

# Hungary

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## 1. SUMMARY

Hungary has a reduction obligation of 6% compared to Kyoto base year (1985-88/95) emission level. Hungary has recently submitted revised inventory approved by ERT. The new base year emission is a bit higher than submitted earlier, but compliance will not be a problem. WEM and WAM projections for 2010 show 11.8 % and 12.4 % reduction from base year emissions respectively, against a target of a 6 % reduction.

Hungary is able to meet its reduction commitments concerning the first commitment period (2008-2012) of Kyoto Protocol without using any flexible mechanisms. Hungary intends to use joint implementation (JI) and international emissions trading (IET) only in order to trade its surplus of emission permits. A government decree regulating the Kyoto mechanisms projects was prepared and put in force in the beginning of January, 2008.

Hungary so far has used joint implementation (only as host country); and recently a green investment scheme (GIS) for international emissions trading has reached its preparation stage.

The last document submitted under the EC Monitoring Mechanism in 2007 includes a detailed description of existing and planned policies and measures, but not of the projections. Quantification of their effect was made, also non-quantifiable policies and measures are planned to include to the overall projections. New GHG emission projections are being prepared at present based on new modelling approach. The schedule is to complete by August 2008.

## 2. GHG PROJECTIONS AND PROGRESS TO KYOTO TARGETS

The Kyoto base-year is the average of 1985-87 for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O and 1995 for fluorinated gases. The Biannual Report of Republic of Hungary (Report in accordance with Article 3(2) of Decision 280/2004/EC, Ministry of Environment and Water of Hungary), with the extension of the questionnaire in Flexible Mechanisms provide with some information on projections based on old calculations and assumption. There are detailed data available for projections splitting for sectors and all gases except F gases, which are not covered. Since new projections are being prepared (to be scheduled to complete by August 2008), the old methodology (bottom-up sector-wise modelling) revised in 2005 is not described. Only figures are presented in the report, since the old version will not be valid anymore. The model was prepared in 2004, so first projected year is 2004. Inventory data were available from 2001 through 2003. Emission projections for the preceding years were presented relative to these actual inventory data. Three scenarios were projected (WOM, WEM and WAM). The highest rate of increase of GHG emission is projected to be in waste sector for both WEM and WAM scenarios. New projections will be based on new approach and modelling, also the recalculated GHG inventory data consistent with projections (approved by UN Expert review team in August 2007) will be considered.

Table 1 shows, for all gases and main sectors:

- GHG emission projections for the two scenarios “with existing measures” (WEM) and “with additional measures” (WAM), as reported by Hungary;
- Historic emissions (in the “reference year”) as reported together with projections. For Hungary, the reference year is 2001.

Projection was made in 2004 using the preceding years for emission data. Projection consistent emission is 2001 inventory submitted in 2004, so reference year is emission 2001 from 2004.

Table 2 shows, for all gases and main sectors:

- 1990 GHG emissions as reported in the latest (2008) GHG emissions inventory (1990-2006);
- Adjusted GHG emission projections for the WEM and WAM scenarios. This adjustment of the projections reported in Table 1 is carried out to allow consistency and comparability between projections and the latest (2008) GHG inventory data<sup>1</sup>. In the case of Hungary, the correction factor is very small ( 1.0015456).

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<sup>1</sup> The adjustment consists in applying an adjustment factor to projections from Table 1. This factor is the ratio between total emissions in the reference year as reported in the 2008 GHG inventory report (or, if the reference year is the base-year under the Kyoto Protocol, in the report of the review of the initial report under the Kyoto Protocol) and total emissions in the reference year as reported by the country with projections (Table 1).

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**Table 1. Summary of reported projections by sector and by gas in 2010 (Mt CO<sub>2</sub>-eq.)**

	Carbon dioxide			Methane			Nitrous oxide			F-gases (SF <sub>6</sub> , HFCs and PFCs)			Total		
	Reference year	2010 WEM	2010 WAM	Reference year	2010 WEM	2010 WAM	Reference year	2010 WEM	2010 WAM	Reference year	2010 WEM	2010 WAM	Reference year	2010 WEM	2010 WAM
<b>Energy (excl. transport)*</b>	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	61.7	65.1	65.1
Energy supply	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Energy – industry, construction	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Energy – other (commercial, residential, agriculture)	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
<b>Transport (energy)</b>	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
<b>Industrial processes</b>	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
<b>Waste</b>	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	5.4	4.7	4.7
<b>Agriculture</b>	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	7.8	11.0	10.4
<b>Other</b>	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	0.2		
<b>Total (excl. LULUCF)</b>	54.5	NE	NE	10.2	NE	NE	9.5	NE	NE	NE	NE	NE	79.3	86.5	85.9

**Key:**

Reference year: 2001

WEM: 'with existing measures' projection

WAM: 'with additional measures' projection

\* Energy **including** transport

**Source:** Hungary's MM submission, 2007, and Annual greenhouse gas inventory 1985 – 2001, April 2004.

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**Table 2. Summary of projections by sector and by gas in 2010 compared to 1990 emissions (MtCO<sub>2</sub>eq)**

	Carbon dioxide			Methane			Nitrous oxide			F-gases (SF <sub>6</sub> , HFCs and PFCs)			Total		
	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM
<b>Energy (excl. transport)</b>	60.0	NE	NE	2.6	NE	NE	0.7	NE	NE	NE	NE	NE	63.3	NE	NE
<b>Energy (incl. transport)</b>	68.1	NE	NE	2.6	NE	NE	1.2	NE	NE	NE	NE	NE	71.8	65.2	65.2
Energy supply	22.0	NE	NE	2.2	NE	NE	0.2	NE	NE	NE	NE	NE	24.6	NE	NE
Energy – industry, construction	15.7	NE	NE	0.1	NE	NE	0.3	NE	NE	NE	NE	NE	16.1	NE	NE
Energy – other (commercial, residential, agriculture)	22.2	NE	NE	0.2	NE	NE	0.3	NE	NE	NE	NE	NE	22.7	NE	NE
<b>Transport (energy)</b>	8.0	NE	NE	0.0	NE	NE	0.4	NE	NE	NE	NE	NE	8.5	NE	NE
<b>Industrial processes</b>	5.1	NE	NE	0.0	NE	NE	3.2	NE	NE	0.3	NE	NE	8.7	5.7	5.7
<b>Waste</b>	0.1	NE	NE	3.1	NE	NE	0.2	NE	NE	NE	NE	NE	3.4	4.7	4.7
<b>Agriculture</b>	NA	NE	NE	3.8	NE	NE	10.4	NE	NE	NE	NE	NE	14.1	11.0	10.4
<b>Other</b>	0.3	NE	NE	NA	NE	NE	0.2	NE	NE	NE	NE	NE	0.3		
<b>Total (excl. LULUCF)</b>	73.3	NE	NE	9.5	NE	NE	15.1	NE	NE	0.3	NE	NE	98.2	86.7	86.0

**Key:**

WEM: 'with existing measures' projection

WAM: 'with additional measures' projection

**Source:** Hungary's MM submission, 2007, and Annual greenhouse gas inventory 1985 – 2006, April 2008.

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**Table 3: Summary of projections by sector and by gas in 2010 compared to 1990 and base year emissions (index 100 = reference year)**

	Carbon dioxide			Methane			Nitrous oxide			F-gases (SF6, HFCs and PFCs)			Total		
	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM	1990	2010 WEM	2010 WAM
<b>Energy (excl. transport)</b>	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE	100	90.8	90.8
Energy supply	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE
Energy – industry, construction	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE
Energy – other (commercial, residential, agriculture)	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE
<b>Transport (energy)</b>	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE
<b>Industrial processes</b>	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE	100	67.7	67.7
<b>Waste</b>	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE	100	139.8	139.8
<b>Agriculture</b>	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE	100	77.9	73.6
<b>Other</b>	100	NE	NE		NE	NE		NE	NE		NE	NE		NE	NE
<b>Total (excl. LULUCF)</b>	100	NE	NE	100	NE	NE	100	NE	NE	100	NE	NE	100	88.2	87.6

**Key:**

WEM: 'with existing measures' projection

WAM: 'with additional measures' projection

**Source:** Hungary's MM submission, 2007, and Annual greenhouse gas inventory 1985 – 2006, April 2008.

**Table 4. Summary of projections in 2010 compared to base year emissions under the Kyoto Protocol**

	Unit	Base-year emissions under	2010 projections 'with existing	2010 projections 'with additional
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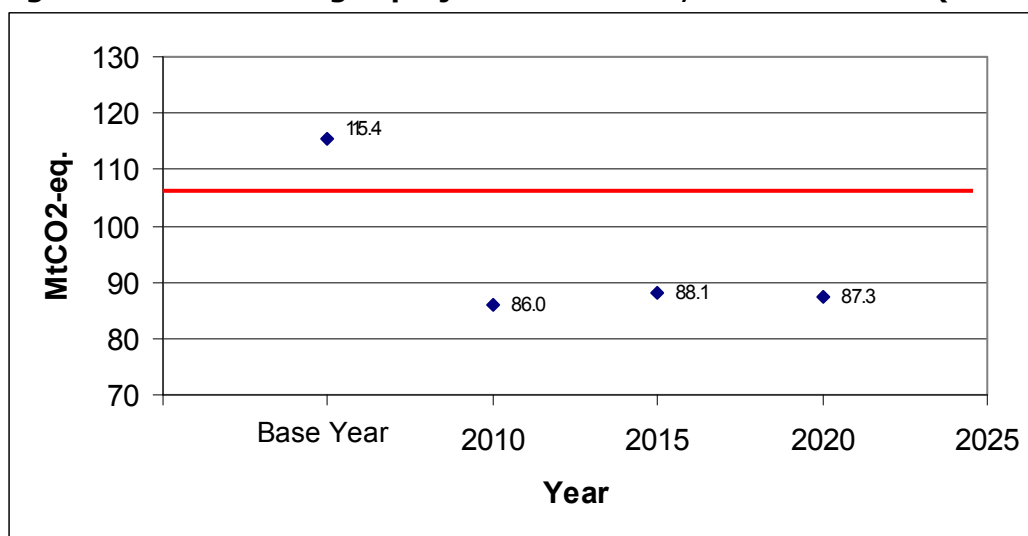
		the Kyoto Protocol	measures'	measures'
Total GHG emissions (excluding LULUCF)	Mt CO <sub>2</sub> -eq.	115.4	86.7	86.0
	Index (base-year emissions = 100)	100	75.1	74.5

**Note:** The Kyoto base-year (reference year) is the average of 1985-87 for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O and 1995 for fluorinated gases.

**Source:** Hungary's MM submission, 2007, and Annual greenhouse gas inventory 1985 – 2006, April 2008.

In Figure 1, the same correction factor used in Table 2 has been applied to the projections for 2010, 2015 and 2020. The graph shows WAM scenario for the year 2010, 2015 and 2020. GHG emission will remain below the Kyoto target indicated by red line.

**Figure 1. Greenhouse gas projections in 2010, 2015 and 2020 (Mt CO<sub>2</sub>-eq.)**



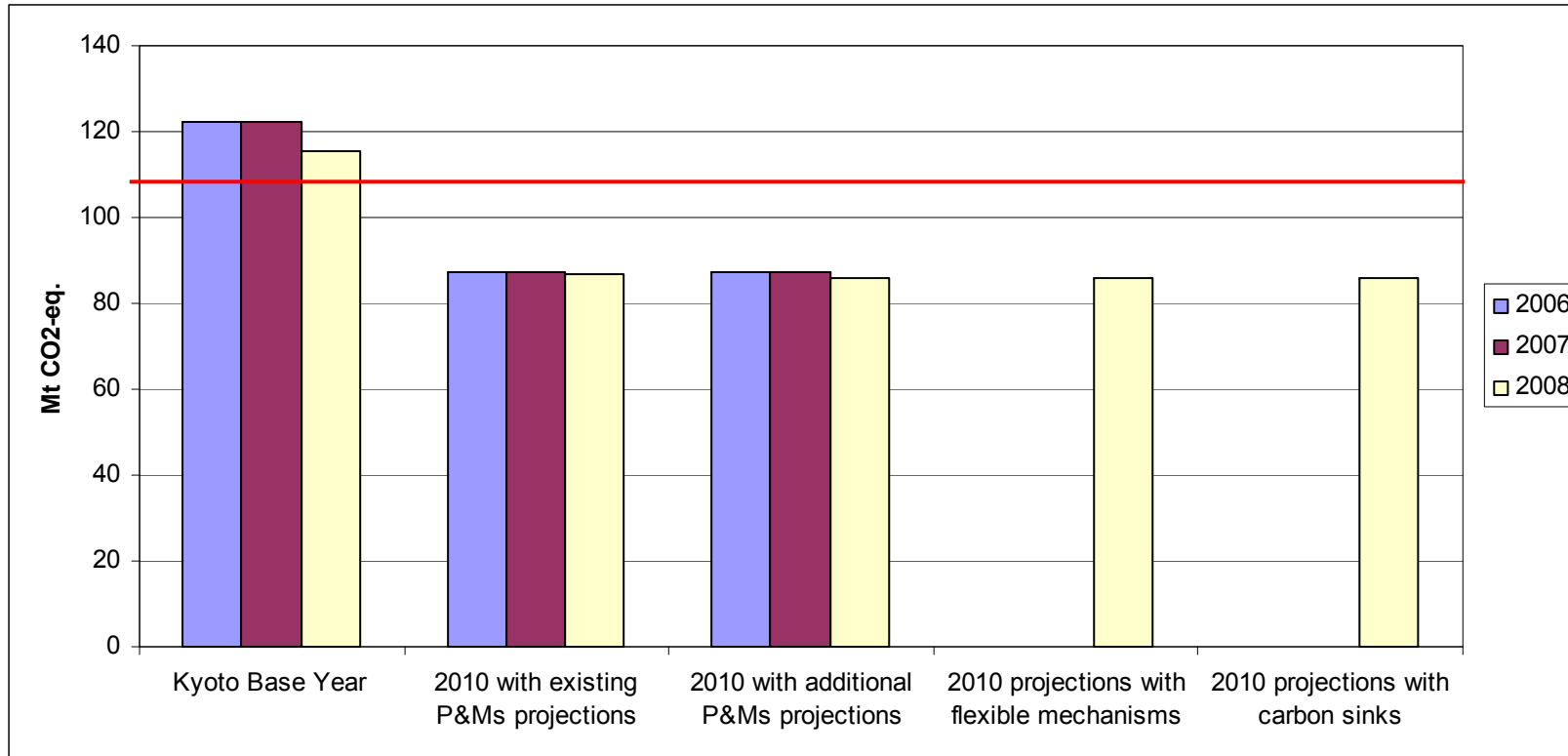
**Source:** Hungary's MM submission, 2007

Kyoto base year emissions and GHG projections from 2006, 2007 are different from that of 2008. Hungary will be able to meet its reduction commitments in the first commitment period (2008-2012) of Kyoto Protocol without using any flexible mechanisms. So, joint implementation

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(JI) and international emissions trading (IET) are intended to use only for trading its surplus of emission permits. Reduction effect of flexible mechanisms and sinks was not estimated.

**Figure 2. Comparison of 2010 projections reported in 2006, 2007 and 2008**



**Source:** Hungary's MM submission, 2007.



### 3. CLIMATE CHANGE MITIGATION POLICIES AND MEASURES

The baseline is the “without measures” forecast, without the effect of any policies or measures. The “with measures” includes the effect of the currently implemented and adopted policies and measures. It is noted however, that some of the implemented but currently suspended policies whose future in the light of past experience seems uncertain (e.g. support of residential energy efficiency projects) are not included, since their forecast savings are based on somewhat arbitrary assumptions. These are included in among the additional measures. The forecast savings of the individual measures were converted to a common reference year and baseline scenario.

The scenario “with additional measures” assumes a higher rate of governmental interest and support in aiding the Kyoto emission reduction targets.

The “with measures” and “with additional measures” scenarios were developed with the following two basic differentiating factors: changes in agricultural and forestation policies, application of previously mentioned policies and measures, improved utilisation of renewable energy sources, and different transportation policies. The “with measures scenario” includes a higher penetration rate of renewables in electricity generation, increased afforestation ratio and a more effective transportation policy change. The effects and differences were presented for each sector if applicable. There are also policies and measures, which were not directly quantifiable, but their effect is included to overall emission projections.

**Table 5. Summary of the effect of policies and measures included in the 2010 projections (Mt CO<sub>2</sub>-eq.)**

	Top down calculation		Bottom Up calculation	
	Existing Measures	Planned Measures	Existing Measures	Planned Measures
<b>Energy (total, excluding transport)</b>	0.9	1.5	1.0	1.5
Energy supply	NE	1.5	NE	NE
Energy – industry, construction	NE	NE	NE	NE
Energy – other (commercial, residential, agriculture)	NE	NE	NE	NE
<b>Transport (energy)</b>	NE	NE	0.1	0.4

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<b>Industrial processes</b>	0.1	0.3	NE	NE
<b>Waste</b>	NE	NE	NE	NE
<b>Agriculture</b>	0.7	0.3	0.3	NE
<b>Cross-sectoral</b>	NE	NE	NE	NE
<b>Total (excluding LULUCF)</b>	1.7	2.1	1.3	1.9

\*Energy total -top down- includes transport

**Note:** The effects of measures detailed above are calculated firstly by determining the difference between total projections in each scenario ('top down calculation') and secondly by summing the reported effect of individual measures ('bottom up calculation').

**Source:** Hungary's MM submission, 2007, for the top down calculation; ECCP Policies and Measures database, June 2008, for the bottom up calculation.

**Table 6. Detailed information on Existing Policies and measures**

Sector	Name	Type	GHG	Status	Absolute Reduction [kt CO <sub>2</sub> eq. p.a.]			Costs [EUR/t]
					2005	2010	2020	
					Crosscutting			
	Act on general rules of the protection of the Environment	regulatory	all	implemented				
	New Hungary Development Plan	planning	CO2					
	New Hungary Rural Development Strategic Plan	planning	CO2	implemented				
	National Energy Strategy	planning	CO2	implemented				
	2nd National Environmental Protection Programme	planning	all	implemented				
	Emission Trading System	economic, regulatory	CO2	Implemented				

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Energy supply	R&D for energy efficiency and renewables	economic, research	CH4, CO2	implemented		
	Act on Electricity (VET)	regulatory	CO2	implemented		
	Limitation of SO2 emissions from power plants	regulatory	CO2	implemented	980	980
	Support of CHP	economic, regulatory	CO2	implemented	698	750
	Support of renewable- based power generation	economic, regulatory	CO2	implemented	2668	5284
	Land-based support for energy crops and forests	economic	CO2	implemented		
	Additional land-based support for energy crops and forests	economic	CO2	implemented		
	Life extension of the Paks nuclear plant	other				1477
Energy consumption	Support for end-user renewable energy	economic	CO2	implemented	53	139
	Energy Saving and Energy Efficiency Action Programme (ESEEAP)	planning	CO2	implemented		
	National Energy Efficiency Action Plan for 2007-2009	planning	CO2	implemented		
	Energy tax and environmental levy	fiscal, research	CH4, CO2	implemented		
	New legislation for the energy efficiency of buildings	regulatory	CO2	implemented	303	1059

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Improving energy awareness	education, information	CO2	implemented		
Support for the improvement of industrial energy efficiency	economic	CO2	other	63	32
Support for the improvement of residential/communal energy efficiency	economic	CO2	implemented	222	459
Modernizing district heating systems	economic	CO2	implemented	122	160
UNDP-GEF energy efficiency programme for Municipal Energy Conservation	economic	CO2	implemented		
EHA - Energy Saving Loan Fund (German Coal Aid)	economic	CO2	implemented		
Phare Co-Financed Energy Efficiency Loan Construction	economic	CO2	expired		
National Energy Saving Programme (SZT-EN, NEP)	economic	CO2	implemented		
KIOP-2004-1.7.0.f (Operative Programme for the Environment and Infrastructure Environmental friendly development of energy management for 2004-2006)	economic	CO2	expired		
Support for the energy efficient reconstruction or modernization of pre-fab technology buildings ("Panel Plus Programme")	economic	CO2	implemented		

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	Szemünk Fénye” Program for the energy efficiency of educational institutions [NEW]	economic	CO2	implemented		
	Act on Electricity (VET)	regulatory	CO2	implemented		
	Limitation of SO2 emissions from power plants	regulatory	CO2	implemented	980	980
	Support of CHP	economic, regulatory	CO2	implemented	698	750
	Support of renewable- based power generation	economic, regulatory	CO2	implemented	2668	5284
	Land-based support for energy crops and forests	economic	CO2	implemented		
	Additional land-based support for energy crops and forests	economic	CO2	implemented		
	Life extension of the Paks nuclear plant	other	CO2			1477
	Support for end-user renewable energy	economic	CO2	implemented	53	139
Transport						
	New priorities in the Transport Operative Programme of the NHDP	economic	CO2			
	Transport related policies and measures in NEP-II	economic	CO2		925	5279
	National targets and support for renewable automotive fuels	fiscal regulatory	CO2	implemented		
Agriculture	National Agri-Envrionmental Programme (NAEP)	economic, regulatory	CO2, N2O, CH4			
	The SAPARD Plan of Hungary (2000 – 2006)	economic planning	CO2	expired		

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	Nitrate Action Programme	economic, regulatory	N2O	expired			
	New Nitrate Action Programme	economic, regulatory	N2O	implemented			
	Agriculture and Rural Development Operative Programme (AVOP)	economic, regulatory	N2O	implemented			
	Second National Environmental Programme - Thematic Action Programme of Climate Change	economic, regulatory	N2O	implemented			
	New Hungary Rural Development Strategic Plan	economic, planning	CO2	implemented			
	Entry Level Scheme (ELs)	economic	CO2	implemented			
	Land-based support for energy crops and forests	economic	CO2	implemented			
	Organic Farming Scheme	economic, regulatory	CH4, CO2	implemented			
		economic	CH4,CO2,	implemented			
	Integrated Crop Management System (ICMS)	economic	CH4,CO2,N2O	implemented			
	Support for meeting standards	economic	CH4	implemented			
	Combined emission reduction of	economic	CH4	expired			
	HU-AGR-01	planning, regulatory	CO2, N2O	implemented			
	HU-AGR-02						
	HU-AGR-03						
	HU-AGR-04						

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	HU-AGR-05						
	HU-AGR-06						
	HU-AGR-07						
	HU-AGR-08						
	HU-AGR-09						
	HU-AGR-10						
Forestry							
	National Forest Programme 2006-2015	economic planning	CO2	implemented			
	New Hungary Rural Development Strategic Plan	economic planning	CO2	implemented			
	National Agri-environment Programme	economic	CO2	implemented			
	Act LIV of 1996 on the forests and their protection	economic	CO2	implemented			
	Act XLIII of 2000 on waste management	economic regulatory	CH4, N2O	implemented			
	Combined emission reduction of	economic planning	CO2	implemented		630	3524
	HU-LUC-01						
	HU-LUC-02						
	HU-LUC-03						
	HU-LUC-04						
Waste							
	Act XLIII of 2000 on waste management	economic regulatory	CH4, N2O	implemented			

**Source:** Öko Institut, (accessed 06/2008), ECCP Policies and Measures database, <http://www.oeko.de/service/pam/index.php>

**Table 7. Detailed information on Planned Policies and measures**

Sector	Name	Type	GHG	Status	Absolute Reduction			Costs [EUR/t]
					[kt CO <sub>2</sub> eq. p.a.]			
					2005	2010	2020	
Crosscutting	The National Climate Change Strategy	planning	CO2	planned				
Energy supply	New Act on Electricity (VET)	regulatory	CO2	planned				
Energy consumption	Energy audits in industry and the communal sector	economic	CO2	other				

**Source:** Öko Institut, (accessed 06/2008), ECCP Policies and Measures database, <http://www.oeko.de/service/pam/index.php>

**Table 8. Status of national policies and measures (PAM) in relation to European common and coordinated policies and measures (CCPM)**

Status	CCPM	Sector
National policies and measures already in force <b>before</b> CCPM was adopted	End-use efficiency and energy services 2006/32/EC	Energy demand
	Directives on energy labelling of appliances	Energy consumption
Existing national policies and measures <b>re-enforced</b> by CCPM		
<b>New</b> national policies and measures implemented after CCPM was adopted	Emissions trading 2003/87/EC	Cross-cutting
	Energy performance of buildings 2002/91/EC	Energy demand
	Promotion of cogeneration 2004/8/EC	Energy supply
	Promotion of electricity from RE sources 2001/77/EC	Energy supply
	Rural development support and CAP(2603/1999, 1698/2005 and 1290/2005)	Agriculture
Status of national policy or measure <b>not reported</b>	Nitrates directive 91/676/EEC	Agriculture
	Promotion of biofuels for transport 2003/30/EC	Transport
	Kyoto Protocol project mechanisms 2004/101/EC	Cross-cutting
	Integrated pollution prevention and control 96/61/EC	Cross-cutting
	Taxation of energy products 2003/96/EC	Energy supply
	Internal electricity market 2003/54/EC	Energy supply
	Internal market in natural gas 98/30/EC	Energy supply
	Ecodesign requirements for energy-using products 2005/32/EC	Energy consumption
	Eco-management & audit scheme (EMAS) EC 761/2001	Energy consumption
	Energy labelling for office equipment 2422/2001	Energy consumption
Efficiency fluorescent lighting 2000/55/EC	Energy consumption	



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Efficiency of hot water boilers 92/42/EEC	Energy consumption
Integrated European railway area (COM(2002)18 final)	Transport
Transport modal shift to rail 2001/12/EC etc.	Transport
Consumer information on cars 1999/94/EC	Transport
Agreement with car manufacturers ACEA etc.	Transport
Marco Polo programme on freight transport	Transport
Motor challenge, voluntary EC programme	Transport
HFCs in mobile air conditioning 2006/40/EC	Transport
F-gas regulation (842/2006)	Industrial Process
Support under CAP (1782/2003)	Agriculture
Support under CAP - amendment (1783/2003)	Agriculture
Support scheme for energy crops under CAP (795/2004)	Agriculture
Support for rural development from EAGGF (1257/1999)	Agriculture
Pre-accession measures for agriculture and rural development (1268/1999)	Agriculture
Landfill directive 1999/31/EC	Waste
Packaging and packaging waste (94/62/EC, 2004/12/EC, 2005/20/EC)	Waste
Directive on waste 2006/12/EC	Waste

**Source:** Hungary' MM submission, 2007.

## 4. METADATA

### Sources of information

Hungary's national report submitted to the European Commission under Article 3(2) of the Monitoring Mechanism, Decision 280/2004/EC. Report submitted in 2007.

Hungary's Annual greenhouse gas inventory 1985 - 2006 and inventory report, April 2008.

Base-year emissions from the UNFCCC website,  
[http://unfccc.int/ghg\\_data/kp\\_data\\_unfccc/base\\_year\\_data/items/4354.php](http://unfccc.int/ghg_data/kp_data_unfccc/base_year_data/items/4354.php)

European Climate Change Programme (ECCP), Database on Policies and Measures in Europe <http://www.oeko.de/service/pam/index.php>

Hungary's Fourth National Communication under the United Nations Framework Convention on Climate Change, Ministry of Environment and Water of Hungary, 2006 (hereinafter 4th NC).

### Kyoto base-year emissions

Kyoto base-year emissions are presented throughout, except Table 1 which presents projections reference year emissions (see below). Kyoto base year emissions of greenhouse gases were calculated using average emissions 1985-87 for carbon dioxide (CO<sub>2</sub>), methane

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(CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) and 1995 emissions for fluorinated gases (SF<sub>6</sub>, HFCs and PFCs).

Kyoto base-year emissions have now been reviewed and set for all EEA countries, including Hungary.

### Projections reference year emissions

Projections reference year emissions are presented in Table 1.

Projections reference year emissions are defined as projections-consistent emissions data for a given historic year, as chosen by the Member State. Inventory recalculations from year to year may mean that latest inventory data cannot be compared with projections based on older inventory data. Where such an inconsistency has arisen, MS projections have been corrected by applying the following formula, in Table 2:

Corrected projection = reported projections \* latest inventory total GHG emissions / Table 1 reported total GHG emissions for the same reference year

### Quality of Reporting

Member State reporting in the sources detailed above was assessed semi-qualitatively. Scoring was attributed according to the level of detail and clarity: from 0 (representing not reported) to +++ (representing very detailed and/or clear reporting). Guidance used for this assessment included the reporting requirements laid down in:

- EU legislation: Monitoring Mechanism (280/2004/EC) and Implementing Provisions (2005/166/EC)
- UNFCCC reporting guidelines for national communications available in English, French, Spanish ("Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications - FCCC/CP/1999/7")

The following tables detail reporting considered to be best practice for the purposes of this assessment.

Information provided	Example of good practice
Policy names	Clear names and description provided with unique identifier.
Objectives of policies	Good description of objectives
Types of policies	Type of policy instrument specified e.g. regulatory, fiscal
Which greenhouse gases?	Specifies which gases each PAM affects
Status of Implementation	Clear for each PAM: planned, adopted, implemented, expired
Implementation body	Clear which authorities are responsible for implementation
Quantitative assessment of emission reduction effect and cost of policies	Almost all PAMs are actually quantified. Total effect of all PAMs specified. WOM projection provided.
Interaction with other national and EU level policies	Detailed discussion and analysis of policy interactions.

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Measures implementing community legislation	Report details which national policies are implementing individual pieces of EU legislation.
Arrangements for flexible mechanisms	Details arrangements for use of flexible mechanisms.
Balance between domestic action and flexible mechanisms	Regarding reductions required to meet Kyoto target, details proportion to result from domestic action and flexible mechanisms.

Category of Information	Example of good practice
Projection scenarios	"With measures" and "with additional measures" projections required, "without measures projection" optional.
Policies included in each projection	Clear presentation of the policies included in each projections scenario.
Expressed relative to historic reference year data	Projections are presented alongside consistent historic emissions.
Starting year	Starting year and emissions used as basis for for projections is detailed.
Split of projections	Projection split by all 6 gases (or F-gases together), all sectors and years
Presentation of results	Clear, both tables and graphs provided and/or used excel reporting template.
Description of methodologies	Description of approach, model and assumptions
Sensitivity analysis	Was an analysis carried out to determine the sensitivity of projections to variance in the input parameters? Are high medium and low scenarios presented?
Discussion of uncertainty	Is an uncertainty range for the projections provided?
Details of parameters and assumptions	Are parameters as required under Monitoring Mechanism 280/2004/EC reported?
Indicators for projections	Are indicators for projections as required under Monitoring Mechanism 280/2004/EC reported?

**Table 9. Information provided on policies and Kyoto flexible mechanisms**

Information provided	Level of information provided	Comments
Policy names	+++	Clear names and description provided with unique identifier.
Objectives of policies	+++	Good description of objectives
Types of policies	+++	Type of policy instrument specified e.g. regulatory, fiscal
Which greenhouse gases?	++	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O
Status of Implementation	+++	Specifies which gases each PAM affects
Implementation body	+++	Clear which authorities are responsible for implementation
Quantitative assessment of emission reduction effect and cost of policies	++	Not all PaMs are quantified. Not directly quantifiable are also included in the overall emission forecasts
Interaction with other national and EU level policies	++	Not detailed information
Measures implementing community legislation	++	Report details which national policies are implementing individual pieces of EU legislation.

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Arrangements for flexible mechanisms	o	No need for flexible mechanisms for compliance
Balance between domestic action and flexible mechanisms	o	domestic actions dominate

**Table 10. Information provided on projections**

Category of Information	Level of information provided	Comments
WOM, WEM and WAM projections	+++	"Without measures", "with measures" and "with additional measures" projections required.
Policies included in each projection	+++	Clear presentation of policies included
Expressed relative to historic reference year data	+++	Projections are presented alongside consistent historic emissions.
Starting year	+++	Starting year and emissions used as basis for projections is detailed.
Split of projections	++	No detailed split for F gases, other GHGs and all sectors included
Presentation of results	+++	Clear, both tables and graphs provided
Description of methodologies	+	Briefly described
Sensitivity analysis	o	No information
Discussion of uncertainty	o	No information
Details of parameters and assumptions	++	Partly covered
Indicators for projections	+	Limited information

Note: No new projections are available yet

**Table 11. Parameters for Projections**

1. Mandatory parameters on projections	2005	2010	2015	2020	Units
<b>Assumptions for general economic parameters</b>					
GDP (value at given years or annual growth rate and base year)	60,6	71,2	87,4	104,6	000 MEUR'00
Population (value at given years or annual growth rate and base year)	10 086	9 940	9 783	9 621	thousands
International coal prices at given years in euro per tonne or GJ (Gigajoule)					
International oil prices at given years in euro per barrel or GJ	54,1	70	NA	NA	Brent, USD/barrel
International gas prices at given years in euro per m3 or GJ					
<b>Assumptions for the energy sector</b>					
Total gross inland consumption (PJ) (split by oil, gas, coal, renewables, nuclear, other)					
Total electricity production by fuel type (oil, gas, coal, renewables, nuclear, other)					
coal	NE	7 332	6 104	6 635	GWh
oil	NE	642	509	553	GWh

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gas	NE	15 306	19 227	22 892	GWh
nuclear	NE	13 998	16 391	17 819	GWh
Energy demand by sector split by fuel (delivered)					
Assumptions on weather parameters, especially heating or cooling degree days					
<b>Assumptions for the industry sector</b>					
<i>For Member States using macroeconomic models:</i>					
The share of the industrial sector in GDP and growth rate	22,1	NE	NE	NE	%
<i>For Member States using other models:</i>					
The production index for industrial sector					
<b>Assumptions for the transport sector</b>					
<i>For Member States using macroeconomic models:</i>					
The growth of transport relative to GDP					
<i>For Member States using other models:</i>					
Number of kilometres by passenger cars, billion passenger km	NE	60	69.5	NE	
freight tonne kilometres billion tkm	NE	41	45	NE	
<b>Assumptions for buildings (in residential and commercial or tertiary sector)</b>					
<i>For Member States using macroeconomic models:</i>					
The level of private consumption (excluding private transport)					
The share of the tertiary sector in GDP and the growth rate					
<i>For Member States using other models:</i>					
The rate of change of floor space for tertiary buildings and dwellings					
The number of dwellings and number of employees in the tertiary sector					
<b>Assumptions in the agriculture sector</b>					
<i>For Member States using macroeconomic models:</i>					
The share of the agriculture sector in GDP and relative growth	3	NE	NE	NE	%
<i>For Member States using other models:</i>					
Livestock numbers by animal type (for enteric fermentation beef, cows, sheep, for manure management pigs and poultry)					
The area of crops by crop type					
Emissions factors by type of livestock for enteric fermentation and manure management (t)					
<b>Assumptions in the waste sector</b>					
Waste generation per head of population or tonnes of municipal solid waste					
The organic fractions of municipal solid waste					
Municipal solid waste disposed to landfills, incinerated or composted (in tonnes or %)					
<b>Assumptions in the forestry sector</b>					
Forest definitions					
Areas of:					
managed forests					
unmanaged forests					

2. Recommended parameters on projections	2005	2010	2015	2020	Units
<b>Assumptions for general economic parameters</b>					
GDP growth rates split by industrial sectors in relation to 2000					
Comparison projected data with official forecasts					

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<b>Assumptions for the energy sector</b>					
National coal, oil and gas energy prices per sector (including taxes)					
National electricity prices per sector as above (may be model output)					
Total production of district heating by fuel type					
<b>Assumptions for the industry sector</b>					
Assumptions fluorinated gases:					
Aluminium production and emissions factors					
Magnesium production and emissions factors					
Foam production and emissions factors					
Stock of refrigerant and leakage rates					
<i>For Member States using macroeconomic models:</i>					
Share of GDP for different sectors and growth rates					
Rate of improvement of energy intensity (1990 = 100)					
<i>For Member States using other models:</i>					
Index of production for different sectors					
Rate of improvement or index of energy efficiency					
<b>Assumptions for buildings (in residential and commercial / tertiary sector)</b>					
<i>For Member States using macroeconomic models:</i>					
Share of tertiary and household sectors in GDP					
Rate of improvement of energy intensity					
<i>For Member States using other models:</i>					
Number of households					
Number of new buildings					
Rate of improvement of energy efficiency (1990 = 100)					
<b>Assumptions for the transport sector</b>					
<i>For Member States using econometric models:</i>					
Growth of transport relative to GDP split by passenger and freight					
Improvements in energy efficiency split by vehicle type					
Improvements in energy efficiency split by vehicle type, whole fleet/new cars					
Rate of change of modal split (passenger and freight)					
Growth of passenger road kilometres					
Growth of passenger rail kilometres					
Growth of passenger aviation kilometres					
Growth of freight tonne kilometres on road					
Growth of freight tonne kilometres by rail					
Growth of freight tonne kilometres by navigation					
<b>Assumptions for the agriculture sector</b>					
<i>For Member States using econometric models:</i>					
Agricultural trade (import/export)					
Domestic consumption (e.g. milk/beef consumption)					
<i>For Member States using other models:</i>					
Development of area of crops, grassland, arable, set-aside, conversion to forests etc					
Macroeconomic assumptions behind projections of agricultural activity					

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Description of livestock (e.g. by nutrient balance, output/animal production, milk production)					
Development of farming types (e.g. intensive conventional, organic farming)					
Distribution of housing/grazing systems and housing/grazing period					
Parameters of fertiliser regime:					
Details of fertiliser use (type of fertiliser, timing of application, inorganic/organic ratio)					
Volatilisation rate of ammonia, following spreading of manure on the soil					
Efficiency of manure use					
Parameters of manure management system:					
Distribution of storage facilities (e.g. with or without cover):					
Nitrogen excretion rate of manures					
Methods of application of manure					
Extent of introduction of control measures (storage systems, manure application), use of best available techniques					
Parameters related to nitrous oxide emissions from agricultural soils					
Amount of manure treatment					