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**Developing Local Plans for Climate Change Mitigation by 2020
(CLIM-LOCAL2020)**

LIFE07 ENV/GR/000282

ACTION 2

Report on Projections of GHG Emissions up to 2020



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1 Introduction

The European Commission (EC) announced in January 2008 a legislative package on energy and climate change (named “20-20-20 by 2020”), aiming to materialize the decisions of the March 2007 Summit of the EU and to adopt and implement effective policies for tackling global warming. This package sets a series of ambitious legally binding targets on greenhouse gas (GHG) emissions reduction, renewable energy sources (RES) penetration, and energy efficiency promotion. The package also seeks to promote the development and safe use of carbon capture and storage (CCS), a suite of technologies that allows the carbon dioxide emitted by industrial processes to be captured and stored underground where it cannot contribute to global warming. On December 2008, the European Parliament adopted the legislative package on energy and climate change.

More specific, three key targets are set by the European Council (Commission of the European Communities, 2008):

- ☞ A reduction of at least 20% in greenhouse gases (GHG) emissions by 2020 - rising to a more ambitious reduction of 30% in the event of an international agreement.
- ☞ An improvement of energy efficiency by 20% in 2020 compared to a baseline scenario.
- ☞ A 20% share of Renewable Energy Sources (RES) in the European Union’s final energy consumption by 2020.

The above-mentioned targets will be achievable only if local stakeholders, citizens and their groupings share the responsibility of fighting global warming with national governments. The benefits of an active participation of local communities to the climate change mitigation effort are manifold as:

- ☞ Local economy will be strengthened
- ☞ Living conditions and quality of life will be improved
- ☞ There will be positive effects on employment at local level

Local authorities are faced with a lack of systematic approaches, methodologies and tools which can assist them in investigating, assessing and realizing their local potential with respect to GHG emissions reductions. Although some tools may exist at national level, these require several adjustments so that they can be used at local scale.

In this context, the objectives of CLIM-LOCAL2020 are to:

1. Develop a systematic approach and appropriate tools which will enable local authorities to substantially reduce GHG emissions in their region with the aim to contribute in keeping the global temperature increase below the threshold of 2 °C in order to achieve the ultimate objective of UNFCCC as stated in its Article 2.
2. Develop appropriate monitoring and assessment activities related to GHG emissions reduction at local level, which can serve as a guide to other interested municipalities in Greece and the rest of the EU.
3. Clearly identify the interface between local authorities and central administration with respect to climate change mitigation and the main barriers imposed at local level when

taking measures for reducing GHG emissions.

4. Promote awareness, provide training and disseminate of information on climate change and its mitigation, which is necessary for the active participation of citizens and local stakeholders in any mitigation effort.
5. Initiate GHG emission reductions at local level within a 10-15 years horizon and with the active participation of citizens.

Action 2 of the CLIM-LOCAL2020 project (entitled *Projection of local GHG emissions*) aims at the development of GHG and other gases emissions projections covering the sources defined in the context of the Action 1 of the project. The methodology applied is largely based on the methodologies selected for the calculations of present emissions, and will project the future change of emissions through the evolution of suitable drivers per sector.

Table 1 provides an overview of the emissions inventory developed in the context of Action 1 of the CLIM-LOCAL2020 project.

Table 1a GHG emissions per sector in the greater Volos area for 2007

	CO ₂ (t)	CH ₄ (t)	N ₂ O (t)	F-gases (t CO ₂ eq)	GHG (t CO ₂ eq)
Stationary combustion	2401174.63	41.31	186.38	-	2459819.26
<i>Of which, EU-ETS installations</i>	<i>1916387.08</i>	<i>22.18</i>	<i>179.53</i>	-	<i>1972505.79</i>
Mobile combustion	117455.41	55.05	11.66	-	122227.38
Industrial processes	1863806.62	4.50	-	414.28	1864315.41
<i>Of which, EU-ETS installations</i>	<i>1863806.62</i>	<i>4.50</i>	-	<i>0.00</i>	<i>1863901.12</i>
Solvents	1338.28	-	-	-	1338.28
Agriculture	-	411.23	46.14	-	22940.51
Waste	-	4502.38	13.87	-	98851.08
Total	4382179.79	5014.44	258.04	414.28	4569491.91
Total excluding EU-ETS installations	603581.24	4987.78	78.54	414.28	733084.99

Table 1b Other gases emissions per sector in the greater Volos area for 2007

	NOx (t)	SO2 (t)	NMVOG (t)	PM10 (t)
Stationary combustion	8203.95	8183.24	522.81	858.73
<i>Of which, EU-ETS installations</i>	<i>7126.44</i>	<i>5754.76</i>	<i>96.50</i>	<i>388.01</i>
Mobile combustion	1081.76	76.34	344.96	43.22
Industrial processes	90.00	58.50	40.50	799.32
<i>Of which, EU-ETS installations</i>	<i>90.00</i>	<i>58.50</i>	<i>40.50</i>	<i>799.32</i>
Solvents	-	-	429.39	-
Agriculture	1.05	-	-	-
Waste	-	-	-	-
Total	9376.77	8318.09	1337.66	1702.78
Total excluding EU-ETS installations	2164.49	2515.75	1200.84	516.35

The emissions inventory and the emissions projections will provide the basis for the identification of possible policies and measures to be defined at local level as well as the quantification of their expected effect.

The present report covers deliverable product "**Projections of GHG emissions up to 2020**". The methodology and key assumptions made (regarding the trend of key drivers) for the formulation of projections are addressed in **Chapter 2**, while future emissions estimates are presented in **Chapter 3**. Key concluding remarks are presented in **Chapter 4**.

2 Methodology and key assumptions for the projection of GHG and other gases emissions in the greater Volos area

Projection of GHG and other gases emissions in the greater Volos area is based on the methods selected for the compilation of the emissions inventory (in order to maintain consistency) taking into account changes in the emission-generating activity. These changes are associated with activity data trends (e.g. population, number of buildings, industrial production, etc.) and the emission factors applied as they may be affected by policies and measures that are or will be in place.

An overview of the assumptions made, key activity data trends and policies integrated in the projections are presented hereafter. The scenario developed on the basis of these assumptions and by applying the methods used for the compilation of the emissions inventory can be considered as a "with measures" scenario, according to the definition of such a scenario in the UNFCCC guidelines for Annex I national communications.

↳ *Demographic characteristics*

Growth rates for population trend derive from the Land Use Plan of the city of Volos (January 2009). The plan adopts an annual growth rate of 1.5% for the period up to 2013 and of 0.9% for the period 2013 – 2021.

The average household size is assumed to remain constant at the levels estimated during the 2001 national population census.

↳ *Building stock*

With the exception of schools, the number of buildings operated by municipal authorities remains at 2007 levels. The number of school buildings increased from 132 buildings in 2007 to 150 in 2020. This increase does not include the University.

No increase is also assumed for hospitals and hotels, but in the case of hotels an increase of 30% in overnight staying is assumed. As a result of this increase average annual occupancy increased from 45% in 2007 to 60% in 2020.

A linear trend is assumed for the number of buildings for offices and trade taking into account the average construction rate of the period 2000 – 2007. The total number of offices and trade increased from 2007 to 2020 by 60%.

The main change assumed for the residential sector refers to the allocation of buildings between single/double storey buildings and multi-storey buildings. The share of single/double storey buildings decreased from 85% of total residential buildings in 2007 to 75% in 2020. As a result, the total number of residential buildings has only slightly increased from 2007 to 2020 by 1%.

All new buildings are constructed according to the existing insulation code (introduced in 1979) as the development of an updated code is still in progress.

↳ *Electric appliances and air-conditioning*

Ownership of electric appliances and air-conditioning in the residential sector is expected to continue its upward trend. The average ownership of air-conditioning units (split

systems) increased from 1 unit per household in 2007 to 1.5 units per household in 2020. No increase is assumed for refrigeration (ownership is kept constant at 1 unit per household), while rates are differentiated per appliance category for the rest of the end-uses.

A total increase of 50% is foreseen for electric appliances in all categories of the tertiary sector as the current specific consumption can be considered as low especially in schools.

↳ *Technical characteristics of equipment / appliances in the buildings sector*

The share of natural gas in the various end-uses of the tertiary sector has remained at 2007 levels while the share of natural gas for space heating in the residential sector increased to 75% of the buildings with central heating systems (from 60% in 2007).

Efficient lighting systems cover 25% of the relevant energy needs in all building categories assuming a linear penetration for the period 2007 – 2020, while the use of low efficiency AC units is restricted to current levels.

↳ *Road transportation*

Future car and motorcycle ownership follow a linear trend (as observed during the decade 1998 – 2007) for the period up to 2020. As a result the total number of private cars in 2020 increased to 75000, while the number of motorcycles increased to 32000 (an increase of 80% and 90% respectively).

↳ *Industry*

Industrial production of installations participating in the EU-ETS follow the trend estimated at the latest national submission under Decision 280/2004/EC for the relevant sectors (MINENV 2009a). Electricity and fuels use in rest industry follows the growth rate estimated at national level (MINENV 2009a).

↳ *Primary sector*

Taking into consideration the limited contribution of primary sector (both energy use and cultivation practices) to total energy consumption and emissions, the key determinant parameters have either remained at 2007 levels (e.g. livestock) or slightly decreased (e.g. agricultural areas, fishing fleet) according to the observed trends. The use of synthetic N fertilizers represents the only exception, as their use (a decrease from 2007 to 2020 by 20%) follows the trend projected at national level according to the latest projections submitted to EC under Decision 280/2004/EC.

↳ *Waste*

Solid waste generation per capita increased from 2.36 kg per day in 2007 to 2.58 kg per day in 2020. The targets set under the regional planning for solid waste management in the Region of Thessalia regarding the biodegradable waste landfilled and the packaging and packaging waste are downscaled to the level of the greater Volos area on the basis of the relevant population distribution. As a result, the quantities landfilled decreased from 2007 to 2020 by 40% approximately. In addition, the expansion of the biogas

recovery network (already in operation in 2007) has been completed in 2012.

The capacity of the wastewater treatment plant as well as the associated network has expanded according to the Operational Plan of the municipal enterprise for water supply and wastewater treatment. The technical characteristics of the wastewater treatment plant have been kept the same with those of 2007, while BOD treated and biogas generated follow the trend of the population served by the facility.

Table 2 provides an overview of the key activity data trends estimated on the basis of the assumption presented above.

Table 2 Key activity data trends for the projection of emissions for the greater Volos area

Category / Driver	2007	2010	2015	2020
Demographic characteristics				
Population	128369	134233	142902	149450
Households	46455	48576	51714	54083
Building stock				
Residential	28322	28467	28609	28558
Offices	355	415	515	615
Commercial	1063	1201	1431	1661
Schools	132	133	143	153
Road transportation				
Passenger cars	41031	48484	61489	74632
Motorcycles	16905	19889	26045	32332
Rest industry (Index, 2007 = 100)				
Electric uses	100	103	109	115
Thermal uses	100	99	101	105
Agriculture				
Cultivation areas (Ha)	7440	7219	6865	6529
Irrigated areas (%)	42%	44%	48%	52%
Synthetic N fertilizers (Index, 2007 = 100)	100	87	80	79
Waste				
Waste landfilled (t)	103525	91944	64783	62832
BOD handled (t)	3722	3892	4541	4747

↪ *Emission factors for electricity consumption*

The estimation of future emission factors for electricity generation is similar to the approach followed for the existing ones. Projected electricity generation and emissions (for all gases except PM10) derive from the latest national submission to the EC under Decision 280/2004/EC regarding projections and policies & measures (MINENV 2009a). In the case of PM10, fuel consumption for electricity generation per power plant type is also considered. The emissions factors estimated for 2010, 2015 and 2020 are presented in **Table 3**.

According to the "with measures" scenario (for 2020) described in the above-mentioned submission:

- ❑ The installed capacity of the lignite-fired power plants is 4.8 GW, as planned by the Public Power Corporation.
- ❑ The installation of coal power plants is also foreseen. It should be mentioned that according to the Minister for Development this option is not, anymore, relevant for the Greek electricity generation system. Since the "with measures" has not been revised, these estimates are used in the context of the Action 2 of the project.
- ❑ The installed capacity of the natural gas-fired power plants reaches a total of 6.8 GW which is more than double the capacity in operation at 2005 (2.5 GW).
- ❑ The contribution of RES to net electricity generation is projected at 19% for 2020. Total installed capacity is projected at 8.6 GW, of which 4 GW refer to hydroelectric plants and 3.6 GW refer to wind farms.

Table 3 Emission factors estimated for the calculation of indirect emissions from electricity use

	2010	2015	2020
CO ₂ (t/TJ)	243.04	218.29	176.75
CH ₄ (kg/TJ)	2.81	2.60	2.16
N ₂ O (kg/TJ)	2.61	2.43	2.00
NO _x (kg/TJ)	490.00	480.00	400.00
SO ₂ (kg/TJ)	1595.00	1435.00	1130.00
NMVOOC (kg/TJ)	24.96	23.26	18.98
PM10 (kg/TJ)	136.82	107.71	72.41

3 Projection of GHG and other gases emissions in the greater Volos area

3.1 Projection of final energy consumption in the greater Volos area

The main results of the “with measures” scenario regarding final energy consumption in the greater Volos area are presented below, while in **Table 4** and **Table 5** a brief presentation is given on the development of final energy consumption per sector and fuel respectively for the period 2007-2020.

Final energy consumption including EU-ETS installations increases continuously during the entire time period (from 521 ktoe in 2007 to 572 ktoe in 2020), with an average annual growth rate of 0.7%. Final energy consumption is clearly dominated by EU-ETS installations as

- ↳ Energy consumption of EU-ETS installations account for 69% of the total for 2020, though their relative contribution has slightly decreased compared to 2007 (74% of the total in 2007).
- ↳ Solid fuels (consumed exclusively in EU-ETS installations for cement and lime production) have the highest share in final energy consumption, presenting however a slight decrease of their contribution from 55% in 2007 to 51% in 2020.

Table 4 Final energy consumption per sector in the greater Volos area (in ktoe) for the period 2007 - 2020

	2007	2010	2015	2020
Primary sector	6.02	5.97	5.89	5.82
Residential sector	64.73	67.92	72.78	77.08
Road transportation	33.96	36.40	41.15	46.81
Passengers	29.18	31.62	36.37	42.03
Local authorities	0.24	0.24	0.24	0.24
Goods transportation	3.97	3.98	3.98	3.98
Port of Volos	0.56	0.56	0.56	0.56
Tertiary sector	19.47	23.23	27.01	31.18
Offices	3.65	4.32	5.45	6.67
Trade	9.80	11.29	13.89	16.68
Hotels	0.93	1.10	1.02	1.08
Hospitals	3.69	4.02	4.06	4.11
Schools	1.40	2.50	2.59	2.64
Public lighting	0.68	0.68	0.68	0.68
Industry	396.20	342.10	399.86	410.20
EU-ETS installations	383.98	329.79	387.21	396.99
Water - Wastewater	1.08	1.12	1.20	1.25
Rest industry	11.14	11.18	11.45	11.96
Total	521.05	476.31	547.38	571.78

Table 5 Final energy consumption per fuel in the greater Volos area (in ktoe) for the period 2007 - 2020

	2007	2010	2015	2020
Diesel	43.00	43.11	42.41	40.55
Heavy fuel oil	13.28	11.43	12.18	11.96
of which, EU-ETS installations	9.48	8.07	9.41	9.65
LPG	0.45	0.45	0.46	0.47
Electricity	99.62	96.09	112.26	119.28
of which, EU-ETS installations	66.76	59.14	70.36	72.13
Natural gas	46.56	48.92	60.79	69.70
of which, EU-ETS installations	21.23	18.91	23.09	23.67
Gasoline	20.49	22.72	27.01	32.35
Biomass	9.52	8.02	5.54	3.10
Solar energy	1.63	1.90	2.37	2.84
Solid fuels	286.51	243.68	284.35	291.53
Total	521.05	476.31	547.38	571.78
Total excluding EU-ETS installations	137.07	146.51	160.17	174.80

If EU-ETS installations are excluded from the analysis, then final energy consumption (**Figure 1**) is projected to increase by 27.5% from 2007 (137 ktoe) to 2020 (175 ktoe).

- ↳ The consumption of diesel oil that had the highest share in final energy consumption in 2007 (31% - 43 ktoe), decreases continuously (40.55 ktoe in 2020) and as a result its share is projected at 23% in 2020. This trend is mainly attributed to the systematic substitution of diesel oil to natural gas. Electricity contribution to final energy consumption increases from 24% in 2007 (32.85 ktoe) to 27% in 2020 (47.15 Mtoe). Natural gas consumption has increased by 82% from 2007 to 2020, accounting for 26% of final energy consumption in 2020 (46.02 ktoe). Gasoline consumption has increased from 20.49 ktoe in 2007 to 32.35 ktoe in 2020, presenting the second largest (following natural gas) total increase (58% from 2007 to 2020). The share of RES declines from 8% in 2007 to 3% in 2020, mainly due to the decreased use of biomass for space heating in the residential sector.
- ↳ The residential sector has the highest share in final energy consumption, presenting however a slight decrease of its contribution from 47% in 2007 to 44% in 2020. The share of rest industry in final energy consumption is slightly decreased during the examined period from 8.9% in 2007 to 7.6% in 2020, even though in absolute terms energy consumption in the sector increases from 12.21 ktoe in 2007 to 13.21 Mtoe in 2020. Similarly the share of the primary sector decreases from 4.4% in 2007 to 3.3% in 2020. On the contrary energy consumption in the tertiary sector as well energy consumption for road transportation has increased by 60% and 38% respectively for the period 2007 – 2020.

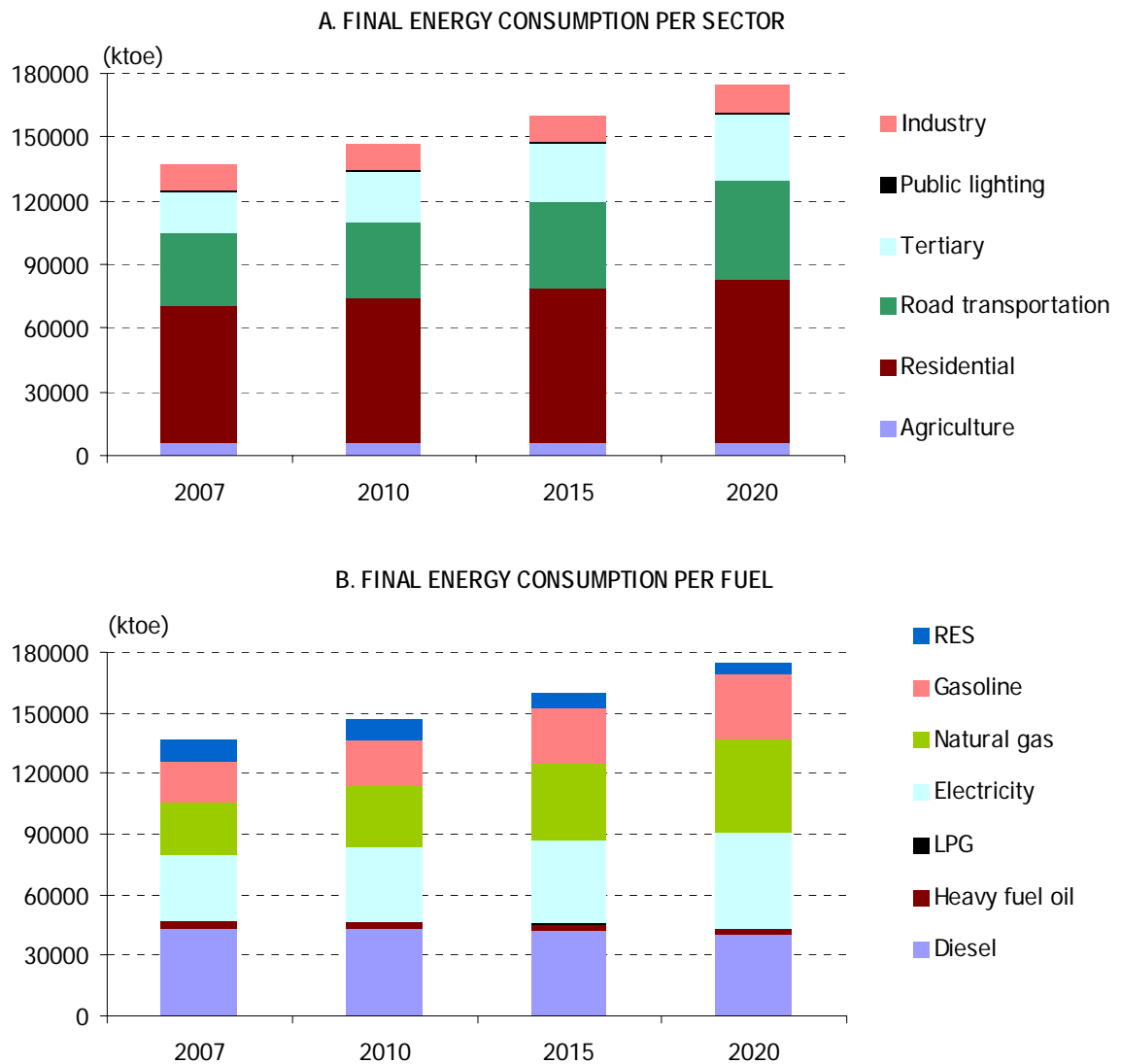


Figure 1 Final energy consumption per sector and fuel in the greater Volos area (in ktoe) for the period 2007 – 2020, excluding EU-ETS installations

3.2 Projection of emissions

Total GHG emissions (i.e. including industrial installations participating in the EU-ETS and indirect emissions from electricity consumption) decreased from 2007 to 2020 by 1.4% (**Table 6**). This decrease is mainly attributed to changes in the fuel mix for electricity generation sector that resulted to a continuous decrease of the average emission factor. If indirect emissions from electricity consumption are excluded from the total figures, then the scenario developed projects a total increase of 2.1% for the period 2007 – 2020. If both indirect emissions and emissions from EU-ETS installations are excluded, then a total increase (for the period 2007 – 2020) of 3.5% is projected.

Table 6 Total GHG emissions (in kt CO₂ eq) in the greater Volos area for the period 2007 - 2020

	2007	2010	2015	2020
Total emissions	4,569,491.91	4,036,278.80	4,552,616.59	4,505,544.68
Total excluding indirect emissions	3,545,901.36	3,054,981.71	3,522,775.19	3,619,454.60
Total excluding EU-ETS installations	733,084.99	762,416.25	776,247.84	759,687.02
Total excluding indirect emissions and EU-ETS installations	395,497.01	385,064.89	391,805.88	409,424.39

The scenario does not foresee significant changes with respect to the sectoral contribution to total GHG emissions (**Figure 2**, excluding emissions from EU-ETS installations).

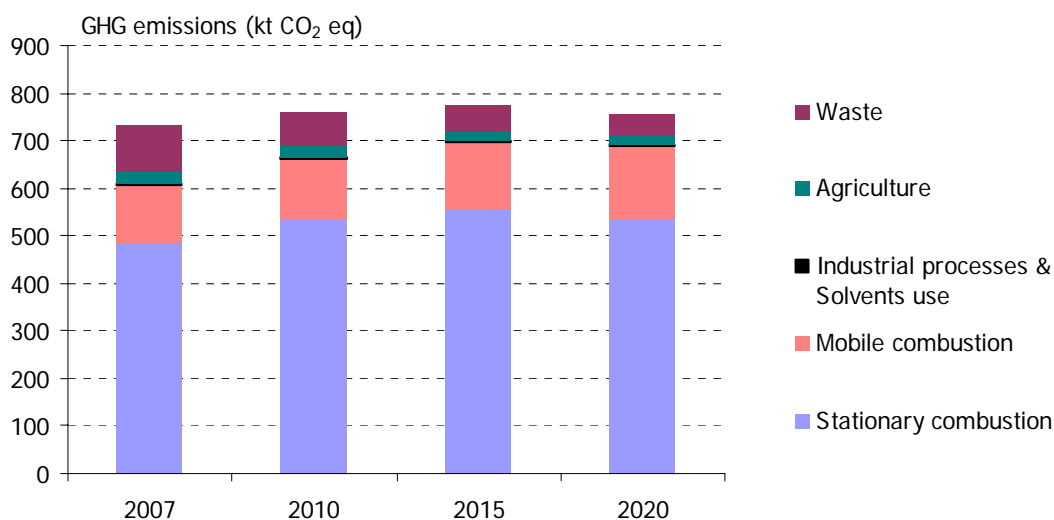


Figure 2 Total GHG emissions per sector for the period 2007 – 2020, excluding EU-ETS installations

- ↪ GHG emissions from the energy sector (excluding EU-ETS installations) increased by 13.5%. Total GHG emissions from stationary combustion increased by 10%. As a result, the share of stationary combustion to total GHG emissions (excluding EU-ETS installations) increased slightly from 66.5% in 2007 to 70.5% in 2020. GHG emissions from mobile combustion increased by 28% for the period 2007 – 2020. This increase is attributed to the increase projected for the passengers' cars as well as to the limited contribution of alternative transport modes to the transportation work.

GHG emissions from Road transportation and Tertiary sector presented the highest increase (about 34% and 30% respectively) for the period 2007 – 2020 (**Figure 3**). The residential sector remains the largest contributor to total GHG emissions from the Energy sector, with a minor decrease of its share has slightly reduced to 42.4% (from 45% in 2007).

Indirect emissions from electricity consumption account for the largest part of GHG emissions in the greater Volos area for the period 2007 – 2020 (**Figure 4**). Indirect emissions present a total increase of 4% for the period 2007 – 2020, though their contribution has slightly decreased (from 55% of GHG emissions from Energy excluding EU-ETS installations in 2007 to 51% in 2020). The lower increase of indirect emissions compared to electricity consumption projected for the reference period (see Paragraph 3.1) is attributed to changes in the electricity generation fuel mix.

GHG emissions from natural gas consumption have increased by 82% from 2007 (59.85 kt CO₂ eq) to 2020 (108.74 kt CO₂ eq) as a result of its continuous penetration to the local energy balance (for both new and existing consumers). Accordingly, emissions from liquid fuels (in stationary combustion) have decreased by 14% during the reference period. On the contrary emissions from gasoline consumption have increased by 53% from 2007 – 2020, which is the second higher total increase projected (following natural gas).

It should be noted that if both indirect emissions from electricity consumption and emissions from EU-ETS installations are excluded from totals, then GHG emissions from the energy sector have increased by 25.5% (26.5% if only CO₂ is considered). Such an increase is obviously not in line with the provisions of the EU legislative package on energy and climate change that calls for GHG emissions reduction targets for the non-ETS sectors (a reduction of 4% in 2020 as regards 2005 levels is foreseen for Greece). It is evident that policies and measures both at national and local level should address this issue.

- ↪ Industrial processes (i.e. F-gases use in residential refrigeration and air-conditioning equipment in dwellings and passenger cars) represent the most dynamic sector by means of its total emissions increase (72% approximately), though its contribution to total emissions is less than 0.5%.
- ↪ GHG emissions from Agriculture and Waste decreased by 3% and 57% respectively, from 2007 to 2020. The decrease of GHG emissions projected for the Waste sector is the result of the solid waste management practices applied in accordance with the relevant management plan adopted by the Region of Thessalia.

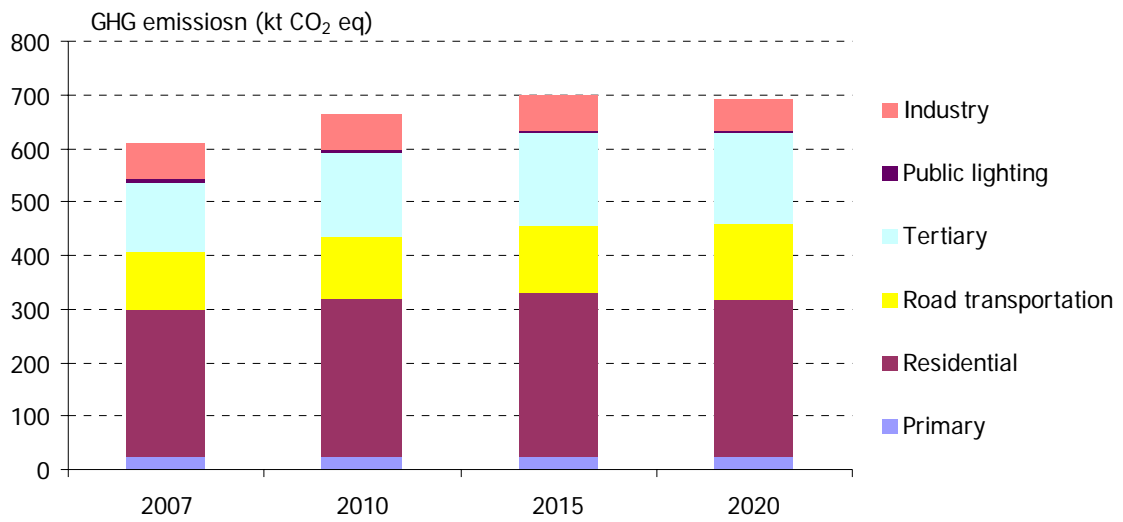


Figure 3 Total GHG emissions from Energy per sector for the period 2007 – 2020, excluding EU-ETS installations

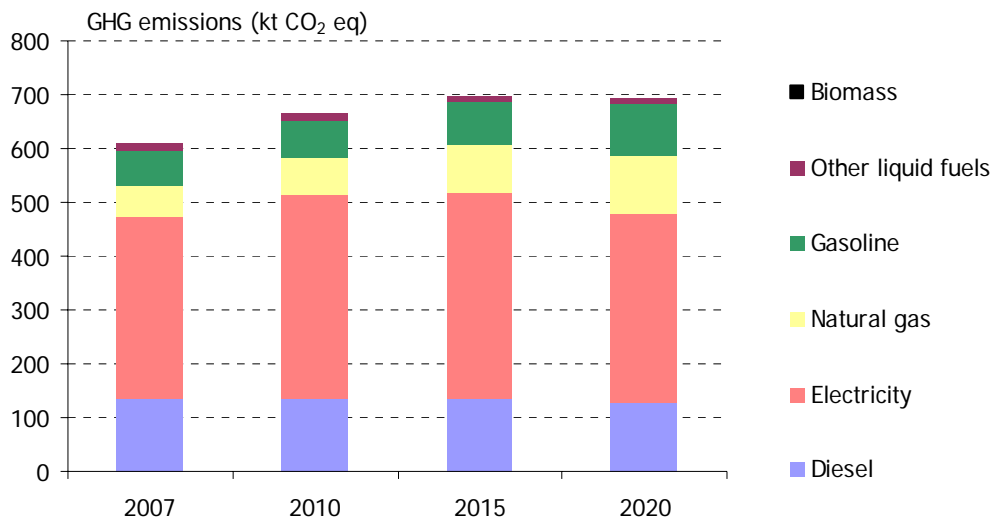


Figure 4 Total GHG emissions from Energy per fuel for the period 2007 – 2020, excluding EU-ETS installations

A continuous and significant decrease of other gases emissions (excluding EU-ETS installations and indirect emissions from electricity consumption) is projected for the greater Volos area (**Figure 5**). Total decrease projected, varies from 30% (for NMVOC) to 60% (for PM10). This is attributed to:

- ↪ The improved qualitative characteristics (especially S content) of liquid fuels.
- ↪ The continuous renewal of the passenger vehicles fleet.
- ↪ The gradual reduction of traditional biomass use in the residential sector for space heating.

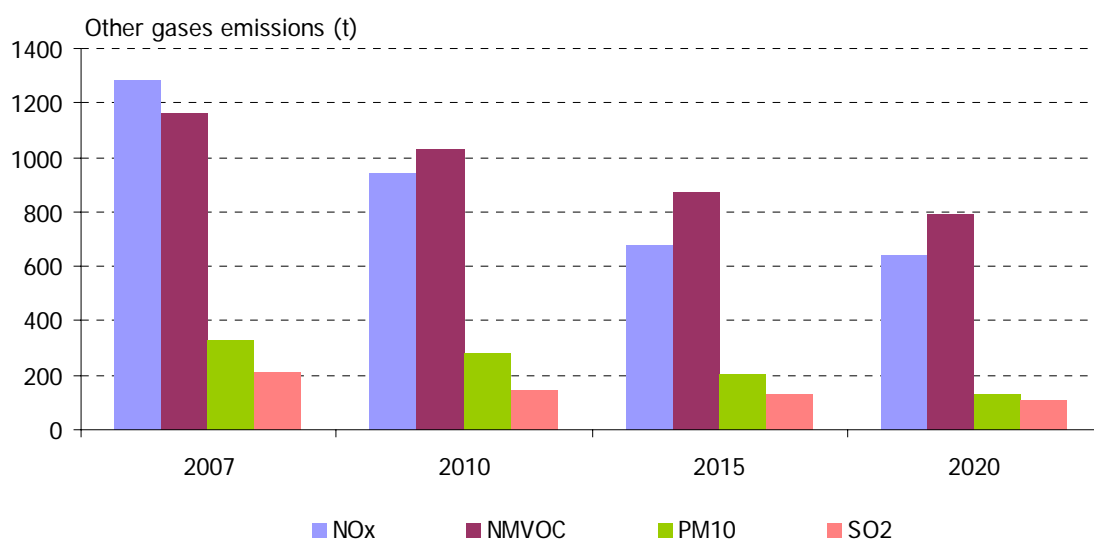


Figure 5 Total GHG emissions from the Energy sector for the period 2007 – 2020, excluding EU-ETS installations and indirect emissions

4 Remarks

Action 2 of the CLIM-LOCAL2020 project (entitled *Projection of local GHG emissions*) aims at the development of GHG and other gases emissions projections covering the sources defined in the context of the Action 1 of the project. The outcome of these Actions will provide the basis for the identification of possible policies and measures to be defined at local level as well as the quantification of their expected effect.

To this end the following should be noted:

- ↪ Electricity consumption is expected to increase significantly (a total increase of 43.3% is projected for electricity consumption excluding EU-ETS installations during the period 2007 – 2020). Although local authorities do not have the means to affect the electricity generation mix, measures aiming at electricity conservation could have a positive economic effect for the consumers and would result in emissions reductions at national level.
- ↪ Local authorities are responsible for the operation of installations, buildings, etc., that account for about 25% of total GHG emissions, excluding indirect emissions from electricity consumption as well as emissions from EU-ETS units. Policies and measures to be developed should deal with this part of emissions.
- ↪ The residential sector account for about 37% of total GHG emissions, excluding indirect emissions from electricity consumption as well as emissions from EU-ETS units. Given the continuous increase of GHG emissions from the residential sector it is evident that a local action plan for climate change mitigation should, at least, address this part of emissions by means of awareness campaigns and the provision of information to the population regarding potential mitigation actions. Additionally, the possibility to provide economic incentives for supporting specific measures should also be examined. A similar approach should be followed for the tertiary sector that presents the highest growth rate (a mean annual growth rate of 2.7% is projected for the period 2007 – 2020) within the Energy sector.

Road transportation constitutes the major source of GHG emissions (excluding indirect emissions from electricity consumption as well as emissions from EU-ETS units) with a highly increasing trend (a mean annual growth rate of 2.3% is projected for the period 2007 – 2020). To the extent possible, transportation-related interventions planned by local authorities need to consider climate change as a design parameter.

The trends described above are obviously not in line with the provisions of the EU legislative package on energy and climate change that calls for GHG emissions reduction targets for the non-ETS sectors (a reduction of 4% in 2020 as regards 2005 levels is foreseen for Greece). Therefore policies and measures both at national and local level should address this issue.

- ↪ The decrease of GHG emissions from Waste is attributed to the solid waste management practices (recycling of paper and packaging waste, minimization of organic waste landfilled) applied in accordance with the relevant management plan adopted by the

Region of Thessalia. Local authorities should focus on the successful implementation of this plan in order to exploit the available potential.

- ↪ A continuous and significant decrease of other gases emissions (excluding EU-ETS installations and indirect emissions) is projected for the greater Volos area. This is attributed to (a) the improved qualitative characteristics (especially S content) of liquid fuels; (b) the continuous renewal of the passenger vehicles fleet and (c) the gradual reduction of traditional biomass use in the residential sector for space heating. Ancillary benefits related to air quality improvement should also be considered when defining measures for climate change mitigation.

