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Report on the technical review of the third biennial report of Hungary

Developed country Parties were requested by decision 2/CP.17 to submit their third biennial report to the secretariat by 1 January 2018. This report presents the results of the technical review of the third biennial report of Hungary, conducted by an expert review team in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”.

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Abbreviations and acronyms

AEA	annual emission allocation
Annex II Party	Party included in Annex II to the Convention
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH ₄	methane
CO ₂	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
CTF	common tabular format
EEA	European Environment Agency
ERT	expert review team
ESD	effort-sharing decision
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
HFC	hydrofluorocarbon
HUF	Hungarian forint
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NCCS	National Climate Change Strategy
NE	not estimated
NF ₃	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
non-ETS sectors	sectors not covered by the European Union Emissions Trading System
N ₂ O	nitrous oxide
PaMs	policies and measures
PFC	perfluorocarbon
reporting guidelines for supplementary information	“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol, Part II: Reporting of supplementary information under Article 7, paragraph 2”
SF ₆	sulfur hexafluoride
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on NCs	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”
WAM	‘with additional measures’
WEM	‘with measures’
WOM	‘without measures’

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the BR3¹ of Hungary. The review was organized by the secretariat in accordance with the “Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”, particularly “Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention” (annex to decision 13/CP.20).

2. In accordance with the same decision, a draft version of this report was transmitted to the Government of Hungary, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

3. The review was conducted from 19 to 23 March 2018 in Budapest by the following team of nominated experts from the UNFCCC roster of experts: Mr. Amnat Chidthaisong (Thailand), Mr. Tom Dauwe (Belgium), Ms. Maria Ana Gonzalez Casartelli (Argentina) and Ms. Pascale Vizy (France). Mr. Chidthaisong and Mr. Dauwe were the lead reviewers. The review was coordinated by Mr. Bernd Hackmann (UNFCCC secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the BR3 of Hungary in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

1. Timeliness

5. The BR3 was submitted on 10 January 2018, after the deadline of 1 January 2018 mandated by decision 2/CP.17. The CTF tables were also submitted on 10 January 2018.

6. Hungary informed the secretariat on 8 January 2018 about its difficulties with making a timely submission. In accordance with decision 13/CP.20 and decision 22/CMP.1, a Party should inform the secretariat thereof by the due date of the submission, in order to facilitate the arrangement of the review process. The ERT noted with concern the delay in the submission and recommends that Hungary make its next submission on time.

2. Completeness, transparency of reporting and adherence to the reporting guidelines

7. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Hungary in its BR3 mostly adheres to the UNFCCC reporting guidelines on BRs.

Table 1

Summary of completeness and transparency of mandatory information reported by Hungary in its third biennial report

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
GHG emissions and trends	Complete	Transparent	
Assumptions, conditions and methodologies related to the attainment of the quantified	Complete	Transparent	

¹ The BR submission comprises the text of the report and the CTF tables, which are both subject to the technical review.

<i>Section of BR</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to description of recommendations</i>
economy-wide emission reduction target			
Progress in achievement of targets	Mostly complete	Mostly transparent	Tables 5, 7 and 11
Provision of support to developing country Parties ^a	NA	NA	NA

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below.

^a Hungary is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention.

II. Technical review of the information reported in the third biennial report

A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

8. Total GHG emissions² excluding emissions and removals from LULUCF decreased by 34.9 per cent between 1990 and 2015, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 40.1 per cent over the same period. Table 2 illustrates the emission trends by sector and by gas for Hungary.

Table 2

Greenhouse gas emissions by sector and by gas for Hungary for the period 1990–2015

	<i>GHG emissions (kt CO₂ eq)</i>					<i>Change (%)</i>		<i>Share (%)</i>	
	<i>1990</i>	<i>2000</i>	<i>2010</i>	<i>2014</i>	<i>2015</i>	<i>1990–2015</i>	<i>2014–2015</i>	<i>1990</i>	<i>2015</i>
<i>Sector</i>									
1. Energy	68 197.29	54 663.46	48 876.20	40 905.57	43 274.77	–36.5	5.8	72.6	70.7
A1. Energy industries	20 687.29	23 656.05	17 888.19	13 497.20	13 906.95	–32.8	3.0	22.0	22.7
A2. Manufacturing industries and construction	13 622.83	4 651.73	3 404.85	4 059.08	4 325.55	–68.2	6.6	14.5	7.1
A3. Transport	8 878.17	9 083.63	11 663.05	11 186.55	12 202.64	37.4	9.1	9.5	19.9
A4. and A5. Other	22 363.26	15 767.71	14 782.86	11 299.16	12 065.28	–46.0	6.8	23.8	19.7
B. Fugitive emissions from fuels	2 645.74	1 504.34	1 137.26	863.58	774.35	–70.7	–10.3	2.8	1.3
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	–	–	–	–
2. IPPU	11 831.84	8 293.37	6 678.57	6 601.21	7 381.21	–37.6	11.8	12.6	12.1
3. Agriculture	9 975.64	6 100.63	5 642.44	6 493.90	6 676.35	–33.1	2.8	10.6	10.9
4. LULUCF	–2 671.60	–767.22	–4 551.87	–5 361.21	–6 512.11	143.8	21.5	NA	NA
5. Waste	3 891.12	4 369.59	4 276.51	3 936.59	3 838.62	–1.3	–2.5	4.1	6.3

² In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of CO₂ eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2017 annual submission, version of 23 October 2017.

	<i>GHG emissions (kt CO₂ eq)</i>					<i>Change (%)</i>		<i>Share (%)</i>	
	1990	2000	2010	2014	2015	1990– 2015	2014– 2015	1990	2015
	6. Other	NO	NO	NO	NO	NO	–	–	–
Indirect CO ₂	NE, NO	NE, NO	NE, NO	NE, NO	NE, NO	–	–	NA	NA
<i>Gas^a</i>									
CO ₂	73 447.85	58 544.69	52 217.01	44 034.38	46 777.50	–36.3	6.2	78.2	76.5
CH ₄	11 746.22	8 923.16	8 067.39	7 702.95	7 625.88	–35.1	–1.0	12.5	12.5
N ₂ O	8 315.21	5 367.24	3 808.79	4 224.18	4 308.75	–48.2	2.0	8.9	7.0
HFCs	NO	224.81	1 291.67	1 865.81	2 345.79	–	25.7	–	3.8
PFCs	375.72	283.11	1.52	1.45	1.15	–99.7	–20.9	0.4	0.0
SF ₆	10.89	84.04	87.34	108.51	111.88	927.5	3.1	0.0	0.2
NF ₃	NO	NO	NO	NO	NO	–	–	–	–
Total GHG emissions without LULUCF	93 895.89	73 427.06	65 473.72	57 937.27	61 170.95	–34.9	5.6	100.0	100.0
Total GHG emissions with LULUCF	91 224.29	72 659.83	60 921.84	52 576.06	54 658.84	–40.1	4.0	NA	NA

Source: GHG emission data: Hungary's 2017 annual submission, version of 23 October 2017.

^a Emissions by gas without LULUCF and without indirect CO₂.

9. The decrease in total GHG emissions in Hungary was driven mainly by factors such as the economic downturn due to the transition to a more energy-efficient market economy and Hungary's implementation of climate-related PaMs (see chapter II.C below). The transition to a market economy resulted in the restructuring of industrial production and of the energy supply system, leading to a considerable decline in activity in the energy, heavy industry and agriculture sectors.

10. Hungary's transition to a market economy resulted in a sharp drop in emissions between 1985 and 1995, followed by a decade of economic growth and a relatively stable low level of emissions. Between 1990 and 2012, Hungary's GDP increased by 24.2 per cent, while GHG emissions decreased by 36.2 per cent. The global economic crisis of the late 2000s led to a slowdown of economic growth in 2009 and a decrease in total GHG emissions by 7.5 per cent from 2009 to 2012. Although Hungary was affected by the economic crisis in the eurozone in the late 2000s, its economy showed some signs of improvement starting in 2011, but this did not translate into an increase in emissions until 2013. In the period from 2013 to 2015, the economy showed a recovery of 7.3 per cent in GDP growth and this was linked to an increase in emissions in the same period of 6.4 per cent (excluding the LULUCF sector), which was mainly because of the economic reactivation of energy-intensive industries (steel and iron) and the increased fuel needs of the transport sector.

11. In brief, Hungary's BR3 states that its national inventory arrangements were established in accordance with Government Decree 278/2014 (XI. 14). It also states that there have been no changes in the national inventory arrangements since the changes introduced on 1 January 2015 that were reflected in the BR2. The Ministry of Agriculture is the single national entity responsible for maintaining the registration systems, while the National Emissions Inventory Unit (of the Hungarian Meteorological Service) compiles the inventory for all sectors except LULUCF, for which the inventory is compiled by the National Food Chain Safety Office together with the Forestry Research Institute. The Minister of Agriculture, together with the Minister of National Development and the Minister for National Economy, responsible for the national budget, are the final inventory approvers and responsible for submitting the reports to the UNFCCC.

2. Assessment of adherence to the reporting guidelines

12. The ERT assessed the information reported in the BR3 of Hungary and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 3.

Table 3

Findings on greenhouse gas emissions and trends from the review of the third biennial report of Hungary

No.	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	<p>Reporting requirement specified in paragraph 2</p> <p>Issue type: transparency</p> <p>Assessment: encouragement</p>	<p>The ERT noted that the information provided in the BR3 regarding total GHG emissions was slightly inconsistent throughout the report, because the total values reported in different sections of the report differed by 0.12 per cent. Further, the ERT noted that information provided in the BR3 regarding total GHG emissions was partly inconsistent with the information reported in the recent submission of the annual inventory.</p> <p>During the review, Hungary explained that the slight differences in the total GHG emission values were due to the revision (in October 2017) of the NIR after its first submission in April 2017, and that some reported values reflected the total emissions before the revision and some after.</p> <p>In order to increase the transparency of the reporting, the ERT encourages Hungary to provide in its next BR information consistent with that provided in the most recent annual inventory submission and fully explain any differences or inconsistencies.</p>

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

B. Assumptions, conditions and methodologies related to attainment of the quantified economy-wide emission reduction target

1. Technical assessment of the reported information

13. For Hungary the Convention entered into force on 25 May 1994. Under the Convention Hungary committed to contributing to the achievement of the joint EU economy-wide emission reduction target of 20 per cent below the 1990 level by 2020. The EU offered to move to a 30 per cent reduction target on the condition that other developed countries commit to a comparable target and developing countries contribute according to their responsibilities and respective capabilities under a new global climate change agreement.

14. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The legislative package regulates emissions of CO₂, CH₄, N₂O, HFCs, PFCs and SF₆ using global warming potential values from the AR4 to aggregate the GHG emissions of the EU until 2020. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms as well as new market mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Companies can make use of such units to fulfil their requirements under the EU ETS.

15. The EU 2020 climate and energy package includes the EU ETS and the ESD (see chapter II.C.1 below). The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emissions cap has been put in place for the period 2013–2020 with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. Emissions from non-ETS sectors are regulated through member State specific targets that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020.

16. Under the ESD, Hungary has a target of limiting its emission growth to 10 per cent above the 2005 level by 2020 for non-ETS sectors. National emission targets for non-ETS sectors for 2020 have been translated into binding quantified AEAs for the period 2013–2020. Hungary’s AEAs change following a path from 50,398.98 kt CO₂ eq in 2013 to 52,830.57 kt CO₂ eq in 2020.³

17. Hungary also has a national target to achieve a 14.65 per cent share of renewable sources in primary energy consumption by 2020, which is even higher than the EU target of 13 per cent for the same year. Further, Hungary has a national target to improve its energy efficiency by 10 per cent by 2020 compared with the 2005 level regarding its primary energy consumption.

2. Assessment of adherence to the reporting guidelines

18. The ERT assessed the information reported in the BR3 of Hungary and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

C. Progress made towards the achievement of the quantified economy-wide emission reduction target

1. Mitigation actions and their effects

(a) Technical assessment of the reported information

19. Hungary provided information on its package of PaMs implemented, adopted and planned, by sector and partially by gas, in order to fulfil its commitments under the Convention and its Kyoto Protocol. Hungary reported on its policy context and legal and institutional arrangements put in place to implement its commitments and monitor and evaluate the effectiveness of its PaMs.

20. Hungary provided information on their PaMs in the BR3 only by referring to the dedicated chapter in the NC7. Hungary provided information on a set of PaMs similar to those previously reported in its BR2, with some exceptions. The ERT noted that a different structure and presentation was applied in the BR3 and NC7 compared with the BR2, with less detailed descriptions of the PaMs and without reported impacts on emissions. Hungary provided information on changes made since the previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target. Hungary reported that no significant changes had been made since the previous BR in terms of the responsibilities and processes in climate policymaking.

21. Hungary reported on its self-assessment of compliance with emission reduction target and national rules for taking action against non-compliance. As part of the EU, Hungary is subject to the internal EU rules for reporting on and compliance with the targets under the 2020 climate and energy package. This includes the monitoring of compliance with the ESD annual targets.

22. The key overarching related cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO₂ emissions from cars and vans, the carbon capture and storage directive, and the general programmes for environmental conservation, namely the 7th Environment Action Programme and the clean air policy package.

³ European Commission decision 2017/1471 of 10 August 2017 amending decision 2013/162/EU of 26 March 2013 to revise member States’ AEAs for the period from 2017 to 2020.

23. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities) that produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N₂O emissions from chemical industries, PFC emissions from aluminium production and CO₂ emissions from industrial processes (since 2013).

24. The ESD became operational in 2013 and covers sectors outside the EU ETS, including transport (excluding domestic and international aviation, and international maritime transport), residential and commercial buildings, agriculture and waste, together accounting for 55–60 per cent of the GHG emissions of the EU. The aim of the ESD is to decrease GHG emissions in the EU by 10 per cent below the 2005 level by 2020 and includes binding annual targets for each member State for 2013–2020.

25. Hungary highlighted the EU-wide mitigation actions that are under development, such as the proposals, as part of the new 2030 energy and climate policy framework of the EU, for the revision of the EU directives on energy efficiency, renewable energy and the energy performance of buildings.

26. Hungary introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. The ERT noted that the information necessary for assessing the mitigation effects of PaMs was not reported by Hungary for the majority of its PaMs. Table 4 provides a summary of the reported information on the PaMs of Hungary.

27. Hungary reported that it is on track to attain its 2020 emission reduction target. In addition to the PaMs already implemented, a number of other mitigation actions will provide a stronger foundation for achieving Hungary's 2020 emission reduction target, such as the adopted new requirements on energy performance of buildings (entering into force in 2018) and the planned promotion of eco-driving techniques.

Table 4

Summary of information on policies and measures reported by Hungary

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>
Policy framework and cross-sectoral measures	Second NCCS	NE
	National Energy Strategy	NE
	Operational Programmes under the European Cohesion Fund	NE
	EU climate and energy package	NE
Energy		
Energy supply	Capacity maintenance of the Paks nuclear power plant	NE
Transport	Improvement of the bicycle transportation network	1 550
	National Transport Infrastructure Development Strategy	NE
	Application of usage-based road toll on heavy-duty vehicles	136.6
	Anyos Jedlik Plan for the promotion of e-mobility	NE
Renewable energy	Operational grant for the production of renewable energy	NE
Energy efficiency	National Energy Efficiency Action Plan	NE
	National Building Energy Performance Strategy	NE
	Funding for the energy modernization of residential	

<i>Sector</i>	<i>Key PaMs</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>
	buildings – Warmth of Home programme	NE
	Funding for the energy modernization of residential buildings – interest-free loan programme	NE
	Tax advantage for companies after energy efficiency investments	NE
IPPU	EU F-gas regulation	NE
Agriculture	Greening payment	NE
	Protection against soil erosion	NE
LULUCF	Rural Development Programme	NE
	National Forest Programme	NE
Waste	Waste Law	NE
	National Waste Management Plan	NE
	Environmental product fee	NE

Note: The estimates of mitigation impact are estimates of emissions of CO₂ or CO₂ eq avoided in a given year as a result of the implementation of mitigation actions.

28. In addition, Hungary reported on its second NCCS, which outlines its long-term decarbonization road map beyond 2020. During the review, Hungary provided detailed information on the strategy and its three main components: the decarbonization road map; the National Adaptation Strategy; and awareness-raising activities. The objective of the decarbonization road map is to launch a planning mechanism that contributes to the development of the Hungarian green economy and the sharing of international decarbonization burdens on the basis of balanced respect for competitiveness, welfare, the technological shift and climate protection. The strategy is operationalized via the Climate Change Action Plan 2018–2020. Its main role is to transpose into practice the climate change development concepts included in the second NCCS.

29. Funding of climate action is partly achieved via EU structural funds and Hungary’s operational programmes. Hungary reported that improving energy efficiency and increasing renewable energy, among other things, are achieved via its operational programmes, which include the Environment and Energy Efficiency Operational Programme, the Economic Development and Innovation Operational Programme and the Integrated Transport Development Operational Programme. Additionally, resources from income generated from the sale of emission allowances under the EU ETS are invested in mitigation measures via the Economy Greening Scheme and the Green Economy Financing Scheme.

30. The ERT noted that Hungary did not report on the impacts of most of its PaMs. For the PaMs for which an impact was reported, the ERT also noted that providing information on methodologies, assumptions and data would enhance the transparency of the reporting.

(b) Policies and measures in the energy sector

31. Between 1990 and 2015, GHG emissions from the energy sector decreased by 36.5 per cent or 24,922.52 kt CO₂ eq, owing to the economic decline in the period 1990–1995, leading to the closure of many industrial installations. Since 1995, Hungary has been able to decouple economic growth from GHG emissions, enabling it to maintain its decreasing emission trend in the energy sector by decreasing energy consumption (–12.4 per cent between 1990 and 2015), decreasing coal consumption (–62.2 per cent between 1990 and 2015) and increasing the share of non-GHG emitting technologies (69.3 per cent between 1990 and 2015), such as renewable and nuclear energy.

32. **Energy supply.** The National Energy Strategy is the main long-term strategy of Hungary in the energy sector. The main objective of the National Energy Strategy is to decrease energy dependency, which is a key policy priority for Hungary considering its dependence on the import of fossil fuels and electricity. To reduce dependency on imported fossil fuels and electricity, Hungary aims to increase the share of both nuclear and renewable energy production, increase energy efficiency, construct cross-border connections to enhance the import and export of electricity and implement a renewal of the energy institutional framework.

33. The replacement of the existing 2,000 MW Paks nuclear power plant by two new installations of 1,200 MW each, expected to be in operation from 2026 and 2027 onwards, is an important policy to assure sufficient domestic and non-GHG emitting electricity production. This is projected to contribute to a reduction in the emission intensity of electricity production from 370 g CO₂/kWh in 2012 to 200 g CO₂/kWh by 2030.

34. **Renewable energy sources.** Renewable energy targets were set for individual EU member States for 2020 in the electricity, heating and cooling and transport sectors. Hungary's target is a 13 per cent share of renewables in gross final energy consumption. The Hungarian Government increased this to 14.6 per cent by 2020 and Hungary is on track to achieving this target because it already achieved a share of 14.6 per cent in 2016. This was achieved via increased renewable energy use in the transport, electricity, and heating and cooling sectors, the latter achieved via the modernization of community district heating and private heat generation. By 2030, the share of generation of heat from renewable energy sources is planned to have increased to 25 per cent from 10 per cent in 2012.

35. In line with the National Energy Strategy, Hungary plans to further increase the share of renewable energy (in total primary energy consumption) to 20 per cent by 2030. This will mainly be driven by the increased use of renewable energy sources for heating and cooling for district heating and the promotion of renewable energy sources of electricity, the latter with an emphasis on solar photovoltaics. The main instrument used to increase renewable energy use in Hungary is the operational grant for the production of renewable energy. Additionally, resources from the income generated from the sale of emission allowances under the EU ETS are invested in mitigation measures.

36. **Energy efficiency.** Hungary's energy efficiency policies are guided by several EU regulations and directives, including the EU directive on energy efficiency and the recast of the EU directive on the energy performance of buildings. In order to achieve the objectives, Hungary prepared the National Energy Efficiency Action Plan for 2020 and the National Strategy for the Energy Performance of Buildings (2015). The latter includes measures to achieve the quantified objective of the EU directive on energy efficiency, that is to decrease primary energy consumption by 10 per cent by 2020 compared with the 2005 level. For Hungary, that objective translates into a reduction of 1,009 PJ primary energy consumption.

37. **Residential and commercial sectors.** Energy efficiency improvements and increasing renewable energy uptake in the residential and commercial sector are laid down in several Hungarian strategies and plans, most notably the National Energy Efficiency Action Plan, which includes the National Building Performance Strategy, and the District Heating Development Action Plan. Energy efficiency and renewable energy use in the residential sector are supported by several operational programmes. Funding for the energy modernization of residential buildings – Warmth of Home programme has been implemented since 2008. The majority of the domestic resources available for improving the energy efficiency of residential buildings come from the revenues from sales of units under the Kyoto Protocol (2008–2013) and EU ETS emission allowances.

38. **Transport sector.** The transport sector is the only sector in Hungary that showed an increasing emission trend between 1990 and 2015. Transport emissions grew by 3,324.47 kt CO₂ eq or 37 per cent between 1990 and 2015. Hungary has implemented a number of PaMs to curb the emission trend in the transport sector, including increasing the share of biofuels, which is part of Hungary's target under the EU directive on renewable energy. Modal shift has been promoted through the introduction of a road toll for heavy-duty vehicles, improvements to the public transport service and improvements to the bicycle

transportation network. Hungary implemented an extensive policy package to support alternative-fuelled vehicles, compressed natural gas/liquefied natural gas, biofuels, hydrogen and, especially, electricity. Introduction of electric vehicles in Hungary is supported by the Anyos Jedlik Plan.

39. The ERT noted that the NC7 did not include information on how Hungary promotes and implements the decisions of the International Civil Aviation Organization and the International Maritime Organization to limit emissions from aviation and marine bunker fuels. During the review, Hungary clarified that most of the emissions from aviation are included under the EU ETS. Additionally, Hungary clarified that it is promoting ambitious action under the International Civil Aviation Organization and its Carbon Offsetting and Reduction Scheme for International Aviation, in line with the EU position.

40. **Industrial sector.** Hungarian installations have been part of the EU ETS since 2005. The EU ETS is the key instrument driving large energy consumers in the economy to reduce their fossil fuel consumption and GHG emissions. The Irinyi Plan provides a strategy for strengthening the share of industry in the Hungarian GDP taking into account resource and energy efficiency.

(c) **Policies and measures in other sectors**

41. **Industrial processes.** Emissions from industrial processes accounted for 12.1 per cent of total GHG emissions (without LULUCF) in Hungary in 2015. Emissions had decreased by 38 per cent by 2015 compared with the 1990 level. Hungary did not report specific national PaMs that affect emissions from industrial processes. During the review, the Party clarified that the main national PaMs affecting emissions in this sector are EU policies, directly applicable or transposed into national law, including the EU F-gas regulation, the EU directive on mobile air conditioning and the EU directive on industrial emissions. Additionally, some of the emissions from industrial processes are included under the EU ETS.

42. **Agriculture.** Between 1990 and 2015, GHG emissions from the agriculture sector decreased by 33 per cent (3,299.29 kt CO₂ eq), owing mainly to the transition to a market economy and reductions in agricultural production, livestock population and the use of fertilizers. Since Hungary's accession to the EU, its agriculture has developed considerably and in terms of its efficiency, competitiveness and profitability has begun to catch up with that of the EU-15.⁴

43. Since the Party's NC6, the Hungarian Rural Development Strategic Plan has expired. Actions to reduce GHG emissions in the agriculture sector are funded by EU funds such as the European Agricultural Guarantee Fund and the Rural Development Programme. In its NC7 Hungary reported a number of PaMs to protect against soil erosion, protect water against nitrate pollution, increase crop diversification and maintain existing grassland, and improve manure management.

44. **LULUCF.** The LULUCF sector in Hungary was a net sink of 6,512.11 kt CO₂ eq in 2015, achieved mainly by increasing forest cover and increasing stock volume by 121 million m³ between 1981 and 2015. The forestry sector is regulated by the Act on Forests, Forest Protection and Forest Management, which covers, among other things, forest protection, afforestation, sustainable forest management and enforcement.

45. The main long-term policy in the forestry sector is the National Forestry Strategy (2016–2030), a continuation of the first National Forest Programme (2006–2015). The National Forestry Strategy aims to increase forest cover in Hungary to 27 per cent by 2050. During the review, Hungary explained that climatic changes will have an important adverse effect on the forestry sector in the longer term, which poses additional challenges to

⁴ The 15 member States that formed the European Community at the time of the ratification of the Kyoto Protocol (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom of Great Britain and Northern Ireland).

implementing, and is taken into account in, the National Forestry Strategy. The measures in the National Forest Strategy are partly funded by the Rural Development Programme for the period 2014–2020.

46. **Waste management.** Emissions in the Hungarian waste sector mostly originate from landfill sites and for several years after 1990 the emissions were increasing. However, in 2003 emissions from the waste sector started to decrease and in 2015 they were at a level very similar to the 1990 emission level. Emissions in 2015 were 1 per cent or 52.50 kt CO₂ eq lower than in 1990.

47. The main PaMs in the waste sector of Hungary are a landfill tax and selective waste collection (introduced by the Waste Law), the National Waste Management Plan and the National Waste Management Public Services Plan. Hungary also reported PaMs aimed at improving wastewater management, such as the National Implementation Programme on Wastewater Collection and Treatment and the Sewage Sludge Treatment and Recovery Programme.

(d) Response measures

48. Hungary reported on the assessment of the economic and social consequences of its response measures. It presented initiatives aimed at minimizing adverse impacts in the BR3. Hungary is guided by the principle that national reduction targets shall be achieved by national climate policies avoiding adverse impacts on developing countries, such as carbon leakage. The Party's main instrument is the integration of climate policy into development policy, which is guaranteed via the second NCCS. The NCCS will also safeguard emission mitigation projects, cooperation fostering technological transfer and enhanced funding options for climate change related projects. During the review, Hungary provided additional details on how the adverse effects of PaMs on other Parties and on international trade are minimized. Its approach to minimizing adverse impacts consists mainly of adherence to EU policies such as those aimed at avoiding adverse impacts, fostering sustainable development and improving international trade. Hungary does not take part in large-scale development projects relating to climate change alone, but as an EU member State it fully supports the EU's activities in that regard.

(e) Assessment of adherence to the reporting guidelines

49. The ERT assessed the information reported in the BR3 of Hungary and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 5.

Table 5

Findings on mitigation actions and their effects from the review of the third biennial report of Hungary

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
1	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment: recommendation	The ERT noted that the BR3 did not address all of the mitigation actions identified by Hungary. The ERT also noted that the BR3 contained only a reference to the chapter on PAMs of the NC, which does not capture all information on PAMs. During the review, Hungary provided additional information on its PAMs, explaining that the PAMs described in the chapter on national circumstances of the NC are also relevant in the context of the PAMs chapter of the BR. The ERT recommends that Hungary provide comprehensive information on its mitigation actions implemented and planned to achieve its target.
2	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment:	The ERT noted that Hungary organized its PaMs by sector but not by gas. The ERT also noted that there was no information on PaMs affecting the IPPU sector, most notably F-gas emissions. Information on PaMs affecting the IPPU sector was provided by Hungary during the review, including those related to F-gases and HFCs. Hungary acknowledged the requirement to organize the description of PaMs not only by sector but also by gas. In order to enhance transparency, the ERT recommends that in its next BR and CTF

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
	recommendation	table 3 Hungary organize to the extent appropriate its mitigation actions by sector (energy, IPPU, agriculture, LULUCF, waste and other sectors), including the IPPU sector, and by gas (CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆).
3	Reporting requirement specified in paragraph 6 Issue type: completeness Assessment: recommendation	The ERT noted that Hungary did not report information on the estimated impact of most of its PaMs on GHG emissions in its BR and CTF table 3. During the review, in response to an ERT request, Hungary explained that the mitigation impact of most of its PAMs was not estimated as there is no unified monitoring system in Hungary. It also explained that this is likely to be done in the future. In order to enhance the completeness of the reporting, the ERT recommends that Hungary, in its next BR, include estimates of the impacts of all PaMs in CTF table 3, to the extent possible, and, if that is not possible, clearly explain why this may not be possible due to its national circumstances.
4	Reporting requirement specified in paragraph 8 Issue type: transparency Assessment: encouragement	The ERT noted that rather general information was reported in the BR3 on how Hungary strives to implement PaMs in such a way as to minimize adverse effects, including the adverse effects of climate change, effects on international trade, and social, environmental and economic impacts on other Parties, especially developing country Parties. During the review, Hungary provided additional details on this issue, highlighting that Hungary's approach to minimizing adverse impacts consists mainly of adherence to EU policies such as those aimed at avoiding adverse impacts, fostering sustainable development and improving international trade. In order to enhance the transparency of the reporting, the ERT encourages Hungary to include more detailed information on this issue in its next BR.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

2. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry

(a) Technical assessment of the reported information

50. For 2014 Hungary reported in its 2017 annual inventory submission total GHG emissions excluding LULUCF of 57,937.27 kt CO₂ eq, which is 38.3 per cent below the 1990 level. In 2014 emissions from non-ETS sectors relating to the target under the ESD amounted to 38,423.03 kt CO₂ eq.

51. For 2015 Hungary reported in its 2017 annual inventory submission total GHG emissions excluding LULUCF of 61,170.95 kt CO₂ eq, which is 34.9 per cent below the 1990 level. In 2015 emissions from non-ETS sectors relating to the target under the ESD amounted to 41,437.59 kt CO₂ eq.

52. Because Hungary is an EU member State, the LULUCF sector is not covered by its target and thus does not contribute to the achievement of the target. Hungary reported that it does not intend to use units from market-based mechanisms. It reported in CTF tables 4 and 4(b) that it did not use units from market-based mechanisms in 2014 and 2015 towards the achievement of its 2020 target. Table 6 illustrates Hungary's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 6

Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry by Hungary to achieve its target

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO₂ eq)^a</i>	<i>Contribution of LULUCF (kt CO₂ eq)^b</i>	<i>Emissions including contribution of LULUCF (kt CO₂ eq)</i>	<i>Use of units from market-based mechanisms (kt CO₂ eq)</i>
1990	93 895.89	NA	NA	NA
2010	65 473.72	NA	NA	NA
2011	63 908.65	NA	NA	NA
2012	60 224.26	NA	NA	NA
2013	57 456.23	NA	NA	0
2014	57 937.27	NA	NA	0
2015	61 170.95	NA	NA	NA

Sources: Hungary's BR3 and CTF tables 1, 4, 4(a)I, 4(a)II and 4(b).

^a Source: GHG emission data: Hungary's 2017 annual submission, version of 23 October 2017.

^b The EU's unconditional commitment to reduce GHG emissions by 20 per cent below the 1990 level by 2020 does not include emissions/removals from LULUCF.

53. In assessing the progress towards the achievement of the 2020 target, the ERT noted that Hungary's emission reduction target under the Convention for non-ETS sectors is 10 per cent above the 2005 level (see para. 16 above). As discussed above, in 2015 Hungary's emissions from non-ETS sectors were 21.3 per cent (11,196.71 kt CO₂ eq) below the AEA under the ESD. In addition, the ERT noted that in 2014 and 2015 Hungary did not make use of market-based mechanisms.

54. The ERT noted that Hungary is making progress towards its emission reduction target by implementing mitigation actions that are delivering significant emission reductions. On the basis of the results of the projections (see para. 69 below), the ERT also noted that the Party is making progress towards achieving its target under the Convention.

(b) Assessment of adherence to the reporting guidelines

55. The ERT assessed the information reported in the BR3 of Hungary and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 7.

Table 7

Findings on estimates of emission reductions and removals and the use of units from the market-based mechanisms and land use, land-use change and forestry from the review of the third biennial report of Hungary

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation</i>
1	Reporting requirement specified in paragraph 9 Issue type: transparency Assessment: recommendation	The ERT noted that CTF table 4(a)II relating to the contribution from LULUCF to the target was not completed in accordance with the joint EU target, which does not include a contribution from the LULUCF sector, and hence should not include information in this table. The ERT recommends that Hungary provide the correct information in CTF table 4 for all required years.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

3. Projections overview, methodology and results

(a) Technical assessment of the reported information

56. Hungary reported in BR CTF tables 6(a) and 6(c) updated projections for 2020 and 2030 relative to actual inventory data for the base year, 1990 and every five years up to 2015 under the WEM and WAM scenarios. The BR3 refers to the projections section of the NC7 for detailed information. In addition, the BR3 includes information on changes in methodology since the BR2.

57. The ERT noted that the projections reported in CTF tables 6(a) and 6(c) are not consistent with the projections reported in the NC7. Such inconsistencies were noted, for example, in the emissions reported by sector for the energy sector and for the LULUCF sector between table 5.3 of the NC7 and CTF table 6(c). During the review, Hungary provided an updated version of its projections, which was used by the ERT as the basis for the projections presented in this report.

58. Hungary referred to chapter 5 of the NC7 for the definition of its scenarios, explaining that its WEM scenario includes implemented and adopted PaMs, while its WAM scenario also includes planned measures. For the projections, the status of the extent to which policies are considered as implemented or planned was described in BR CTF table 3.

59. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO₂, CH₄, N₂O, PFCs, HFCs and SF₆ (treating PFCs and HFCs collectively in each case) for the period 2015–2035 and in BR CTF tables 6(a) and 6(c) for the period 1990–2030. The projections are also provided in an aggregated format for each sector as well as for a Party total using global warming potential values from the AR4.

60. Hungary did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides.

61. Emission projections related to aircraft engaged in international transport were reported separately and were not included in the totals, which was noted by the ERT as an improvement with respect to previous BRs.

62. Hungary reported on factors and activities affecting emission projections for some sectors; however, the ERT noted that Hungary could further substantiate the factors and activities affecting the LULUCF and waste sectors by including the reasons behind the expected changes reported for each subsector.

(b) Methodology, assumptions and changes since the previous submission

63. The methodology used for the preparation of the projections is slightly different from that used for the preparation of the emission projections for the BR2. Specifically, some of the changes reported relate to the use of the 'nuclear-coal-green' scenario of the National Energy Strategy for electricity and heat production under the WEM scenario; the use of the CASMOFOR model for the LULUCF sector; the use of projected demand in the National Transport Infrastructure Strategy (instead of extrapolating the aggregated transport emissions); and the increase in the expected share of landfilling in the waste sector in accordance with the National Waste Law.

64. To prepare its projections, Hungary relied on the following key underlying assumptions: GDP is expected to increase by 3.7 per cent by 2020, by 2.8 per cent by 2025 and by 2.6 per cent by 2030; and Hungary's population is expected to decrease from 9,855,571 inhabitants in 2015 to 9,047,175 inhabitants in 2030, as reported in BR3 CTF table 5.

65. Hungary reported that the projections were not calculated using one comprehensive model; instead, different methods were used for each sector, including logarithmic extrapolations, multivariable regression models and linear regression models. The ERT noted that the CASMOFOR model applied for afforestation was developed by Hungarian

experts and is an internationally recognized model compatible with guidelines published by the Intergovernmental Panel on Climate Change.

66. Hungary provided some information on the assumptions, methodologies, models and approaches used in the projections analysis. The ERT noted that further information could be reported regarding the strengths and weaknesses of the models or approaches used and an explanation of how the models or approaches used account for any overlap or synergies that may exist between different PaMs, as required by the UNFCCC reporting guidelines on NCs (applicable to the BR3 as per paragraph 11 of the UNFCCC reporting guidelines on BRs).

67. The ERT noted that Hungary provided a sensitivity analysis for the agriculture and waste sectors following an encouragement made by the previous ERT.

68. Sensitivity analyses were not conducted for cross-sectoral variables; instead Hungary applied a 1 per cent variation only to specific variables for the waste and agriculture sectors. During the review, Hungary provided additional information explaining that it did not use cross-sectoral variables in its sensitivity analysis because the projections were not performed on the basis of those parameters. According to the sensitivity analysis, the agriculture sector shows a 0.3 per cent change in GHG emissions in 2020 due to a 1 per cent increase in cattle population.

(c) Results of projections

69. The projected emission levels under different scenarios, and information on the quantified economy-wide emission reduction target are presented in table 8 and the figure below.

Table 8
Summary of greenhouse gas emission projections for Hungary

	<i>GHG emissions (kt CO₂ eq per year)</i>	<i>Changes in relation to base-year^a level (%)</i>	<i>Changes in relation to 1990 level (%)</i>
Kyoto Protocol base year ^b	109 574.82	NA	-14.3
Quantified emission limitation or reduction commitment under the Kyoto Protocol (2013–2020) ^c	51 761.44	NA	NA
Quantified economy-wide emission reduction target under the Convention ^d	NA	NA	NA
Inventory data 1990 ^e	93 895.89	-14.3	NA
Inventory data 2015 ^e	61 107.95	-44.2	-34.9
WEM projections for 2020 ^f	58 897.5	-46.3	-37.3
WAM projections for 2020 ^f	58 807.8	-46.3	-37.4
WEM projections for 2030 ^f	60 375.3	-44.9	-35.7
WAM projections for 2030 ^f	59 842.1	-45.4	-36.3

Note: Updated projections were provided by the Party during the review; the projections are for GHG emissions without LULUCF.

^a “Base year” in this column refers to the base year used for the target under the Kyoto Protocol, while for the target under the Convention it refers to the base year used for that target.

^b The Kyoto Protocol base-year level of emissions is provided in the initial review report, contained in document FCCC/IRR/2016/HUN.

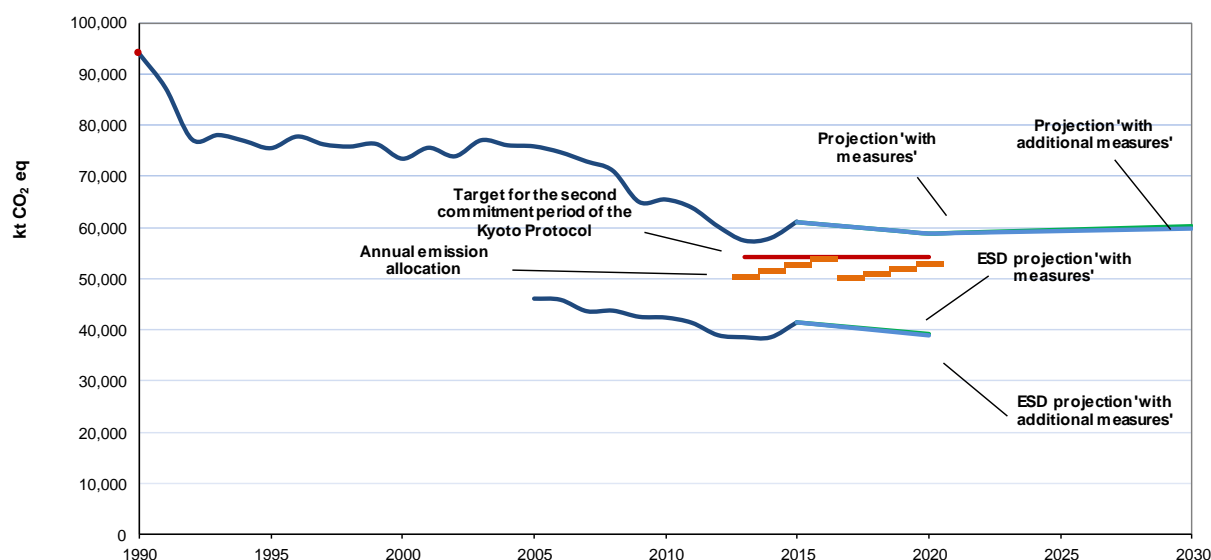
^c The Kyoto Protocol target for the second commitment period (2013–2020) is a joint target of the EU and its 28 member States and Iceland. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020. The target for non-ETS sectors is 10 per cent above the 2005 level under the ESD.

^d The quantified economy-wide emission reduction target under the Convention is a joint target of the EU and its 28 member States. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020.

^e From Hungary’s 2017 GHG inventory submission.

^f Updated projections were provided by the Party during the review.

Greenhouse gas emission projections reported by Hungary



Sources: (1) data for the years 1990–2015: Hungary's 2017 annual submission, version of 23 October 2017; total GHG emissions excluding LULUCF; (2) data for the years 2015–2030: updated projections provided by the Party during the review; (3) ESD data: EEA, 2017.

70. Hungary's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 58,897.5 and 60,375.3 kt CO₂ eq, respectively, under the WEM scenario, which represents a decrease of 37.3 and 35.7 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be lower than those in 1990 by 37.4 and 36.3 per cent and amount to around 58,807.8 and 59,842.1 kt CO₂ eq, respectively. The 2020 projections suggest that Hungary will continue contributing to the achievement of the EU target under the Convention (see paras. 13–16 above).

71. Hungary's target for non-ETS sectors is to limit its emission growth to 10 per cent above the 2005 level by 2020 (see para. 16 above). Hungary's AEAs, which correspond to its national emission target for non-ETS sectors, change from 50,398.98 kt CO₂ eq in 2013 to 52,830.57 kt CO₂ eq in 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 39.1 Mt CO₂ eq by 2020. Under the WAM scenario, Hungary's emissions from non-ETS sectors in 2020 are projected to be 39.0 Mt CO₂ eq (EEA, 2017). The projected level of emissions under the WEM and WAM scenarios is 25.9 and 26.1 per cent, respectively, below the AEAs for 2020. The ERT noted that this suggests that Hungary expects to meet its target under the WEM and WAM scenarios (see para. 16 above). Hungary presented the WEM and WAM scenarios by sector for 2020 and 2030, as summarized in table 9.

Table 9
Summary of greenhouse gas emission projections for Hungary presented by sector

Sector	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
Energy (not including transport)	59 319	28 858	28 858	27 243	27 274	–51.4	–51.4	–54.0	–54.0
Transport	8 878	11 730	11 712	14 877	14 654	32.1	31.9	67.6	65.0
Industry/industrial processes	11 832	6 923	6 923	7 095	7 095	–41.5	–41.5	–40.0	–40.0
Agriculture	9 976	7 362	7 362	7 892	7 892	–26.2	–26.2	–20.9	–20.9

Sector	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
LULUCF	-2 672	-3 385	-4 239	-3 156	-3 772	26.7	58.7	18.1	41.2
Waste	3 891	4 027	3 953	3 269	2 928	3.5	1.6	-16.0	-24.8
Other (specify)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total GHG emissions without LULUCF	93 896	58 898	58 808	60 375	59 842	-37.3	-37.4	-35.7	-36.3

Source: GHG emission data provided by Hungary during the review.

72. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy sector (not including transport), amounting to projected reductions of 28,858 kt CO₂ eq (51.4 per cent) between 1990 and 2020. The pattern of projected emissions reported for 2030 under the same scenario remains approximately the same. However, the projections also show an increase in transport emissions of 32.1 per cent from 1990 to 2020, owing mostly to an increase in the number of vehicles and the ageing of the vehicle fleet. This trend is expected to continue, reaching an increase of 67.6 per cent compared with the 1990 level by 2030.

73. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by sector and by gas change slightly due to planned PaMs in the energy, transport, LULUCF and waste sectors. The sector showing the greatest emission decrease under the WAM scenario compared with the WEM scenario is the LULUCF sector, which is expected to absorb an additional 853.8 kt CO₂ eq.

74. Hungary presented the WEM and WAM scenarios by gas for 2020 and 2030, as summarized in table 10.

Table 10
Summary of greenhouse gas emission projections for Hungary presented by gas

Gas	GHG emissions and removals (kt CO ₂ eq)					Change (%)			
	1990	2020		2030		1990–2020		1990–2030	
		WEM	WAM	WEM	WAM	WEM	WAM	WEM	WAM
CO ₂	73 448	44 933	44 917	47 633	47 441	-38.8	-38.8	-35.1	-35.4
CH ₄	11 746	8 025	7 951	7 296	6 955	-31.7	-32.3	-37.9	-40.8
N ₂ O	8 315	4 530	4 530	4 813	4 813	-45.5	-45.5	-42.1	-42.1
HFCs	NO	1 292	1 292	499	499	NA	NA	NA	NA
PFCs	376	1	1	1	1	-99.7	-99.7	-99.7	-99.7
SF ₆	11	116	116	134	134	966.4	966.4	1129.9	1129.9
NF ₃	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total GHG emissions without LULUCF	93 896	58 898	58 808	60 375	59 842	-37.3	-37.4	-35.7	-36.3

Source: GHG emission data provided by Hungary during the review.

75. For 2020 the most significant reductions are projected for CO₂ emissions (without LULUCF): 28,515 kt CO₂ eq (38.8 per cent) between 1990 and 2020 under the WEM scenario.

76. The projections by gas for 2030 show a slight increase in CO₂ emissions and an expected further decrease in CH₄ emissions.

77. If additional measures are considered (i.e. in the WAM scenario), the patterns of emission reductions by 2020 presented by sector and by gas are similar.

(d) Assessment of adherence to the reporting guidelines

78. The ERT assessed the information reported in the BR3 of Hungary and identified issues relating to transparency, completeness and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 11.

Table 11

Findings on greenhouse gas emission projections reported in the third biennial report of Hungary

<i>No.</i>	<i>Reporting requirement, issue type and assessment</i>	<i>Description of the finding with recommendation or encouragement</i>
1	Reporting requirement specified in paragraph 28 Issue type: completeness Assessment: encouragement	Hungary did not provide a WOM scenario in its BR3. During the review, in response to an ERT request, Hungary explained that it did not prepare a WOM scenario. The ERT encourages the Party to improve the completeness of its reporting by including a WOM scenario in its next BR.
2	Reporting requirement specified in paragraph 28 Issue type: transparency Assessment: recommendation	The ERT noted that there were inconsistencies in the values reported in the CTF tables and in the tables of the NC7 (tables 5.2 and 5.3). For example, emissions reported for the energy sector and for the LULUCF sector in table 5.3 of the NC7 were not the same as reported in CTF table 6(c). During the review, Hungary provided revised versions of CTF tables 6(a) and 6(c), which were used by the ERT to prepare this report, in particular tables 8–10. In order to increase the transparency of the reporting, the ERT recommends that Hungary ensure consistent reporting of the projections in its next BR.
3	Reporting requirement specified in paragraph 29 Issue: transparency Assessment: encouragement	The ERT noted that for some sectors the projection scenarios showed inconsistencies when compared with the UNFCCC reporting guidelines on NCs, which require the WEM scenario to reflect “adopted” and “implemented” PaMs, while the WAM scenario should additionally include “planned” PaMs. For the transport sector, different expected effects of PaMs were underlying the WEM and WAM scenarios. During the review, Hungary provided additional information on its scenarios and the definitions that were used. In order to increase the transparency of the reporting, the ERT reiterates the encouragement made in the previous review report that Hungary explain which PaMs (implemented, planned, adopted) are included in each projection scenario.
4	Reporting requirement specified in paragraph 43 Issue type: transparency Assessment: encouragement	The ERT noted that Hungary did not provide transparent information on the models or approaches used for its projections. During the review, the Party provided additional information on the models and approaches used for its projections; however, the ERT noted that it did not provide sufficient information regarding the strengths and weaknesses of the models or approaches used, and did not explain how the models or approaches used account for any overlap or synergies that may exist between different PaMs. In order to increase the transparency of the reporting, the ERT reiterates the encouragement made in the previous review report that Hungary provide in its next NC and BR references to more detailed information on the aspects indicated in paragraph 43 of the UNFCCC reporting guidelines on NCs, including the strengths and weaknesses of the models or approaches used and an explanation of how the models or approaches used account for any overlap or synergies that may exist between different PaMs.
5	Reporting requirement specified in	The ERT noted that Hungary did not provide transparent information regarding the factors and activities affecting the emission trends for the waste and

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
paragraph 48	Issue type: transparency Assessment: recommendation	LULUCF sectors, which is needed to enhance understanding of the emission trends for 1990–2020. In order to increase the transparency of the reporting, the ERT recommends that Hungary provide in its next NC relevant information on the factors and activities driving the projections for each sector, which could be provided in tabular format.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs and on BRs.

D. Provision of financial, technological and capacity-building support to developing country Parties

79. Hungary is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Hungary provided information in its NC7 and BR3 on its provision of support to developing country Parties. The ERT commends Hungary for reporting this information and suggests that it continue to do so in future NCs and BRs.

80. Hungary reported that, as an EU member State together with the other 10 new EU member States, it is committed to contributing to the assistance provided to developing countries in line with EU regulations in order to fulfil the commitment of developed country Parties to jointly mobilize USD 100 billion per year by 2020 from a wide variety of sources, including public and private sources, through bilateral and multilateral channels.

81. In 2017 Hungary disbursed HUF 80 million (about EUR 0.27 million) for the preparation and design of the Balkan Regional Trust Fund. The Fund is to be launched over the course of 2019 and is expected to play a crucial role in mobilizing climate finance, helping the western Balkan countries to implement their nationally determined contributions under the Paris Agreement in the form of bankable projects.

82. Hungary plans to provide climate finance to developing country Parties through multilateral and bilateral channels in the coming years. The Hungarian Government pledged HUF 1 billion (about EUR 3.2 million) for bilateral climate finance at the United Nations Climate Change Conference in Paris, of which about one third (HUF 347 million) has already been disbursed for a sustainable forest plantation in Uganda, and the remaining HUF 653 million will be committed in the course of 2018. An additional HUF 1 billion was transferred to the Green Climate Fund in 2016. The greatest share of Hungarian international climate finance goes to adaptation projects, including projects in northern, eastern and southern Africa, south-eastern Asia and in south-eastern Europe.

III. Conclusions and recommendations

83. The ERT conducted a technical review of the information reported in the BR3 and CTF tables of Hungary in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and provides an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; and progress made by Hungary in achieving its target.

84. Hungary's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 34.9 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 40.1 per cent below its 1990 level, in 2015. Emission decreases were driven mainly by the economic downturn in the country due to its transition to a market economy, mainly during the period 1985–1995,

which was followed by a decade of economic growth characterized by an increase in GDP without a corresponding increase in GHG emissions.

85. Under the Convention, Hungary committed to contributing to the achievement of the joint EU quantified economy-wide emission reduction target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and CO₂, CH₄, N₂O, HFCs, PFCs and SF₆, expressed using global warming potential values from the AR4. Emissions and removals from the LULUCF sector are not included. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms and new market mechanisms for compliance purposes up to an established limit and subject to a number of restrictions on the origin and the type of project. Companies can make use of such units to fulfil their requirements under the EU ETS.

86. Under the ESD, Hungary has a target of limiting its emission growth to 10 per cent above the 2005 level by 2020. The 2015–2020 progression in Hungary's AEA (its national emission target for non-ETS sectors) is 52,634.30–52,830.57 kt CO₂ eq.

87. For 2015 Hungary reported in its 2017 annual inventory submission total GHG emissions excluding LULUCF of 61,170.95 kt CO₂ eq, which is 34.9 per cent below the 1990 level. Hungary reported that it has not used and does not plan to use units from market-based mechanisms to achieve its target.

88. Hungary's main policy framework relating to energy and climate change is its second NCCS and National Energy Strategy. Key recent legislation supporting Hungary's climate change goals includes the acts on the publication of the Doha Amendment and the Paris Agreement and the 2007 Climate Change Act. The mitigation actions with the most significant impact are the replacement and increase in the capacity of the Paks nuclear power plant, increasing the share of renewable energy sources in the electricity and heating and cooling sectors, energy efficiency improvements achieved via the National Energy Efficiency Action Plan and the promotion of alternative fuels and electricity in the transport sector.

89. The GHG emission projections provided by Hungary in its BR3 correspond to the WEM and WAM scenarios. Under these scenarios, emissions are projected to be 37.3 and 37.4 per cent below the 1990 level by 2020, respectively. On the basis of the reported information, the ERT concludes that Hungary will contribute to achieving the EU 2020 target under the WEM and WAM scenarios, and that Hungary expects to meet its target for non-ETS sectors.

90. The ERT noted that Hungary is making progress towards its emission reduction target by implementing mitigation actions that deliver emission reductions.

91. On the basis of the results of the projections for 2020 under the WEM and WAM scenarios, the ERT noted that Hungary may achieve or overachieve its emission reduction target by 2020.

92. Hungary is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, Hungary provided information on its provision of support to developing country Parties.

93. In the course of the review, the ERT formulated the following recommendations for Hungary to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:⁵

(a) To improve the completeness of its reporting by providing information on the impact of its PaMs on GHG emissions in CTF table 3, to the extent possible (see table 5, issue 3);

(b) To improve the transparency of its reporting by:

(i) Providing comprehensive information on all its mitigation actions implemented or planned to achieve its economy-wide target (see table 5, issue 1);

⁵ The recommendations are given in full in the relevant chapters of this report.

- (ii) Providing information on its mitigation actions organized by sector, including the IPPU sector (energy, IPPU, agriculture, LULUCF, waste and other sectors) and by gas (CO₂, CH₄, N₂O, HFCs, PFCs and SF₆) (see table 5, issue 2);
 - (iii) Clarifying progress in achievement of quantified economy-wide emission reduction targets by providing information in CTF table 4 in accordance with the joint EU target, which does not include a contribution from the LULUCF sector, for all required years (see table 7, issue 1);
 - (iv) Ensuring consistent reporting of information on projections (see table 11, issue 2);
 - (v) Providing more detailed information on the factors and activities driving the projections for each sector, which could be provided in tabular format, in order to enhance the transparency of the emission trends (see table 11, issue 5);
- (c) To improve the timeliness of its reporting by submitting its next BR on time (see para. 6 above).

Annex

Documents and information used during the review

A. Reference documents

2017 GHG inventory submission of Hungary. Available at http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/10116.php.

BR3 of Hungary. Available at http://unfccc.int/national_reports/biennial_reports_and_iar/biennial_reports_data_interface/items/10132.php.

BR3 CTF tables of Hungary. Available at http://unfccc.int/national_reports/biennial_reports_and_iar/biennial_reports_data_interface/items/10132.php.

EEA. 2017. *Trends and projections in Europe 2017. Tracking progress towards Europe's climate and energy targets*. Available at www.eea.europa.eu/publications/trends-and-projections-in-europe-2017.

“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories”. Annex to decision 24/CP.19. Available at <http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf>.

“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. Available at <http://unfccc.int/resource/docs/cop5/07.pdf>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex to decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf>.

“Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol”. Annex III to decision 3/CMP.11. Available at <http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf>.

“Guidelines for review under Article 8 of the Kyoto Protocol”. Annex to decision 22/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf>.

“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”. Annex to decision 13/CP.20. Available at <http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf>.

NC7 of Hungary. Available at http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/10138.php.

Report on the individual review of the annual submission of Hungary submitted in 2016. FCCC/ARR/2016/HUN. Available at http://unfccc.int/national_reports/annex_i_ghg_inventories/inventory_review_reports/items/9916.php.

Report on the review of the report to facilitate the calculation of the assigned amount for the second commitment period of the Kyoto Protocol of Hungary. FCCC/IRR/2016/HUN. Available at http://unfccc.int/documentation/documents/advanced_search/items/6911.php?preref=600009495.

Report of the technical review of the second biennial report of Hungary. FCCC/TRR.2/HUN. Available at

http://unfccc.int/documentation/documents/advanced_search/items/6911.php?preref=600009062.

Report of the technical review of the sixth national communication of Hungary. FCCC/IDR.6/HUN. Available at

http://unfccc.int/documentation/documents/advanced_search/items/6911.php?preref=600008410.

Revisions to the guidelines for review under Article 8 of the Kyoto Protocol. Annex I to decision 4/CMP.11. Available at

<http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf>.

“UNFCCC biennial reporting guidelines for developed country Parties”. Annex I to decision 2/CP.17. Available at <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Barbara Botos (Hungarian Ministry of National Development), including additional material. The following documents¹ were provided by Hungary:

Ministry of National Development. 2017. *Climate Change Action Plan – Executive Summary*.

Ministry of National Development. 2018. *Climate Change Strategy for the period between 2017 and 2030*. Available at web address. <http://nakfo.mbfisz.gov.hu/en/node/365>.

¹ Reproduced as received from the Party.