



United Nations

FCCC/TRR.2/SVK



Framework Convention on
Climate Change

Distr.: General
1 July 2016

English only

Report of the technical review of the second biennial report of Slovakia

According to decision 2/CP.17, developed country Parties are requested to submit their second biennial reports by 1 January 2016, that is, two years after the due date for submission of a full national communication. This report presents the results of the technical review of the second biennial report of Slovakia, 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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I. Introduction and summary

A. Introduction

1. This report covers the centralized technical review of the second biennial report (BR2)¹ of Slovakia. 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). In accordance with the same decision, a draft version of this report was communicated to the Government of Slovakia, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

2. The review took place from 7 to 12 March 2016 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Mr. Xiang Gao (China), Mr. Fredrick Kossam (Malawi), Mr. Budit Limmeechokchai (Thailand), Mr. Nicolo Macaluso (Canada), Mr. Khanyisa Brian Mantlana (South Africa), Mr. Dylan Muggeridge (New Zealand), Ms. Gherghita Nicodim (Romania), Mr. Marcelo Rocha (Brazil), Mr. Christoph Streissler (Austria) and Mr. Alexander Zahar (Australia). Mr. Gao and Mr. Streissler were the lead reviewers. The review was coordinated by Ms. Ruta Bubniene and Ms. Veronica Colerio (UNFCCC secretariat).

B. Summary

3. The expert review team (ERT) conducted a technical review of the information reported in the BR2 of Slovakia in accordance with the “UNFCCC biennial reporting guidelines for developed country Parties” (hereinafter referred to as the UNFCCC reporting guidelines on BRs). During the review, Slovakia provided the following additional relevant information:

- (a) The reasons why it did not report the estimated effects of all mitigation actions;
- (b) The differences between the information reported in the first biennial report (BR1) and the BR2 on the estimated effects of some mitigation actions;
- (c) Key parameters and assumptions and related references for the projection models.

1. Timeliness

4. The BR2 was submitted on 18 December 2015, before the deadline of 1 January 2016 mandated by decision 2/CP.17. The common tabular format (CTF) tables were submitted on 15 December 2015 and resubmitted on 16 December 2015.

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

5. Issues and gaps related to the reported information identified by the ERT are presented in table 1 below. The information reported by Slovakia in its BR2 is mostly in adherence with the UNFCCC reporting guidelines on BRs as per decision 2/CP.17.

¹ The biennial report submission comprises the text of the report and the common tabular format (CTF) tables. Both the text and the CTF tables are subject to the technical review.

Table 1

Summary of completeness and transparency issues related to mandatory reported information in the second biennial report of Slovakia

<i>Chapter of the biennial report</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Paragraphs with recommendations</i>
Greenhouse gas emissions and trends	Complete	Transparent	
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Transparent	
Progress in achievement of targets	Mostly complete	Mostly transparent	22, 25
Provision of support to developing country Parties	NA	NA	

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

Abbreviation: NA = not applicable.

II. Technical review of the reported information

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

6. Slovakia has provided a summary of information on greenhouse gas (GHG) emission trends for the period 1990–2013 in its BR2 and CTF tables 1(a)–(d). The BR2 makes reference to the national inventory arrangements, which are explained in more detail in the national inventory report included in Slovakia’s 2015 annual inventory submission (in chapter 1). The national inventory arrangements were established in accordance with the reporting requirements related to national inventory arrangements contained in the “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” that are required by paragraph 3 of the UNFCCC reporting guidelines on BRs.

7. Further, Slovakia provided information on changes in the national inventory arrangements since its BR1. The changes included, inter alia, increasing the number of training sessions and meetings, with the participation of staff working on all aspects of the national inventory system, enhancing cooperation among ministries, and improving the quality assurance/quality control procedures and the inventory plan. These changes led to a higher degree of robustness of the national system for the preparation of the inventory and an increase in the capacity involved in the preparation of the annual GHG inventory.

8. The information reported in the BR2 on emission trends is consistent with that reported in the 2015 annual inventory submission of Slovakia. To reflect the most recently available data, version 3.0 of Slovakia’s 2015 annual inventory submission has been used as the basis for discussion in chapter II.A of this review report.

9. Total GHG emissions² excluding emissions and removals from land use, land-use change and forestry (LULUCF) decreased by 42.2 per cent between 1990 and 2013, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 46.2 per cent over the same period. The decrease in the total GHG emissions

² In this report, the term “total GHG emissions” refers to the aggregated national GHG emissions expressed in terms of carbon dioxide equivalent excluding land use, land-use change and forestry, unless otherwise specified. Values in this paragraph are calculated based on the 2015 inventory submission, version 3.0.

can be attributed mainly to carbon dioxide (CO₂) emissions, which decreased by 42.1 per cent (excluding LULUCF) between 1990 and 2013. Over the same period, emissions of methane (CH₄) decreased by 36.0 per cent, while emissions of nitrous oxide (N₂O) decreased by 56.1 per cent. The combined fluorinated gases (F-gases), such as perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF₆), increased by 80.1 per cent over the same period. The increasing emission trend of F-gases was driven mainly by the increased use of F-gases in industry.

10. The ERT noted that, during the period 1990–2013, Slovakia's gross domestic product (GDP) per capita increased by 80.4 per cent, while GHG emissions per GDP and GHG emissions per capita decreased by 68.6 and 43.4 per cent, respectively. The reduction in GHG emissions is due to the initial economic decline and subsequent restructuring of the economy resulting from the transition from a centrally planned to a market-driven economy, the implementation of new and more effective technologies needed to implement fuel switching of fossil fuels from coal and oil to natural gas (air pollution legislation since 1991 was the main driving force), and the reduction in the share of energy-intensive industry. These activities and measures were followed by the decoupling of emissions from economic growth. Table 2 below illustrates the emission trends by sector and some of the economic indicators relevant to GHG emissions for Slovakia.

Table 2

Greenhouse gas emissions by sector and some indicators relevant to greenhouse gas emissions for Slovakia for the period 1990–2013

Sector	GHG emissions (kt CO ₂ eq)					Change (%)		Share by sector (%)	
	1990	2000	2010	2012	2013	1990–2013	2012–2013	1990	2013
1. Energy	56 466.69	36 378.53	32 548.16	29 602.56	29 846.42	–47.1	0.8	74.8	68.3
A1. Energy industries	19 148.93	12 219.50	9 160.03	8 856.13	8 317.72	–56.6	–6.1	25.4	19.0
A2. Manufacturing industries and construction	15 890.36	9 311.87	7 629.37	6 994.08	7 173.46	–54.9	2.6	21.0	16.4
A3. Transport	6 838.01	5 656.02	7 465.96	6 967.72	6 842.59	0.1	–1.8	9.1	15.7
A4.–A5. Other	12 176.79	6 845.45	6 396.12	5 287.81	5 850.75	–52.0	10.6	16.1	13.4
B. Fugitive emissions from fuels	2 412.60	2 345.69	1 896.68	1 496.82	1 661.89	–31.1	11.0	3.2	3.8
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	9 813.65	8 555.98	9 518.93	9 019.41	8 717.87	–11.2	–3.3	13.0	20.0
3. Agriculture	7 789.81	3 866.57	3 384.36	3 521.35	3 564.75	–54.2	1.2	10.3	8.2
4. LULUCF	–9 038.14	–9 024.28	–5 435.35	–7 316.15	–7 901.28	–12.6	8.0	NA	NA
5. Waste	1 463.01	1 442.50	1 496.89	1 563.22	1 550.12	6.0	–0.8	1.9	3.5
6. Other	NO	NO	NO	NO	NO	NA	NA	NA	NA
Total GHG emissions without LULUCF	75 533.16	50 243.58	46 948.35	43 706.55	43 679.16	–42.2	–0.1	100.0	100.0
Total GHG emissions with LULUCF	66 495.02	41 219.29	41 513.00	36 390.40	35 777.88	–46.2	–1.7	NA	NA
<i>Indicators</i>									
GDP per capita (thousands 2005 USD)	12.11	12.92	20.72	21.55	21.84	80.4	1.3		

Sector	GHG emissions (kt CO ₂ eq)					Change (%)		Share by sector (%)	
	1990	2000	2010	2012	2013	1990–2013	2012–2013	1990	2013
	using PPP)								
GHG emissions without LULUCF per capita (t CO ₂ eq)	14.25	9.32	8.71	8.08	8.07	–43.4	–0.2		
GHG emissions without LULUCF per GDP unit (kg CO ₂ eq per 2005 USD using PPP)	1.18	0.72	0.42	0.37	0.37	–68.6	–1.5		

Sources: (1) GHG emission data: Slovakia’s 2015 annual inventory submission, version 3.0; (2) GDP per capita data: World Bank.

Note: The ratios per capita and per GDP unit as well as the changes in emissions and the shares by sector are calculated relative to total GHG emissions without LULUCF using the exact (not rounded) values, and may therefore differ from the ratio calculated with the rounded numbers provided in the table.

Abbreviations: GDP = gross domestic product, GHG = greenhouse gas, IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NA = not applicable, NO = not occurring, PPP = purchasing power parity.

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

11. In its BR2 and CTF tables 2(a)–(f), Slovakia reported a description of its target, including associated conditions and assumptions. CTF tables 2(a)–(f) contain the required information in relation to the description of the Party’s emission reduction target, such as: the base year for each gas (CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and nitrogen trifluoride); the sectors covered (energy, transport, industrial processes and product use, agriculture and waste); the global warming potential (GWP) values; the approach to counting emissions from LULUCF; and the use of international market-based mechanisms in achieving its emission reduction target. Further information on the target and the assumptions, conditions and methodologies related to the target is provided in chapter 3 of the BR2.

12. For Slovakia, the Convention entered into force on 23 November 1994. Under the Convention, Slovakia committed to contributing to the achievement of the joint European Union (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 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.

13. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. This legislative package regulates emissions of CO₂, CH₄, N₂O, HFCs, PFCs and SF₆ using GWP values from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (AR4) to aggregate the GHG emissions of the EU up to 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 Emissions Trading System (EU ETS).

14. The EU 2020 climate and energy package includes the EU ETS and the effort-sharing decision (ESD) (see chapter II.C.1 below). Further information on this package is

provided in chapter 3 of the BR2. The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. For the period 2013–2020, an EU-wide cap has been put in place with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. Emissions from sectors covered by the ESD are regulated by targets specific to each member State, which leads to an aggregate reduction at the EU level of 10 per cent below the 2005 level by 2020.

15. Under the ESD, Slovakia has a target to limit its emission growth to 13 per cent above the 2005 level by 2020 from sectors covered by the ESD (non-ETS sectors). National emission targets for non-ETS sectors for 2020 have been translated into binding quantified annual emission allocations (AEAs) for the period 2013–2020. Slovakia's AEAs change following a linear path from 22,914.57 kt of carbon dioxide equivalent (CO₂ eq) in 2013 to 25,418.31 kt CO₂ eq in 2020.³

16. In Slovakia, market-based mechanisms are currently used by operators in the EU ETS only. Slovakia reported that no units have been used thus far under the ESD, and that it is not planning to use the flexibility provisions under the ESD, including the use of international credits (i.e. credits from the joint implementation and the clean development mechanisms). Further, Slovakia reported that the use of market-based mechanisms under the ESD cannot be quantified, as any assessment of potential use of units for the first year (2013) will not take place until 2016.

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

17. This chapter provides information on the review of the reporting by Slovakia on the progress made in reducing emissions in relation to the target, mitigation actions taken to achieve its target, and the use of units from market-based mechanisms and LULUCF.

1. Mitigation actions and their effects

18. In its BR2 and CTF table 3, Slovakia reported on its progress in the achievement of its target and the mitigation actions adopted and implemented since its sixth national communication (NC6) and BR1 to achieve its target. Slovakia has provided information on mitigation actions introduced to achieve its target. The BR2 includes information on mitigation actions organized by sector and by gas. The ERT commends Slovakia for responding to the recommendation made in the previous review report regarding the organization of the reporting of mitigation actions by sector and by gas. Further information on the mitigation actions related to the Party's target is provided in chapter 4 of the BR2 and in this report (see paras. 28–35 below).

19. This report highlights the changes made since the publication of the Party's NC6 and BR1. In its BR2, Slovakia provided information on changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for monitoring, reporting, archiving of information and evaluation of the progress made towards its target. However, Slovakia did not include information on changes in its domestic institutional arrangements used for domestic compliance towards its economy-wide emission reduction target.

³ European Commission decision 2013/162/EU of 26 March 2013 “on determining member States’ annual emission allocations for the period from 2013 to 2020 pursuant to Decision No. 406/2009/EC of the European Parliament and of the Council” and European Commission implementing decision 2013/634/EU of 31 October 2013 “on the adjustments to member States’ annual emission allocations for the period from 2013 to 2020 pursuant to Decision No. 406/2009/EC of the European Parliament and of the Council”.

20. As an EU member State, Slovakia has to comply with two European Commission regulations on EU ETS monitoring, reporting and verification: European Commission regulation 601/2012⁴ and European Commission regulation 600/2012.⁵ Further, EU regulation 525/2013⁶ (the monitoring mechanism regulation) was adopted in May 2013. Two new regulations (European Commission implementing regulation 749/2014 and European Commission delegated regulation 666/2014⁷) were adopted in 2014 to enable the implementation of several provisions of the monitoring mechanism regulation. The main aim of the monitoring mechanism regulation is to improve the quality of reported data and to assist the EU and its member States in tracking progress towards meeting emission targets in 2020. The two new regulations specify in more detail the structure of the information, the reporting formats and the submission procedures under the monitoring mechanism regulation.

21. During the review, Slovakia informed the ERT that its domestic system for the policies and measures (PaMs) and projections of anthropogenic GHG emissions is based on a similar institutional framework and similar use of expert judgement as the national inventory system and is set out in accordance with Article 12 of the monitoring mechanism regulation and Article 20 of European Commission regulation 749/2014. Further, Slovakia explained that the European Commission regulations are directly applicable to the national legislation and that no further transposition into national legislation is needed.

22. The ERT recommends that Slovakia include in its next biennial report (BR) the information on changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance towards its economy-wide emission reduction target.

23. Slovakia did not report in CTF table 3 the estimated effects of some of its mitigation actions for 2020 and did not provide an explanation for not reporting this information in the BR2 or in CTF table 3.

24. During the review, Slovakia provided additional information, elaborating on the reasons why it did not report the estimated effects of all mitigation actions. For the industrial processes and waste sectors, Slovakia explained that the total aggregate effect of all PaMs in these sectors was estimated using expert judgement, which was also used for the projections, and that an assessment of the individual effect of PaMs in these sectors was not conducted. With regard to the impact of forest measures, Slovakia explained that emphasis is given to sustainable forest management and that the direct mitigation impact is not estimated.

⁴ European Commission regulation 601/2012 of 21 June 2012 “on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council”.

⁵ European Commission regulation 600/2012 of 21 June 2012 “on the verification of greenhouse gas emission reports and the accreditation of verifiers pursuant to Directive 2003/87/EC of the European Parliament and of the Council”.

⁶ European Commission regulation 525/2013 of 21 May 2013 “on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No. 280/2004/EC of the European Parliament and of the Council”.

⁷ European Commission implementing regulation 749/2014 of 30 June 2014 “on structure, format, submission processes and review of information reported by member States pursuant to Regulation (EU) No. 525/2013 of the European Parliament and of the Council” and European Commission delegated regulation 666/2014 of 12 March 2014 “establishing substantive requirements for a Union inventory system and taking into account changes in the global warming potentials and internationally agreed inventory guidelines pursuant to Regulation (EU) No. 525/2013 of the European Parliament and of the Council”.

25. The ERT recommends that Slovakia improve the transparency of its reporting in its next BR and/or CTF tables by providing, in the case that the estimated mitigation impacts of some PaMs are not reported in CTF table 3, explanations for the reasons why such information is not reported. This information could be provided either in the BR or in the footnotes to CTF table 3.

26. Slovakia provided, to the extent possible, detailed information on the assessment of the economic and social consequences of its response measures. Slovakia reported on how domestically implemented environmental policies, such as fiscal policy instruments, the biofuels policy and some GHG emission reduction policies, might have an impact on countries outside the EU. Slovakia reported that the integration of the aviation sector into the EU ETS and the possibility of carbon leakage were the main examples of how mitigation policies may have direct and indirect effects on countries outside the EU.

27. Slovakia did not report, to the extent possible, on its domestic arrangements established for the process of self-assessment of compliance with emission reductions required by science, and on the progress made in the establishment of national rules for taking action against non-compliance with emission reduction targets. The ERT encourages Slovakia to include this information in its next BR.

28. The key overarching 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. This 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 (see table 3 below).

29. 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), which 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).

30. 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, waste and other sectors, together accounting for 55–60 per cent of the GHG emissions of the EU. The ESD aims 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, which are underpinned by the national policies and actions of the member States (see para. 15 above).

31. At the national level, Slovakia introduced policies to achieve its targets under the ESD and domestic emission reduction targets. The key policies reported in the BR2 are: the Nitric Acid Production Act No. 414/2012 Coll. on emissions trading and its amendments, which contains provisions for the implementation of secondary catalysts at nitric acid production plants; emissions trading, through Act No. 414/2012 Coll. on emissions trading and its amendments; the Energy Efficiency Action Plan, which contains a group of measures aimed at increasing energy efficiency across the relevant sectors, in particular in the residential and commercial sectors; the National Renewable Energy Action Plan, which aims at increasing the share of renewable energy sources in electricity generation; and the manure management and agricultural soils legal framework (Government Ordinance No. 488/2010 Coll. on conditions for granting subsidies in agriculture through direct payments),

which presents the legal framework under which the targets defined in the EU Common Agricultural Policy should be met.

32. Table 3 below provides a concise summary of the key mitigation actions and estimates of their mitigation effects reported by Slovakia to achieve its target.

Table 3

Summary of information on mitigation actions and their impacts reported by Slovakia

<i>Sector affected</i>	<i>List of key mitigation actions</i>	<i>Estimate of mitigation impact in 2020 (kt CO₂ eq)</i>	<i>Estimate of mitigation impact in 2030 (kt CO₂ eq)</i>
Policy framework and cross-sectoral measures	Emissions trading; Act No. 414/2012 Coll. on emissions trading and its amendments	356	377
Energy, including:			
Renewable energy	National Renewable Energy Action Plan (Government Resolution No. 677/2010)	324	NE
Energy efficiency	Energy Efficiency Action Plan (2014–2016)	1 377	2 101
IPPU	Nitric Acid Production Act No. 414/2012 Coll. on emissions trading and its amendments	784	784
Agriculture	Government Ordinance No. 488/2010 Coll. on conditions for granting subsidies in agriculture through direct payments	531	639
LULUCF	Rural Development Programme for the period 2014–2020	243	123

Note: The estimates of mitigation impact are estimates of emissions of carbon dioxide or carbon dioxide equivalent avoided in a given year as a result of the implementation of mitigation actions, unless otherwise specified.

Abbreviations: IPPU = industrial processes and product use, LULUCF = land use, land-use change and forestry, NE = not estimated.

33. The ERT noted that Slovakia provided information on specific national PaMs implemented, adopted and planned to reduce emissions in the BR2, while adopted and implemented PaMs were reported in CTF table 3. During the review, Slovakia explained that it is not planning to implement additional mitigation actions as the Party considers that the current set of PaMs is sufficiently ambitious.

34. The ERT noted an error in the information reported in CTF table 3 on the estimated mitigation impact of the National Renewable Energy Action Plan. During the review, Slovakia provided the correct information, which can now be found in table 3 above.

35. The ERT noted that the estimated mitigation impact of the same set of PaMs was different between the BR1 and the BR2. During the review, Slovakia provided relevant information that explained that the differences in the estimated mitigation impact were due to changes in input data (cross-sectoral measures), methodological differences (transport sector), the implementation of new measures (renewable energy) and the use of the latest available information (carbon capture and storage). The ERT further notes that the transparency of the Party’s reporting in future BRs could be enhanced with the inclusion of such information.

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

36. Slovakia reported in its BR2 and CTF tables 4, 4(a)I, 4(a)II and 4(b) its use of units from market-based mechanisms under the Convention and the EU ETS, and the contribution of LULUCF to achieving its target. This information was provided for the base year 1990 and each reported year (2010–2013). Further relevant information on emissions and removals and the use of units is provided in chapter 3 of the BR2.

37. For 2013, Slovakia reported in CTF table 4 annual total GHG emissions excluding LULUCF of 43,679.16 kt CO₂ eq, or 42.2 per cent below the 1990 level. In 2013, emissions from the non-ETS sectors relating to the target under the ESD were 21.84 Mt CO₂ eq, or 10.0 per cent below the 2013 ESD target for Slovakia (24.02 Mt CO₂ eq).⁸

38. On its use of units from LULUCF activities, Slovakia reported in CTF tables 4 and 4(a) that it did not use such units. Slovakia further reported that it does not intend to use units from market-based mechanisms towards the achievement of its 2020 target. Table 4 below illustrates Slovakia's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 4

Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry as part of the reporting on the progress made by Slovakia towards the achievement of its target

Year	Emissions excluding LULUCF (kt CO ₂ eq)	Contribution from LULUCF (kt CO ₂ eq) ^a	Emissions including contribution from LULUCF (kt CO ₂ eq)	Use of units from market-based mechanisms (kt CO ₂ eq) ^b
1990	75 533.16	NA	NA	0
2010	46 948.35	NA	NA	0
2011	46 170.24	NA	NA	0
2012	43 706.55	NA	NA	0
2013	43 679.16	NA	NA	0

Sources: Slovakia's second biennial report and common tabular format tables 1, 4, 4(a)I, 4(a)II and 4(b).

Abbreviations: LULUCF = land use, land-use change and forestry, NA = not applicable.

^a The European Union's unconditional commitment to reduce greenhouse gas emissions by 20 per cent below the 1990 level by 2020 does not include emissions/removals from LULUCF. The expert review team did not include these values in the above table as the Party is a European Union (EU) member State, which is bound by the EU-wide unconditional commitment to reduce greenhouse gas emissions by 20 per cent below the 1990 level by 2020, which does not include emissions/removals from LULUCF.

^b Information as reported by the Party in its second biennial report.

39. To assess the progress towards the achievement of the 2020 target, the ERT noted that Slovakia's emission reduction target from sectors not covered by the EU ETS under the EU ESD is 13 per cent above the 2005 level (see para. 15 above). In 2013, national emissions from the non-ETS sectors relating to the target under the ESD were 21.84 Mt CO₂ eq, or 10.0 per cent below the 2013 ESD target for Slovakia (24.02 Mt CO₂ eq).⁹

⁸ European Environment Agency. 2015. *Trends and Projections in Europe 2015 – Tracking Progress Towards Europe's Climate and Energy Targets*. Available at <<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015>>.

⁹ European Environment Agency. 2015. *Trends and Projections in Europe 2015 – Tracking Progress Towards Europe's Climate and Energy Targets*. Available at <<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015>>.

40. The ERT noted that Slovakia is making progress towards its emission reduction target by implementing mitigation actions.

3. Projections

41. Slovakia reported in its BR2 and CTF table 6(a) updated projections for 2020 and 2030 relative to actual inventory data for 2013 under the ‘with measures’ (WEM) scenario. Projections are presented on a sectoral basis, using the same sectoral categories as used in the chapter on mitigation actions, and on a gas-by-gas basis for the following GHGs: CO₂, CH₄, N₂O, PFCs, HFCs and SF₆ (treating PFCs, HFCs and SF₆ collectively in each case). Projections are also provided in an aggregated format for each sector as well as for a Party total, using GWP values from the IPCC AR4. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and were not included in the totals. Slovakia reported on factors and activities influencing emissions for each sector. Further information on the projections is provided in chapter 5 of the BR2.

42. In addition to the WEM scenario, Slovakia reported in the BR2 and CTF tables 6(b) and 6(c) the ‘with additional measures’ (WAM) and ‘without measures’ (WOM) scenarios. The projections are presented by sector and by gas in the same way as for the WEM scenario for 2020 and 2030. Slovakia also provided information on the sensitivity analysis.

Overview of projection scenarios

43. The WEM scenario reported by Slovakia includes all PaMs implemented or adopted up to 2013 with an expected impact up to 2035. Slovakia also reported a WAM scenario, which consists of measures in the WEM scenario and additional measures officially planned to be adopted in the period up to 2035, and that the WOM scenario excludes all PaMs and excludes impacts of the EU ETS after year 2004. The definitions indicate that the scenarios have been prepared according to the “Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”.

Methodology and changes since the previous submission

44. The methodology used in the BR2 is identical to that used for the preparation of the emission projections for the NC6/BR1. The models used to generate the projections include: the MESSAGE¹⁰ model, which was used for stationary emissions sources, the REMOVE¹¹ model, which was used for the transport sector, and the COPERT¹² model, which was used for individual types of vehicles in road transport. In the BR2, Slovakia explained that in addition to modelling tools, it also used expert judgement. During the review, Slovakia explained that the PRIMES¹³ energy model was not directly used to prepare the projections.

45. To prepare its projections, Slovakia relied on the following key underlying assumptions: population trends, energy prices and economic development indicators, as reported in CTF table 5. These assumptions have been updated on the basis of the most recent economic developments known at the time of the reporting on projections. The Party further explained during the review, that in the WEM scenario, the GDP values for 2013

¹⁰ MESSAGE model, available at <http://www.iiasa.ac.at/web/home/research/researchPrograms/Energy/MESSAGE.en.html>.

¹¹ REMOVE model, available at <http://www.tmlleuven.be/methode/tremove/home.htm>.

¹² COPERT model, available at <http://emisia.com/products/copert-4/versions>.

¹³ PRIMES model, available at http://www.e3mlab.ntua.gr/e3mlab/index.php?option=com_content&view=category&id=35&Itemid=80&lang=en.

were obtained from the Statistical Office, but the GDP growth rates for the period 2015–2020 were derived from the PRIMES model. The high GDP values were estimated by Slovakia on the basis of trends calculated by the PRIMES model.

46. Sensitivity analyses were conducted for three GDP growth rates: low GDP growth, GDP growth under the WEM scenario and high GDP growth. During the review, Slovakia explained that the simple logarithmic mean Divisia index decomposition methodology was used for the sensitivity analysis in the BR2 due to a lack of technical capacity. In order to improve the sensitivity analysis, Slovakia may wish to explore the possibility of conducting a sensitivity analysis for other key parameters, such as energy prices and population trends, in its next BR.

Results of projections

47. Slovakia's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 44,132.98 and 46,218.94 kt CO₂ eq, respectively, under the WEM scenario, which represents a decrease of 41.6 and 38.8 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be around 42,853.87 and 41,753.04 kt CO₂ eq, respectively. While emissions are projected to be below the 2020 target, the ERT also noted that emissions in 2025 in the energy sector under the WEM scenario are expected to increase above the 2020 level by 3 per cent. Overall, the 2020 projections suggest that Slovakia will continue contributing to the achievement of the EU target under the Convention (see para. 12 above).

48. Slovakia's target for the emissions from sectors covered by the ESD (non-ETS sectors) is to limit its emission growth at 13 per cent above the 2005 level by 2020. Slovakia's AEAs, which correspond to its national emission target for non-ETS sectors, change linearly from 22,914.57 kt CO₂ eq in 2013 to 25,418.31 kt CO₂ eq in 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to reach 22.6 Mt CO₂eq by 2020.¹⁴ Under the WAM scenario, Slovakia's emissions from non-ETS sectors in 2020 are projected to be 21.6 Mt CO₂ eq.¹⁵ The projected level of emissions under the WEM and WAM scenarios is 11.1 and 15.0 per cent below the AEAs allocated for 2020. The ERT noted that this suggests that Slovakia expects to meet the target under both the WEM and the WAM scenarios (see para. 15 above).

49. According to the projections presented by sector, the most significant GHG emission reductions under the WEM scenario between 1990 and 2020 are expected to occur in the energy sector (25,920.01 kt CO₂ eq, or 45.9 per cent), followed by the agriculture sector (4,883.80 kt CO₂ eq, or 62.7 per cent) and the industrial processes and product use sector (689.36 kt CO₂ eq, or 7.0 per cent). GHG emissions from the transport subsector are projected to increase by 1,011.93 kt CO₂ eq (14.8 per cent) above the 1990 level by 2020. Slovakia also provided GHG projections for 2030. The pattern of projected emission reductions for 2030 remains almost the same as for 2020, with the most significant GHG emission reductions under the WEM scenario from 1990 to 2030 expected to occur in the energy sector (23,959.71 kt CO₂ eq, or 42.4 per cent), followed by the agriculture sector (5,054.46 kt CO₂ eq, or 64.9 per cent) and the waste sector (118.99 kt CO₂ eq, or 8.1 per cent). GHG emissions from the transport subsector are projected to increase by 2,080.05 kt CO₂ eq (30.4 per cent) above the 1990 level by 2030.

¹⁴ European Environment Agency. 2015. *Trends and Projections in Europe 2015 – Tracking Progress Towards Europe's Climate and Energy Targets*. Available at <<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015>>.

¹⁵ European Environment Agency. 2015. *Trends and Projections in Europe 2015 – Tracking Progress Towards Europe's Climate and Energy Targets*. Available at <<http://www.eea.europa.eu/publications/trends-and-projections-in-europe-2015>>.

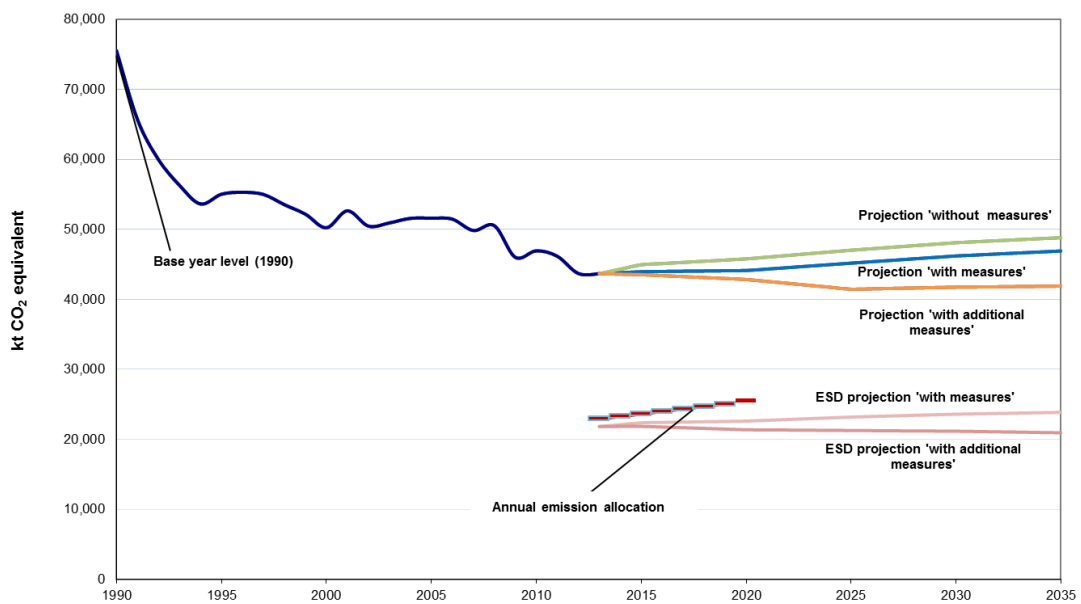
50. If additional measures are considered (i.e. under the WAM scenario), the pattern of sectoral proportions changes slightly: the energy sector remains the most prominent source of reductions, followed by the agriculture sector. The projected emission growth in the transport subsector under the WAM scenario is less prominent (a 474.62 kt CO₂ eq or 6.9 per cent increase above the 1990 level by 2020).

51. According to the projections presented by gas, reductions in CO₂ emissions are expected to contribute the most to the Party’s overall emission reductions. Under the WEM scenario, reductions in CO₂ emissions will make up approximately 80.3 per cent of the aggregate GHG emission reductions below the 1990 level (25,212.07 kt CO₂ eq) by 2020, followed by N₂O with 12.7 per cent (3,985.06 kt CO₂ eq) and CH₄ with 7.7 per cent (2,427.69 kt CO₂ eq). Slovakia also provided GHG emission reduction projections for 2030. Under the WEM scenario, reductions in CO₂ emissions will make up approximately 77.4 per cent of the aggregate GHG emission reductions below the 1990 level (22,675.12 kt CO₂ eq) by 2030, followed by N₂O with 13.5 per cent (3,947.62 kt CO₂ eq) and CH₄ with 9.6 per cent (2,819.82 kt CO₂ eq).

52. Under the WAM scenario, reductions in CO₂ emissions will make up approximately 80.3 per cent of the aggregate GHG emission reductions below the 1990 level (26,252.78 kt CO₂ eq) by 2020, followed by N₂O with 12.4 per cent (4,052.47 kt CO₂ eq) and CH₄ with 8.0 per cent (2,598.68 kt CO₂ eq).

53. The projected emission levels under the different scenarios and Slovakia’s AEAs are presented in the figure below.

Greenhouse gas emission projections by Slovakia



Sources: (1) Data for the years 1990–2013: Slovakia’s 2015 annual inventory submission, version 3.0; total GHG emissions excluding land use, land-use change and forestry; (2) Data for the years 2014–2030: Slovakia’s second biennial report; total GHG emissions excluding land use, land-use change and forestry.

Abbreviations: ESD = effort-sharing decision.

54. The ERT also noted that under the WEM scenario, emissions from sectors covered by the ESD will increase during the period 2020–2030, while under the WAM scenario, emissions will decrease during the same period.

55. The projections in the BR2 take into account future national economic development trends, impacts of energy markets, technological development, electricity imports and any other relevant assumptions used in the preparation of the projections.

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

56. Slovakia is not a Party included in Annex II to the Convention and is therefore not obliged to adopt measures and fulfil obligations as defined in Article 4, paragraphs 3, 4 and 5, of the Convention. However, as reported in its BR2, Slovakia provided information on its provision of support to developing country Parties. The ERT commends Slovakia for reporting this information and suggests that it continue to do so in future BRs.

57. Slovakia defines financial contributions as being climate specific when funds are used for activities defined as mitigation, adaptation, cross-cutting or other climate-specific activities. The total climate-specific financial contribution provided by Slovakia through multilateral channels in 2013 and 2014 was USD 684,574 and USD 2,032,979 through bilateral support. All of the support was channelled through official development assistance in accordance with the methodology of the Development Assistance Committee of the Organisation for Economic Co-operation and Development. Slovakia also funded technology transfer initiatives and capacity-building programmes in developing countries. For further information, please see chapter 6 of the BR2.

III. Conclusions

58. The ERT conducted a technical review of the information reported in the BR2 and CTF tables of Slovakia in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information is mostly in adherence with the UNFCCC reporting guidelines on BRs and provides an overview on: 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; progress made by Slovakia in achieving its target; and the provision of support to developing country Parties.

59. Slovakia's total GHG emissions excluding LULUCF related to its quantified economy-wide emission reduction target were estimated to be 42.2 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 46.2 per cent below its 1990 level for 2013. The emission decrease was driven by the strong decrease in economic activities, the restructuring of the economy, the implementation of a strong policy in air quality and climate change, the implementation of new and more effective technologies and the reduction in the share of energy-intensive industry.

60. Under the Convention, Slovakia is committed to contributing to the achievement of the joint EU quantified economy-wide target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and the gases CO₂, CH₄, N₂O, HFCs, PFCs and SF₆, expressed using GWP values from the AR4. 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.

61. Under the ESD, Slovakia has a target to limit the emission growth to 13 per cent above the 2005 level by 2020. Slovakia's AEAs, which correspond to its national emission

target for non-ETS sectors, change linearly from 22,914.57 kt CO₂ eq in 2013 to 25,418.31 kt CO₂ eq in 2020.

62. At the national level, Slovakia introduced PaMs to achieve its targets under the ESD and domestic emission reduction targets. The key policies reported in the BR2 are: the Nitric Acid Production Act No. 414/2012 Coll. on emissions trading and its amendments, which contains provisions for the implementation of secondary catalysts at nitric acid production plants; emissions trading, through Act No. 414/2012 Coll. on emissions trading and its amendments; the Energy Efficiency Action Plan, which contains a group of measures aimed at increasing energy efficiency across the relevant sectors, in particular in the residential and commercial sectors; the National Renewable Energy Action Plan, which aims at increasing the share of renewable energy sources in electricity generation; and the manure management and agricultural soils legal framework (Government Ordinance No. 488/2010 Coll. on conditions for granting subsidies in agriculture through direct payments), which presents the legal framework under which the targets defined in the EU Common Agricultural Policy should be met.

63. For 2013, Slovakia reported in CTF table 4 total GHG emissions excluding LULUCF at 43,679.16 kt CO₂ eq, or 42.2 per cent below the 1990 level. Slovakia also reported that it did not use units from market-based mechanisms to offset its total GHG emissions, and does not intend to use such units to achieve its 2020 target. The ERT noted that Slovakia is making progress towards its emission reduction target by implementing mitigation actions.

64. The GHG emission projections provided by Slovakia in its BR2 include those for the WOM, WEM and WAM scenarios. Under these three scenarios, emissions are projected to be 39.4, 41.6 and 43.3 per cent below the 1990 level in 2020, respectively. For the ESD sectors, the estimated emissions in 2020 are projected to reach 22,616.90 kt CO₂ eq under the WEM scenario, and 21,377.45 kt CO₂ eq under the WAM scenario. The ERT noted that this suggests that Slovakia expects to meet its ESD target under both the WEM and the WAM scenarios.

65. Slovakia is not a Party included in Annex II to the Convention and is therefore not obliged to provide support to developing countries. However, Slovakia provided information in its BR2 on its provision of support to developing country Parties.

66. In the course of the review, the ERT formulated the following recommendations for Slovakia to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:¹⁶

(a) Improve the completeness of its reporting by providing information on changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance towards its economy-wide emission reduction target (see para. 22 above);

(b) Improve the transparency of its reporting by providing, in the case that the estimated mitigation impacts of some PaMs are not reported in CTF table 3, explanations for the reasons why such information is not reported (see para. 25 above).

¹⁶ The recommendations are given in full in the relevant chapters of this report.

Annex

Documents and information used during the review

A. Reference documents

“UNFCCC biennial reporting guidelines for developed country Parties”. Annex to decision 2/CP.17. Available at

<<http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf#page=4>>.

“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#page=2>>.

“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 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>>.

FCCC/ARR/2014/SVK. Report on the individual review of the annual submission of Slovakia submitted in 2014. Available at

<<http://unfccc.int/resource/docs/2015/arr/svk.pdf>>.

FCCC/IDR.6/SVK. Report of the technical review of the sixth national communication of Slovakia. Available at <<http://unfccc.int/resource/docs/2015/idr/svk06.pdf>>.

FCCC/TRR.1/SVK. Report of the technical review of the first biennial report of Slovakia. Available at <<http://unfccc.int/resource/docs/2015/trr/svk01.pdf>>.

2015 greenhouse gas inventory submission of Slovakia. Available at

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First biennial report of Slovakia. Available at

<http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/svk_br1_2013.pdf>.

Common tabular format tables of the first biennial report of Slovakia. Available at

<http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/svk_2014_v2.0.pdf>.

Second biennial report of Slovakia. Available at

<http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/svk_2br_18-12-2015.pdf>.

Common tabular format tables of the second biennial report of Slovakia. Available at <http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/svk_2016_v3.0_formatted.pdf>.

B. Additional information used during the review

Responses to questions during the review were received from Ms. Lenka Malatinska and Ms. Janka Szemesova (Climate Change Department, Ministry of Environment).
