from energy production	130.44	130.44	99.34	91.95	94.65	85.55	84.82	81.85	82.15
C. CO2 transport and storage									
2. Industrial processes	0.38	0.38	0.36	0.31	0.26	0.27	0.24	0.21	0.23
A. Mineral industry									
B. Chemical industry	0.23	0.23	0.21	0.21	0.21	0.20	0.21	0.20	0.20
C. Metal industry	0.16	0.16	0.15	0.10	0.04	0.07	0.03	0.01	0.03
D. Non-energy products from fuels and solvent use	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Electronic industry									
F. Product uses as ODS substitutes									
G. Other product manufacture and use	NO	NO	NO	NO	NO	NO	NO	NO	NO
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Agriculture	114.16	114.16	109.62	96.09	94.62	86.49	82.53	79.22	76.15
A. Enteric fermentation	100.04	100.04	96.05	84.47	82.96	75.59	72.26	69.30	66.57
B. Manure management	14.11	14.11	13.57	11.62	11.66	10.90	10.28	9.93	9.58
C. Rice cultivation	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Agricultural soils	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Prescribed burning of savannas									
F. Field burning of agricultural residues	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Liming									
H. Urea application									
I. Other carbon-containing fertilizers									
J. Other									
4. Land use, land-use change and forestry	0.05	0.05	0.13	0.61	1.38	0.46	0.30	0.66	0.71
A. Forest land	0.04	0.04	0.12	0.55	1.31	0.43	0.28	0.61	0.65
B. Cropland	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
C. Grassland	0.00	0.00	0.01	0.06	0.06	0.03	0.02	0.06	0.05
D. Wetlands	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
E. Settlements	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Other land	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Harvested wood products									
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Waste	21.07	21.07	21.59	22.11	22.66	23.46	24.03	24.53	25.58
A. Solid waste disposal	11.55	11.55	12.09	12.63	13.20	13.82	14.54	15.32	16.20
B. Biological treatment of solid waste	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE
C. Incineration and open burning of waste	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
D. Waste water treatment and discharge	9.51	9.51	9.50	9.48	9.46	9.65	9.50	9.21	9.37
E. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
6. Other (as specified in the summary table in CRF)									
Total CH4 emissions without CH4 from LULUCF	278.12	278.12	239.41	217.32	218.71	202.35	198.08	192.98	191.09
Total CH4 emissions with CH4 from LULUCF	278.16	278.16	239.53	217.93	220.09	202.81	198.38	193.65	191.79
Memo items:									
International bunkers	0.03	0.03	0.00	0.00	0.01	0.02	0.02	0.02	0.01
Aviation	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01
Navigation	0.01	0.01	NO	NO	NO	0.01	0.01	0.01	0.01
Multilateral operations	C	C	C	C	C	C	C	C	C
CO2 emissions from biomass									
CO2 captured									
Long-term storage of C in waste disposal sites									
Indirect N2O									
Indirect CO2 (3)									

CTF Table 1(b) Emission trends (CH_4), cont.

Table 1(b) HRV_BR2_v0.1

Emission trends (CH_4)

(Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*1998*	1999	2000	2001	2002	2003	2004	2005	2006	2007
1. Energy	83.01	78.55	76.94	76.96	77.95	77.81	75.91	74.64	78.76	79.29
A. Fuel combustion (sectoral approach)	6.12	5.91	6.29	5.12	5.17	6.17	5.96	5.68	5.65	5.01
1. Energy industries	0.21	0.22	0.16	0.18	0.20	0.23	0.19	0.18	0.19	0.22
2. Manufacturing industries and construction	0.21	0.17	0.18	0.18	0.17	0.20	0.24	0.22	0.23	0.23
3. Transport	1.45	1.48	1.43	1.22	1.19	1.14	1.07	0.98	0.97	0.93
4. Other sectors	4.26	4.04	4.53	3.55	3.61	4.59	4.45	4.30	4.26	3.62
5. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Fugitive emissions from fuels	76.88	72.65	70.65	71.84	72.78	71.64	69.95	68.96	73.11	74.28
1. Solid fuels	0.70	0.21	NO	NO	NO	NO	NO	NO	NO	NO
2. Oil and natural gas and other emissions from energy production	76.18	72.44	70.65	71.84	72.78	71.64	69.95	68.96	73.11	74.28
C. CO2 transport and storage										
2. Industrial processes	0.20	0.21	0.14	0.15	0.14	0.13	0.16	0.16	0.15	0.14
A. Mineral industry										
B. Chemical industry	0.19	0.19	0.12	0.15	0.14	0.13	0.16	0.16	0.15	0.14
C. Metal industry	0.02	0.02	0.02	0.00	0.00	0.00	NA, NO	NA, NO	NA, NO	NA, NO
D. Non-energy products from fuels and solvent use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Electronic industry										
F. Product uses as ODS substitutes										
G. Other product manufacture and use	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Agriculture	73.58	71.11	68.35	65.57	62.50	60.11	61.46	58.18	55.43	50.58
A. Enteric fermentation	64.28	61.78	59.51	56.78	53.97	51.51	52.43	49.78	46.63	42.40
B. Manure management	9.30	9.33	8.85	8.79	8.53	8.60	9.03	8.40	8.80	8.18
C. Rice cultivation	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Agricultural soils	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Prescribed burning of savannas										
F. Field burning of agricultural residues	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Liming										
H. Urea application										
I. Other carbon-containing fertilizers										
J. Other										
4. Land use, land-use change and forestry	1.80	0.24	3.88	0.76	0.26	1.58	0.12	0.11	0.24	1.27
A. Forest land	1.59	0.17	3.48	0.64	0.22	1.44	0.08	0.09	0.22	1.18
B. Cropland	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
C. Grassland	0.21	0.07	0.39	0.12	0.03	0.14	0.04	0.02	0.02	0.09
D. Wetlands	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
E. Settlements	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Other land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Harvested wood products										
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Waste	26.21	27.54	28.94	29.41	30.82	32.27	34.02	33.17	36.54	39.53
A. Solid waste disposal	17.13	18.18	19.24	20.47	21.85	23.39	24.82	24.01	27.14	29.86
B. Biological treatment of solid waste	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE
C. Incineration and open burning of waste	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
D. Waste water treatment and discharge	9.08	9.36	9.70	8.94	8.97	8.88	9.19	9.16	9.41	9.67
E. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6. Other (as specified in the summary table in CRF)										
Total CH4 emissions without CH4 from LULUCF	182.99	177.41	174.38	172.09	171.40	170.31	171.54	166.14	170.89	169.54
Total CH4 emissions with CH4 from LULUCF	184.80	177.65	178.26	172.85	171.66	171.90	171.66	166.25	171.13	170.81
Memo items:										
International bunkers	0.02	0.01	0.01	0.02	0.01	0.01	0.01	0.02	0.02	0.02
Aviation	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Navigation	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Multilateral operations	C	C	C	C	C	C	C	C	C	C
CO2 emissions from biomass										
CO2 captured										
Long-term storage of C in waste disposal sites										
Indirect N2O										
Indirect CO2 (3)										

CTF Table 1(b) Emission trends (CH_4), cont.

Table 1(b) HRV_BR2_v0.1

Emission trends (CH_4)

(Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*2008*	2009	2010	2011	2012	2013	Change from base to latest reported year
							%
1. Energy	75.62	73.03	72.05	67.22	58.90	56.44	-60.40
A. Fuel combustion (sectoral approach)	4.99	5.17	5.62	6.32	6.46	6.13	-36.66
1. Energy industries	0.19	0.19	0.17	0.17	0.16	0.13	-40.60
2. Manufacturing industries and construction	0.22	0.21	0.21	0.18	0.19	0.18	-54.75
3. Transport	0.87	0.81	0.73	0.67	0.56	0.55	-66.43
4. Other sectors	3.71	3.96	4.51	5.30	5.56	5.28	-29.00
5. Other	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	70.62	67.85	66.43	60.89	52.44	50.31	-62.13
1. Solid fuels	NO	NO	NO	NO	NO	NO	
2. Oil and natural gas and other emissions from energy production	70.62	67.85	66.43	60.89	52.44	50.31	-61.43
C. CO2 transport and storage							
2. Industrial processes	0.14	0.12	0.12	0.08	0.01	0.01	-98.41
A. Mineral industry							
B. Chemical industry	0.14	0.12	0.12	0.08	0.01	0.01	-97.30
C. Metal industry	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	
D. Non-energy products from fuels and solvent use	NA	NA	NA	NA	NA	NA	
E. Electronic industry							
F. Product uses as ODS substitutes							
G. Other product manufacture and use	NO	NO	NO	NO	NO	NO	
H. Other	NA	NA	NA	NA	NA	NA	
3. Agriculture	47.83	46.76	45.69	44.23	43.42	40.71	-64.34
A. Enteric fermentation	40.15	38.94	37.99	36.71	36.11	33.59	-66.42
B. Manure management	7.68	7.82	7.70	7.52	7.31	7.11	-49.62
C. Rice cultivation	NO	NO	NO	NO	NO	NO	
D. Agricultural soils	NA	NA	NA	NA	NA	NA	
E. Prescribed burning of savannas							
F. Field burning of agricultural residues	NO	NO	NO	NO	NO	NO	
G. Liming							
H. Urea application							
I. Other carbon-containing fertilizers							
J. Other							
4. Land use, land-use change and forestry	0.38	0.20	0.07	0.75	1.56	0.08	56.67
A. Forest land	0.35	0.19	0.07	0.61	1.44	0.06	29.78
B. Cropland	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	
C. Grassland	0.04	0.01	0.00	0.14	0.11	0.02	334.10
D. Wetlands	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	
E. Settlements	NO	NO	NO	NO	NO	NO	
F. Other land	NO	NO	NO	NO	NO	NO	
G. Harvested wood products							
H. Other	NO	NO	NO	NO	NO	NO	
5. Waste	42.43	43.87	43.61	45.06	45.23	46.09	118.76
A. Solid waste disposal	32.87	35.57	35.25	36.79	37.50	37.89	227.94
B. Biological treatment of solid waste	IE, NE	IE, NE	IE, NE	IE, NE	IE, NE	0.18	
C. Incineration and open burning of waste	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	
D. Waste water treatment and discharge	9.57	8.30	8.36	8.27	7.73	8.02	-15.74
E. Other	NO	NO	NO	NO	NO	NO	
6. Other (as specified in the summary table in CRF)							
Total CH4 emissions without CH4 from LULUCF	166.01	163.79	161.47	156.58	147.56	143.24	-48.50
Total CH4 emissions with CH4 from LULUCF	166.39	163.99	161.54	157.33	149.11	143.32	-48.48
Memo items:							
International bunkers	0.02	0.01	0.01	0.02	0.01	0.03	-9.65
Aviation	0.01	0.01	0.01	0.01	0.01	0.03	74.53
Navigation	0.01	0.00	0.00	0.01	NO	NO	
Multilateral operations	C	C	C	C	C	C	
CO2 emissions from biomass							
CO2 captured							
Long-term storage of C in waste disposal sites							
Indirect N2O							
Indirect CO2 (3)							

CTF Table 1(c) Emission trends (N_2O)

Table 1(c) HRV_BR2_v0.1

Emission trends (N_2O)

(Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*Base year* [a]	1990	1991	1992	1993	1994	1995	1996	1997
	kt								
1. Energy	0.41	0.41	0.30	0.27	0.30	0.30	0.28	0.39	0.43
A. Fuel combustion (sectoral approach)	0.40	0.40	0.30	0.27	0.30	0.29	0.28	0.39	0.43
1. Energy industries	0.06	0.06	0.04	0.05	0.06	0.04	0.04	0.04	0.05
2. Manufacturing industries and construction	0.06	0.06	0.04	0.03	0.03	0.03	0.03	0.03	0.03
3. Transport	0.18	0.18	0.15	0.13	0.16	0.17	0.15	0.24	0.28
4. Other sectors	0.10	0.10	0.07	0.06	0.05	0.06	0.06	0.07	0.07
5. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Fugitive emissions from fuels	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1. Solid fuels	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA
2. Oil and natural gas and other emissions from energy production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C. CO2 transport and storage									
2. Industrial processes	2.64	2.64	2.34	3.02	2.30	2.48	2.39	2.23	2.34
A. Mineral industry									
B. Chemical industry	2.53	2.53	2.22	2.90	2.19	2.37	2.28	2.12	2.23
C. Metal industry	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Non-energy products from fuels and solvent use	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Electronic industry									
F. Product uses as ODS substitutes									
G. Other product manufacture and use	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Agriculture	6.25	6.25	6.13	5.58	4.94	4.76	4.62	4.60	5.09
A. Enteric fermentation									
B. Manure management	1.09	1.09	1.04	0.85	0.86	0.78	0.75	0.72	0.67
C. Rice cultivation									
D. Agricultural soils	5.16	5.16	5.09	4.73	4.08	3.97	3.87	3.89	4.41
E. Prescribed burning of savannas									
F. Field burning of agricultural residues	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Liming									
H. Urea application									
I. Other carbon containing fertlizers									
J. Other									
4. Land use, land-use change and forestry	0.02	0.02	0.02	0.05	0.09	0.04	0.03	0.05	0.05
A. Forest land	0.00	0.00	0.01	0.03	0.07	0.02	0.02	0.03	0.04
B. Cropland	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
C. Grassland	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00
D. Wetlands	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
E. Settlements	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Other land	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Harvested wood products									
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Waste	0.22	0.22	0.21	0.21	0.21	0.22	0.24	0.23	0.23
A. Solid waste disposal									
B. Biological treatment of solid waste	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA
C. Incineration and open burning of waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D. Waste water treatment and discharge	0.22	0.22	0.21	0.21	0.21	0.22	0.24	0.23	0.23
E. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
6. Other (as specified in the summary table in CRF)									
Total direct N2O emissions without N2O from LULUCF	9.52	9.52	8.98	9.08	7.76	7.76	7.53	7.46	8.10
Total direct N2O emissions with N2O from LULUCF	9.54	9.54	9.00	9.13	7.85	7.80	7.56	7.51	8.15
Memo items:									
International bunkers	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Aviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navigation	0.00	0.00	NO	NO	NO	0.00	0.00	0.00	0.00
Multilateral operations	C	C	C	C	C	C	C	C	C
CO2 emissions from biomass									
CO2 captured									
Long-term storage of C in waste disposal sites									
Indirect N2O	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
Indirect CO2 (3)									

CTF Table 1(c) Emission trends (N_2O), cont.

Table 1(c) HRV_BR2_v0.1

Emission trends (N_2O)

(Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*1998*	1999	2000	2001	2002	2003	2004	2005	2006	2007
1. Energy	0.35	0.50	0.53	0.51	0.39	0.42	0.58	0.41	0.43	0.45
A. Fuel combustion (sectoral approach)	0.35	0.50	0.53	0.51	0.39	0.42	0.58	0.41	0.43	0.45
1. Energy industries	0.06	0.06	0.06	0.07	0.08	0.09	0.08	0.08	0.08	0.09
2. Manufacturing industries and construction	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.04
3. Transport	0.20	0.35	0.37	0.35	0.22	0.22	0.39	0.23	0.25	0.26
4. Other sectors	0.07	0.07	0.07	0.06	0.06	0.08	0.07	0.07	0.07	0.06
5. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
B. Fugitive emissions from fuels	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1. Solid fuels	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA
2. Oil and natural gas and other emissions from energy production	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C. CO2 transport and storage										
2. Industrial processes	1.79	2.09	2.44	2.07	2.01	1.91	2.30	2.25	2.22	2.44
A. Mineral industry										
B. Chemical industry	1.68	1.98	2.33	1.95	1.90	1.80	2.19	2.14	2.11	2.33
C. Metal industry	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Non-energy products from fuels and solvent use	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E. Electronic industry										
F. Product uses as ODS substitutes										
G. Other product manufacture and use	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
H. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3. Agriculture	4.55	4.78	4.83	5.16	5.02	4.70	5.14	5.20	4.93	4.96
A. Enteric fermentation										
B. Manure management	0.67	0.68	0.62	0.64	0.62	0.60	0.66	0.61	0.63	0.58
C. Rice cultivation										
D. Agricultural soils	3.88	4.10	4.21	4.52	4.41	4.11	4.48	4.58	4.31	4.38
E. Prescribed burning of savannas										
F. Field burning of agricultural residues	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Liming										
H. Urea application										
I. Other carbon containing fertlizers										
J. Other										
4. Land use, land-use change and forestry	0.12	0.03	0.24	0.06	0.03	0.11	0.02	0.03	0.03	0.10
A. Forest land	0.09	0.01	0.19	0.04	0.01	0.08	0.00	0.00	0.01	0.07
B. Cropland	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02
C. Grassland	0.02	0.01	0.04	0.01	0.00	0.01	0.00	0.00	0.00	0.01
D. Wetlands	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
E. Settlements	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
F. Other land	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
G. Harvested wood products										
H. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
5. Waste	0.23	0.24	0.24	0.25	0.26	0.26	0.26	0.27	0.28	0.28
A. Solid waste disposal										
B. Biological treatment of solid waste	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA
C. Incineration and open burning of waste	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
D. Waste water treatment and discharge	0.23	0.24	0.23	0.25	0.26	0.26	0.26	0.27	0.28	0.28
E. Other	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6. Other (as specified in the summary table in CRF)										
Total direct N2O emissions without N2O from LULUCF	6.92	7.62	8.04	7.99	7.69	7.29	8.28	8.13	7.87	8.13
Total direct N2O emissions with N2O from LULUCF	7.04	7.65	8.28	8.05	7.72	7.40	8.30	8.16	7.90	8.23
Memo items:										
International bunkers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aviation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Navigation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Multilateral operations	C	C	C	C	C	C	C	C	C	C
CO2 emissions from biomass										
CO2 captured										
Long-term storage of C in waste disposal sites										
Indirect N2O	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO
Indirect CO2 (3)										

CTF Table 1(c) Emission trends (N_2O), cont.

Table 1(c) HRV_BR2_v0.1

Emission trends (N_2O)

(Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*2008*	2009	2010	2011	2012	2013	Change from base to latest reported year
							%
1. Energy	0.42	0.41	0.41	0.37	0.37	0.36	-11.86
A. Fuel combustion (sectoral approach)	0.42	0.41	0.41	0.37	0.37	0.36	-11.57
1. Energy industries	0.08	0.07	0.07	0.07	0.07	0.07	11.86
2. Manufacturing industries and construction	0.03	0.03	0.03	0.03	0.03	0.03	-56.25
3. Transport	0.25	0.24	0.23	0.19	0.19	0.19	3.21
4. Other sectors	0.06	0.06	0.07	0.08	0.08	0.08	-25.21
5. Other	NO	NO	NO	NO	NO	NO	
B. Fugitive emissions from fuels	0.00	0.00	0.00	0.00	0.00	0.00	-77.72
1. Solid fuels	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	
2. Oil and natural gas and other emissions from energy production	0.00	0.00	0.00	0.00	0.00	0.00	-77.72
C. CO2 transport and storage							
2. Industrial processes	2.49	2.10	2.67	2.64	2.33	0.95	-64.14
A. Mineral industry							
B. Chemical industry	2.38	1.99	2.57	2.53	2.19	0.81	-68.13
C. Metal industry	NO	NO	NO	NO	NO	NO	
D. Non-energy products from fuels and solvent use	NA	NA	NA	NA	NA	NA	
E. Electronic industry							
F. Product uses as ODS substitutes							
G. Other product manufacture and use	0.11	0.11	0.10	0.11	0.14	0.14	26.03
H. Other	NA	NA	NA	NA	NA	NA	
3. Agriculture	5.02	4.66	4.38	4.64	4.46	4.13	-33.94
A. Enteric fermentation							
B. Manure management	0.55	0.55	0.54	0.51	0.47	0.47	-56.57
C. Rice cultivation							
D. Agricultural soils	4.48	4.11	3.84	4.14	3.99	3.66	-29.18
E. Prescribed burning of savannas							
F. Field burning of agricultural residues	NO	NO	NO	NO	NO	NO	
G. Liming							
H. Urea application							
I. Other carbon containing fertlizers							
J. Other							
4. Land use, land-use change and forestry	0.05	0.04	0.03	0.08	0.12	0.04	113.04
A. Forest land	0.02	0.01	0.00	0.03	0.08	0.00	29.78
B. Cropland	0.02	0.03	0.03	0.03	0.03	0.03	120.63
C. Grassland	0.00	0.00	0.00	0.01	0.01	0.00	334.10
D. Wetlands	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	
E. Settlements	NO	NO	NO	NO	NO	NO	
F. Other land	NO	NO	NO	NO	NO	NO	
G. Harvested wood products							
H. Other	NO	NO	NO	NO	NO	NO	
5. Waste	0.29	0.29	0.28	0.28	0.28	0.29	30.23
A. Solid waste disposal							
B. Biological treatment of solid waste	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	IE, NE, NA	0.01	
C. Incineration and open burning of waste	0.00	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	
D. Waste water treatment and discharge	0.29	0.29	0.28	0.28	0.28	0.28	24.76
E. Other	NO	NO	NO	NO	NO	NO	
6. Other (as specified in the summary table in CRF)							
Total direct N2O emissions without N2O from LULUCF	8.23	7.46	7.73	7.94	7.45	5.73	-39.87
Total direct N2O emissions with N2O from LULUCF	8.27	7.50	7.76	8.01	7.57	5.77	-39.57
Memo items:							
International bunkers	0.00	0.00	0.00	0.00	0.00	0.00	-64.53
Aviation	0.00	0.00	0.00	0.00	0.00	0.00	-17.32
Navigation	0.00	0.00	0.00	0.00	NO	NO	
Multilateral operations	C	C	C	C	C	C	
CO2 emissions from biomass							
CO2 captured							
Long-term storage of C in waste disposal sites							
Indirect N2O	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	NA, NO	
Indirect CO2 (3)							

CTF Table 1(d) Emission trends (HFCs, PFCs and SF_6)

Table 1(d) HRV_BR2_v0.1

Emission trends (HFCs, PFCs and SF_6)

(Sheet 1 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*Base year* [a]	1990	1991	1992	1993	1994	1995	1996	1997
	kt								
Emissions of HFCs and PFCs - (kt CO2 equivalent)	1,240.24	1,240.24	850.75	NO	NO	NO	57.28	80.07	106.14
Emissions of HFCs - (kt CO2 equivalent)	NO	NO	NO	NO	NO	NO	57.28	80.07	106.14
HFC-23	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-32	NO	NO	NO	NO	NO	NO	0.00	0.00	0.00
HFC-41	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-43-10mee	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-125	NO	NO	NO	NO	NO	NO	0.00	0.00	0.01
HFC-134	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-134a	NO	NO	NO	NO	NO	NO	0.03	0.04	0.05
HFC-143	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-143a	NO	NO	NO	NO	NO	NO	0.00	0.00	0.00
HFC-152	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-152a	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-161	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-227ea	NO	NO	NO	NO	NO	NO	0.00	0.00	0.00
HFC-236cb	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-236ea	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-236fa	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-245ca	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-245fa	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-365mfc	NO	NO	NO	NO	NO	NO	NO	NO	NO
Unspecified mix of HFCs(4) - (kt CO_2 equivalent)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Emissions of PFCs - (kt CO2 equivalent)	1,240.24	1,240.24	850.75	NO	NO	NO	NO	NO	NO
CF_4	0.12	0.12	0.08	NO	NO	NO	NO	NO	NO
C_2F_6	0.03	0.03	0.02	NO	NO	NO	NO	NO	NO
C_3F_8	NO	NO	NO	NO	NO	NO	NO	NO	NO
C_4F_{10}	NO	NO	NO	NO	NO	NO	NO	NO	NO
c-C_4F_8	NO	NO	NO	NO	NO	NO	NO	NO	NO
C_5F_{12}	NO	NO	NO	NO	NO	NO	NO	NO	NO
C_6F_{14}	NO	NO	NO	NO	NO	NO	NO	NO	NO
C10F18	NO	NO	NO	NO	NO	NO	NO	NO	NO
c-C3F6	NO	NO	NO	NO	NO	NO	NO	NO	NO
Unspecified mix of PFCs(4) - (kt CO_2 equivalent)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Unspecified mix of HFCs and PFCs - (kt CO2 equivalent)	NO	NO	NO	NO	NO	NO	NO	NO	NO
Emissions of SF6 - (kt CO2 equivalent)	10.45	10.45	10.33	10.42	10.53	10.64	11.12	11.57	11.43
SF_6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions of NF3 - (kt CO2 equivalent)	NO	NO	NO	NO	NO	NO	NO	NO	NO
NF3	NO	NO	NO	NO	NO	NO	NO	NO	NO

CTF Table 1(d) Emission trends (HFCs, PFCs and SF_6), cont.

Table 1(d) HRV_BR2_v0.1

Emission trends (HFCs, PFCs and SF_6)

(Sheet 2 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*1998*	1999	2000	2001	2002	2003	2004	2005	2006	2007
Emissions of HFCs and PFCs - (kt CO2 equivalent)	139.06	166.70	199.21	224.96	261.93	304.77	347.89	386.12	422.70	469.51
Emissions of HFCs - (kt CO2 equivalent)	139.06	166.70	199.21	224.96	261.93	304.77	347.89	386.12	422.70	469.51
HFC-23	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-32	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
HFC-41	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-43-10mee	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-125	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
HFC-134	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-134a	0.06	0.08	0.09	0.11	0.12	0.15	0.17	0.19	0.21	0.23
HFC-143	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-143a	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
HFC-152	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-152a	NO	NO	NO	NO	NO	NO	NO	NO	0.00	0.00
HFC-161	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-227ea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HFC-236cb	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-236ea	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-236fa	NO	NO	NO	NO	NO	NO	NO	NO	0.00	0.00
HFC-245ca	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-245fa	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
HFC-365mfc	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Unspecified mix of HFCs(4) - (kt CO_2 equivalent)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Emissions of PFCs - (kt CO2 equivalent)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
CF_4	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C_2F_6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C_3F_8	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C_4F_{10}	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
c-C_4F_8	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C_5F_{12}	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C_6F_{14}	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C10F18	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
c-C3F6	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Unspecified mix of PFCs(4) - (kt CO_2 equivalent)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Unspecified mix of HFCs and PFCs - (kt CO2 equivalent)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Emissions of SF6 - (kt CO2 equivalent)	11.99	11.99	11.62	11.69	12.01	12.28	12.57	13.03	13.01	13.05
SF_6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions of NF3 - (kt CO2 equivalent)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
NF3	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

CTF Table 1(d) Emission trends (HFCs, PFCs and SF_6), cont.

Table 1(d) HRV_BR2_v0.1

Emission trends (HFCs, PFCs and SF_6)

(Sheet 3 of 3)

GREENHOUSE GAS SOURCE AND SINK CATEGORIES	*2008*	2009	2010	2011	2012	2013	Change from base to latest reported year
							%
Emissions of HFCs and PFCs - (kt CO2 equivalent)	490.33	495.90	543.99	563.15	564.99	577.77	-53.41
Emissions of HFCs - (kt CO2 equivalent)	490.33	495.65	543.95	563.13	564.96	577.71	
HFC-23	NO	NO	0.00	0.00	NO	0.00	
HFC-32	0.01	0.01	0.01	0.01	0.01	0.01	
HFC-41	NO	NO	NO	NO	NO	NO	
HFC-43-10mee	NO	NO	NO	NO	NO	NO	
HFC-125	0.02	0.02	0.02	0.03	0.03	0.03	
HFC-134	NO	NO	NO	NO	NO	NO	
HFC-134a	0.24	0.25	0.27	0.27	0.27	0.27	
HFC-143	NO	NO	NO	NO	NO	NO	
HFC-143a	0.01	0.01	0.02	0.02	0.02	0.02	
HFC-152	NO	NO	NO	NO	NO	NO	
HFC-152a	NO	0.00	0.04	NO	NO	NO	
HFC-161	NO	NO	NO	NO	NO	NO	
HFC-227ea	0.00	0.00	0.00	0.00	0.00	0.00	
HFC-236cb	NO	NO	NO	NO	NO	NO	
HFC-236ea	NO	NO	NO	NO	NO	NO	
HFC-236fa	0.00	NO	NO	0.00	0.00	0.00	
HFC-245ca	NO	NO	NO	NO	NO	NO	
HFC-245fa	NO	NO	NO	NO	NO	NO	
HFC-365mfc	NO	NO	NO	NO	NO	NO	
Unspecified mix of HFCs(4) - (kt CO_2 equivalent)	NO	NO	NO	NO	NO	NO	
Emissions of PFCs - (kt CO2 equivalent)	NO	0.26	0.03	0.02	0.03	0.06	-100.00
CF_4	NO	NO	0.00	NO	NO	NO	
C_2F_6	NO	NO	NO	NO	NO	0.00	-99.98
C_3F_8	NO	0.00	0.00	0.00	0.00	NO	
C_4F_{10}	NO	NO	NO	NO	NO	NO	
c-C_4F_8	NO	NO	NO	NO	NO	NO	
C_5F_{12}	NO	NO	NO	NO	NO	NO	
C_6F_{14}	NO	NO	NO	NO	NO	NO	
C10F18	NO	NO	NO	NO	NO	NO	
c-C3F6	NO	NO	NO	NO	NO	NO	
Unspecified mix of PFCs(4) - (kt CO_2 equivalent)	NO	NO	NO	NO	NO	NO	
Unspecified mix of HFCs and PFCs - (kt CO2 equivalent)	NO	NO	NO	NO	NO	NO	
Emissions of SF6 - (kt CO2 equivalent)	11.98	8.03	8.95	9.37	9.21	6.58	-37.03
SF_6	0.00	0.00	0.00	0.00	0.00	0.00	-37.03
Emissions of NF3 - (kt CO2 equivalent)	NO	NO	NO	NO	NO	NO	
NF3	NO	NO	NO	NO	NO	NO	

1.2. NATIONAL INVENTORY ARRANGEMENTS

Institutional arrangement for inventory preparation in Croatia is regulated in Chapter II of the Regulation on the Monitoring of Greenhouse Gas Emissions, Policies and Mitigation Measures in the Republic of Croatia (Official gazette, No. 87/12) entitled National system for the estimation and reporting of anthropogenic greenhouse gas emissions by sources and removals by sinks. Institutional arrangements for inventory management and preparation in Croatia could be characterized as decentralized and out-sourced with clear tasks breakdown between participating institutions including MENP (MENP), Croatian Agency for the Environment and Nature (CAEN) and competent governmental bodies responsible for providing of activity data. The preparation of inventory itself is entrusted to Authorised Institution which is elected for three-year period by public tendering. Committee for inter-sectorial coordination for national system for monitoring of GHG emission (National System Commite) is included in the approval process; its members provide their opinion on certain parts of the Inventory within the frame of their speciality. Members of the National System Commitee are nominated by the authorized Ministries upon the request of the MENP.

MENP is a governmental competent authority for the implementation of the UNFCCC and national focal point for functioning of the National system in a sustainable manner, including:

- mediation and exchange of data on greenhouse gas emissions and removals with international organisations and Parties to the Convention;
- mediation and exchange of data with competent bodies and organisations of the European Union in a manner and within the time limits laid down by legal acts of the European Union;
- control of methodology for calculation of greenhouse gas emissions and removals in line with good practices and national circumstances;
- consideration and approval of the National Inventory Report prior to its formal submission to the Convention Secretariat.

CAEN is responsible for the following tasks:

- organisation of greenhouse gas inventory preparation with the aim of meeting the due deadlines referred to in Article 12 of this Regulation;
- collection of activity data referred to in Article 11 the Regulation;
- development of quality assurance and quality control plan (QA/QC plan) related to the greenhouse gas inventory in line with the guidelines on good practices of the Intergovernmental Panel on Climate Change;
- implementation of the quality assurance procedure with regard to the greenhouse gas inventory in line with the quality assurance and quality control plan;
- archiving of activity data on calculation of emissions, emission factors, and of documents used for inventory planning, preparation, quality control and quality assurance;

- maintaining of records and reporting on authorised legal persons participating in the Kyoto Protocol flexible mechanisms;
- selection of Authorised Institution (in Croatian: Ovlaštenik) for preparation of the greenhouse gas inventory.
- provide insight into data and documents for the purpose of technical reviews.

Authorised Institution is responsible for preparation of inventory, which include:

- emission calculation of all anthropogenic emissions from sources and removals by greenhouse gas sinks, and calculation of indirect greenhouse gas emissions, in line with the methodology stipulated by the effective guidelines of the Convention, guidelines of the Intergovernmental Panel on Climate Change, Instructions for reporting on greenhouse gas emissions as published on the Ministry's website, and on the basis of the activities data referred to in Article 11 of this Regulation;
- quantitative estimate of the calculation uncertainty referred to in indent 1 of this Article for each category of source and removal of greenhouse gas emissions, as well as for the inventory as a whole, in line with the guidelines of the Intergovernmental Panel on Climate Change;
- identification of key categories of greenhouse gas emission sources and removals;
- recalculation of greenhouse gas emissions and removals in cases of improvement of methodology, emission factors or activity data, inclusion of new categories of sources and sinks, or application of coordination/adjustment methods;
- calculation of greenhouse gas emissions or removal from mandatory and selected activities in the sector of land use, land-use change and forestry;
- reporting on issuance, holding, transfer, acquisition, cancellation and retirement of emission reduction units, certified emission reduction units, assigned amount units and removal units, and carry-over, into the next commitment period, of emission reduction units, certified emission reduction units and assigned amount units, from the Registry in line with the effective decisions and guidelines of the Convention and supporting international treaties;
- implementation of and reporting on quality control procedures in line with the quality control and quality assurance plan;
- preparation of the greenhouse gas inventory report, including also all additional requirements in line with the Convention and supporting international treaties and decisions;
- cooperation with the Secretariat’s ERTs for the purpose of technical review and assessment/evaluation of the inventory submissions.

EKONERG – Energy and Environmental Protection Institute was selected as Authorised Institution for preparation of 2015 inventory submission.

1.2.1. CHANGES TO NATIONAL INVENTORY ARRANGEMENTS SINCE THE LAST BIENNIAL REPORT

In 2015 Croatian Environment Agency changed its name to Croatian Agency for the Environment and Nature. There are no other changes regarding national system since last Biennial report.

2. QUANTIFIED ECONOMY-WIDE EMISSION REDUCTION TARGET

This section explains the EU 2020 emission reduction target under the UNFCCC and the target compliance architecture set up within the EU in order to meet that target, and gives an overview of the emission reduction targets of the Republic of Croatia in the context of the EU emission target.

2.1. THE EU TARGET UNDER THE CONVENTION

In 2010, the EU submitted a pledge to reduce its GHG emissions by 2020 by 20 % compared to 1990 levels, in order to contribute to achieving the ultimate objective of the UNFCCC: 'to stabilise GHG concentrations at a level that would prevent dangerous anthropogenic (human-induced) interference with the climate system'[1], or, in other words, to limit the global temperature increase to less than 2°C compared to temperature levels before industrialization (FCCC/CP/2010/7/Add.1). The EU is also committed to raising this target to a 30 % emission reduction by 2020 compared with 1990 levels, provided that other developed countries also commit to achieving comparable emission reductions, and that developing countries contribute adequately, according to their responsibilities and respective capabilities. This offer was reiterated in the submission to the UNFCCC by the EU-28 and Iceland on 30 April 2014[2].

The definition of the Convention target for 2020 is documented in the revised note provided by the UNFCCC Secretariat on the 'Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention' (FCCC/SB/2011/INF.1/Rev.1 of 7 June 2011). In addition, the EU provided additional information relating to its quantified economy-wide emission reduction target in a submission as part of the process of clarifying the developed country Parties' targets in 2012 (FCCC/AWGLCA/2012/MISC.1).

The EU clarified that the accounting rules for the target under the UNFCCC are more ambitious than the current rules under the Kyoto Protocol, for example, including international aviation, adding an annual compliance cycle for emissions under the Effort Sharing Decision (ESD, Decision No 406/2009/EC on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020) or higher Clean Development Mechanism (CDM) quality standards under the EU Emissions Trading System (EU ETS) (FCCC/TP/2013/7). Accordingly, the following assumptions and conditions apply to the EU's 20 % target under the UNFCCC:

- The EU Convention pledge does not include emissions/removals from Land Use, Land-Use Change and Forestry, but it is estimated to be a net sink over the relevant period. EU inventories also include information on emissions and removals from LULUCF in

[1] First steps to a safer future: Introducing the United Nations Framework Convention on Climate Change http://unfccc.int/essential/_background/convention/items/6036.php

[2] European Union, its Member States and Iceland submission pursuant to par 9 of decision 1/CMP.8' http://ec.europa.eu/clima/policies/international/negotiations/docs/eu_submission_20140430_en.pdf

accordance with relevant reporting commitments under the UNFCCC. Accounting for LULUCF activities only takes place under the Kyoto Protocol.

- The target refers to 1990 as a single base year for all gases and all Member States.
- Emissions from international aviation to the extent it is included in the EU ETS are included in the target[3].
- A limited number of CERs and ERUs units may be used to achieve the target: in the ETS, the use of international credits is capped. Quality standards also apply to the use of international credits in the EU ETS, including a ban on credits from LULUCF projects and certain industrial gas projects. In the ESD sectors, the annual use of international credits is limited to up to 3 % of each Member State's ESD emissions in 2005, with a limited number of Member States being permitted to use an additional 1 % from projects in Least Developed Countries (LDCs) or Small Island Developing States (SIDS), subject to conditions.
- The Global Warming Potentials (GWPs) used to aggregate GHG emissions up to 2020 under EU legislation were those based on the Second Assessment Report of the IPCC when the target was submitted. In its submission to clarify the 2020 target from 20 March 2012, the EU announced that the implications of the CMP Decision to revise the GWPs to those from the IPCC Fourth Assessment Report (AR4) are under review. This review has been completed and revised GWPs from AR4 were adopted for the EU ETS. For the revision of ESD targets the revised GWPs were taken into account. For the implementation until 2020, GWPs from AR4 will be used consistently with the UNFCCC reporting guidelines for GHG inventories.
- The target covers the gases CO_2, CH_4, N_2O, HFCs, PFCs and SF_6.

Table 2-1: Key facts of the Convention target of the EU-28

Parameters	Target
Base Year	1990
Target Year	2020
Emission Reduction target	-20% in 2020 compared to 1990
Gases covered	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6
Global Warming Potential	AR4
Sectors Covered	All IPCC sources and sectors, as measured by

[3] In the EU, emissions covered by category 'international aviation' go beyond the scope of the EU target, as emissions from international aviation are included in the EU Climate and Energy Package and the EU target under the UNFCCC to the extent to which aviation is part of the EU ETS. As such emissions cannot be separated in the EU inventory nor in the projections for the entire time series, emissions from international aviation have been considered in their entirety throughout the report. Over the period, total emissions from international aviation were between 1.2-2.9% of the annual total EU GHG emissions.

Parameters	Target
	the full annual inventory and international aviation to the extent it is included in the EU ETS.
Land Use, Land-Use Change, and Forests (LULUCF)	Accounted under KP, reported in EU inventories under the Convention. Assumed to produce net removals
Use of international credits (JI and CDM)	Possible subject to quantitative and qualitative limits.
Other	Conditional offer to move to a 30% reduction by 2020 compared to 1990 levels as part of a global and comprehensive agreement for the period beyond 2012, provided that other developed countries commit themselves to comparable emission reductions and that developing countries contribute adequately according to their responsibilities and respective capabilities.

2.2. THE EU TARGET COMPLIANCE ARCHITECTURE

2.2.1. The 2020 climate and energy package

In 2009 the EU established internal rules under its "2020 climate and energy package"[4] - these underpin the EU implementation of the target under the Convention. The package introduced a clear approach to achieving the 20 % reduction of total GHG emissions from 1990 levels, which is equivalent to a 14 % reduction compared to 2005 levels. This 14 % reduction objective is divided between the ETS and ESD sectors. These two sub-targets are:

- a 21 % reduction target compared to 2005 for emissions covered by the ETS (including domestic and international aviation);
- a 10 % reduction target compared to 2005 for ESD sectors, shared between the 28 Member States (MS) through individual national GHG targets.

The distribution of the total target across the ETS and ESD is shown in the Figure 2.1.

Source: European Commission

[4] http://ec.europa.eu/clima/policies/package/index_en.htm

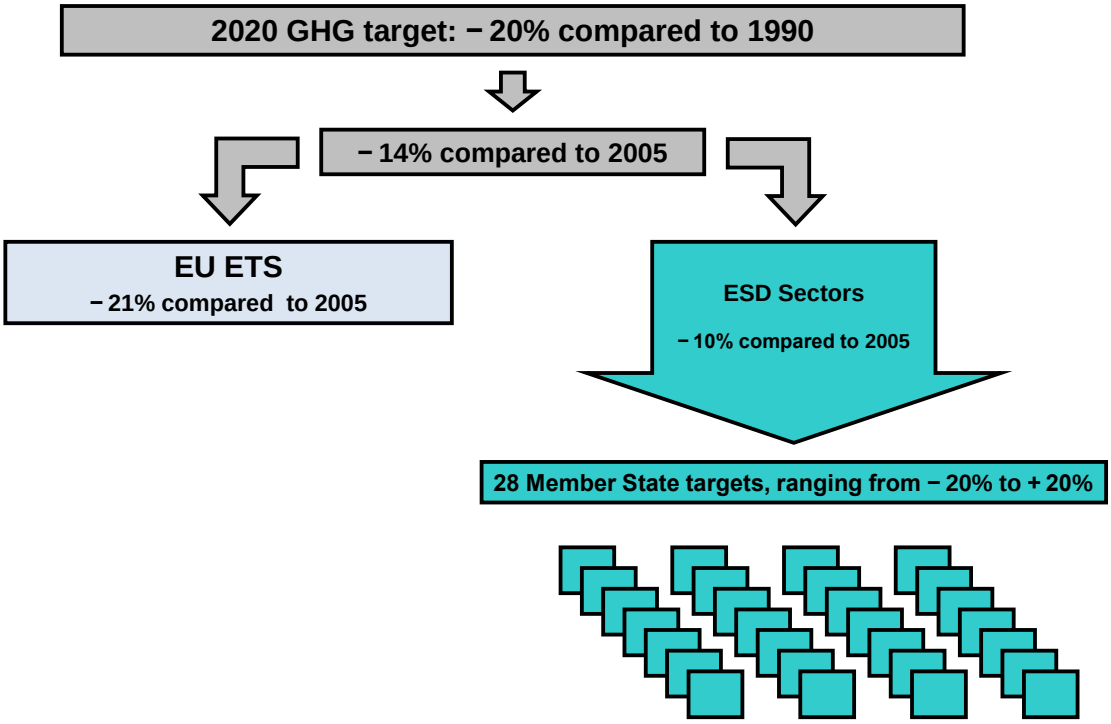
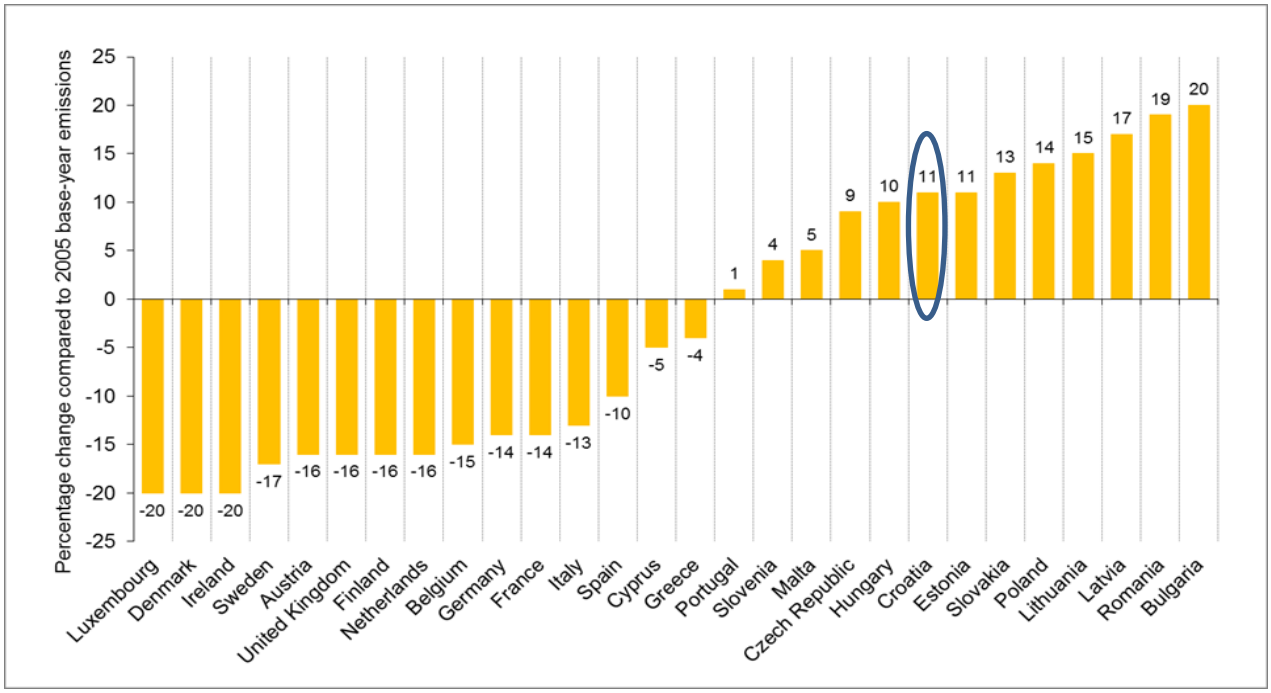


Figure 2-1: GHG targets under the 2020 climate and energy package

Under the revised EU ETS Directive (Directive 2009/29/EC), a single ETS cap covers the EU Member States and three participating non-EU countries (Norway, Iceland and Liechtenstein), i.e. there are no further individual caps by country. Allowances allocated in the EU ETS from 2013 to 2020 decrease by 1.74 % annually, starting from the average level of allowances issued by Member States for the second trading period (2008–2012).

The three non-EU countries participating in EU ETS (Norway, Iceland and Liechtenstein) are also subject to a similarly defined cap and the same annual decrease in allowance allocation.

The vast majority of emissions within the EU which fall outside the scope of the EU ETS are addressed under the Effort Sharing Decision (ESD) (Decision No 406/2009/EC). The ESD covers emissions from all sources outside the EU ETS, except for emissions from domestic and international aviation (which were included in the EU ETS from 1 January 2012), international maritime, and emissions and removals from land use, land-use change and forestry (LULUCF). It thus includes a diverse range of small-scale emitters in a wide range of sectors: transport (cars, trucks), buildings (in particular heating), services, small industrial installations, fugitive emissions from the energy sector, emissions of fluorinated gases from appliances and other sources, agriculture and waste. Such sources currently account for about 60 % of total GHG emissions in the EU. According to the Decision 529/2013/EU on accounting rules on GHG emissions and removals resulting from the activities relating to land use, land use change and forestry and on information concerning actions relating to those activities, Member States are obliged to provide information on their LULUCF actions to limit or reduce emissions and to maintain or increase removals.



Source: EU Decision No 406/2009/EC, Annex 2

Figure 2-2: National 2020 GHG emission limits under the ESD, relative to 2005 emissions levels

While the EU ETS target is to be achieved by the EU as a whole, the ESD target was divided into national targets to be achieved individually by each Member State. Under the Effort Sharing Decision, national emission targets for 2020 are set, expressed as percentage changes from 2005 levels. These changes have been transferred into binding quantified annual reduction targets for the period from 2013 to 2020 (Commission Decisions 2013/162/EU and 2013/634/EU), denominated in Annual Emission Allocations (AEAs). At country level, 2020 targets under the ESD range from -20 % to +20 %, compared to 2005 levels. ESD targets for 2020 for each EU Member State are shown in the Figure 2-2.

The target levels have been set on the basis of Member States' relative Gross Domestic Product per capita. In addition, different levels of development in the EU-28 are taken into account by the provision of several flexibility options. Up to certain limitations, the ESD allows Member States (MS) to make use of flexibility provisions for meeting their annual targets: carry-over of over-achievements to subsequent years within each Member State up to 5%, transfers of AEAs between Member States and the use of international credits (credits from Joint Implementation and the Clean Development Mechanism) up to 3% according to the Decision No 406/2009/EC. Nevertheless, ESD targets are designed in a strict manner. Every year, once MS emissions are reviewed according to strict criteria (described in Chapter III of the Commission Implementing Regulation 749/2014), the European Commission issues an implementing decision on MS ESD emissions in the given year. MS exceeding their annual AEA, even after taking into account the flexibility provisions and the use of JI/CDM credits, will face

inter alia a penalty – a deduction from their emission allocation of the following year (excess emissions, multiplied by 1.08).

National Annual Emission Allocations may be revised in late 2016 if the application of new UNFCCC methodologies to determine GHG inventories leads to a significant change of a Member State's past ESD emissions (Regulation No 525/2013 Article 27).

Croatian Parliament passed the Law on the Ratification on Doha Amendment on 25 September 2015 (Official Gazette, International Treaties, No 06/15).

2.3. THE CROATIAN EMISSION REDUCTION TARGETS

2.3.1. KYOTO PROTOCOL LIMIT 2008-2012

Total projections of greenhouse gas emissions for period from 2008 to 2012 as well as the obligation for Croatia according to the Kyoto Protocol are shown in Figure 2-8. The base year emission (year 1990, AR2) is 31,322 kt CO_2 eq, and accordingly the Kyoto Protocol limit (-5% in relation to base year) is 29,756 kt CO_2 eq. The difference in emissions compared to the target under the Kyoto Protocol for the period from 2008 to 2012 is shown in Table 2-2.

Table 2-2: The difference to the Kyoto Protocol target, kt CO_2 eq (AR 2)

	1990	2008	2009	2010	2011	2012	2008 -2012
Total emissions		31,376	29,341	28,806	28,464	26,385	144,373
Total emissions + sink**		30,404	28,369	27,834	27,492	25,413	139,513
Emission in base year	31,322						
-5% in relation to base year		29,756	29,756	29,756	29,756	29,756	148,780*
Difference of the total emissions		1,620	-415	-950	-1,292	-3,371	-4,407
Difference of the total emissions + sink**		648	-1,387	-1,922	-2,264	-4,343	-9,267

* The assigned amount calculated pursuant to Article 3, paragraph 7 and 8 of the Kyoto Protocol

** The forest sink of 972 kt CO_2 per year is included

In the first commitment period, from 2008 to 2012, the total greenhouse gas emissions were 4,407 kt CO_2 eq below the obligations under the Kyoto Protocol (148,780 kt CO_2 eq). If the forest sink of 972 kt CO_2 per year is included, the total greenhouse gas emissions were 9,267 kt CO_2 eq below the obligations under the Kyoto Protocol.

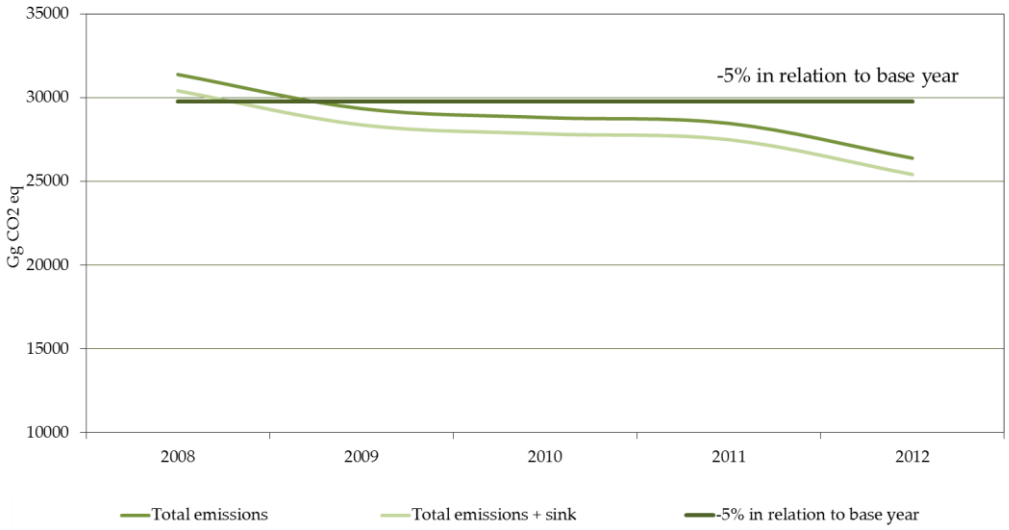


Figure 2-3: Comparison with Kyoto Protocol limit

2.3.2. ESD target until 2020

As described in previous chapter, outside of the EU ETS, aims to reduce or increase the permitted emissions are determined on the basis of GDP per capita in the framework of the Decision on joint efforts of the division. For the Republic of Croatia is allowed to increase greenhouse gas emissions outside the EU ETS by 11% by 2020 compared to 2005. The Commission Decision 2013/162/EC of 26 March 2013 determined the quotas expressed in absolute terms for Croatia from 2013 to 2020. The Commission Decision 2013/634/EC of 31 October 2013 adjusted the quotas due to an increase in the scope of the EU ETS, which has decreased the quotas for emissions outside the EU ETS. In both documents, quota is expressed using the value of global warming potential (GWP) of the second and fourth report of the Intergovernmental Panel on Climate Change (IPCC).

Table 2-3 shows the limitation of greenhouse gas emissions outside the EU ETS (national annual quota) in the period 2013-2020 using GWP values from the second and fourth assessment report of the IPCC.

Table 2-3: Annual emission allocations for the Republic of Croatia for the period 2013-2020 [t CO_2eq]

	2013	2014	2015	2016
GWP AR2	18,990,152	19,185,523	19,380,894	19,576,265
GWP AR4	19,613,805	19,805,256	19,996,708	20,188,161
	2017	**2018**	**2019**	**2020**
GWP AR2	19,771,635	19,967,007	20,162,378	20,357,748
GWP AR4	20,379,612	20,571,063	20,762,515	20,953,966

Further information is provided in CTF Tables 2(a)-(f).

CTF Table 2(a) Description of quantified economy-wide emission reduction target: base year

Table 2(a) HRV_BR2_v0.1

Description of quantified economy-wide emission reduction target: base year[a]

Party	*Croatia*	
Base year /base period	1990	
Emission reduction target	% of base year/base period	% of 1990 [b]
	20.00	20.00
Period for reaching target	BY-2020	

CTF Table 2(b) Description of quantified economy-wide emission reducing target: gasses and sectors covered

Table 2(b) HRV_BR2_v0.1

Description of quantified economy-wide emission reduction target: gases and sectors covered[a]

Gases covered		*Base year for each gas (year):*
CO_2		1990
CH_4		1990
N_2O		1990
HFCs		1990
PFCs		1990
SF_6		1990
NF_3		
Other Gases (specify)		
Sectors covered[b]	Energy	Yes
	Transport[f]	Yes
	Industrial processes[g]	Yes
	Agriculture	Yes
	LULUCF	No
	Waste	Yes
	Other Sectors (specify)	

CTF Table 2(c) Description of quantified economy-wide emission reducing target: global warming

Table 2(c) HRV_BR2_v0.1

Description of quantified economy-wide emission reduction target: global warming potential values (GWP)[a]

Gases	*GWP values* [b]
CO_2	4th AR
CH_4	4th AR
N_2O	4th AR
HFCs	4th AR
PFCs	4th AR
SF_6	4th AR
NF_3	4th AR
Other Gases (specify)	

CTF Table 2(d) Description of quantified economy-wide emission reducing target: approach to counting emissions and removals from LULUCF sector

Table 2(d) HRV_BR2_v0.1

Description of quantified economy-wide emission reduction target: approach to counting emissions and removals from the LULUCF sector[a]

Role of LULUCF	LULUCF in base year level and target	Excluded
	Contribution of LULUCF is calculated using	

CTF Table 2(e)I Description of quantified economy-wide emission reducing target: market-based mechanisms under the Convention

Table 2(e)I	HRV_BR2_v0.1
Description of quantified economy-wide emission reduction target: market-based	
Market-based mechanisms under the Convention	*Possible scale of contributions (estimated kt CO_2 eq)*
CERs	
ERUs	
AAUs[i]	
Carry-over units[j]	
Other mechanism units under the Convention (specify)[d]	

CTF Table 2(e)II Description of quantified economy-wide emission reducing target: market-based mechanisms under the Convention

Table 2(e)II HRV_BR2_v0.1

Description of quantified economy-wide emission reduction target: other market-based mechanisms[a]

Other market-based mechanisms	*Possible scale of contributions*
(Specify)	*(estimated kt CO_2 eq)*

CTF Table 2(f) Description of quantified economy-wide emission reducing target: any other information

Table 2(f) HRV_BR2_v0.1

Description of quantified economy-wide emission reduction target: any other information[a,b]

In December 2009, the European Council reiterated the conditional offer of the EU to move to a 30% reduction by 2020 compared to 1990 levels as part of a global and comprehensive agreement for the period beyond 2012, provided that other developed countries commit themselves to comparable emission reductions and that developing countries contribute adequately according to their responsibilities and respective capabilities.

Legally binding target trajectories for the period 2013-2020 are enshrined in both the EU-ETS Directive (Directive 2003/87/EC and respective amendments) and the Effort Sharing Decision (Decision No406/2009/EC). These legally binding trajectories not only result in a 20% GHG reduction in 2020 compared to 1990 but also define the EU's annual target pathway to reduce EU GHG emissions from 2013 to 2020. The Effort Sharing Decision sets annual national emission targets for all Member States for the period 2013-2020 for those sectors not covered by the EU emissions trading system (ETS), expressed as percentage changes from 2005 levels. In March 2013,the Commission formally adopted the national annual limits throughout the period for each Member State. By 2020, the national targets will collectively deliver a reduction of around 10% in total EU emissions from the sectors covered compared with 2005 levels. The emission reduction to be achieved from the sectors covered by the EU ETS will be 21% below 2005 emission levels.

3. POLICIES AND MEASURES

Policies and measures that are subject of this report are included in the "with measures" and "with additional measures" scenarios.

In this report, policies and measures that belong to the so-called ETS sector are being separately observed from policies and measures in non-ETS sectors. This way of overview is selected in accordance with the European practice in which the effects of policies and measures are separated in such way. ETS (Emissions Trading System) sector includes all activities listed in Annex I of the Regulation on trading with greenhouse gas emission allowances (OG 69/12, 154/14) and for the reduction of greenhouse gas emissions from these activities alone are responsible plant operators involved in the trading system. Reduction commitments through emission allowances allocated evenly have been distributed to all Member States, thus it can be concluded that reduction of emissions of certain activities of the ETS is in fact regulated at EU level. Emissions trading system is treated as a single group of measures to reduce emissions, without dividing the activities covered by the system.

For all other activities at the state level, which are not covered by the ETS, common sectorial division is applied, while responsibility for reducing the emissions and increasing the outflow by implementing these policies and measures is on the Member States. For activities that are not covered by the ETS sector, policies and measures to reduce emissions from sources and increase sinks of greenhouse gases are shown separately for the following sectors:

- energy
- transport
- industrial processes
- waste management
- agriculture
- land use, land use change and forestry (LULUCF)
- other (cross-cutting) policies and measures.

3.1. EMISSIONS TRADING SYSTEM

Besides implementation of EU ETS in Croatia from 2013 onward, there are two measures directly linked to the emission trading system. One measure refers to the use of funds obtained from the sales of emission allowances through auctions and the other related to the regulation of the geological storage of carbon dioxide. All three measures are described below.

MSP-1: Inclusion of the operators in the European Union Emission Trading System (EU ETS) in the full scale from 1 January 2013 and administering aviation operators from 1 January 2014

From 1 January 2013, the Republic of Croatia is fully integrated in the EU Emission Trading System (EU ETS). Operators in Croatia - the pursuants in the EU ETS have obtained Permits for greenhouse gas emissions and have established a regime for emissions monitoring and reporting to the competent authority.

The EU ETS includes activities listed in Annex I of the Regulation on the Greenhouse Gas Emission Allowances Trading (OG 69/12, 154/14). Greenhouse gases covered by EU ETS are: carbon dioxide (CO_2) for all activities and additionally for certain activities, nitrous oxide (N_2O) and perfluorocarbon (PFC). Additional activity included in EU ETS is aviation. Aircraft operators in Croatia are included in the EU ETS from 2012, and Croatia undertook to administer aviation operators included in the EU ETS from 2014.

All operators, except electricity producers for the third party's sales, have submitted their applications for issuance of free allowances. Operators, which will not have a sufficient number of allowances to cover their greenhouse gases emissions, have the option to purchase emission units through auctions.

MSP-2: Adoption of the Plan for use of funds obtained from the sales of emission allowances through auctions in the Republic of Croatia for the period from 2014 to 2016 (OG 140/14)

Of the total number of allowances designated for the allocation to operators and aircraft operators, in each year of the trading period, a part is distributed free of charge according to the prescribed method. The remaining part is distributed to the Member States of the European Union and is subject to public auctions.

The Air Protection Act (OG 130/11, 47/14) stipulates that Republic of Croatia for such purposes use all funds received decreased by 5 percent, i.e. 15 percent for 2014 and 2015, which will be paid to the state budget of the Republic of Croatia to cover the costs of administering the emissions trading system, for administrative affairs, functioning of the Union Registry, auctioneers, National System for monitoring greenhouse gas emissions and other matters related to climate change. Plan for the use of funds obtained from the sales of emission allowances through auctions in the Republic of Croatia for the period from 2014 to 2016 was adopted by the Croatian Government (OG 140/14) on the proposal of the ministry responsible for environmental protection, while the funds are paid to a special account of the Environmental Protection and Energy Efficiency Fund. Founds obtained from the sales of emission allowances through auctions are planned to use for encouraging of energy efficiency and use sustainable energy resources, reduction GHG emissions, reduction emissions from transport sector, adaptation to climate change etc.

MSP-3: Preparation of National Feasibility Study with the action plan for the preparatory activities for CCS projects in Croatia

Technology for carbon capture and storage for large emission sources is not yet commercially available. The possibility of commercial application is expected in the period after 2020.

According to Directive 2009/31/EC on the geological storage of carbon dioxide, respectively Article 36 of Directive on industrial emissions 2010/75/EU, for power plants with capacity exceeding 300 MW which have obtained the construction permit after the entry into force of the Directive 2009/31/EC, it is necessary to assess whether the following requirements are satisfied:

- suitable storage locations are available,
- transport facilities are technically and economically feasible and
- upgrade of the plant for CO_2 capture is technically and economically feasible.

If these conditions are satisfied, the competent authority should provide adequate reserve area on the plant's location for equipment for capturing and compressing extracted CO_2.

Due to described commitments for new thermal power plants, with this measure the preparation of National Feasibility Study with the action plan of the preparatory activities for CCS projects is planned. This Study will include stages of capturing on the sources of emissions, transport, injection and storage

3.2. SECTORAL POLICIES AND MEASURES: ENERGY

MEN-1: Promotion of energy efficiency in households and services through project activities

Increase of energy efficiency in buildings has been identified as an area with great potential for saving energy and reducing greenhouse gas emissions. Important documents that have been adopted are as follows:

- The Third National Action Plan for Energy Efficiency Croatia for the period 2014-2016 (Ministry of Economy, 2014),
- The Long-term Strategy to Stimulate Investment in the Renovation of the National Building Stock in Croatia (OG 74/14),
- The Program of Energy Renovation of Apartment Buildings for the Period from 2014 to 2020 with a Detailed Plan for the Period from 2014 to 2016 (OG 78/14),
- The Program of Energy Renovation of Family Houses for the Period from 2014 to 2020 with a Detailed Plan for the Period from 2014 to 2016 (OG 43/14),

- The Program of Energy Renovation of Commercial Non-residential Buildings for the Period from 2014 to 2020 with a Detailed Plan of Energy renovation of Commercial Non-residential Buildings for the Period from 2014 to 2016 (OG 98/14) and

- The Programme for the Energy Renovation of Public Buildings 2012 - 2013 (Ministry of Construction and Physical Planning),

- The Programme for the Energy Renovation of Public Buildings 2014 - 2015 (Ministry of Construction and Physical Planning).

In the above listed documents, mechanisms, dynamics and aims to achieve energy savings and reduce greenhouse gas emissions in buildings are prescribed.

In addition, incentives for energy efficiency improvements are expected under the Operative Programme Competitiveness and cohesion for the period from 2014 to 2020 where, under Priority Axis 4 - Promotion of energy efficiency and renewable energy sources, provides support for energy efficiency.

MEN-2: Energy audits in industry

With this measure, support to assess the potential energy savings in industrial plants through co-financing the implementation of energy audits should be provided. Scheme for Energy audits in industry includes:

- mandatory energy audits for large companies (companies that meet at least two of the following criteria: total assets of at least HRK 130,000,000.00, annual income of at least HRK 260,000,000.00, an average of at least 250 employees during the financial year). The obligation is regulated by the Law on Energy Efficiency (OG 127/14),

- voluntary scheme of energy audits for small and medium companies. Energy audits on a voluntary basis are supported by the financial assistance provided by the Environmental Protection and Energy Efficiency Fund.

MEN-3: Measurement and informative calculation of energy consumption

Law on Energy Efficiency (OG 127/14) stipulates that energy distributors ensure that, to the extent that is technically possible, financially reasonable and proportionate in view of the potential energy savings, final customers of energy and hot water in homes acquire individual meters at competitive prices that accurately reflect the actual energy consumption of end customers. Energy supplier shall free of charge on request of the end customer at least once a year provide information on the calculation of electricity, heat or gas and previous consumption of the end customer.

Legible and understandable energy bills (electricity, heat and natural gas) and individual consumption metering are obligation of distribution system operators and suppliers. This will increase consumer awareness of the way in which they consume the energy. The bills should include comparisons of consumption for the current year and for the corresponding period of the previous year, as well as information on available energy efficiency measures.

MEN-4 and MEN-8: Promotion of the cogeneration construction

The legislative framework which introduces a system of incentives for electricity generation from cogeneration was adopted for implementation of this measure. The largest contribution is expected from new industrial cogeneration.

Incentives (tariffs) are the main mechanism for the promotion of cogeneration. Tariffs depend on the installed plant capacity. In addition to the system of incentives for electricity generation from cogeneration plants, this measure provides adoption of appropriate regulations to promote the heat generation from cogeneration (defining the status of eligible heat producer).

MEN-5: Labelling the energy efficiency of household appliances

Scheme of labelling the energy efficiency of household appliances is legally prescribed in the Regulations on Energy Labelling of Household Appliances (OG 130/07, 101/11). It is prescribed that energy efficiency label have to be marked on all household appliances that use electricity and are placed on the Croatian market, whether they are manufactured in the Republic of Croatia or imported.

By energy labelling, customers are informed about the energy consumption of devices and selection is directed towards more efficient appliances. For the implementation of these measures, a lot has been done to raise public awareness and educate in order to increase the market share of household appliances with A, A+, A++ energy efficiency class and reduce the market share of household appliances under class C.

MEN-6: Eco-design of energy-using products

Ordinance on establishing Eco-design requirements for energy related products (OG 80/2013), transferred the 2009/125/EC Directive of the European Parliament and of the Council of 21 the October 2009 about establishing a framework for determining the Eco-design requirements for energy related products to the Croatian legislation.

This Ordinance established a framework for the setting of EU Eco-design of energy-related products with the aim of ensuring the free movement of these products on the internal market. The Ordinance provides for the determination of requirements to be met by energy-related products covered by implementing measures, to be placed on the market and / or in use. It

contributes to sustainable development by increasing the energy efficiency and level of environmental protection, while at the same time increasing the security of energy supply.

This Ordinance also allows the implementation of provisions related to the Directive 2009/125/EZ (air conditioners and fans, fan motor-driven, self-circulation pumps without seals, household washing machines, electric motors, non-directional household lamps, lamps directed to the corresponding equipment LED - lamps, fluorescent lamps, external power supplies, cooling devices, simple control boxes, electric and electronic equipment in homes and offices - mode, hold and mute, televisions, household dryers, washing household dishes and pumps water). The Ordinance came into force on the date of the Republic of Croatia accession to EU.

MEN-7: Supporting the use of renewable energy sources in electricity generation

For the implementation of measures, legislative framework, which introduces a system of incentives electricity generation using renewable energy sources, has been adopted. The main mechanism for development of renewable energy sources are incentive prices (tariffs). The tariffs depend on the type of source, power plant size and amount of generated electricity.

In the National Action Plan for Renewable Energy Sources (Ministry of Economy, 2013), the Republic of Croatia determined the objectives and policy for increasing the share of RES in final energy consumption by 2020. The Act on Renewable Energy Sources is under development with expected adoption during 2016.

In addition, incentives for use of renewable energy sources are expected under the Operative Programme Competitiveness and cohesion for the period from 2014 to 2020 where under Priority Axis 4 - Promotion of energy efficiency and renewable energy the support of renewable energy sources is planned.

MEN-9: Usage of biodegradable fraction of waste in public electricity and heating plants

This is a cross-cutting measure meaning that it requires coordination of activities with "Waste management" sector. This measure is related to the measures *Use of biogas from bioreactors for electricity and heat generation* and *Thermal treatment of municipal waste and sludge from wastewater treatment*. The reduction of biodegradable waste in disposed municipal solid waste is one of the main objectives defined in the Waste Management Plan of the Republic of Croatia for the period from 2007 until 2015 (OG 85/07, 126/10, 31/11) and the Law of Sustainable Waste Management (OG 94/13). Using of biodegradable waste for production of biogas that could be used as a fuel, as well as municipal waste and sludge from wastewater treatment in thermal treatment plant also means reducing the consumption of fossil fuels in the energy sector. One of the activities leading to the accomplishment of this objective is the utilization of waste as alternative fuel in public electricity and heating plants.

MEN-10: Usage of refused derived fuel in the cement industry

The same applies to this measure as to the previous one, but waste is utilized as a fuel of rotary kilns in cement industry. The Waste Management Plan defines technological processes of processing and utilization of municipal waste before final disposal within the waste management centers, whereat the procedure of mechanical-biological waste treatment is considered as method for the production of fuel from waste. Use of fuel from waste results in reduced consumption of primary energy sources. Precondition for implementation of this measure is to ensure stable quantity, composition and structure of waste.

MEN-11: Promotion of the use of renewable energy sources in heat/cooling energy generation

The Law on Heat Market (OG 80/13, 14/14, 102/14) stipulates that use of renewable energy as a source of heat is of interest for Croatia. The Republic of Croatia has in the National Action Plan for Renewable Energy Sources (Ministry of Economy, 2013) determined the objectives and policy for increasing the share of RES in final energy consumption by 2020 and in particular, the estimated contribution of energy sources for heating and cooling from renewable energy. The Act on Renewable Energy Sources is under development and expected adoption is during 2015.

In addition, incentives for use of renewable energy sources are expected under the Operative Programme Competitiveness and cohesion for the period from 2014 to 2020 where under Priority Axis 4 - Promotion of energy efficiency and renewable energy the support of renewable energy sources is planned.

MEN-12: Promotion of the use of renewable energy sources and energy efficiency by HBOR-a (Croatian Bank for Reconstruction and Development)

For the purpose of financing the environmental protection projects, HBOR extends loans through the Loan programme for the Preparation of Renewable Energy Resources and Loan Programme for the Financing of Projects of Environmental protection, Energy Efficiency and Renewable Energy Sources.

The goal of the loan program of environmental projects, energy efficiency and renewable energy sources is the realization of investment projects focused on environmental protection, improving energy efficiency and promoting renewable energy. Loans are intended for investment in land, buildings, equipment and devices. Final user may be local and territorial (regional) governments, utility companies, companies, dealers and other legal entities.

MEN-13: Promotion of the use of renewable energy sources and energy efficiency by FZOEU (The Environmental Protection and Energy Efficiency Fund) resources

The Environmental Protection and Energy Efficiency Fund provides funding for the preparation, implementation and development of programs and projects in the field of environmental

protection, energy efficiency and use of renewable energy sources and climate change mitigation.

Funds for financing are provided from the revenues raised by environmental polluters, which includes fees for nitrogen oxides, sulfur dioxide and carbon dioxide emissions, fees for burdening the environment with waste, environmental user fees and special fees for the environment for motor vehicles as well as from funds obtained from the sales of emission allowances through auctions.

Resources of the Environmental Protection and Energy Efficiency Fund are allocated to projects, which improve energy efficiency, including cogeneration, district heating systems, energy audits and demonstration activities, public lighting projects, fuel replacement and waste heat use and projects in the field of building construction and sustainable construction.

Renewable energy projects for which the Environmental Protection and Energy Efficiency Fund grants resources include solar energy, wind energy, biomass, energy from small hydro and geothermal energy.

The Environmental Protection and Energy Efficiency Fund provides grants to local and regional governments, companies, craftsmen, non-profit organizations and individuals, through loans, interest rate subsidies, financial aids and donations.

For some tenders of the Fund, operators in the EU ETS are eligible, thus this measure has effects in the EU ETS and non-EU ETS sector.

MEN-14: Energy efficiency projects with implementation through energy services

Energy efficiency projects with implementation through energy services include modernization, reconstruction and renovation of existing plants and facilities with the aim of rational use of energy in a way to achieve the return on investment through savings in energy costs and maintenance. These projects include the development, implementation and financing to improve energy efficiency and reduce operation and maintenance. Areas of business are public and private sectors, i.e. buildings (schools and kindergartens, offices, hotels, universities, hospitals), public lighting, industry and power supply systems (cogeneration, district heating).

Center for monitoring of the energy sector and investment (CEI) was implementing the program "Energy renovation of public buildings 2012 - 2013" under an agreement with the Ministry of Construction and Physical Planning. CEI conducted the program and based on the Law on Energy Efficiency in Final Consumption (OG 55/12) and the Regulation on the Negotiation and Implementation of Energy Services (OG 69/12), by which CEI was responsible for the implementation of public procurement procedures for energy services for budgetary and extra-budgetary users (Law Art. 25(5)). The program involves contracting energy building renovation process by public tender, which results in the signing of the energy performance contract between bidder companies and the owner of the public building. Such a model has been recognized as the most effective way to achieving energy savings.

3.3. SECTORAL POLICIES AND MEASURES: TRANSPORT

MTR-2: Providing information to consumers on fuel economy and CO_2 emission of new passenger cars

Pursuant to the Ordinance on Availability of Information on Fuel Economy and CO_2 Emissions from Passenger Cars (OG 120/07), which was replaced by the new Ordinance on Availability of Information on Fuel Economy and CO_2 Emissions from Passenger Cars (OG 7/2015) each supplier of new passenger cars intended for sale shall provide consumers with information on the fuel consumption rate and specific CO_2 emission of passenger cars. The Ministry of Interior which is responsible for the road traffic safety, on the basis of the Ordinance once a year, not later than 31 March of the current year, makes a Guidelines on cost-effectiveness of fuel consumption and CO_2 emission from new passenger cars available for purchase on the market in the Republic of Croatia. The Guidelines contains required information for each model of new passenger cars available in the domestic market.

MTR-3: Implementation of the pilot project and establishment of training system for drivers of road vehicles for eco-driving

The pilot projects were conducted and systematic training for drivers of road vehicles for eco-driving is implemented, as prescribed in the third National Action Plan for Energy Efficiency for the Period from 2014 to 2016 (Ministry of Economy, 2014). This saves energy and increases the level of awareness of all citizens and drivers in the Republic of Croatia on advantages of this modern, intelligent and environmentally friendly driving style. Special elements are dedicated to education on eco driving for drivers of passenger cars, buses and trucks.

MTR-4: Promotion of production and use of biofuels in transport

The basic regulation that regulates and promotes the usage of biofuel is Law on Biofuels for Transport (OG 65/09, 145/10, 26/11, 144/12).

Based on this law, in 2010, the National Action Plan that promotes the production and use of biofuels in transport for the period 2011 - 2020 was prepared. The Plan establishes a policy to promote increased production and use of biofuels in transport in Croatia. The Plan contains a review and assessment of the situation on the fuel market for transport and air protection, comparative analysis, long-term goals, including the target-market of biofuels and measures to promote increased production and use of biofuels in transport. Measures prescribed by action plan include measures that promote the production of raw materials for the production of biofuels, measures that promote the production of biofuels with reference to the fee for promotion of production, measures that promote consumption of biofuels with reference to liquid petroleum distributors to place the biofuels on market, administrative measures and research and development activities. The National Action Plan for Renewable Energy Sources (Ministry

of Economy, 2013) determined the goals and policies related to increasing the share of RES in final energy consumption by 2020 and in particular the estimated contribution of energy of biofuels in transport. The Act on Renewable Energy Sources is under development and the expected adoption is during 2015.

MTR-5: Modification of the system for special fee payment for the environment for motor vehicles

The current system of paying a special fee for the environment in motor vehicles is regulated by Environmental Protection and Energy Efficiency Law (OG 107/03, 144/12), Regulation on unit charges, corrective coefficients and detailed criteria and standards to determine the special environmental fee for motor vehicles (OG 114/14, 147/14) and Ordinance on the manner and terms of calculation and payment of the special fee for environment in motor vehicles (OG 20/04). Special fee was charged pursuant to the aforementioned Ordinance, taking into consideration the type of engine and fuel, engine operating volume and vehicle's age.

This measure proposed changes in the method of calculating the fees according to the criteria of pollutant emissions and greenhouse gas emissions to promote the purchase of vehicles with lower emissions. By the Amendments to the Regulation on unit charges, corrective coefficients and detailed criteria and benchmarks for determination of special environmental charges for motor vehicles (OG 114/14, 147/14), this measure was implemented.

MTR-6: Financial incentives for the purchase of hybrid and electric vehicles

Electric and hybrid vehicles are due to the cost of technological development currently still more expensive than conventional vehicles using internal combustion engines. Electric vehicles are significantly more efficient than conventional from the standpoint of primary energy consumption and are almost neutral from the standpoint of carbon dioxide emissions provided that are powered by electricity generated by using renewable sources.

In order to increase the share of electric and hybrid vehicles, subsidies for the purchase of electric and hybrid vehicles through a grant have been introduced. These payments are made from the income of the Environmental Protection and Energy Efficiency Fund achieved, inter alia, by collecting special environmental charge for motor vehicles. The Third National Action Plan for Energy Efficiency for the Period from 2014 to 2016 (Ministry of Economy, 2014) prescribed goals and a plan to support purchases of electric and hybrid vehicles.

In addition, the Law on Excise Tax on Motor Vehicles (OG 15/13, 108/13) introduced a special tax that is calculated on the basis of unit CO_2 emissions and is accounted for the purchase of new motor vehicles. Electric and hybrid vehicles are not covered by this law, which has further stimulated the procurement of vehicles with low greenhouse gas emissions.

MTR-7: Development of infrastructure for electric vehicles in urban areas

The main objective of this measure is development and establishment of infrastructure necessary for popularizing the concept of mobility in urban areas and increase the number of electric vehicles in road traffic. Development of infrastructure should be focused on building the charging stations and stations for changing electric batteries. Because of the battery capacity, the autonomy of movement and time of charging, in urban areas is necessary to provide dense network of filling stations for vehicles in relation to the distribution of filling stations for vehicles with conventional drive. According to experiences in other countries, it was found that for the same services as for conventional vehicles it is necessary to provide one charging station for every four electric vehicles. For implementation of this measure it is necessary to prepare a techno-economic analysis with optimal solution and proposed network of filling/ battery changing stations.

MTR-8: Development of sustainable transport systems in urban areas

Traffic and need for mobility is one of the biggest pressures on the environment in urban areas. Increase in the number of passenger cars, the way they are used, intensity of traffic and unstructured expansion of urban areas largely reversed technological progress in relation to the energy efficiency of vehicles and emission intensity, including noise.

With this measure, a gradual development of sustainable transport systems in urban areas of Croatia is provided where Plans for sustainable transport development should be drawn up as basic documents. These plans would include the analysis of the current situation, defining the vision and objectives, impact analysis and the adoption of measures for all types of transportation, distribution of responsibilities, method of implementation and monitoring mechanism. These plans would be brought on the level of major cities, they should be prepared in accordance with the European Commission guidelines and funded through EU programs and funds.

In addition, incentives are expected and under the Operative Programme Competitiveness and cohesion for the period from 2014 to 2020 where under Priority Axis 7 - Connectivity and mobility, the development of public transport system with low levels of CO_2 is planned.

3.4. SECTORAL POLICIES AND MEASURES: INDUSTRY / INDUSTRIAL PROCESSES

The Industrial Strategy of the Republic of Croatia 2014 – 2020 defines objectives of industrial development and key indicators of the Croatian industry in the period 2014 – 2020. According to the “real scenario”, in 2020 it is assumed to achieve the level of the volume of industrial production in 2008, when the highest level of development of the Croatian economy was reached.

Measures belonging to the ETS sector and included in the measure *MSP-1 Inclusion of the operators and aircraft operators in the European Union Emission Trading System (2013-2020)* are the following:

- reducing the clinker factor in cement production – the share of additives in the cement is in the range of 15-30%, depending on the composition of raw materials, availability of suitable additives on the market and market demands for certain types of cement (clinker content in cement is defined by standard HRN EN 197-1),
- N_2O emission reduction in nitric acid production (catalytic decomposition) – N_2O emission reduction up to 88% can be achieved by installing the catalyst.

In addition to production of cement, nitric acid and ammonia, the key source in the Industrial processes sector is the consumption of hydrofluorocarbons in refrigerating and air-conditioning equipment. Regulation on substances that deplete the ozone layer and fluorinated greenhouse gases (OG 90/14) prescribes the following measures:

MOS-1: Handling with substances that deplete the ozone layer and fluorinated greenhouse gases

Release of controlled substances and fluorinated greenhouse gases into the atmosphere during collecting, checking leakage, maintenance or servicing of devices and equipment is forbidden.

MOS-2: Technical and organizational measures for collecting, recycling, recovering and destroying of controlled substances and fluorinated greenhouse gases

This group of measures defines the way in which used controlled substances and fluorinated greenhouse gases contained in products and equipment must be recovered, recycled, reclaimed or destroyed.

MOS 2a: Capacity building and strengthening the knowledge of servicer

Education of authorized servicers responsible for collection of controlled substances and fluorinated greenhouse gases during servicing of devices and equipment and provide it to the Centre for the collection, recycling and recovery of controlled substances and fluorinated greenhouse gases.

MOS-3: Checking the leakage of controlled substances and fluorinated greenhouse gases

It is necessary to take all necessary technically feasible measures to prevent leakage, early eliminate any detected leakage and reduce emissions of controlled substances and fluorinated greenhouse gases into the atmosphere.

3.5. SECTORAL POLICIES AND MEASURES: AGRICULTURE

MSP-4: Development of the assessment of implementation of GHG emission reduction measures in the agriculture sector

Development of this assessment is recommended with the goal of valorization of middle-term period of acceptability of potential emission reduction measures that imply various social and economic risks for farmers. Possible measures to be analyzed are:

- improvement of cattle feeding regime and improvement of cattle meal (balanced ratio of energy and protein) in order to reduce methane emissions from the storage of manure and enteric fermentation
- anaerobic decomposition and biogas manufacturing
- improvement of nitrogen use efficiency with the goal of reducing the N_2O emissions from synthetic and organic fertilizer use
- carbon capture in agricultural soil.

MSP-4a: Rural Development Programme of the Republic of Croatia for the Period 2014-2020

One of the principal areas of institutional work of the European Union is the Common Agricultural Policy (CAP). Rural development, as the second CAP tier, is financed through the Agricultural Fund for Rural Development (EAFRD). Development of the Rural Development Programme of the Republic of Croatia is a prerequisite for the EAFRD eligibility in the next period. Goals set by the Europe 2020 Strategy are also evident within three CAP goals: agriculture competitiveness, sustainable resource management and balanced development of rural areas. The Rural Development Programme should achieve the goals set by CAP through measures given in six priorities:

- Promotion of knowledge and innovation transfers in agriculture, forestry and rural areas
- Improvements in sustainability and competitiveness in agriculture, forestry and rural areas
- Promotion of food provision chain, including processing and market placement of agricultural products, animal welfare and risk management
- Revitalization, protection and improvement of agriculture and forestry related ecosystems
- Promotion of resource efficiency and encouraging the shift to low-carbon farming, resilient to climate changes in the agriculture, food and forestry sectors

- Promotion of social involvement, combating poverty through economic development of rural areas.

3.6. SECTORAL POLICIES AND MEASURES: FORESTRY / LULUCF

MSP-5: Improving the reporting from LULUCF sector

The Annex I countries of the United Nations Framework Convention on Climate Change, including Croatia as well, are obligated in accordance with Annex I to Decision 15/CP.17 continuously review the quality of the relevant technical elements of GHG inventory. Because of this commitment and because of the fact that additional improvements to the procedure for determining the changes in carbon stocks in LULUCF sector need to be done for each store separately, as well as the procedure for more detailed matrix of land, the implementation of these measures is still considered necessary.

For the implementation of this measure, during 2014, the MENP launched two projects from the LULUCF sector that are currently in the final stages of implementation. These are: 'Improving the reporting in the sector Land use, land-use change and forestry during the first commitment period of the Kyoto Protocol' (abbreviated as LULUCF 1) and 'Upgrade of the National System for reporting on greenhouse gas emissions for the implementation of the Decision of the European Parliament and of the Council No. 529/2013 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' (abbreviated as LULUCF 2). Since the land matrix represents the basis for the calculation of sinks/emissions of greenhouse gases in the LULUCF sector, the LULUCF 2 project includes defining the proposal of national system for determining the land cover, use and land use change, as well as the development of the new project proposal that would put the newly defined system into operation.

MSP-6: Preparation of cost-benefit analysis of afforestation on new areas and natural regeneration of forests as a measure of increasing the sinks in LULUCF sector

Changes in the sinks of greenhouse gases as a result of direct land use change caused by human activity and forestry activities are allowed to be calculated in the national balance of emissions and sinks of greenhouse gases and used to fulfill obligations under the Kyoto Protocol. The aforementioned is stipulated by Article 3 paragraph 3 of Kyoto Protocol for parties included by Annex I to the Kyoto Protocol.

By analyzing the costs and benefits of afforestation on the new areas, possibility of increasing greenhouse gas sinks using reforestation activities on the barren productive forest floor will be investigated. Thus would justify introduction of possible incentive measures, such as the afforestation of fast-growing species and natural regeneration of forests, equivalent to measures for greenhouse gas emissions reduction. The implementation of this activity was determined in the Plan for Air Protection, Ozone Layer Protection and Climate Change Mitigation for the period 2013-2017 (OG 139/13), and its implementation is planned for 2016.

MSP-7: Revision of Forest Management Reference Level (FMRL) under Article 3.4 of the Kyoto Protocol for the second commitment period

For the second commitment period of the Kyoto Protocol, new rules for the calculation of sinks generated from forest management under which the outflow is calculated relative to the Forest Management Reference Level (FMRL) were adopted. In addition, obligation of revision of reference levels for forest management activities in accordance with the correction in the national inventory is introduced and it is necessary to determine the new value of the reference level for Croatia. For the purpose of implementing this measure, as part of the launched project LULUCF 1, a review of the established value for FMRL is planned and the first technical correction of FMRL for the Republic of Croatia will be performed. According to currently available information, by the end of the Second commitment period it will be necessary to perform another technical correction of FMRL considering that further improvements of the LULUCF sector calculation are planned for this period.

MSP-8: Development of Action plan for LULUCF sector

According to the Decision 529/2013/EU[5], as a member of the European Union, Croatia is obliged to prepare and submit information from the forestry sector to the Commission in accordance with Article 10 of Decision 529/2013/EU. The plan was drafted and submitted to the EC on 9 January 2015, and will form an integral part of the national strategy for low carbon development.

As part of the action plan, measures for maintaining/reducing emissions and maintaining/increasing sinks of greenhouse gases that occur as a result of implementation of activities of forest management, cropland management, grazing land management, and implementation of afforestation and deforestation have been defined. The basis for the preparation of the aforementioned document was the draft of Rural Development Programme of the Republic of Croatia for the period 2014-2020 to define the measures in the forestry sector as well as to define the measures associated with agricultural land use categories. During the document preparation, data and information available in the National Inventory Report on Greenhouse Gas Emissions for the Republic of Croatia (NIR 2014) were used, as well as data and information available in a number of different strategic documents, national regulations (e.g. Ordinance on cross-compliance OG 27/14) and the European Commission Guidance[6], which

[5] 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

[6] Guidance on Member State reports providing: 'Information on LULUCF actions' in accordance with Article 10 of EU Decision 529/2013/EU

was created in order to assist Member States in fulfilling the obligations defined under Article 10 of the Decision 529/2013/EU. In order to address future activities within the low-carbon development strategy it should be noted that the Air Protection Act (OG 130/11, 47/14) stipulates the obligation of adopting the Low-Carbon Development Strategy of the Republic of Croatia, which ensures a long-term economic and social development towards a low-GHG emission society. The Low-Carbon Development Strategy defines the guidelines for long-term actions by defining objectives in accordance with Article 4, paragraph 1 of the Regulation (EU) No. 525/2013 and determining measures for their realization, taking into account the current situation and international obligations. Given that some of the strategic plans were adopted prior to or at the beginning of the process of Croatia accession to the European Union, and that they e.g. National Environmental Strategy (OG 46/02) do not contain provisions related to maintaining/increasing the carbon pools in forest ecosystems and wood products, it will be necessary to revise them in the coming period and to align them with provisions of the legislative acts which were adopted after the Croatia accession to the European Union. Additionally, upon the adoption of the Low-Carbon Development Strategy, certain modifications of some strategic documents that are of particular importance to the horizontal level will be required, e.g. Sustainable Development Strategy of the Republic of Croatia (OG 30/09).

With the Plan for use of funds obtained from the sales of the emission allowances through auctions in the Republic of Croatia for the period from 2014 to 2016 (OG 140/14), Croatia plans to allocate the significant financial resources for emission reductions and adaptation to climate change, in accordance with the provisions of Article 100 of the Air Protection Act (OG 130/11, 47/14). Activities that are planned to be financed by the Plan are determined in accordance with the LULUCF sector activities included in the Decision No. 529/2013/EU, Low-Carbon Development Strategy of the Republic of Croatia, which is in preparation, and Regulation 525/2013/EU.

3.7. SECTORAL POLICIES AND MEASURES: WASTE MANAGEMENT / WASTE

For the purpose of effective implementation of the measures included in the waste management sector, along with the already adopted sectoral legislation that is harmonized with EU legislation, it is necessary to adopt a more significant number of by-lows. It will primarily impact on the projections after 2020 to measures MSP-9, MSP-10 and MSP-13, described below.

MSP-9: Prevention of and reducing the amount of municipal waste

Prevention of waste generation is the first priority in the priority order to the waste management, as outlined in the Law on Sustainable Waste Management (OG 94/13) and Waste Management Strategy of the Republic of Croatia (OG 130/05). The Waste Management Plan in the Republic of Croatia for the period 2007 – 2015 (OG 85/07, 126/10, 31/11) was adopted to meet the objectives of the Strategy. This measure should be achieved by cleaner production, education, economic instruments, implementation of regulations on integrated pollution prevention and control and investment in modern technologies. According to the Act concerning the conditions

of accession of the Republic of Croatia to the European Union, quantitative targets and deadlines for reducing the total amount of waste disposed to non-compliant landfills are defined. By the end of 2015, the maximum waste disposed to non-compliant landfills amounts 1.21 million tons, by the end of 2016, 1.01 million tons and by the end of 2017, 800,000 tons. Disposal of waste to non-compliant landfills in Croatia is prohibited after 31 December 2017.

MSP-10: Increasing the amount of separately collected and recycled municipal waste

Beside the Waste Management Strategy in Croatia, the Waste Framework Directive also defines the quantitative targets and deadlines for increasing the amount of separately collected and recycled waste. In accordance with the requirements of the Waste Framework Directive by 2015, it is necessary to ensure separate collection of at least paper, metal, plastic and glass. By 2020, it is necessary to ensure the preparation for re-use and recycling of the following waste materials: paper, metal, plastic and glass from households and possibly from other sources if these waste streams are similar to the waste from households, in the minimum share of 50% by waste weight.

MSP-12: Methane flaring

The Ordinance on the Methods and Conditions for the Landfill of Waste, Categories and Operational Requirements for Landfills (OG 117/07, 111/11, 17/13, 62/13) and Ordinance on the Waste Management regulate technical requirements for landfill operation, which reduces possible adverse effects of landfills on the environment. Landfills where landfill gas is generated shall have the system for collecting the gas which shall be processed and used. If the collected landfill gas cannot be used for energy generation, it must be flared at the landfill site and the emission of those gases into air has to be prevented. Methane emission into atmosphere is thereby reduced.

4,802 tons of methane is processed at Croatian landfills in 2012, whether it is burned in a flare or used for electricity generation.

MSP-13: Reducing the amount of landfilled biodegradable municipal waste

The aim of this measure is to reduce the amount of biodegradable fraction of waste disposed at landfills, thus reducing methane emissions resulting from anaerobic decomposition of waste.

Pursuant to the Law on Sustainable Waste Management, quantitative targets related to the reduction of biodegradable municipal waste disposed to landfills are established. By the end of 2016, the share of biodegradable municipal waste disposed to landfills must be reduced to 50% weight of biodegradable municipal waste produced in 1997, until the end of 2020 the share of

biodegradable municipal waste disposed to landfills must be reduced to 35% weight of biodegradable municipal waste generated in 1997.

Reducing the biodegradable fraction of waste disposed to the landfills results in reduced emissions of methane, which would otherwise occur during the process of anaerobic decomposition of waste in landfills.

MSP-14: Production of fuel from waste and processing of waste for use in the cement industry

The measure is related to the measures in Energy sector means of which the fossil fuels to generate electricity and heat as well as for the cement production in rotary kilns is replaced by the fuel from waste. Production of fuels from waste by mechanical-biological treatment of municipal waste in regional and county waste management centres is planned. Using biodegradable fraction of waste as fuel to generate electricity and heat as well as in the cement industry is important from the standpoint of reducing the greenhouse gas emissions, conservation of primary energy sources and reducing the amount of waste disposed to landfills. Biodegradable fraction of waste is considered to be neutral with respect to carbon dioxide. Reduction of methane emissions will be achieved by reducing the amount of disposed biodegradable waste.

MSP-15: Use of biogas for electricity and heat generation

The measure is associated with measures *Promoting the use of renewable sources in electricity generation* and *Promoting the construction of cogeneration plants* in the Energy sector. The main mechanism for promoting the implementation of biogas for electricity generation and to promote the construction of biogas cogeneration plants are incentive prices (tariffs) that depend of the installed plant capacity. Looking at the waste management sector, the potential reduction in greenhouse gas emissions of these measures is the potential to reduce methane emissions (resulting from the anaerobic decomposition of the biodegradable fraction of waste), which is used for electricity and heat generation.

MSP-16: Thermal treatment of municipal waste and sludge from wastewater treatment plants

Construction of a facility for thermal processing of municipal waste in the city of Zagreb is planned, in which about 300,000 tonnes of municipal waste and about 70,000 tonnes of dried sludge from the "Central waste water treatment plant" would be treated annually at the facility by 2020. Thermal treatment of municipal waste and sludge from wastewater treatment plant is important from the standpoint of conservation of primary energy sources, reducing the amount of waste disposed to landfills and reducing greenhouse gas emissions.

3.8. OTHER (CROSS-CUTTING) POLICIES AND MEASURES

MSP-17: Establishment of monitoring, reporting and verification of greenhouse gas emissions in the lifetime of liquid fuels

In accordance with the Air Protection Act (OG 130/11, 47/14), supplier that places the fuel on domestic market shall monitor greenhouse gas emissions per energy unit in the life of the fuel. Suppliers have to draw up a report that has to be verified and submitted to the Environmental Protection Agency.

Pursuant to the Act, the Croatian Government's Decree on the quality of liquid petroleum fuels (OG 33/11, 113/13, 76/14) stipulates limit values for components and quality characteristics of liquid petroleum fuels, the method of determining and monitoring the quality of liquid petroleum fuels, method of conformity, the conditions for the operation of laboratories for sampling and laboratory analysis of quality liquid petroleum fuels, product labelling and the method and deadline for the submission of reports on the quality of liquid petroleum fuels to the Environmental Protection Agency.

MSP-18: CO_2 emission tax

The Regulation on Unit Charges, Corrective Coefficients and Detailed Criteria and Benchmarks for Determination of the Charge for Emissions into Environment of Carbon Dioxide (OG 73/07, 48/09) stipulates the obligation to pay charges on CO_2 emission for all stationary sources emitting more than 30 tonnes of CO_2 per year. Fee payers who invest in energy efficiency, renewable energy and other measures to reduce emissions of CO_2 and other greenhouse gas emissions are charged by lower fee.

The Environmental Protection and Energy Efficiency Fund is authorized for accounting and collecting charges. The unit fee for 2013 is HRK 14 for emitting one tonne of CO_2. The Law on Amendments to the Law on Environmental Protection and Energy Efficiency Fund (OG 142/12) stipulates that from 1 January 2013, legal or natural persons who own or use a single source of CO_2 emissions, for which permits for greenhouse gas emissions have been obtained, do not have to pay fee. This means that from 2013 onwards measures apply only to sources that are not covered by the ETS.

The amount of compensation paid by the operators of installations excluded from the EU ETS is defined by the Decision on the amount of the unit charge on greenhouse gas emissions for operators of installations excluded from emissions trading system for 2013 (OG 105/14).

MSP-19: Establishment of the Committee for cross-sectoral coordination of policies and measures for mitigation and adaptation to climate change

In accordance with the Air Protection Act (OG 130/11, 47/14), for monitoring and evaluation of the implementation and planning of policies and measures for mitigation and adaptation to climate change in the Republic of Croatia, the Commission for inter-sectoral coordination of policies and measures for mitigation and adaptation to climate change (OG 114/14) was established. The Committee members include representatives of relevant government bodies and other relevant organizations, agencies and non-governmental organizations. The Committee members, activities and functioning of the Commission are determined by the Croatian Government on the proposal of the ministry responsible for environmental protection.

MSP-20: Intensifying the use of innovative information and communication technologies (ICT) to reduce greenhouse gas emissions

Innovative information and communication technologies have an increasingly important role in reducing greenhouse gas emissions and increasing energy efficiency. Intensifying their use in public administration, services and manufacturing processes, will boost productivity and work efficiency and at the same time will reduce energy consumption and consequent greenhouse gas emissions. The measure is expected to intensify the use of innovative ICT and monitoring of actual energy savings and reductions of greenhouse gas emissions.

Among others, examples of the implementation of this measure are:

- System for the Measurement and Verification of Energy Savings (SMIV, 2014), which will monitor the energy savings and resultant reduction of greenhouse gas emissions, was presented by the Ministry of Economy,

- Energy Management Information System (ISGE), which is supported and established by the UNDP, GEF, the Fund and the Croatian Government, is used as a national tool for systematic energy and water management in public buildings. ISGE is under the competence of the Ministry of Construction and Physical Planning and Agency for Transactions and Mediation in Immovable Properties (APN).

In continuation CTF table 3 regarding progress in achievement of the quantified economy-wide emission reduction target: information on mitigation actions and their effects are presented

CTF Table 3 Progress in achievement of the quantified economy-wide emission reduction target: information on mitigation actions and their effects

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
MSP-1: Inclusion of the operators in the European Union Emission Trading System (EU ETS) in the full scale from 1 January 2013 and administering aviation operators from 1 January 2014*	Energy, Industry/ industrial processes	CO2, N2O	Increase in renewable energy;Switch to less carbon-intensive fuels; Efficiency improvement in the energy and transformation sector; Efficiency improvement in industrial end-use sectors; Installation of abatement technologies; Reduction of losses	Other (Regulatory)	Implemented	See Chapter 3	2013	MENP CEAN	kt CO_2-eq	NE
MSP-2 Adoption of the Plan for use of funds obtained from the sales of emission allowances through auctions*	Cross-cutting	CH_4, CO_2, N_2O, PFCs, HFCs, SF_6	Framework policy	Economic	Implemented	See Chapter 3	2014	MENP Government of Republic of Croatia	kt CO_2-eq	0.0
MSP-3: Preparation of National Feasibility Study with the action plan for the preparatory activities for CCS projects in Croatia	Energy, Industry/industrial processes	CO_2	Carbon capture and storage	Other (Information)	Planned	See Chapter 3	2017	Ministry of Economy		0
MEN-1 Promotion of energy efficiency in households and services through project activities*	Energy	CO_2	Efficiency improvements of buildings Efficiency improvement in services/ tertiary sector Efficiency improvement of appliances Efficiency improvement in industrial end-use sectors	Economic|Regulatory|Information	Implemented	See Chapter 3	2004	Ministry of Economy Ministry of Construction and Physical Planning		IE

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
MEN-2 Energy audits in industry*	Energy, Industry /industrial processes	CO_2, CH_4, N_2O	Efficiency improvements of buildings Demand management/reduction Efficiency improvement in industrial end-use sectors	Other (Regulatory)	Implemented	See Chapter 3	2010	MENP Ministry of Economy		IE
MEN-3 Measurement and informative calculation of energy consumption*	Energy	CO_2	Demand management/reduction	Information	Implemented	See Chapter 3	2010	Ministry of Economy Distributing companies		IE
MEN-4, MEN-8 Promotion of the cogeneration construction*	Energy	CO_2	Efficiency improvement in the energy and transformation sector Increase in renewable energy	Other (Regulatory)	Implemented	See Chapter 3	2007	Ministry of Economy		NE
MEN-5 Labelling the energy efficiency of household appliances*	Energy	CO_2	Efficiency improvement of appliances	Other (Information)	Implemented	See Chapter 3	2007	Ministry of Economy		IE
MEN-6 Eco-design of energy-using products*	Energy	CO_2	Efficiency improvement of appliances	Other (Information)	Implemented	See Chapter 3	2013	Ministry of Economy		IE
MEN-7 Supporting the use of renewable energy sources in electricity generation*	Energy	CO_2	Increase in renewable energy	Other (Regulatory)	Implemented	See Chapter 3	2007	Ministry of Economy		IE
MEN-9 Usage of biodegradable fraction of municipal waste in public electricity and heating plants*	Energy, Waste management/ waste	CH_4, CO_2	Switch to less carbon-intensive fuels Increase in renewable energy Enhanced CH4 collection and use	Other (Regulatory)	Implemented	See Chapter 3	2012	MENP		IE

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
			Waste incineration with energy use							
MEN-10 Use of refuse derived fuel in cement industry*	Energy, Industry/industrial processes, Waste management/ waste	CO_2, CH_4	Increase in renewable energy Switch to less carbon-intensive fuels Installation of abatement technologies Improved treatment technologies	Other (Regulatory)	Implemented	See Chapter 3	2012	MENP		NE
MEN-11 Promotion of the use of renewable energy sources in heat/cooling energy production	Energy	CO_2	Increase in renewable energy	Other (Regulatory)	Implemented	See Chapter 3	2016	Ministry of economy		NE
MEN-12 Promotion of the use of renewable energy sources and energy efficiency by HBOR-a (Croatian Bank for Reconstruction and Development)*	Energy	CO_2	Increase in renewable energy Efficiency improvement in the energy and transformation sector Efficiency improvement in industrial end-use sectors Efficiency improvements of buildings Efficiency improvement in services/ tertiary sector	Economic	Implemented	See Chapter 3	2009	Croatian Bank for Reconstruction and Development		IE
MEN-13 Promotion of the use of renewable energy sources and energy efficiency by FZOEU (The Environmental Protection and Energy Efficiency Fund) resources*	Energy, Transport	CO_2	Increase in renewable energy Switch to less carbon-intensive fuels Efficiency improvements of buildings Efficiency improvement of appliances Efficiency improvement	Economic	Implemented	See Chapter 3	2004	Environmental protection and energy efficiency fund		IE

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
			in services/ tertiary sector Efficiency improvement in industrial end-use sectors Demand management/reduction Improved behaviour Low carbon fuels/electric cars							
MEN-14 Energy efficiency projects with implementation through energy services*	Energy	CO_2	Efficiency improvements of buildings Efficiency improvement in services/ tertiary sector Efficiency improvement in industrial end-use sectors Demand management/reduction	Economic	Implemented	See Chapter 3	2004	ESCO companies		IE
MTR-2: Providing information to consumers on fuel economy and CO2 emission of new passenger cars*	Transport	CO_2	Low carbon fuels/electric cars	Information	Implemented	See Chapter 3	2007	MENP Ministry of Interior		IE
MTR-3: Implementation of the pilot project and establishment of training system for drivers of road vehicles for eco-driving*	Transport	CO_2	Improved behaviour	Education	Implemented	See Chapter 3	2011	MENP Ministry of Interior		IE
MTR-4: Promotion of production and use of biofuels in transport*	Energy, Transport, Agriculture	CO_2	Low carbon fuels/electric cars Increase in renewable energy	Economic|Regulatory|Fiscal	Implemented	See Chapter 3	2010	Ministry of Economy		IE

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
MTR-5: Modification of the system for special fee payment for the environment for motor vehicles*	Transport	CO_2	Low carbon fuels/electric cars Efficiency improvements of vehicles	Fiscal	Implemented	See Chapter 3	2014	MENP Environmental protection and energy efficiency fund		IE
MTR-6: Financial incentives for the purchase of hybrid and electric vehicles*	Transport	CO_2	Low carbon fuels/electric cars	Economic	Implemented	See Chapter 3	2014	MENP Ministry of Economy		IE
MTR-7: Development of infrastructure for electric vehicles in urban areas	Transport	CO_2	Improved transport infrastructure Low carbon fuels/electric cars	Economic	Planned	See Chapter 3	2016	Ministry of Economy Ministry of maritime affairs, transport and infrastructure		NE
MTR-8: Development of sustainable transport systems in urban areas	Transport	CO_2	Modal shift to public transport or non-motorized transport Demand management/reduction	Other (Planning)	Implemented	See Chapter 3	2017	MENP Units of regional and local self-government		NE
MOS-1: Handling with substances that deplete the ozone layer and fluorinated greenhouse gases*	Industry/industrial processes	SF_6, PFCs, HFCs	Reduction of emissions of fluorinated gases Replacement of fluorinated gases by other substances	Regulatory	Implemented	See Chapter 3	2014	MENP		NE
MOS-2: Technical and organizational measures for collecting, recycling, recovering and destroying of controlled substances and fluorinated greenhouse gases*	Industry/industrial processes	PFCs, SF_6, HFCs	Reduction of emissions of fluorinated gases	Regulatory	Implemented	See Chapter 3	2014	Centers for collecting, recycling and recovering of controlled substances		NE

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
								and fluorinated greenhouse gases		
MOS-2a: Capacity building and strengthening the knowledge of authorized service technician*	Industry/industrial processes	HFCs, PFCs, SF_6	Reduction of emissions of fluorinated gases	Other (Education)	Implemented	See Chapter 3	2014	MENP		NE
MOS-3: Checking the leakage of controlled substances and flourinated greenhouse gases*	Industry/industrial processes	HFCs, PFCs, SF_6	Reduction of emissions of fluorinated gases	Regulatory	Implemented	See Chapter 3	2014	MENP Operators		NE
MSP-9: Prevention of and reducing the amount of municipal waste*	Waste management/ waste	CH_4	Demand management / reduction	Economic|Regulatory|Education	Implemented	See Chapter 3	2005	Units of regional and local self-government		IE
MSP-10 Increasing the amount of separately collected and recycled municipal waste*	Waste management/ waste	CH_4	Enhanced recycling Reduced landfilling	Other (Regulatory)	Implemented	See Chapter 3	2005	Units of regional and local self-government		IE
MSP-12: Methane flaring*	Waste management/ waste	CH_4	Enhanced CH4 collection and use	Other (Regulatory)	Implemented	See Chapter 3	2005	Units of regional and local self-government		145
MSP-13: Reducing the amount of landfilled biodegradable municipal waste*	Waste management/ waste	CH_4	Reduced landfilling	Regulatory	Implemented	See Chapter 3	2016	Units of regional and local self-government		IE
MSP-14: Production of fuel from waste and processing of waste for use in the cement industry*	Energy, Industry/industrial processes,	CH_4, CO_2	Improved treatment technologies Switch to less carbon-intensive fuels	Other (Regulatory)	Implemented	See Chapter 3	2009	Units of regional and local self-		NE

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
	Waste management/ waste		Increase in renewable energy Installation of abatement technologies					government		
MSP-15: Use of biogas for electricity and heat generation*	Waste management/ waste, Energy	CH_4, CO_2	Increase in renewable energy Switch to less carbon-intensive fuels Enhanced CH4 collection and use Waste incineration with energy use	Other (Regulatory)	Implemented	See Chapter 3	2012	Units of regional and local self-government		IE
MSP-16: Thermal treatment of municipal waste and sludge from wastewater treatment plants	Energy, Waste management/ waste	CH_4, CO_2	Increase in renewable energy Switch to less carbon-intensive fuels Enhanced CH4 collection and use Waste incineration with energy use	Economic	Planned	See Chapter 3	2020	City of Zagreb		34
MSP-4: Development of the assessment of implementation of GHG emission reduction measures in the agriculture sector	Agriculture	CH_4, N_2O	Reduction of fertilizer/manure use on cropland Other activities improving cropland management Improved livestock management Improved animal waste management systems Activities improving grazing land or grassland management Improved management of organic soils	Research	Planned	See Chapter 3	2016	Ministry of agriculture MENP		NE

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
MSP-4a: Rural Development Programme of the Republic of Croatia for the Period 2014-2020*	Agriculture, Forestry/LULUCF	CH_4, CO_2	Other activities improving cropland management Improved livestock management Reduction of fertilizer/manure use on cropland Improved animal waste management systems Activities improving grazing land or grassland management Improved management of organic soils	Other (Economic)	Adopted	See Chapter 3	2015	Ministry of agriculture		68
MSP-5: Improving the reporting from LULUCF sector*	Forestry/LULUCF	CO_2	Conservation of carbon in existing forests Afforestation and reforestation Enhancing production in existing forests Enhanced forest management Increasing the harvested wood products pool Prevention of deforestation Strengthening protection against natural disturbances Substitution of GHG-intensive feedstocks and materials with harvested wood products Prevention of drainage or rewetting of wetlands Restoration of degraded lands	Regulatory	Implemented	See Chapter 3	2014	MENP Ministry of agriculture		NE

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
MSP-6: Preparation of cost-benefit analysis of afforestation on new areas and natural regeneration of forests as a measure of increasing sinks in LULUCF sector	Forestry/LULUCF	CO_2	Afforestation and reforestation Conservation of carbon in existing forests Enhancing production in existing forests Enhanced forest management Prevention of deforestation Increasing the harvested wood products pool Strengthening protection against natural disturbances Substitution of GHG-intensive feedstocks and materials with harvested wood products Prevention of drainage or rewetting of wetlands Restoration of degraded lands	Research	Planned	See Chapter 3	2016	MENP Ministry of agriculture		NE
MSP-7: Revision of Forest Management Reference Level (FMRL) under Article 3.4 of the Kyoto Protocol for the second commitment period	Forestry/LULUCF	CO_2	Afforestation and reforestation Conservation of carbon in existing forests Enhancing production in existing forests Increasing the harvested wood products pool Enhanced forest management Prevention of deforestation Strengthening protection against natural disturbances Substitution of GHG-	Regulatory	Implemented	See Chapter 3	2014	MENP Ministry of agriculture		NE

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
			intensive feedstocks and materials with harvested wood products Prevention of drainage or rewetting of wetlands Restoration of degraded lands							
MSP-8: Development of Action plan for LULUCF sector*	Forestry/LULUCF	CO_2	Afforestation and reforestation Conservation of carbon in existing forests Enhancing production in existing forests Increasing the harvested wood products pool Prevention of deforestation Enhanced forest management Substitution of GHG-intensive feedstocks and materials with harvested wood products Strengthening protection against natural disturbances Prevention of drainage or rewetting of wetlands Restoration of degraded lands	Regulatory	Implemented	See Chapter 3	2014	MENP Ministry of agriculture		NE
MSP-18: CO2 emission tax*	Energy, Cross-cutting, Industry/industrial processes	CO_2	Framework policy Efficiency improvement in industrial end-use sectors Installation of abatement technologies	Fiscal	Implemented	See Chapter 3	2013	MENP Environmental protection and energy efficiency fund		NE

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
MSP-19: Establishment of the Committee for cross-sectoral coordination of policies and measures for mitigation and adaptation to climate change*	Cross-cutting	CH_4, CO_2, HFCs, N_2O, PFCs, SF_6	Multi-sectoral policy	Regulatory	Implemented	See Chapter 3	2014	MENP, competent ministries		NE
MSP-17: Establishment of monitoring, reporting and verification of greenhouse gas emissions in the lifetime of liquid fuels*	Cross-cutting, Transport	CO_2	Efficiency improvements of vehicles Framework policy	Regulatory	Implemented	See Chapter 3	2012	MENP, CEAN		NE
MSP-20: Intensifying the use of innovative information and communication technologies (ICT) to reduce greenhouse gas emissions*	Cross-cutting	CH_4, CO_2, HFCs, N_2O, PFCs, SF_6	Framework policy	Information	Adopted	See Chapter 3	2011	MENP, CEAN		NE
Waste - group*	Waste management/ waste	CH_4	Demand management / reduction Enhanced recycling Reduced landfilling	Regulatory|Economic|Education	Implemented	This group of measures includes measures: MSP-9: MSP-10 IMSP-13:	2005/ 2016	Units of regional and local self-government		464
Energy efficiency measures in WEM scenario*	Energy, Transport	CH_4, CO_2, N_2O	Efficiency improvements of buildings;Efficiency improvement in services/ tertiary sector;Efficiency improvement of appliances;Efficiency improvement in industrial end-use sectors;Demand management/reduction Increase in renewable energy;Switch to less carbon-intensive fuels Improved behaviour Low carbon fuels/electric cars;Efficiency improvement in the energy and	Economic|Regulatory|Information|Fiscal|Education|Other (Planning)	Implemented	This group of measures include effects of measures: MEN-1, MEN-2, MEN-3, MEN-5, MEN-6, MEN-12 MEN-13, MEN-14 MTR-3: MTR-5: MTR-6	2004/ 2007/ 2010/ 2009/ 2010/ 2011/ 2013/ 2014	Ministry of Economy; Ministry of Construction and Physical Planning Ministry of Environmental and Nature Protection Distributing companies Environmental protection and energy efficiency fund ESCO		1229

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
			transformation sector; Modal shift to public transport or non-motorized transport; Demand management/reduction Efficiency improvements of vehicles					companies Ministry of Interior Croatian Bank for Reconstruction and Development Units of regional and local self-government		
Renewable energy in WEM scenario*	Energy, Waste management/ waste, Transport	CH_4, CO_2, N_2O	Increase in renewable energy;Switch to less carbon-intensive fuels Enhanced CH4 collection and use; Waste incineration with energy use; Efficiency improvements of buildings; Efficiency improvement of appliances; Efficiency improvement in services/ tertiary sector; Efficiency improvement in industrial end-use sectors;Demand management/reduction Improved behaviour;Low carbon fuels/electric cars	Economic|Regulatory|Fiscal	Implemented	Incorporates estimated mitigation potential of measures: tMEN-7 MEN-9 MEN-12 MEN-13 MTR-4: MSP-15	2004/ 2007/ 2010/ 2012	Ministry of Economy Ministry of Environmental and Nature Protection Environmental protection and energy efficiency fund Ministry of Economy		4325
Energy efficiency measures in WAM scenario	Energy, Transport	CH_4, CO_2, N_2O	Efficiency improvements of buildings; Efficiency improvement in services/ tertiary sector; Efficiency improvement of appliances;Efficiency improvement in industrial end-use sectors;Demand management/reduction Increase in renewable energy;Switch to less carbon-intensive fuels Improved behaviour	Economic|Regulatory|Information|Education|Fiscal|Other (Planning)	Implemented	This group of measures include effects of measures: MEN-1 MEN-2 MEN-3 MEN-5 MEN-12 , MEN-13 MEN-14 MTR-2: MTR-3:	2004/ 2007/ 2010/ 2011/ 2014/ 2017	Ministry of Economy Ministry of Construction and Physical Planning Distributing companies Environmental protection and energy efficiency fund ESCO		2553

Name of mitigation action	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implement.	Breaf description	Start year of impl.	Implementing entity or entities	Estimate of mitigation impact (not cumulative) in kt CO_2-eq 2020	
			Low carbon fuels/electric cars; Efficiency improvement in the energy and transformation sector; Modal shift to public transport or non-motorized transport Demand management/ reduction; Efficiency improvements of vehicles			MTR-5: MTR-6: MTR-8:		companies Ministry of Environmental and Nature Protection Ministry of Interior Croatian Bank for Reconstruction and Development Units of regional and local self-government		
Renewable energy measures in WAM scenario	Energy, Waste management/ waste, Transport		Increase in renewable energy, Switch to less carbon-intensive fuels Enhanced CH4 collection and use; Waste incineration with energy use;Efficiency improvements of buildings;Efficiency improvement of appliances;Efficiency improvement in services/ tertiary sector;Efficiency improvement in industrial end-use sectors;Demand management/reduction Improved behaviour Low carbon fuels/electric cars	Economic|Regulatory|Fiscal	Planned	Incorporates estimated mitigation potential of measures: MEN-7 MEN-9 MEN-12 PMEN-13 MTR-4: MSP-15: MSP-16:	2021	Ministry of Economy Ministry of Environmental and Nature Protection Environmental protection and energy efficiency fund Ministry of Economy		0

* mitigation action is included in the ‘with measures’ projection

3.9. ASSESSMENT OF THE ECONOMIC AND SOCIAL CONSEQUENCE OF RESPONSE MEASURES

According to paragraph 24 of the Annex to Decision 15/CMP.1 Parties included in Annex II, and other Parties included in Annex I that are in a position to do so, shall incorporate information on how they give priority, in implementing their commitments based on relevant methodologies referred to in paragraph 8 of decision 31/CMP.1. As a country undergoing the process of transition to market economy, Croatia has, pursuant to Article 22, paragraph 3 of the Convention, assumed the commitments of countries included in Annex I, therefore Croatia is not required to provide financial or any other assistance to developing countries.

According to Article 4, paragraphs 8 and 9 of the Convention Croatia strives to implement Kyoto commitments in a way which minimize adverse impact on developing countries. In continuation information on implementation of policies and measures that minimise adverse social, environmental and economic impacts on non-Annex I Parties is provided.

a) Market imperfections, fiscal incentives, tax and duty exemptions and subsidies

The ongoing liberalization of energy market is in line with EU policies and directives. No significant market distortions have been identified. Consumption taxes for electricity and fossil fuels were harmonized recently. The main instrument addressing externalities is the emission trading under the EU ETS.

b) Removing subsidies associated with the use of environmentally unsound and unsafe technologies

In Republic of Croatia no subsidies for environmentally unsound and unsafe technologies have been identified.

c) Technological development of non-energy uses of fossil fuels

The Republic of Croatia has not participated actively in activities of this nature.

d) Carbon capture and storage technology development

The Republic of Croatia does not take part in any such activity.

e) Improvements in fossil fuel efficiencies

In 2014 The Third National Energy Efficiency Action Plan for the 2014- 2016 period has been drawn up in accordance with the template laid down by the European Commission, with which all EU Member States must comply. Measures for the period from 2014 to 2016 regarding energy efficiency are:

- supporting the use of renewable energy sources and energy efficiency by the Environmental Protection and Energy Efficiency Fund (the Fund),
- encouraging the use of renewable energy and energy efficiency through the Croatian Bank for Reconstruction and Development (HBOR),

- energy efficiency projects with repayment through savings (ESCOs),
- increasing energy efficiency in buildings
- energy audits in the industry,
- promoting energy efficiency in households and the services sector through project activities,
- labelling the energy efficiency of household appliances,
- metering and informative billing of energy consumption,
- eco-design of energy using products.

f) Assisting developing country Parties which are highly dependent on the export and consumption of fossil fuels in diversifying their economies

As regard of above mentioned activity the Republic of Croatia does not take part in any such activity.

3.10. ESTIMATES OF EMISSION REDUCTIONS AND REMOVALS AND THE USE OF UNITS FROM MARKET-BASED MECHANISMS AND LULUCF ACTIVITIES

In this section summary information on estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land use change and forestry activities are provided in CTF Tables 4, 4(a) and 4(b).

CTF Table 4: Reporting on progress

Table 4						HRV_BR2_v0.1
Reporting on progress [a, b]						
	Total emissions excluding LULUCF	*Contribution from LULUCF* [d]	*Quantity of units from market based mechanisms under the Convention*		*Quantity of units from other market based mechanisms*	
Year [c]	*(kt CO_2 eq)*	*(kt CO_2 eq)*	*(number of units)*	*(kt CO_2 eq)*	*(number of units)*	*(kt CO_2 eq)*
(1990)	35,115.98					
2010	28,326.05					
2011	27,719.29					
2012	25,505.09					
2013	24,492.78					
2014						

CTF Table 4(a)I_2013: Progress in achieving the quantified economy-wide emission reduction targets-further information on mitigation actions relevant to the contribution of the land use, land-use change and forestry sector in 2013

Table 4(a)I HRV_BR2_v0.1

Progress in achieving the quantified economy-wide emission reduction targets – further information on mitigation actions relevant to the contribution of the land use, land-use change and forestry sector in 2013 [a,b]

	Net GHG emissions/removals from LULUCF categories [c]	*Base year/period or reference level value* [d]	*Contribution from LULUCF for reported year*	*Cumulative contribution from LULUCF* [e]	*Accounting approach* [f]
	(kt CO_2 eq)				
Total LULUCF					
A. Forest land					
1. Forest land remaining forest land					
2. Land converted to forest land					
3. Other [g]					
B. Cropland					
1. Cropland remaining cropland					
2. Land converted to cropland					
3. Other [g]					
C. Grassland					
1. Grassland remaining grassland					
2. Land converted to grassland					
3. Other [g]					
D. Wetlands					
1. Wetland remaining wetland					
2. Land converted to wetland					
3. Other [g]					
E. Settlements					
1. Settlements remaining settlements					
2. Land converted to settlements					
3. Other [g]					
F. Other land					
1. Other land remaining other land					
2. Land converted to other land					
3. Other [g]					
Harvested wood products					

Numbers for LULUCF are not reported because this sector is not included under the Convention target

CTF Table 4(a)I_2014: Progress in achieving the quantified economy-wide emission reduction targets-further information on mitigation actions relevant to the contribution of the land use, land-use change and forestry sector in 2014

Table 4(a)I HRV_BR2_v0.1

Progress in achieving the quantified economy-wide emission reduction targets – further information on mitigation actions relevant to the contribution of the land use, land-use change and forestry sector in 2014 [a, b]

	Net GHG emissions/removals from LULUCF categories [c]	*Base year/period or reference level value* [d]	*Contribution from LULUCF for reported year*	*Cumulative contribution from LULUCF* [e]	*Accounting approach* [f]
	(kt CO_2 eq)				
Total LULUCF					
A. Forest land					
1. Forest land remaining forest land					
2. Land converted to forest land					
3. Other [g]					
B. Cropland					
1. Cropland remaining cropland					
2. Land converted to cropland					
3. Other [g]					
C. Grassland					
1. Grassland remaining grassland					
2. Land converted to grassland					
3. Other [g]					
D. Wetlands					
1. Wetland remaining wetland					
2. Land converted to wetland					
3. Other [g]					
E. Settlements					
1. Settlements remaining settlements					
2. Land converted to settlements					
3. Other [g]					
F. Other land					
1. Other land remaining other land					
2. Land converted to other land					
3. Other [g]					
Harvested wood products					

Numbers for LULUCF are not reported because this sector is not included under the Convention target

Table 4(b) Reporting on progress

Table 4(b)				HRV_BR2_v0.1
Reporting on progress [a, b, c]				
Units of market based mechanisms			*Year*	
			2013	*2014*
Kyoto Protocol units [d]	*Kyoto Protocol units*	*(number of units)*		
		(kt CO_2 eq)		
	AAUs	*(number of units)*		
		(kt CO2 eq)		
	ERUs	*(number of units)*		
		(kt CO2 eq)		
	CERs	*(number of units)*		
		(kt CO2 eq)		
	tCERs	*(number of units)*		
		(kt CO2 eq)		
	lCERs	*(number of units)*		
		(kt CO2 eq)		
Other units [d,e]	*Units from market-based mechanisms under the Convention*	*(number of units)*		
		(kt CO_2 eq)		
	Units from other market-based mechanisms	*(number of units)*		
		(kt CO_2 eq)		
Total		*(number of units)*		
		(kt CO_2 eq)		

Use of CER and ERU cannot be quantified at the time of reporting

4. PROJECTIONS

This chapter presents the historical greenhouse gas emissions in the period from 1990 to 2012 and projections of greenhouse gas emissions for the period from 2015 to 2035. The emissions are presented as total emissions of greenhouse gases by sectors and by gases.

Since greenhouse gases have different irradiation properties and consequently different contribution to the greenhouse effect, emissions of each gas are multiplied by their Global Warming Potential (abb. GWP). In this case, the emission of greenhouse gases is presented as equivalent emission of carbon dioxide (CO_2 eq). In case of removing emissions of greenhouse gases, it refers to outflows (sinks) of greenhouse gas emissions and the amount is shown as negative value. The global warming potentials of individual gases that are used in the report are presented below.

GAS	GWP
Carbon dioxide (CO_2)	1
Methane (CH_4)	25
Nitrous oxide (N_2O)	298
HFC-23	14800
HFC-32	675
HFC-125	3500
HFC-134a	1430
HFC-143a	4470
HFC-152a	124
HFC-227ea	3220
HFC-236fa	9810
CF_4	7390
C_3F_8	8830
C_2F_6	12200
SF_6	22800

Source: 24/CP.19

Sectors are identified according to the Guidelines for the preparation of National Communications by Parties included in Annex I to the Convention (FCCC/CP/1999/7, Part II):

- energy,
- transport,
- industry,
- agriculture,
- waste management,

- LULUCF.

Particularly the emissions of certain greenhouse gases are presented:

- CO_2,
- CH_4,
- N_2O,
- HFCs and PFCs,
- SF_6.

According to the Guidelines for the preparation of National Communications by Parties included in Annex I to the Convention, projections are presented for three scenarios: 'without measures' scenario, 'with measures' scenario and 'with additional measures' scenario. Scenario 'without measures' assumes that implementation of adopted policies and measures as well as implementation of planned policies and measures will not happen. Scenario 'with measures' assumes a consistent application of policies and measures, which application is already in progress and application of adopted policies and measures, which application is likely, but still not begun. Scenario 'with additional measures' is based on application of planned policies and measures.

Emission projections start from the last published inventory of greenhouse gas emissions which includes an inventory of emissions and sinks of greenhouse gases for the period 1990 – 2012 (made in accordance with the 1996 IPCC Guidelines). Reference year for projection is 2012.

4.1. PROJECTIONS OF GREENHOUSE GAS EMISSIONS BY SECTORS

Historical and projected trends in greenhouse gas emissions by sectors are presented in Figures 4-1 to 4-3. Emissions are presented for 'without measures' scenario, 'with measures' scenario and 'with additional measures' scenario for the period from 1990 to 2035.

The energy sector covers all activities that involve fuel combustion from stationary sources and fugitive emission from fuels. The emission from energy sector in 2012 amounted to 13,471 kt CO_2 and it is the main source of anthropogenic emission of greenhouse gases, it accounts approximately 50% of the total greenhouse gases emission in 2012. In scenario 'without measures', without implementation of energy efficiency measures and renewable energy policy and an increase in a number of fossil fuel power plants to reduce the import of electricity by 2020, projections show strong growth until 2020 and moderate growth thereafter. In the 'with measures' scenario, projections show continuous downward trend in emissions by 2015 because of economic downturn and implementation of measures to encourage the use of renewable energy sources and energy efficiency. In the period from 2015 to 2020, the increase in emissions is a result of expected increase in installed capacity in thermal power plants using fossil fuels to reduce the import of electricity. After 2020, this scenario shows a slight increase

due to expected increase in economic activity and new power plants. Most measures to reduce emissions in the energy sector are planned by 2020, so it has not yet been determined which will be implemented after 2020. In scenario 'with additional measures', all measures planned in the energy sector were taken into account and projections show a steady trend of a slight reduction of emissions.

The transport sector includes emissions from fuel combustion in road transportation, civil aviation, railways and navigation. The emission from transport sector in 2012 amounted to 5,709 kt CO_2 eq, which makes about 21.5% of total Croatia's greenhouse gases emission. In scenario 'without measures', projections show a continuous trend of reducing emissions by 2015, while there is an increase expected in the period up to 2020, primarily due to strong ties with expected increase in GDP. In the 'with measures' scenario in the period from 2015 to 2020, projections indicate stagnation of emissions. Factors that encourage the growth of emissions are expected increase in economic activities and living standards, while the emission reductions are primarily affected by the measures to increase energy efficiency and use of renewable sources in transport. Most of the existing measures have projected duration by 2020 so after that the emissions show a slight increase. In scenario 'with additional measures', projections show a continuous trend of reducing emissions by 2020, primarily due to planned additional measures to increase energy efficiency [10]. Even though there is an expected development of the technology foreseen, after 2020, projections show a slight increase, mainly due to expected economic growth, increase in the number of vehicles, number of passenger and goods transports with yet undefined measures to reduce greenhouse gas emissions.

The industry sector includes the process emission, while emission from fuel combustion in industry is included into energy sector. The emission from industry sector in 2012 amounted to 3,041 kt CO_2 eq, which makes about 11% of total Croatia's greenhouse gases emission in 2012. Solvent use sector, which is observed within the framework of industry sector, contributes to the total greenhouse gas emission with about 0,6% (153.6 kt CO_2 eq). The projections of emissions indicate an increase in all scenarios, due to expected increase in production to the maximum utilization of existing productive capacity in the period until 2035, despite the implementation of cost-effective measures to reduce emissions.

The agriculture sector covers about 12,9% of total greenhouse gas emissions in 2012 (emission is 3,501 kt CO_2 eq). The projections indicate an increase in emissions after 2015 because of a recovery of livestock (assumption based on expert judgement and draft version of "*Improving NH_3, CH_4 and N_2O emission calculations from manure management and drafting EFs report"*, University of Zagreb, Faculty of Agriculture) and normalization of agricultural production (trend analysis).

The waste management sector participates in the total emission of greenhouse gases with about 4,9% in 2012 (emission is 1,316 kt CO_2 eq). Projections indicate emission reduction in scenarios 'with measures' and 'with additional measures' after 2015. The potential of CO_2 emission reduction, which can be achieved by implementing the measures included in the scenarios 'with measures' and 'with additional measures' is balanced in the Energy sector.

In the year 2012, removals by sink in the LULUCF sector were -6,536 kt CO_2eq. Projections up to 2035 exceed 8,000 kt CO_2 sinks per year (excluding emissions from fires). These projections are made by sectorial sub-categories 'Forest land', 'Cropland', 'Grasslands', 'Wetlands', 'Settlements' and 'Other land' for the scenario with existing measures and are separately shown in Figure 4- 4.

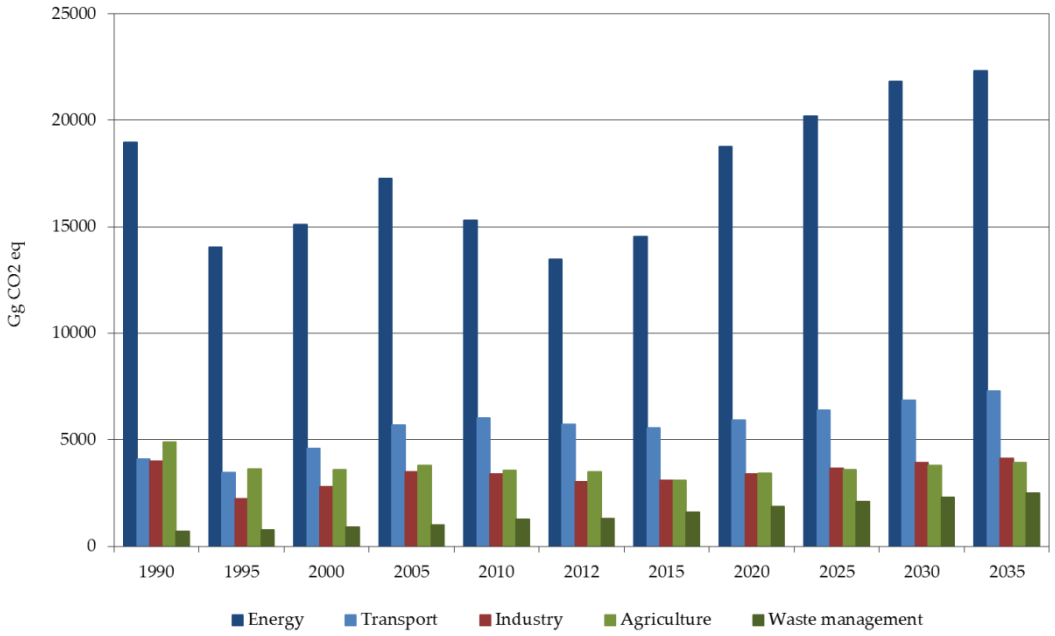


Figure 4-1: Historical and projected greenhouse emissions by sectors, 'without measures' scenario

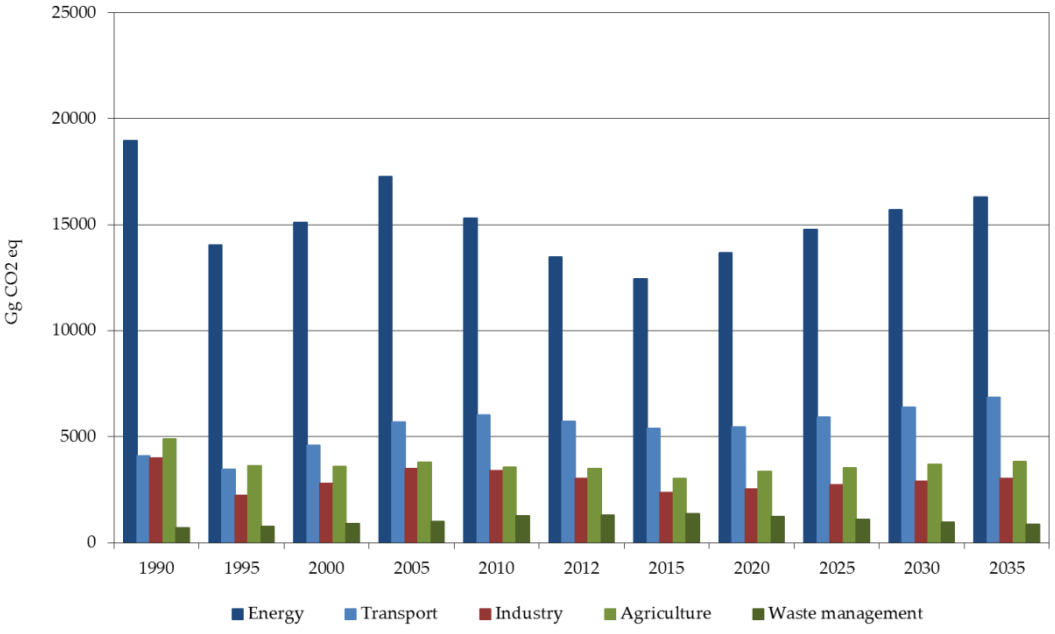


Figure 4-2: Historical and projected greenhouse emissions by sectors, 'with measures' scenario

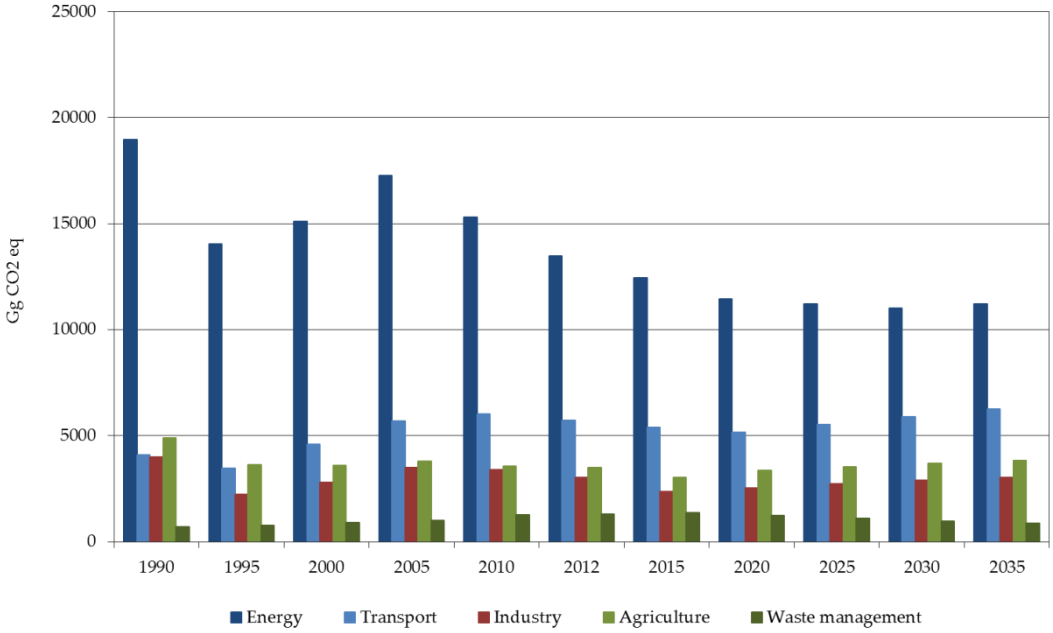


Figure 4-3: Historical and projected greenhouse emissions by sectors, 'with additional measures' scenario

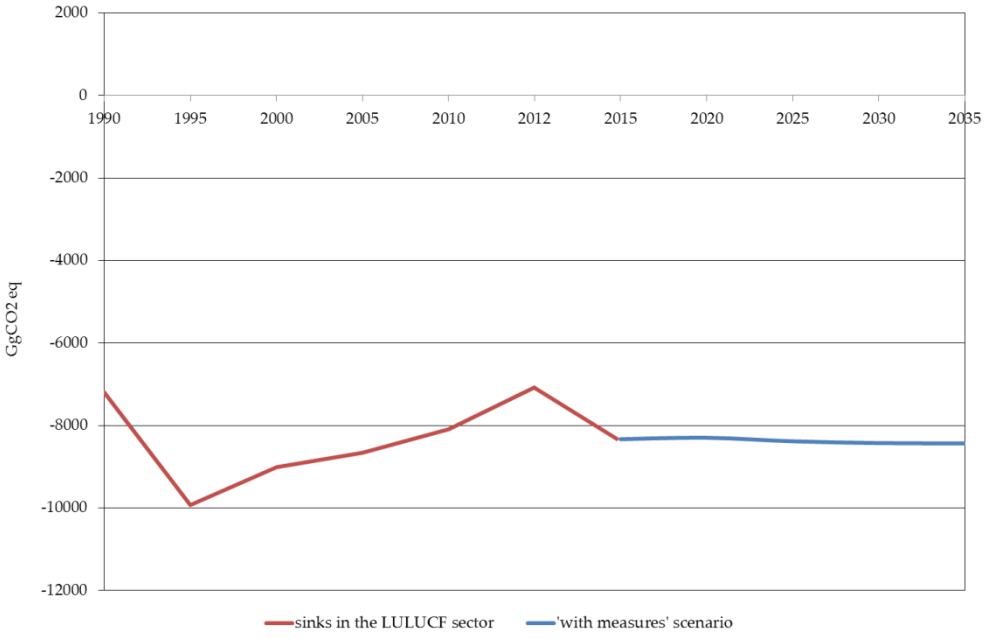


Figure 4-4: Historical and projected removals by sinks in the LULUCF sector, 'with measures' scenario

4.2. PROJECTIONS OF GREENHOUSE GAS EMISSIONS BY GASES

Trends in emissions, by greenhouse gases (CO_2, CH_4, N_2O, HFCs and PFCs, SF_6), for all three scenarios, in the period from 1990 until 2035 are shown in Figure 4-5.

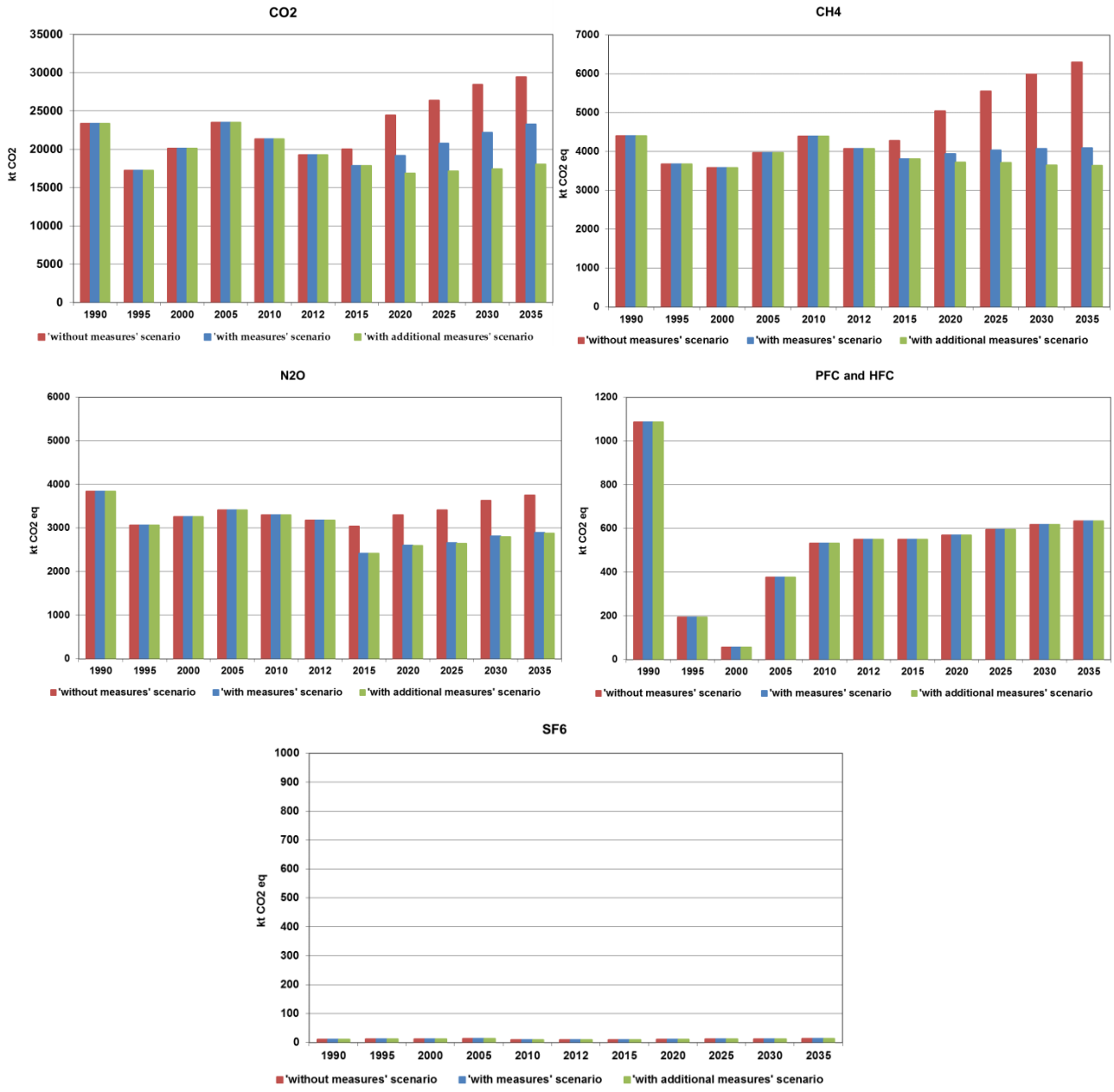


Figure 4-5: Projections of greenhouse emissions by gases

The energy sector has the most significant anthropogenic sources of CO_2 emissions, with maximum value from 19,762 kt CO_2 (for the 'without measures' scenario) to 9,642 kt CO_2 (for the 'with additional measures' scenario) in 2035.

The main sources of CH_4 emissions are fugitive emissions from energy sector, waste management sector and agriculture sector. Projections indicate an increase by 43% in CH_4 emissions by 2035 compared to 1990 for the 'without measures scenario, while in scenarios 'with measures' and 'with additional measures' there is a decrease ranging from -7% (for the 'with measures' scenario) and -17.4% (for the 'without measures' scenario).

The most important source of N_2O emissions is agriculture sector, which projections in 2035 have the maximum of 2,536 kt CO_2 eq for the 'without measures' scenario, or 2,495 kt CO_2 eq for the 'with additional measures' scenario.

The sources of HFCs and PFCs and SF_6 emissions are in the industry sector. Although their emissions in absolute terms are not large, due to the large global warming potential (GWP), their contribution is significant.

4.3. TOTAL PROJECTIONS

Total projections of greenhouse gas emissions (without LULUCF) for all three scenarios, for the period until 2035 are shown in Figure 4-6 and Table 4-1.

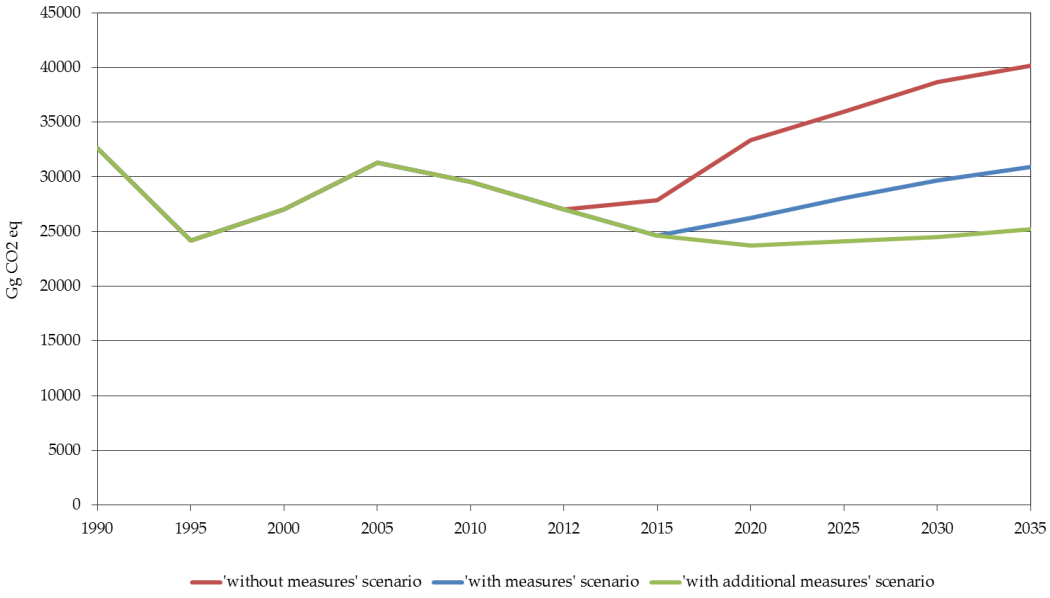


Figure 4-6: Total projections of greenhouse gas emissions (without LULUCF) for period until 2035

Table 4-1: Historical emissions and projections of greenhouse gas emissions, kt CO_2 eq

'without measures' scenario	2015	2020	2025	2030	2035
Energy	14,523	18,769	20,205	21,811	22,324
Transport	5,563	5,933	6,390	6,845	7,283
Industry	3,092	3,385	3,665	3,922	4,124
Waste management	1,605	1,854	2,098	2,314	2,498
Agriculture	3,101	3,423	3,589	3,783	3,916
TOTAL	**27,885**	**33,365**	**35,948**	**38,675**	**40,145**
with measures' scenario	**2015**	**2020**	**2025**	**2030**	**2035**
Energy	12,436	13,673	14,759	15,703	16,292
Transport	5,403	5,475	5,940	6,403	6,846
Industry	2,377	2,523	2,717	2,896	3,040
Waste management	1,353	1,245	1,103	981	876
Agriculture	3,044	3,355	3,515	3,704	3,833
TOTAL	**24,614**	**26,271**	**28,034**	**29,687**	**30,888**
with additional measures' scenario	**2015**	**2020**	**2025**	**2030**	**2035**
Energy	12,436	11,450	11,227	11,009	11,202
Transport	5,403	5,145	5,518	5,879	6,250
Industry	2,377	2,523	2,717	2,896	3,040
Waste management	1,353	1,245	1,103	981	876
Agriculture	3,044	3,355	3,515	3,704	3,833
TOTAL	**24,614**	**23,719**	**24,079**	**24,469**	**25,202**

Projections show that compared to 1990, in 2035 the emission suddenly increases by 22.9% in the 'without measures' scenario. In the 'with measures' scenario, the emission in 2035 remains approximately the same as in 1990, while in the 'with additional measures' scenario emission is reduced by 22.9% compared to 1990.

In the 'with measures' scenario projections show continuous downward trend in emissions by 2015, primarily due to economic downturn and implementation of measures to encourage the use of renewable energy sources and energy efficiency. In the period from 2015 to 2020, the increase in emissions affects the expected increase in installed capacity in thermal power plants using fossil fuels to reduce the import of electricity. After 2020, this scenario shows a slight increase due to expected increase in economic activity and new power plants.

In the 'with additional measures' scenario, projections show a steady light downward trend of emissions.

In 'with measures' scenario, in relation to the 'without measures' in 2035, the greenhouse gas emissions will be reduced by 23%, while in the scenario 'with additional measures' by 37%.

In scenario 'with additional measures' in relation to the scenario 'with measures' in 2035, greenhouse gas emissions will be reduced by 18.4%.

4.4. EMISSIONS OF ETS AND NON-ETS SECTORS

Historical emissions and projections of greenhouse gas emissions in ETS and non-ETS sectors for three scenarios are shown in Table 4-2.

Table 4-2: Historical emissions and projections of greenhouse gas emissions in ETS and non-ETS sectors, kt CO_2 eq

	2015	2020	2025	2030	2035
'Without measures' scenario	**27,885**	**33,365**	**35,948**	**38,675**	**40,145**
ETS	10,770	14,526	15,841	17,332	17,792
non-ETS	17,115	18,839	20,107	21,343	22,353
'With measures' scenario	**24,614**	**26,271**	**28,034**	**29,687**	**30,888**
ETS	8,523	9,819	10,759	11,612	12,085
non-ETS	16,091	16,453	17,275	18,075	18,803
'With additional measures' scenario	**24,614**	**23,719**	**24,079**	**24,469**	**25,202**
ETS	8,523	8,426	8,394	8,402	8,683
non-ETS	16,091	15,293	15,685	16,067	16,519

Emissions within the ETS in 2010 encompassed 36.4% of total emissions, amounting to 10,759 kt CO_2 eq. Projections indicate that in 2015 the ETS will cover, depending on the scenario, between 34.6% (scenarios 'with additional measures') and 38.6% (scenario 'without measures') of total emissions, while in 2035, according to the 'with additional measures' scenario, 34.5% of emissions will be included, 39.1% of emissions will be included according to the 'with measures' scenario and 44.3% of total emissions will be included in the ‘without measures' scenario.

In the ‘without measures' scenario, compared to 2010, emission projections show an increase in emissions of 0.1% in 2015 up to 65.4% in 2035. The reason of this increase is primarily in the expected construction of new power plants using fossil fuels.

In the 'with measures' scenario, the continuation of downward trend in emissions is expected until 2015 due to economic downturn as well as subsequent increase of emissions by 12,085 kt CO_2 eq in 2035, an increase of 12.3% compared to 2010. A slow growth of emissions is due to expected increase in economic activity and new power plants.

In the 'with additional measures' scenario, projections show a steady light downward trend, primarily due to planned actions to promote usage of renewable energy sources and energy efficiency.

In 2010, emissions outside the ETS amounted to 18,798 kt CO_2 eq, which represents 63.6% of total emissions.

In the scenario 'without measures', projections indicate a decrease in emissions in non-ETS sector until 2025 and an increase in emissions until 2035 (18.9% in 2035 compared to 2010).

In the 'with measures' scenario, increase in emissions is expected in the whole observed period from 2015 to 2035, and it is expected that in 2035 the emission will be at the 2010 level.

In the 'with additional measures' scenario, further reduction of emissions is expected.

Historical emissions and projections of greenhouse gas emissions in ETS and non-ETS for three scenarios are shown in Figures 4-7 to 4-9.

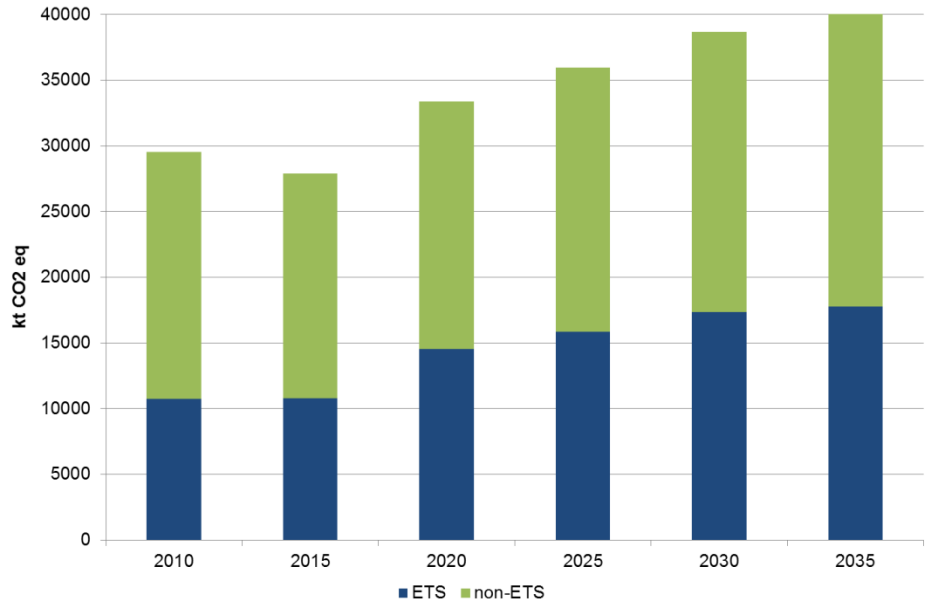


Figure 4-7: Historical emissions and projections of emissions within ETS and non-ETS, scenario 'without measures'

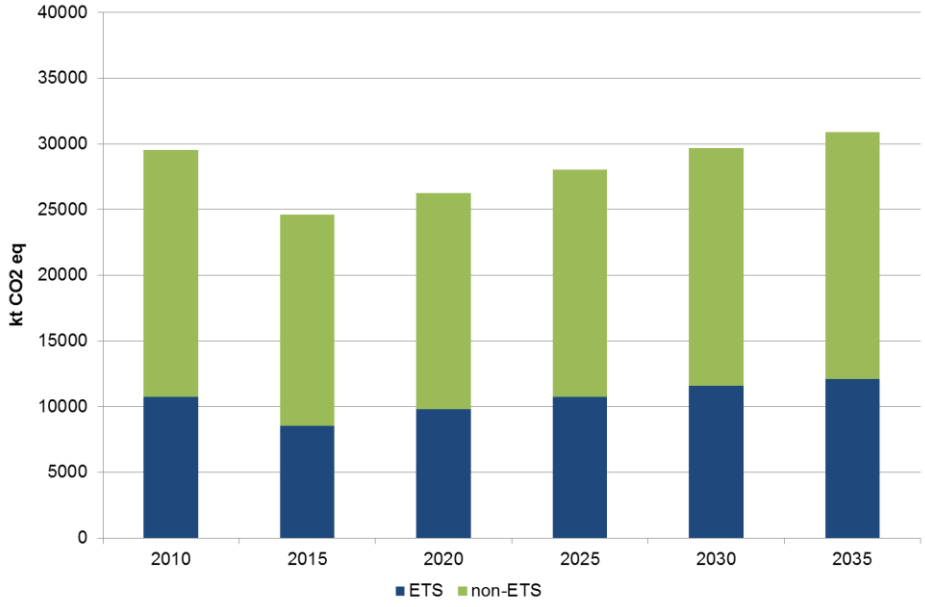


Figure 4-8: Historical emissions and projections of emissions within ETS and non-ETS, scenario 'with measures'

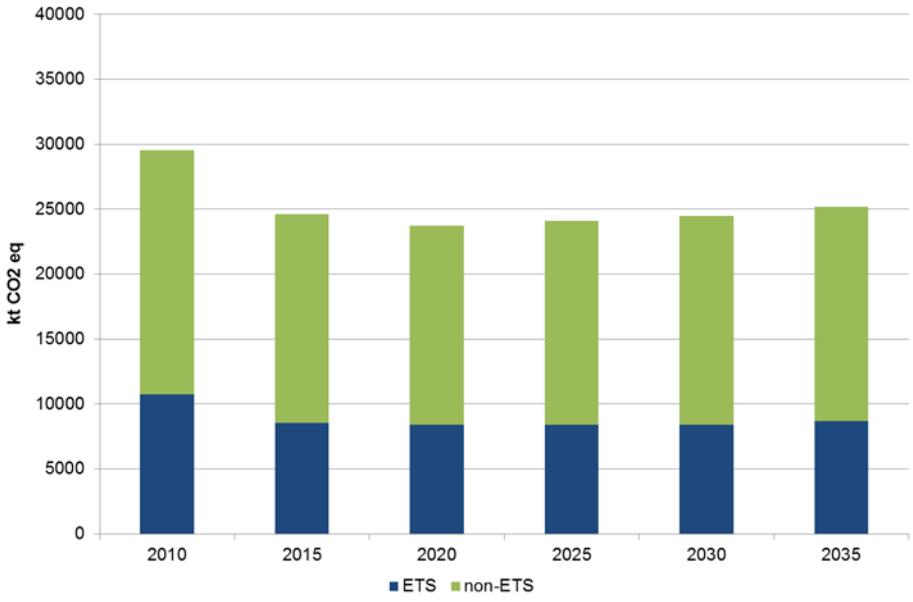


Figure 4-9: Historical emissions and projections of emissions within ETS and non-ETS, scenario 'with additional measures'

4.5. QUANTIFIED PROGRESS TO 2020 TARGETS

Table 4-3: Projected development in relation to the national annual quota in period 2013 – 2020 [t CO_2eq]

	2015.	2016.	2017.	2018.	2019.	2020.
Quota	19,996,708	20,188,161	20,379,612	20,571,063	20,762,515	20,953,966
Difference						
'without measures' scenario	3,150,800	2,299,354	1,983,528	1,606,259	1,175,338	1,544,446
'with measures' scenario	4,100,200	3,715,363	3,687,033	3,597,320	3,377,201	3,754,412
'with additional measures' scenario	4,100,200	3,750,071	3,669,284	3,665,884	4,454,544	4,881,559

Table 4-3 shows the estimates of the amount of greenhouse gases in period 2015-2020 and differences realized in relation to the national annual quota for non-ETS sectors. Differences were calculated by subtracting the amount of the annual national and estimated annual emissions of non-ETS sectors. Emission projections were made using GWP values from the forth assessment report of the IPCC and the comparison was made in relation to the quota given by the use the same GWP.

It is evident that the expected projections are below the annual national quota laid down for all three scenarios.

Summary information of key variables and assumptions used in the projections analysis are provided in CTF Table 5.

Summary information on updated greenhouse gas projections under a ‘with measures’, ‘without measures’ and ‘with additional measures’ scenario are provided in CTF Table 6.

4.6. DESCRIPTIONS OF METHODOLOGIES, MODELS, UNDERLYING ASSUMPTIONS AND KEY INPUT AND OUTPUT PARAMETERS FOR PROJECTIONS

Projections were made in accordance with the Guidelines for preparation of national reports by Parties included in Annex I to the Convention.

The potential for mitigation of national greenhouse gas emissions is analysed and assessed at the sectoral level. This assessment takes into account the previous trends and the current state as well as the future projections of parameters that determine the potential for mitigating emissions. The model and methodology used in preparing the projections are described by sector, in this chapter.

A list of assumptions and input data is provided in tabular form (Tables 3-1 to 3-5). The list contains general parameters and parameters related to the sectors and sub-sectors (energy, transport, buildings, industry, agriculture, waste management and LULUCF), in accordance with Annex XII of Implementing Regulation.

The 'with measures' and 'with additional measures' scenarios included policies and measures for reduction of emissions from sources and increase greenhouse gases sinks. In order to determine the contribution of each individual policy and measure for emissions reduction, the reduction potential was determined. In cases where the emission reduction potential of individual policies and measures cannot be expressed separately, reports are aggregated with other potential policies and measures.

Energy and transport

In preparing the projections, a software package LEAP (eng. Long-range Energy Alternatives Planning System)[7] was used, in which was created a model of the energy sector in Croatia. Output data are structured in accordance with the structure of inventory of the United Nations Framework Convention on Climate Change. It is the engineering simulation model in which are the scenarios simulated and certain processes and decisions optimized in regard to the assumptions and limitations. The model is detailed to the level of individual production units, present and future.

Projections were made until 2030, with a single step every year. The model is of 'bottom-up' type, because it starts from the sectoral data and individual emission sources in the power sector and calculates CO_2, CH_4 and N_2O emissions.

Assumptions and input parameters used in the preparation of projections are shown below:

[7] More information available at http://www.energycommunity.org/default.asp?action=47

Assumptions for projections by sector – energy and transport

ENERGY	
The projections of greenhouse gas emissions are based on projections of final energy consumption that have been updated for the purpose of this report. In the sector related to energy transformation, management of energy resources and import and export of energy, processes are simulated using the software package with regard to assumptions and measures envisaged by scenario. Below is a more detailed description of the methodology.	
1. Final energy demand	Final energy demand is projected in different sectors - industry, transport, services, households and agriculture, fisheries and forestry. In the 'without measures' scenario, projections are based on projections of activities that lead to energy consumption and projection of energy intensity for each activity. The bases for projections of activities are macroeconomic parameters and guidelines provided by the EC to Member States to harmonize the key parameters. For the projections of energy intensities, a development of technology and changing of lifestyles was taken into account. The scenarios 'with measures' and 'with additional measures' modelled the impacts of each measure. The analyses were performed by sub-sectors: – industry - by industry and type of fuel used, – transport – by type of transport (road, air, marine and rail) and types of means of transport (cars, buses, motorcycles, light and heavy vans) or purpose (passenger and freight) and by type of fuel used – services – by type of fuel used – households – by purpose (heating, water heating, cooking, cooling, electrical appliances and lighting) and by type of fuel – agriculture, fisheries and forestry - by type of fuel
	Demographic trends - assumes a scenario of average fertility and average migration, in accordance with the guidelines of the EC.
1.1. 'Without measures' scenario	
1.1.1. Energy demand in industry	Assumptions: – development of industrial production will not be based on energy-intensive industries, – market mechanisms will direct the balanced development to the less energy-intensive industry where Croatia is not in need of resources, – trends in gross value added in industry is based on harmonized parameters for projection given by the EC.
1.1.2. Energy demand in transport	Assumptions: – for passenger and freight transport, an increase in passenger and goods transport in the GDP growth in line with the historical relation has been assumed, – existing road infrastructure was mainly built – the transport of passengers will have fastest growth in air traffic.
1.1.3. Energy demand in general consumption	Assumptions: Households: – living area will grow slowly with the recovery of economic activity. Most of the new surfaces will refer to a block of flats in urban areas, – reduction of the share of electricity and liquid fuels for heating, – consumption of electricity to power household appliances and devices for cooling (air conditioning) will grow, – specific energy consumption for cooking in households will stagnate. Services: – change in the structure, used forms of energy – increase of electricity consumption, decrease in the usage of petroleum products and their replacement with natural gas, – on the islands and parts of Croatia not covered with a natural gas grid, the share of liquefied petroleum gas will be increased. Agriculture, forestry and fisheries: – share in final energy consumption will decline, – there will be no increase in energy consumption.
1.2. 'With measures' scenario	
1.2.1. Energy efficiency improvements	Energy efficiency in line with the National Action Plan for Energy Efficiency for the Period 2014-2016: – supporting the use of renewable energy sources and energy efficiency by the Environmental Protection and Energy Efficiency Fund (the Fund), – encouraging the use of renewable energy and energy efficiency through the Croatian Bank for Reconstruction and Development (HBOR),

ENERGY	
	– energy efficiency projects with repayment through savings (ESCOs), – increasing energy efficiency in buildings – energy audits in the industry, – promoting energy efficiency in households and the services sector through project activities, – labelling the energy efficiency of household appliances, – metering and informative billing of energy consumption, – eco-design of energy using products.
1.2.2. Increase of share of renewable energy sources	The goal is to achieve 20% share of renewable energy in final energy consumption by 2020, according to the National Action Plan for renewable energy sources by 2020.
1.3. 'With additional measures' scenario	
1.3.1. Energy efficiency improvements	Continued support to energy efficiency even after 2020, with the same dynamics as to 2020 and an increase of support to energy efficiency by implementing the energy efficiency obligations for energy distributors as defined by the Law on Energy Efficiency (Official Gazette 127/14) and the Third National Action Plan for Energy Efficiency (2014).
1.3.2. Increase of share of renewable energy sources	Increase of renewable energy policy even after 2020, according to the guidelines and objectives set out in Green book for the Croatian Energy Development Strategy (Official Gazette 130/09).
2. Energy transformations and resources	
2.1. 'Without measures' scenario	
	Assumptions: – all electricity needs will be met from domestic sources, starting from 2020, – no new capacity of renewable resources, – all new electricity demands and replacement of old capacity are settled by production from fossil power plants; 50% high-efficiency combined cycle power plants with gas and 50% coal plants so called 'clean coal technology', – emission intensity of new capacity is at the level of the existing one, – Nuclear power plant Krško continues delivering 50% of energy to Croatia and operates up to 2043.
2.2. 'With measures' scenario	
	Assumptions: Energy efficiency in energy transformation and use of resources in accordance with the Third National Action Plan for Energy Efficiency: – supporting the development and increasing the efficiency of cogeneration plants, – supporting the reduction of losses in transmission and distribution of energy. Achieving the goal of 20% share of renewable energy sources in final energy consumption by 2020, in accordance with the National Action Plan for Renewable Energy Sources by 2020.
2.3. 'With additional measures' scenario	
	Assumptions: Continued support to energy efficiency after 2020, with the same dynamics as to 2020 and an increase of support to energy efficiency by implementing the energy efficiency obligations for energy distributors as defined by the Law on Energy Efficiency (Official Gazette 127/14) and the Third National Action Plan for Energy Efficiency. Extension of renewable energy policy after 2020, according to the guidelines and objectives set out in the Green Paper on Strategy for the Energy Development of Croatia (OG 130/09).

Industry

In preparing the projections, a model derived in tabular Calculation interface was used. The model is structured in accordance with the table structure of the inventory of United Nations Framework Convention on Climate Change. It is the engineering simulation model.

The model is detailed to the level of individual production units, the present and future ones.

Projections are made by 2020, indicative until 2030, in steps of five years. The model is of 'bottom-up' type, because it starts from the sectoral data and individual emission sources and calculates CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 emissions.

Assumptions and input parameters used in the preparation of projections are presented below:

Assumptions for projections by sector – industry

INDUSTRY	
	The projections were carried out based on the expected development of certain industries, which includes the production goals by 2035. Emission projections start from the situation and projections of macroeconomic parameters in 2012 (annual growth rate of gross domestic product and gross value added and decrease in population) and the results of sector analysis and studies (cement and nitric acid production). Assumptions for 'without measures' scenario: – no installation of additional capacity, – production will reach the maximum value by 2035. The Industrial Strategy of the Republic of Croatia 2014 – 2020 defines objectives of industrial development and key indicators of the Croatian industry in the period 2014 – 2020. According to the "real scenario", in 2020, the achievement of level of the volume of industrial production in 2008 is assumed, when the highest level of development of the Croatian economy is reached. Assumptions for 'with measures' scenario: – the application of cost-effective measures in the cement and nitric acid production, – reduction of volatile organic compounds emission in solvent use sector. According to *good practice*, the projections were made for activity data and emission factors: – activity data – applying grade of 1, 2 and 3 methods (projections of macroeconomic parameters, effects of policies and measures, sectoral analysis and studies), – emission factors – applying grade of 1 and 2 methods (projections based on average values for the previous five-year period, effects of policies and measures, sectoral analysis and studies).

Agriculture

In preparing the projections, a model derived in tabular Calculation interface was used. The model is structured in accordance with the table structure of the inventory of United Nations Framework Convention on Climate Change. It is the engineering simulation model.

The model is detailed to the level of individual sources, the present and future ones.

Projections are made by 2020, indicative until 2035, in steps of five years. The model is of 'bottom-up' type, because it starts from the sectoral data and individual emission sources and calculated emissions of CH_4 and N_2O.

Assumptions and input parameters used in the preparation of projections are presented in continuation:

Assumptions for projections – agriculture

AGRICULTURE	
	The projections were carried out based on the expected future state of key parameters. In order to determine the key parameters for projections (number and types of livestock, crop production), the extrapolation of historical input data was used and expert assessment that includes historical data and sectoral strategic and development documents. Assumptions: – uncertainties due to the lack of adequate and reliable statistics and economic indicators.

Waste management

In preparing the projections, a model derived in tabular Calculation interface was used. The model is structured in accordance with the table structure of the inventory of United Nations Framework Convention on Climate Change. It is the engineering simulation model.

The model is detailed to the level of individual sources, the present and future ones.

Projections are made by 2020, indicative until 2035, in steps of five years. The model is of 'bottom-up' type, because it starts from the sectoral data and individual emission sources and calculated emissions of CO_2, CH_4 and N_2O.

Assumptions and input parameters used in the preparation of projections are presented below:

Assumptions for projections – waste management

WASTE MANAGEMENT	
	The projections were carried out based on expected development and future state of the parameters for projections (amount of waste produced, organic fraction of municipal solid waste, amount of waste disposed at landfills). Emission projections start from the situation and projections of macroeconomic parameters in 2012 (annual growth rate of gross domestic product and gross value added and decrease in population), which includes the goals by 2035. The objectives are defined by sector strategic documents - Strategy and Plan of the Waste Management in the Republic of Croatia and the Law on Sustainable Waste Management. Assumptions for 'without measures' scenario: – included projections for solid waste disposal on land, wastewater handling and waste incineration, – continuous growth of the quantity of municipal solid waste is expected as a result of higher living standard. Assumptions for 'with measures' and 'with additional measures' scenarios: – included projections for solid waste disposal on land, – continuous growth of the quantity of municipal solid waste will be slowed down due to application of the measures defined in the strategic documents, – quantitative targets for the amount and composition of municipal waste and other parameters in the model for estimating CH_4 emissions from

	landfills, which are not defined by the strategic documents, are estimated by expert judgment. According to *good practice*, the projections were made for activity data and parameters included in the models for GHG emission calculation: – applying grade of 1, 2 and 3 methods (projections of macroeconomic parameters, effects of policies and measures, sectoral analysis and studies, expert judgement).

LULUCF

In the 'with measures' scenario, for all sectoral components, the Projections Guide (A: General Guidelines and B: Sectoral Guide) was used. Six sub-categories of this sector in the Report of the National Inventory of Croatia for 2014 have been recognized as the key ones, whether the trend or level. These are: 'Forest land remaining forest land', 'The land converted to forest land', 'Cropland remaining cropland',' The land converted to Cropland', 'Land converted to Grassland' and 'Land converted to Settlements'. If possible, for the aforementioned sub-categories it is recommended to use Grade 2 or 3 when making projections. However, because of insufficient capacities in the system for making projections in the LULUCF sector at the national level, Grade 1 was applied. Emissions and removals are calculated by multiplying the projected activity data on 20-year basis and average superior implied emission factor for the past 10 years for each sink (ground and underground biomass and soil). Alternative 1 was used, whereat the activity data for the period from 2013 to 2035, in this case the size of the sub-categories of land, were received using the average annual rates of change from the chain indices within the past ten years, from 2003 to 2012. In cases where the average annual rate of change had unrealistic extreme values, the arithmetic mean of information on specific activity for the past ten years ('Land converted to Grassland') was used, i.e. expert assessment to predict the annual volume of reforestation ("Land converted to forest land').

Assumptions and input parameters used in the preparation of projections are presented in continuation:

Assumptions for projections – LULUCF

LULUCF	
	The projections were carried out based on the expected future state of the parameters that determine a potential for emissions mitigation. Key parameters for screening were determined based on the parameters in the relevant Guideline for projections (land area of each subcategory, emission factors assumed by sinks) and expert judgment for surface renovated and forest land. Assumptions: – Total area of 'forest land' and 'settlements' will be increased – Land conversion to forest land will remain at the same annual level (1.88 kha / year) – There will be a decrease in areas of 'Cropland' and 'Grassland'.

CTF Table 5 Summary of key variables and assumptions used in the projections analysis

Table 5 HRV_BR2_v0.1

Summary of key variables and assumptions used in the projections analysis [a]

Key underlying assumptions		*Historical* [b]								Projected		
Assumption	*Unit*	*1990*	*1995*	2000	2005	2010	2011	2012	2015	2020	2025	2030
Population	*thousands*	4,778.00	4,659.00	4,497.00	4,311.00	4,303.00	4,289.86	4,275.98	NE	4,198.88	4,145.28	4,087.04
GDP growth rate	%	NE	NE	3.80	4.20	-1.70	-0.30	-2.20	NE	1.90	1.90	1.70
International oil price	EUR/GJ	NE	NE	NE	NE	NE	NE	9.30	NE	13.70	13.80	14.40
International coal price	EUR/GJ	NE	NE	NE	NE	NE	NE	2.50	NE	3.50	3.70	3.70
International gas price	EUR/GJ	NE	NE	NE	NE	NE	NE	5.90	NE	9.50	9.10	10.00
Number of households	thousands	NE	1,518.00	1,477.00	1,494.00	1,515.00	1,519.00	1,519.00	NE	1,520.50	1,533.70	1,545.40
Population growth	%	NE	-0.50	-0.70	-0.83	-0.04	-0.31	-0.32	NE	-0.20	-0.30	-0.30
EU ETS carbon price	*EUR/EUA*	NA	NA	NA	NE	NE	NE	5.80	NE	10.00	14.00	35.00

Population census is every 10 years, last was 2011. Numbers between are estimated as arithmetic mean

CTF Table 6(a) Information on updated greenhouse gas projections under a 'with measures' scenario

Table 6(a) HRV_BR2_v0.1

Information on updated greenhouse gas projections under a 'with measures' scenario[a]

	GHG emissions and removals[b]							GHG emission projections	
	(kt CO_2 eq)							(kt CO_2 eq)	
	Base year (1990)	1990	1995	2000	2005	2010	2013	2020	2030
Sector[d,e]									
Energy	20,870.56	20,870.56	14,439.01	15,213.53	17,372.08	15,056.95	12,373.02	19,148.05	22,105.62
Transport	4,032.07	4,032.07	3,419.16	4,525.56	5,581.55	5,978.36	5,749.69	5,474.89	6,402.95
Industry/industrial processes	4,852.60	4,852.60	2,572.87	3,291.57	3,776.88	3,591.27	2,812.59	2,522.97	2,895.73
Agriculture	4,766.50	4,766.50	3,486.55	3,208.67	3,088.88	2,526.14	2,317.95	3,355.40	3,704.46
Forestry/LULUCF	-5,536.67	-5,536.67	-8,431.47	-7,162.09	-6,996.63	-6,260.34	-5,125.18	-8,298.47	-8,426.85
Waste management/waste	594.24	594.24	673.47	799.76	909.89	1,173.33	1,239.53	1,245.03	981.08
Other (specify)									
Gas									
CO_2 emissions including net CO_2 from LULUCF	18,530.88	18,530.88	8,878.42	12,743.58	16,746.51	15,160.49	13,481.96	10,855.75	13,753.59
CO_2 emissions excluding net CO_2 from LULUCF	24,074.30	24,074.30	17,326.48	20,073.72	23,753.49	21,432.05	18,620.85	19,154.22	22,180.44
CH_4 emissions including CH_4 from LULUCF	6,954.12	6,954.12	4,959.49	4,456.44	4,156.24	4,038.47	3,582.93	3,934.92	4,068.37
CH_4 emissions excluding CH_4 from LULUCF	6,952.89	6,952.89	4,951.94	4,359.53	4,153.50	4,036.71	3,581.00	3,934.92	4,068.37
N_2O emissions including N_2O from LULUCF	2,843.63	2,843.63	2,253.28	2,466.14	2,430.75	2,313.81	1,718.35	2,602.82	2,809.09
N_2O emissions excluding N_2O from LULUCF	2,838.10	2,838.10	2,244.23	2,395.00	2,423.13	2,304.36	1,706.58	2,602.82	2,809.09
HFCs	NO	NO	57.28	199.21	386.12	543.95	577.71	569.10	616.76
PFCs	1,240.24	1,240.24	NO	NO	NO	0.03	0.06	NA	NA
SF_6	10.45	10.45	11.12	11.62	13.03	8.95	6.58	10.39	12.22
Other (specify)									
Total with LULUCF[f]	29,579.32	29,579.32	16,159.59	19,876.99	23,732.65	22,065.70	19,367.59	17,972.98	21,260.03
Total without LULUCF	35,115.98	35,115.98	24,591.05	27,039.08	30,729.27	28,326.05	24,492.78	26,271.45	29,686.88

Emission projections scenarios were based on Croatian Energy Development Strategy (Official Gazette 130/09). Detailed explanations on descriptions of methodologies, models, underlying assumptions and key inputand output parameters for projections are provided in Chapter 4.6 of Second biennial report

CTF Table 6(b) Information on updated greenhouse gas projections under a 'without measures' scenario

Table 6(b) HRV_BR2_v0.1

Information on updated greenhouse gas projections under a 'without measures' scenario[a]

	GHG emissions and removals[b] *(kt CO_2 eq)*							GHG emission projections (kt CO_2 eq)	
	Base year (1990)	1990	1995	2000	2005	2010	2013	2020	2030
Sector[d,e]									
Energy	20,870.56	20,870.56	14,439.01	15,213.53	17,372.08	15,056.95	12,373.02	24,701.28	28,656.51
Transport	4,032.07	4,032.07	3,419.16	4,525.56	5,581.55	5,978.36	5,749.69	5,932.61	6,845.27
Industry/industrial processes	4,852.60	4,852.60	2,572.87	3,291.57	3,776.88	3,591.27	2,812.59	3,385.47	3,921.97
Agriculture	4,766.50	4,766.50	3,486.55	3,208.67	3,088.88	2,526.14	2,317.95	3,423.27	3,782.98
Forestry/LULUCF	-5,536.67	-5,536.67	-8,431.47	-7,162.09	-6,996.63	-6,260.34	-5,125.18	NE	NE
Waste management/waste	594.24	594.24	673.47	799.76	909.89	1,173.33	1,239.53	1,854.49	2,313.77
Other (specify)									
Gas									
CO_2 emissions including net CO_2 from LULUCF	18,530.88	18,530.88	8,878.42	12,743.58	16,746.51	15,160.49	13,481.96	NE	NE
CO_2 emissions excluding net CO_2 from LULUCF	24,074.30	24,074.30	17,326.48	20,073.72	23,753.49	21,432.05	18,620.85	24,443.93	28,432.30
CH_4 emissions including CH_4 from LULUCF	6,954.12	6,954.12	4,959.49	4,456.44	4,156.24	4,038.47	3,582.93	NE	NE
CH_4 emissions excluding CH_4 from LULUCF	6,952.89	6,952.89	4,951.94	4,359.53	4,153.50	4,036.71	3,581.00	5,044.81	5,984.59
N_2O emissions including N_2O from LULUCF	2,843.63	2,843.63	2,253.28	2,466.14	2,430.75	2,313.81	1,718.35	NE	NE
N_2O emissions excluding N_2O from LULUCF	2,838.10	2,838.10	2,244.23	2,395.00	2,423.13	2,304.36	1,706.58	3,296.28	3,629.36
HFCs	NO	NO	57.28	199.21	386.12	543.95	577.71	569.10	616.76
PFCs	1,240.24	1,240.24	NO	NO	NO	0.03	0.06	NA	NA
SF_6	10.45	10.45	11.12	11.62	13.03	8.95	6.58	10.39	12.22
Other (specify)									
Total with LULUCF[f]	29,579.32	29,579.32	16,159.59	19,876.99	23,732.65	22,065.70	19,367.59		
Total without LULUCF	35,115.98	35,115.98	24,591.05	27,039.08	30,729.27	28,326.05	24,492.78	33,364.51	38,675.23

Emission projections scenarios were based on Croatian Energy Development Strategy (Official Gazette 130/09). Detailed explanations on descriptions of methodologies, models, underlying assumptions and key inputand output parameters for projections are provided in Chapter 4.6 of Second biennial report

CTF Table 6(c) Information on updated greenhouse gas projections under a 'with additional measures' scenario

Table 6(c) HRV_BR2_v0.1

Information on updated greenhouse gas projections under a 'with additional measures' scenario[a]

	GHG emissions and removals[b]							GHG emission projections	
	(kt CO_2 eq)							(kt CO_2 eq)	
	Base year (1990)	1990	1995	2000	2005	2010	2013	2020	2030
Sector[d,e]									
Energy	20,870.56	20,870.56	14,439.01	15,213.53	17,372.08	15,056.95	12,373.02	16,595.10	16,887.84
Transport	4,032.07	4,032.07	3,419.16	4,525.56	5,581.55	5,978.36	5,749.69	5,145.48	5,878.82
Industry/industrial processes	4,852.60	4,852.60	2,572.87	3,291.57	3,776.88	3,591.27	2,812.59	2,522.97	2,895.73
Agriculture	4,766.50	4,766.50	3,486.55	3,208.67	3,088.88	2,526.14	2,317.95	3,355.40	3,704.46
Forestry/LULUCF	-5,536.67	-5,536.67	-8,431.47	-7,162.09	-6,996.63	-6,260.34	-5,125.18	NE	NE
Waste management/waste	594.24	594.24	673.47	799.76	909.89	1,173.33	1,239.53	1,245.03	981.08
Other (specify)									
Gas									
CO_2 emissions including net CO_2 from LULUCF	18,530.88	18,530.88	8,878.42	12,743.58	16,746.51	15,160.49	13,481.96	NE	NE
CO_2 emissions excluding net CO_2 from LULUCF	24,074.30	24,074.30	17,326.48	20,073.72	23,753.49	21,432.05	18,620.85	16,824.30	17,397.43
CH_4 emissions including CH_4 from LULUCF	6,954.12	6,954.12	4,959.49	4,456.44	4,156.24	4,038.47	3,582.93	NE	NE
CH_4 emissions excluding CH_4 from LULUCF	6,952.89	6,952.89	4,951.94	4,359.53	4,153.50	4,036.71	3,581.00	3,726.53	3,648.00
N_2O emissions including N_2O from LULUCF	2,843.63	2,843.63	2,253.28	2,466.14	2,430.75	2,313.81	1,718.35	NE	NE
N_2O emissions excluding N_2O from LULUCF	2,838.10	2,838.10	2,244.23	2,395.00	2,423.13	2,304.36	1,706.58	2,588.18	2,794.69
HFCs	NO	NO	57.28	199.21	386.12	543.95	577.71	569.10	616.76
PFCs	1,240.24	1,240.24	NO	NO	NO	0.03	0.06	NA	NA
SF_6	10.45	10.45	11.12	11.62	13.03	8.95	6.58	10.39	12.22
Other (specify)									
Total with LULUCF[f]	29,579.32	29,579.32	16,159.59	19,876.99	23,732.65	22,065.70	19,367.59		
Total without LULUCF	35,115.98	35,115.98	24,591.05	27,039.08	30,729.27	28,326.05	24,492.78	23,718.50	24,469.10

Emission projections scenarios were based on Croatian Energy Development Strategy (Official Gazette 130/09). Detailed explanations on descriptions of methodologies, models, underlying assumptions and key inputand output parameters for projections are provided in Chapter 4.6 of Second biennial report

5. PROVISION OF FINANCIAL, TECHNOLOGICAL AND CAPACITY BUILDING SUPPORT TO DEVELOPING COUNTRIES

The Republic of Croatia became a Party to the Convention on 17 January 1996 when the Croatian Parliament passed the law on its ratification (OG, International Treaties 2/96). For the Republic of Croatia, the Convention came into force on 7 July 1996. As a country undergoing the process of transition to market economy, Croatia has, pursuant to Article 22, paragraph 3 of the Convention, assumed the commitments of countries included in Annex I. By the amendment that came into force on 13 August 1998 Croatia was listed among Parties included in Annex I to the Convention. Therefore, Croatia is not required to provide financial or any other assistance to developing countries, because Croatia is one of them. This section applies to developed countries, countries included in Annex II of the Convention.

The current impact of application of the Kyoto Protocol is still inestimable since in Croatia this mechanism has not yet been used. Domestic measures were the only measures applied to reduce emissions and increase sinks of greenhouse gases. The Regulation on Implementation of the Flexible Mechanisms (OG 142/08) from 2008 remains in force, which is the standard way of flexible mechanisms. From 2013, the system of emissions trading (EU ETS) the plants in Croatia were included, which means that the application of the emissions trading mechanism at the level of industrial plants has started. Croatia made no plans for the implementation of project mechanisms, i.e. for investment in clean development mechanism and joint implementation by which Croatia would acquire units of CERs and ERUs.

At the annual level, Croatia pays a fee for membership to the UNFCCC. In 2013 support to Montenegrin institutions in strengthening administrative capacity in the EU accession process in the field of climate change was given. Data for 2013 and 2014 are provided in CTF tables 7, 7(a) and 7(b).

CTF Table 8 and Table 9 remain blank because Republic of Croatia has not contributed to any program specifically aimed at capacity building or technology transfer in developing countries.

CTF Table 7: Provision of public financial support: summary information in 2013

Table 7 HRV_BR2_v0.1

Provision of public financial support: summary information in 2013[a]

Allocation channels	*Year*									
	European euro - EUR					*USD*[b]				
	Core/ general[c]	*Climate-specific*[d]				*Core/ general*[c]	*Climate-specific*[d]			
		Mitigation	*Adaptation*	*Cross-cutting*[e]	*Other*[f]		*Mitigation*	*Adaptation*	*Cross-cutting*[e]	*Other*[f]
Total contributions through multilateral channels:	30,260.00				NO	NO, NE				NO
Multilateral climate change funds[g]	NO				NO	NO				NO
Other multilateral climate change funds[h]										
Multilateral financial institutions, including regional development banks	NO				NO	NO				NO
Specialized United Nations bodies	30,260.00					NE				
Total contributions through bilateral, regional and other channels	NO			1,796.59		NO			NE	
Total	30,260.00			1,796.59	NO	NO, NE			NE	NO

CTF Table 7: Provision of public financial support: summary information in 2014

Table 7 HRV_BR2_v0.1

Provision of public financial support: summary information in 2014[a]

Allocation channels	*Year*									
	European euro - EUR					*USD*[b]				
	Core/ general[c]	*Climate-specific*[d]				*Core/ general*[c]	*Climate-specific*[d]			
		Mitigation	*Adaptation*	*Cross-cutting*[e]	*Other*[f]		*Mitigation*	*Adaptation*	*Cross-cutting*[e]	*Other*[f]
Total contributions through multilateral channels:	33,018.00				NO	NO, NE				NO
Multilateral climate change funds[g]	NO				NO	NO				NO
Other multilateral climate change funds[h]										
Multilateral financial institutions, including regional development banks	NO				NO	NO				NO
Specialized United Nations bodies	33,018.00					NE				
Total contributions through bilateral, regional and other channels	NO					NO				
Total	33,018.00				NO	NO, NE				NO

CTF Table 7 (a): Provision of public financial support: contribution through multilateral channels in 2013

Table 7(a) HRV_BR2_v0.1

Provision of public financial support: contribution through multilateral channels in 2013[a]

Donor funding	*Total amount*				*Status[b]*	*Funding source[f]*	*Financial instrument[f]*	*Type of support[f, g]*	*Sector[c]*
	Core/general[d]		*Climate-specific[e]*						
	European euro - EUR	*USD*	*European euro - EUR*	*USD*					
Total contributions through multilateral channels	30,260.00	NO, NE	NO	NO					
Multilateral climate change funds[g]	NO	NO	NO	NO					
1. Global Environment Facility	NO	NO	NO	NO					
2. Least Developed Countries Fund	NO	NO	NO	NO					
3. Special Climate Change Fund	NO	NO	NO	NO					
4. Adaptation Fund	NO	NO	NO	NO					
5. Green Climate Fund	NO	NO	NO	NO					
6. UNFCCC Trust Fund for Supplementary Activities	NO	NO	NO	NO					
7. Other multilateral climate change funds									
Multilateral financial institutions, including regional development banks	NO	NO	NO	NO					
1. World Bank	NO	NO	NO	NO					
2. International Finance Corporation	NO	NO	NO	NO					
3. African Development Bank	NO	NO	NO	NO					
4. Asian Development Bank	NO	NO	NO	NO					
5. European Bank for Reconstruction and Development	NO	NO	NO	NO					
6. Inter-American Development Bank	NO	NO	NO	NO					
7. Other									
Specialized United Nations bodies	30,260.00	NE							
1. United Nations Development Programme									
2. United Nations Environment Programme									
3. Other	30,260.00	NE							
membership fees	30,260.00	NE						Other ()	

CTF Table 7 (a): Provision of public financial support: contribution through multilateral channels in 2014

Table 7(a) HRV_BR2_v0.1

Provision of public financial support: contribution through multilateral channels in 2014[a]

Donor funding	*Total amount*				*Status[b]*	*Funding source[f]*	*Financial instrument[f]*	*Type of support[f, g]*	*Sector[c]*
	Core/general[d]		*Climate-specific[e]*						
	European euro - EUR	*USD*	*European euro - EUR*	*USD*					
Total contributions through multilateral channels	33,018.00	NO, NE	NO	NO					
Multilateral climate change funds[g]	NO	NO	NO	NO					
1. Global Environment Facility	NO	NO	NO	NO					
2. Least Developed Countries Fund	NO	NO	NO	NO					
3. Special Climate Change Fund	NO	NO	NO	NO					
4. Adaptation Fund	NO	NO	NO	NO					
5. Green Climate Fund	NO	NO	NO	NO					
6. UNFCCC Trust Fund for Supplementary Activities	NO	NO	NO	NO					
7. Other multilateral climate change funds									
Multilateral financial institutions, including regional development banks	NO	NO	NO	NO					
1. World Bank	NO	NO	NO	NO					
2. International Finance Corporation	NO	NO	NO	NO					
3. African Development Bank	NO	NO	NO	NO					
4. Asian Development Bank	NO	NO	NO	NO					
5. European Bank for Reconstruction and Development	NO	NO	NO	NO					
6. Inter-American Development Bank	NO	NO	NO	NO					
7. Other									
Specialized United Nations bodies	33,018.00	NE							
1. United Nations Development Programme									
2. United Nations Environment Programme									
3. Other	33,018.00	NE							
membership fees	33,018.00	NE						Other ()	

CTF Table 7 (b): Provision of public financial support: contribution through bilateral, regional and other channels in 2013

Table 7(b) HRV_BR2_v0.1

Provision of public financial support: contribution through bilateral, regional and other channels in 2013 [a]

Recipient country/ region/project/programme [b]	*Total amount*		*Status* [c]	*Funding source* [g]	*Financial instrument* [g]	*Type of support* [g, h]	*Sector* [d]	*Additional information* [e]
	Climate-specific [f]							
	European euro - EUR	*USD*						
Total contributions through bilateral, regional and other channels	1,796.59	NE						
Montenegro / Republic of Montenegro/ Support to Montenegrin institutions in strengthening administrative capacity in the EU accession process in the field of climate change	1,796.59	NE	Provided	ODA	Other ()	Cross-cutting	Cross-cutting	

CTF Table 7 (b): Provision of public financial support: contribution through bilateral, regional and other channels in 2014

Table 7(b) HRV_BR2_v0.1

Provision of public financial support: contribution through bilateral, regional and other channels in 2014 [a]

Recipient country/ region/project/programme [b]	*Total amount*		*Status* [c]	*Funding source* [g]	*Financial instrument* [g]	*Type of support* [g, h]	*Sector* [d]	*Additional information* [e]
	Climate-specific [f]							
	European euro - EUR	*USD*						
Total contributions through bilateral, regional and other channels								

CTF Table 8: Provision of technology development and transfer support

Table 8 HRV_BR2_v0.1

Provision of technology development and transfer support[a,b]

Recipient country and/or region	*Targeted area*	*Measures and activities related to technology transfer*	*Sector*[c]	*Source of the funding for technology transfer*	*Activities undertaken by*	*Status*	*Additional information*[d]

Republic of Croatia did not provide technology development and transfer support

CTF Table 9: Provision of capacity-building support

Table 9 HRV_BR2_v0.1

Provision of capacity-building support[a]

Recipient country/region	*Targeted area*	*Programme or project title*	*Description of programme or project* [b,c]

Republic of Croatia did not provide any capacity-building support

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