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

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 Sweden, 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 Sweden. 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 Sweden, 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. Amr Abdel-Aziz (Egypt), Mr. John Davies (United States of America), Ms. Claudia Do Valle Costa (Brazil), Mr. Takeshi Enoki (Japan), Mr. Sandro Federici (San Marino), Mr. Michael Gytarsky (Russian Federation), Ms. Medea Inashvili (Georgia), Ms. Baasansuren Jamsranjav (Mongolia), Ms. Yu’e Li (China) and Mr. Ioannis Sempos (Greece). Mr. Federici and Mr. Gytarsky were the lead reviewers. The review was coordinated by Ms. Xuehong Wang, Ms. Kyoko Miwa and Mr. Pedro Torres (UNFCCC secretariat).

B. Summary

3. The expert review team (ERT) conducted a technical review of the information reported in the BR2 of Sweden 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, Sweden provided additional information (see paras. 12, 22, 24, 27, 44, 53 and 65 below).

1. Timeliness

4. The BR2 was submitted on 22 December 2015, before the deadline of 1 January 2016 mandated by decision 2/CP.17. The common tabular format (CTF) tables were also submitted on 22 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 Sweden 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 Sweden

<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, 24, 45, 46
Provision of support to developing country Parties	Complete	Transparent	

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

II. Technical review of the reported information

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

6. Sweden 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 Sweden’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, Sweden provided information on changes in the national inventory arrangements since its first biennial report (BR1). During the 2015 GHG inventory preparation cycle, in December 2014, a new ordinance (2014:1434 Ordinance), which describes the institutional set-up of GHG inventory preparation, came into effect, formally including the Medical Products Agency, the Swedish Civil Contingencies Agency and the Geological Survey of Sweden into the national system for GHG inventory preparation. This change was mostly a formality, as the three organizations had been contributing to the inventory on a voluntary basis in the past. The Party informed the ERT that this information will be described in more detail in the national inventory report submitted in 2016.

8. The information reported in the BR2 on emission trends is consistent with that reported in the 2015 annual inventory submission of Sweden. To reflect the most recently available data, version 1 of Sweden’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 22.4 per cent between 1990 and 2013, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 54.0 per cent over the same period. The decrease in the total GHG emissions can be attributed mainly to carbon dioxide (CO₂) emissions, which decreased by 22.1 per cent (excluding LULUCF) between 1990 and 2013. Over the same period, emissions of methane (CH₄) decreased by 34.6 per cent, while emissions of nitrous oxide (N₂O) decreased by 17.3 per cent. The combined fluorinated gases, such as perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF₆), increased by 76.9 per cent over the same period. The total GHG emissions have fluctuated in recent years: they decreased in 2008 and 2009, increased to the 2009 level in 2010 and decreased again from 2011 to 2013. The economic recession in 2008 and 2009, the low use of nuclear-energy-based electricity in 2010, the cold winter in 2010 and the warm winters in 2012 and 2013 were the main drivers for the fluctuations of total GHG emissions from 2008 onwards.

10. The ERT noted that, during the period 1990–2013, Sweden’s gross domestic product (GDP) per capita increased by 40.6 per cent, while GHG emissions per GDP and GHG emissions per capita decreased by 50.8 and 30.8 per cent, respectively. GHG emissions per capita in Sweden are lower than those for many other industrialized countries due to a relatively high use of hydropower and nuclear power (45.9 per cent of the total primary energy supply), and a low use of fossil fuels. The use of energy and CO₂ taxation for limiting the emissions of CO₂, among other mitigation policies and measures (PaMs), is most likely contributing to the decreasing values. Table 2 below illustrates the emission trends by sector and some of the economic indicators relevant to GHG emissions for Sweden.

Table 2

Greenhouse gas emissions by sector and some indicators relevant to greenhouse gas emissions for Sweden 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	53 215.22	50 261.08	48 684.17	42 338.69	40 713.82	–23.5	–3.8	74.1
A1. Energy industries	9 984.07	9 069.38	13 374.58	10 592.65	10 080.46	1.0	–4.8	13.9	18.1
A2. Manufacturing industries and construction	11 732.03	12 271.26	9 728.43	8 391.04	8 076.02	–31.2	–3.8	16.3	14.5
A3. Transport	19 455.04	19 870.61	20 554.96	19 002.22	18 503.65	–4.9	–2.6	27.1	33.2
A4.–A5. Other	11 655.45	8 582.83	4 062.79	3 390.40	3 235.88	–72.2	–4.6	16.2	5.8
B. Fugitive emissions from fuels	388.63	467.01	963.42	962.38	817.81	110.4	–15.0	0.5	1.5
C. CO ₂ transport and storage	NO	NO	NO	NO	NO	–	–	–	–
2. IPPU	6 987.08	7 423.59	7 528.59	6 651.56	6 543.67	–6.3	–1.6	9.7	11.7

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 1.

Sector	GHG emissions (kt CO ₂ eq)					Change (%)		Share by sector (%)	
	1990	2000	2010	2012	2013	1990–2013	2012–2013	1990	2013
	3. Agriculture	7 893.75	7 779.97	6 820.78	6 605.83	6 898.95	-12.6	4.4	11.0
4. LULUCF	-40.904.25	-42.137.13	-43.807.13	-43 030.13	-41 551.42	1.6	-3.4	NA	NA
5. Waste	3 740.79	3 222.57	1 948.06	1 729.34	1 617.69	-56.8	-6.5	5.2	2.9
6. Other	0.00	0.00	0.00	0.00	0.00	-	-		
Indirect CO ₂	NE, NO	NE, NO	NE, NO	NE, NO	NE, NO	-	-	NA	NA
Total GHG emissions without LULUCF	71 836.85	68 687.21	64 981.60	57 325.42	55 774.13	-22.4	-2.7	100.0	100.0
Total GHG emissions with LULUCF	30 932.59	26 550.08	21 174.47	14 295.28	14 222.71	-54.0	-0.5	NA	NA
<i>Indicators</i>									
GDP per capita (thousands 2011 USD using PPP)	30.90	36.82	42.90	43.26	43.45	40.6	0.4	NA	NA
GHG emissions without LULUCF per capita (t CO ₂ eq)	8.39	7.74	6.93	6.02	5.81	-30.8	-3.5	NA	NA
GHG emissions without LULUCF per GDP unit (kg CO ₂ eq per 2011 PPP)	0.27	0.21	0.16	0.14	0.13	-50.8	-3.9	NA	NA

Sources: (1) GHG emission data: Sweden's 2015 annual inventory submission, version 1; (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, NE = not estimated, 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), Sweden 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 target of the 28 European Union member States (EU-28) of reducing GHG emissions by 20 per cent below the 1990 level by 2020, which is the combined target of EU-28 and not of each member State, as they have no specified targets under the Convention. Further information on the target and the assumptions, conditions and methodologies related to the target is provided in chapter 2 of the BR2.

12. The ERT noted that nitrogen trifluoride (NF₃) is included in CTF table 2(b), even though NF₃ is not included in the quantified economy-wide emission reduction target of the EU-28. The ERT further noted that NF₃ is included in CTF table 2(c) with global warming potential (GWP) values of the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report. The Party informed the ERT during the review that NF₃ should be

deleted from both tables, but was not able to do so due to technical issues with the CTF reporter software.

13. The ERT noted that CTF table 2(e)II has not been compiled because, as stated by Sweden in its BR2 (see para. 39 below) the use of market-based mechanisms cannot currently be quantified within the European Union (EU) target. The BR2 states that the compliance assessment for the first year (2013) under the effort-sharing decision (ESD) will be carried out in 2016, and any potential use of units for the first year will be known in 2016. According to the BR2, Sweden does not currently foresee any need to make use of market-based mechanisms under the ESD.

14. For Sweden, the Convention entered into force on 21 March 1994. Under the Convention, Sweden 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 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.

15. 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 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).

16. The EU 2020 climate and energy package includes the EU ETS and the ESD (see chapter II.C.1 below). Further information on this package is provided in chapter 2 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.

17. Under the ESD, Sweden has a target to reduce its emissions to 17 per cent below the 2005 level by 2020 from sectors covered by the ESD (non-ETS sectors). National emission targets for 2020 have been translated into binding quantified annual emission allocations (AEAs) for the period 2013–2020. The AEAs aim to ensure that EU member States are on a path to meet ESD targets by 2020. For Sweden, the AEAs decrease linearly from 41,685 kt of carbon dioxide equivalent (CO₂ eq) in 2013 to 37,204 kt CO₂ eq in 2020.³ The ERT noted that reporting information on the amounts of emissions from the ESD sectors, as reported in the sixth national communication (NC6), would enhance the transparency of the BR2 on the quantified economy-wide emission reduction target and the progress towards achieving the 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”.

18. In addition to the EU target, Sweden has a national milestone target for climate change, calling for a 40 per cent reduction in emissions below the 1990 level by 2020. This target applies to activities not included in the EU ETS, and does not include the LULUCF sector. According to the *Report for Sweden on Assessment of Projected Progress*,⁴ two thirds of the target will be reached by implementing domestic measures, while one third may be reached through investments in other countries, particularly through the clean development mechanism. The ERT noted that the transparency of the domestic target could be enhanced if this information was included in the next biennial report submission.

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

19. This chapter provides information on the review of the reporting by Sweden 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

20. In its BR2 and CTF table 3, Sweden reported on its progress in the achievement of its target and the mitigation actions implemented since its NC6 and BR1 to achieve its target. Sweden has provided information on mitigation actions introduced to achieve its target. The BR2 includes information on mitigation actions organized by sector and by gas. Further information on the mitigation actions related to the Party's target is provided in chapter 3 of the BR2.

21. This report highlights the changes made since the publication of the Party's NC6 and BR1. In its BR2, Sweden provided information on changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress made towards its target. The main changes in its domestic institutional arrangements described are the Ordinance on Climate Reporting,⁵ which came into force in 2014, and the establishment of a Swedish national system for reporting on PaMs and projections in 2015. The Ordinance on Climate Reporting enlarges the national system by including other agencies, defines the roles and responsibilities of relevant government agencies, and fulfils the reporting requirement under the EU Monitoring Mechanism Regulation.

22. The ERT noted that in its BR2, Sweden provided detailed information on mitigation actions implemented since BR1. The ERT commends the efforts made by the Party. However, the BR2 and CTF table 3 do not include the information required by the UNFCCC reporting guidelines on BRs on planned PaMs. During the review, Sweden clarified that there are no planned PaMs at the moment; accordingly, the BR2 contains information only on implemented PaMs. The ERT recommends that Sweden improve the transparency of its reporting by including information on planned PaMs, or the absence thereof, in its next biennial report.

⁴ Available at <<https://www.naturvardsverket.se/upload/miljoarbete-i-samhallet/uppdelat-efter-omrade/klimat/prognoser-for-Sveriges-utslapp/report-sweden-assessment-projected-progress-2015.pdf>>.

⁵ Available at <<http://www.lagboken.se/Views/Pages/GetFile.ashx?portalId=56&cat=24593&docId=2232659&propId=5>>.

23. The ERT also noted that CTF table 3 does not include an estimate of the mitigation impact of each individual mitigation action in 2020. Instead, Sweden reported estimates of aggregated mitigation impacts of some key existing PaMs for 2020 and 2030. For energy-related PaMs, the estimate of mitigation impact is based on the reduced use of fossil fuels, the improved efficiency of energy use, the increased supply of electricity from renewable energy sources due to the implementation of an energy tax, the CO₂ tax, the electricity certificate system and other relevant PaMs. The impact of this group of PaMs is aggregated and reported for each of the following sectors: production of electricity and district heating; residential and commercial/institutional; industrial combustion and processes; and transport. The estimate of the mitigation impacts of PaMs in the waste sector is based on: increased CH₄ recovery from landfill and reduced landfill disposal of organic material due to a landfill tax; a ban on landfilling combustible and organic materials; extended producer responsibility; and a municipal waste planning requirement.

24. During the review, Sweden provided an explanation for not being able to report in CTF table 3 estimates of the quantified mitigation impact of each mitigation action by 2020. This was due to the interaction among several PaMs, and the difficulties in disentangling the effects of policies from impacts of other external drivers of changes. The ERT encourages Sweden to provide estimates of the impacts from the PaMs in its next biennial report submission, and recommends, when this is not possible, that Sweden enhance the transparency by including explanations for any missing estimate of the mitigation impact of each individual PaM in CTF table 3, in its next biennial report submission.

25. Sweden provided, to the extent possible, detailed information on the assessment of the economic and social consequences of its response measures. The ERT noted that impact assessments on the adverse effects of PaMs, including on developing countries, were carried out by Sweden for decision-making on PaMs. It also noted that the climate strategy in Sweden, which encompasses many different types of measures and covers most sectors and all GHGs, has a design that aims to minimize the risk of adverse effects.

26. The BR2 does not include the information required by the UNFCCC reporting guidelines on BRs on domestic arrangements established for the process of self-assessment of compliance and on the progress made in the establishment of national rules for taking local action against domestic non-compliance with emission reduction targets.

27. During the review, Sweden provided additional information, elaborating on the process of self-assessment of compliance. Sweden has performed regular evaluations of its climate policy at the national level. The first review started in 2004, leading to a climate policy decision in 2006. The second review was initiated in 2007, resulting in a 2009 climate policy decision. The third review was undertaken in 2015 to analyse the progress made towards the 2020 target.

28. The ERT encourages Sweden to report, to the extent possible, on the domestic arrangements established for the process of self-assessment of compliance with emission reductions required by science. The ERT also encourages Sweden to report, to the extent possible, on the progress made in the establishment of national rules for taking local action against domestic non-compliance with emission reduction targets.

29. 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).

30. 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).

31. 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 paras. 17 and 18 above).

32. The Swedish climate policy is based on an environmental quality objective outlined in the “Reduced Climate Impacts”, and the key legislation to support the Swedish climate policy involves the two government bills adopted by the Riksdag (Swedish Parliament) in 2009, entitled “An Integrated Climate and Energy Policy”.⁶ The bills set out a number of milestone targets by 2020, such as a 40 per cent reduction in GHG emissions below the 1990 level, a 49 per cent share of renewable energy in overall energy consumption and a 20 per cent reduction in energy intensity below the 2008 level. For the longer term, the bills also establish, as a priority, for Sweden to have a vehicle fleet that is independent of fossil fuels by 2030, and to achieve zero net GHG emissions by 2050.

33. At the national level, Sweden introduced policies to achieve its targets under the ESD and domestic emission reduction targets. Sweden’s climate strategy is underpinned by the use of economic instruments including the energy and CO₂ taxes introduced in the early 1990s and the electricity certificate system. These economic instruments have been supplemented by other instruments and legislation such as the development and market introduction of technology, information, an annual vehicle tax differentiated according to vehicle CO₂ emissions per kilometre, investment grants and standards primarily in the waste sector. In addition to these, other policies that were reported by Sweden that delivered significant emission reductions include those that aim to increase the use of renewable fuels in the transport sector, such as tax reduction for biofuels and requirements of renewable fuels at filling stations, and those that aim to increase recycling and reduce total quantities of waste in the waste management sector, such as rules on municipal waste planning, extended producer responsibility and landfill tax, and bans on landfill of separated combustible waste and organic waste.

34. Electricity has been taxed in Sweden since the 1950s. The level of energy tax has changed over time, and also varies between fuels. The energy tax was restructured in 2009, and as of 2011, the tax level has been set on the basis of energy content in the fossil fuel. The energy tax has been set at Swedish krona (SEK) 0.085/kWh on heating fuels used for households, services and district heating, and at SEK 0.026/kWh on fossil fuels used for heating in industry (within and outside the EU ETS), combined heat and power production, agriculture, forestry and aquaculture. Tax reductions for biofuels are applied in Sweden, and the energy tax exemption varies among biofuels.

35. The CO₂ tax was introduced in 1991, in addition to the energy tax on fossil fuels, and has been increased in several steps since. The CO₂ tax is now mainly targeted towards

⁶ Government bills 2008/09:162 and 163, available at <<http://www.government.se/information-material/2009/03/an-integrated-climate-and-energy-policy/>>.

the use of fossil fuels outside the EU ETS. In its BR2, Sweden reported that the CO₂ tax has been raised from SEK 0.25/kg CO₂ in 1991 to SEK 1.12/kg CO₂ in 2015. The CO₂ tax on fuels used for heating and stationary engines in industry outside the EU ETS has been increased stepwise, from 30 per cent of the standard CO₂ tax rate in 2011, to 60 per cent in 2015, 80 per cent in 2016 and 100 per cent in 2018. The special reimbursement of CO₂ tax on diesel oil for machinery in agricultural, forestry and aquacultural activities has been lowered significantly between 2011 and 2015 (from SEK 2.1 per litre in 2011 to SEK 0.90 per litre in 2015). Sustainable biofuels will be fully exempt from CO₂ tax in 2016.

36. The electricity certificate system was introduced in Sweden in 2003, with an aim to support electricity production based on renewable energy. Under this system, producers are allocated a certificate for every megawatt-hour of renewable electricity produced, which, in turn, can be sold to electricity users who are obliged by law to purchase these certificates up to a certain quota. The increase in the portion of electricity production that is eligible for certificates in recent years is dominated by greater wind power generation. A new target was approved by the Swedish Parliament in 2015, which translates into an increase of 30 TWh of renewable electricity production within the electricity certificate system above the 2002 level by 2020.

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

Table 3

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

<i>Sector affected</i>	<i>List of key mitigation actions</i>	<i>Estimate of mitigation impact by 2020 (kt CO₂ eq)</i>	<i>Estimate of mitigation impact by 2030 (kt CO₂ eq)</i>
Policy framework and cross-sectoral measures, including energy	Energy tax, carbon dioxide tax, electricity certificate system and EU ETS ^a	16 000 ^b	15 000 ^b
Residential and commercial/institutional	Energy tax, carbon dioxide tax, building regulations, energy declarations, ecodesign directive, mandatory energy labelling	500	700
Transport	Carbon dioxide emission standards for new vehicles ^a	NE	NE
	Tax reduction for biofuels and requirements of renewable fuels at filling stations	3 000	NE
	Differentiated vehicle tax, super green car rebate and tax exemption for environmentally friendly vehicles	NE	NE
IPPU	Energy tax and carbon dioxide tax Electricity certificate system and EU ETS ^a	200	400
Waste	Ban on landfilling of separated, combustible waste and organic waste, Extended producer responsibility, Landfill tax, and Municipal waste planning requirement	1 950	NE

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.

Abbreviations: EU ETS = European Union Emissions Trading System, IPPU = industrial processes and product use, NE = not estimated.

^a European Union instrument.

^b The mitigation impact of the EU ETS does not include that under the IPPU sector.

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

38. Sweden reported in its BR2 and CTF tables 4 (reporting on progress) its use of units from market-based mechanisms under the Convention and the contribution of LULUCF to achieving its target. Further relevant information on emissions and removals and the use of units is provided in chapter 2 of the BR2.

39. CTF tables 4(a)I and 4(a)II on the LULUCF sector and on the use of units of market-based mechanisms, respectively, are not filled out. In its BR2, Sweden clearly explained the reasons for not including these values in the CTF tables. Contributions from the LULUCF sector are not included in the CTF tables because the LULUCF sector is not included under the EU target, and the use of market-based mechanisms cannot be quantified for the moment, as the compliance assessment for 2013 under the ESD will be undertaken in 2016 (see para. 13 above).

40. The ERT noted that the values for total emissions excluding LULUCF entered into CTF table 4 are rounded off to the nearest kilotonne, whereas in CTF table 1, values are reported in kilotonnes to two decimal places. The ERT notes that reporting emission values at the same level of accuracy as those in CTF table 1 would enhance the transparency of reporting. For 2013, Sweden reported in CTF table 4 the annual total GHG emissions excluding LULUCF of 55,774 (55,774.13 according to CTF table 1) kt CO₂ eq, or 22.4 per cent below the 1990 level. In 2013, emissions from the non-ETS sectors relating to the target under the ESD were reported as 35,100 kt CO₂ eq. In its BR2, Sweden explained that the use of market-based mechanisms is possible under the EU ETS and the ESD. Under the EU ETS, the credits cannot exceed 50 per cent of the required reduction below the 2005 level. In the ESD sectors, annual use of credits from market-based mechanisms shall not exceed 3 per cent. Table 4 below illustrates Sweden'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 Sweden towards the achievement of its target

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO₂ eq)</i>	<i>Contribution from LULUCF (kt CO₂ eq)^a</i>	<i>Emissions including contribution from LULUCF (kt CO₂ eq)</i>	<i>Use of units from market-based mechanisms (kt CO₂ eq)</i>
1990	71 836.85	NA	NA	–
2010	64 981.60	NA	NA	NA
2011	60 794.15	NA	NA	NA
2012	57 325.42	NA	NA	NA
2013	55 774.13	NA	NA	NA

Sources: Sweden'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.

41. To assess the progress towards the achievement of the 2020 target, the ERT noted that Sweden's emission reduction target under the Convention from sectors not covered by the EU ETS under the EU ESD is 17 per cent below the 2005 level (see para. 17 above). According to the *Report for Sweden on Assessment of Projected Progress*, Sweden's emissions from the sectors not covered by the EU ETS in 2013 were 15.8 per cent (6,585 kt CO₂ eq) below the AEAs under the ESD for the same year (41,685 kt CO₂ eq) (see para. 17 above).

42. The ERT noted that Sweden is making progress towards its emission reduction target under the ESD by implementing mitigation actions, without using units from market-based mechanisms.

3. Projections

43. Sweden reported in its BR2 and CTF table 6(a) updated projections for 2015, 2020, 2025 and 2030, and also included projections for 2035 for the first time, relative to actual inventory data for 2013 under the 'with measures' (WEM) scenario. Projections are presented on a sectoral basis, mostly 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. 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 in the BR2 and not included in the totals. Sweden reported on factors and activities influencing emissions for each sector. Further information on the projections is provided in chapter 4 of the BR2.

44. The ERT noted that the sectors included in CTF table 6(a) are not consistent with those reported in the BR2, which explains the results of projections according to the GHG inventory sectors. During the review, the Party informed the ERT that Sweden has organized the sectors in table 6(a) to match the sectoral allocation with the PaMs chapter of the BR2. For example, "Working machinery" includes the emissions from working machinery that are reported as part of the emissions in common reporting format categories under the energy sector: "other", "other transportation", "commercial/institutional", "residential" and "agriculture/forestry/fishing". The "Industry/industrial processes" sector includes emissions from industrial combustion.

45. During the review, Sweden informed the ERT that the emissions from "Product use and other" and "Working machinery" are presented incorrectly in CTF table 6(a). The emissions from "Product use and other" are presented on the row for "Working machinery" and vice versa. To enhance transparency, the ERT recommends that Sweden report the correct data for "Product use and other" and "Working machinery" in its next biennial report and CTF table 6.

46. The ERT also noted that emission projections related to fuel sold to ships and aircraft engaged in international transport were not reported in CTF table 6(a). The ERT recommends that Sweden include emissions from international bunkers in CTF table 6(a) of its next biennial report submission, to the extent possible.

47. Sweden does not report in its BR2 or CTF tables 6(b) and 6(c) the 'with additional measures' or 'without measures' (WOM) scenarios. According to Sweden, it has no planned PaMs at the moment (see para. 22 above). The ERT reiterates the encouragement of the previous review team to report a WOM scenario in its next biennial report submission.

48. The ERT noted that historical data for the key variables and assumptions used in projections in CTF table 5 are missing. The ERT further noted that the BR2 contains limited information on sensitivity analyses of the projections. The ERT encourages Sweden to report these historical data to improve the completeness of its reporting and to include a table or summary of sensitivity analyses to enhance transparency, in its next biennial report submission.

49. The BR2 made a reference to the NC6 on the methods and assumptions used in the preparation of the projection scenarios. However, it did not include a summary of this information. The ERT encourages Sweden to provide an overview of the methods and assumptions used in future biennial report submissions to improve the transparency. In addition, the ERT reiterates the encouragement made in the report of the technical review of the NC6 concerning the description of overlap or synergies that may exist between models used when assessing the effects of different PaMs.

Overview of projection scenarios

50. The single WEM scenario reported by Sweden includes all PaMs that had been approved by the Swedish Parliament up to 2014. The definition indicates that the scenario has 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

51. The methodology used in the BR2 is identical to that used for the preparation of the emission projections for the NC6/BR1, except for the agriculture sector. A combination of models and methods are used in the projections such as: the MARKAL-Nordic model, a dynamic optimization model using a bottom-up approach to estimate energy emissions; EMEC (Environmental Medium Term Economic Model), a general equilibrium model for economic developments; and the D&S (Demand and Supply) model. A trend analysis has been performed to obtain the projection for the agriculture sector instead of using results from an economic equilibrium model (SASM, Swedish Agricultural Sector Model). The emissions from the agriculture sector have had a decreasing trend since the beginning of the 1990s, because of a continuous decline in cattle population; this trend is assumed to continue at the same rate in the future. The projected decrease of the population of dairy cows for 2020 and 2030 is primarily a result of increased productivity, trends of product prices and the adaptation to EU agricultural policy regulations.

52. To prepare its projections, Sweden relied on the following key underlying assumptions: variables for the EU ETS price per tonne of CO₂, policy instruments and taxes, fossil fuel prices, biofuel and waste disposal prices, electricity prices, industry production levels, among others, 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.

53. During the review, Sweden informed the ERT that sensitivity analyses were conducted for the energy sector and agriculture sector. In the energy sector analysis, two sensitivity scenarios were calculated: one with higher prices for fossil fuels and one with higher economic growth, than in the reference scenario. In the scenario with higher prices, the prices for fossil fuels were set at 30 per cent higher than in the reference scenario. This resulted in lower emissions than in the reference scenario until 2035, and for 2020 and 2030, they were approximately 1 Mt CO₂ eq lower. The higher prices for fossil fuels also resulted in lower economic growth and in a decrease in the use of transport, although they determined an increase in the deployment of renewable energies and in the energy efficiency of industry. In the scenario with higher economic growth, the increase was set at 30 per cent higher than in the reference scenario. This resulted in higher emissions from

industry and transport, translated into an increase of 0.5 Mt CO₂ eq by 2020 and 0.7 Mt CO₂ eq by 2035. The main reason for the increased emissions is a higher energy demand due to higher production in the industry sector, as well as a higher demand for transportation for goods and people. Two sensitivity scenarios have also been calculated for the agricultural sector, where two parameters were changed: the product prices were raised by 10 per cent and lowered by 10 per cent for the year 2030, and the support to farmland was regionally differentiated. Compared to the baseline, the emissions were 4 per cent lower and 13 per cent higher, respectively, than the reference scenario.

54. Two sensitivity scenarios have also been calculated for the agricultural sector, where two parameters were changed: the product prices were raised by 10 per cent and lowered by 10 per cent for the year 2030, and the support to farmland was regionally differentiated. Compared to the baseline, the emissions were 4 per cent lower and 13 per cent higher, respectively, than the reference scenario.

Results of projections

55. Sweden's total GHG emissions excluding LULUCF in 2020 and 2030 are projected to be 55,344.98 and 51,686.69 kt CO₂ eq, respectively, under the WEM scenario, which represents a decrease of 23.0 and 28.0 per cent, respectively, below the 1990 level. Sweden's total GHG emissions under the ESD (non-ETS sectors) in 2020 and 2030 are projected to be 32,085 and 29,064 kt CO₂ eq, respectively, under the WEM scenario. The 2020 projections suggest that Sweden will continue contributing to the achievement of the EU target under the Convention (see para. 11 above).

56. Sweden's target for the emissions from sectors covered by the non-ETS sectors is to reduce its total emissions by 17 per cent below the 2005 level by 2020. According to the projections under the WEM scenario, emissions from non-ETS sectors are estimated to decrease from 34,149 kt CO₂ eq in 2015 to 32,085 kt CO₂ eq by 2020, well below the AEAs during the same period. The ERT noted that this suggests that Sweden expects to meet its target under the WEM scenario for the non-ETS sectors.

57. In addition to its target for non-ETS sectors, Sweden committed itself to achieving a domestic target of 40 per cent reduction in emissions below the 1990 level by 2020. This corresponds to a reduction to approximately 28,742 kt CO₂ eq by 2020. According to the *Report for Sweden on Assessment of Projected Progress*, two thirds of the reductions should be achieved by domestic measures and the other third could be achieved by using market-based mechanisms (see para. 18 above). The WEM projections for the ESD sectors (see para. 56 above) indicate that there is an approximate 3,350 kt CO₂ eq gap with the domestic target by 2020. The ERT noted that the 40 per cent domestic target is expected to be achieved through a combination of domestic measures and the use of market-based mechanisms as there are no additional measures planned by Sweden (see para. 22 above).

58. According to the projections reported by sector, the most significant GHG emission reductions under the WEM scenario from 1990 to 2020 will occur in the energy sector (6,649.27 kt CO₂ eq or 38.3 per cent), followed by the transport sector (3,409.68 kt CO₂ eq or 17.1 per cent), the industry/industrial processes sector (3,394.49 kt CO₂ eq or 17.6 per cent), the waste sector (2,666.38 kt CO₂ eq or 71.3 per cent) and the agriculture sector (1,546.13 kt CO₂ eq or 19.6 per cent). Conversely, GHG emissions from the other subsectors (including "Product use", "Other" and "Working machinery") are projected to increase by 1,174.09 kt CO₂ eq (33.2 per cent) above the 1990 level by 2020, due to increased energy consumption from working machinery. The pattern of projected emissions by sector reported for 2030 under the same scenario remains the same as that for 2020.

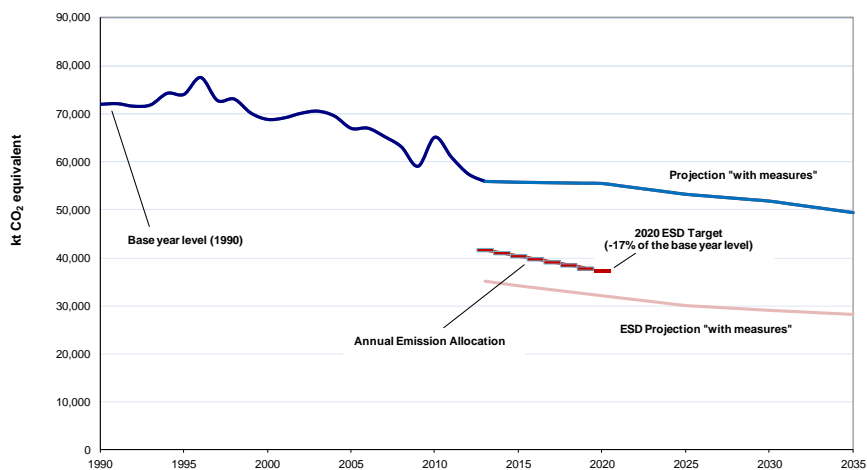
59. The ERT noted that GHG emissions from the energy sector generally decreased from 1990 to 2013 as a result of the PaMs implemented such as the energy tax, CO₂ tax and

electricity certificate system. However, emissions from the energy sector are projected to increase from 2013 to 2020 due to higher emissions from electricity and heat production and industrial combustion; after that, emissions will stabilize and then decrease after 2025. This decrease will occur as a result of higher use of electricity and biofuels in industry, especially in the paper and pulp industry. GHG emissions from road transport have generally decreased since 1990, and are projected to continue this trend until 2020 and beyond, due to the EU regulations that limit emissions from new cars and light-duty vehicles.

60. According to the projections reported 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 make up approximately 71.2 per cent of the aggregate GHG emission reductions below the 1990 level (11,743.15 kt CO₂ eq) by 2020, followed by CH₄ with 21.4 per cent (3,533.08 kt CO₂ eq) and N₂O with 7.9 per cent (1,309.00 kt CO₂ eq). The pattern of projected emissions by gas reported for 2030 under the same scenario remains the same as that for 2020. The ERT noted that CO₂ emissions without LULUCF are projected to increase by 954.52 kt CO₂ eq (approximate 2 per cent increase) above the 2013 level by 2020, and then to decrease by 2030 and beyond. This trend may be explained by a continuous increase of energy consumption, which is eventually offset by increased use of biomass and wind power, and decreased use of oil and coal, in addition to the effects of a newly enhanced target for renewable energy for the year 2020.

61. The projected emission levels under the WEM scenario for total GHG emissions, the AEAs for the ESD sectors and Sweden’s ESD emission projections are presented in the figure below.

Greenhouse gas emission projections by Sweden



Sources: (1) Data for the years 1990–2013: Sweden’s 2015 annual inventory submission, version 1; total GHG emissions excluding land use, land-use change and forestry; (2) Data for the years 2013–2030: Sweden’s second biennial report; total GHG emissions excluding land use, land-use change and forestry; (3) Data for the Swedish annual emission allocation under the ESD: Swedish Environmental Protection Agency. 2015. *Report for Sweden on Assessment of Projected Progress*.

Abbreviations: ESD = effort-sharing decision, GHG = greenhouse gas.

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

62. In its BR2, Sweden reported information on the provision of financial, technological and capacity-building support required under the Convention. The BR2 includes information on the national approach to tracking the provision of support, indicators, delivery mechanisms used and allocation channels tracked. Sweden reported a description of the methodology used to report financial support, including underlying assumptions.

63. Sweden provided details on what new and additional support it has provided and clarified how this support is new and additional (see para. 66. below). Further information on the Party's provision of support to developing country Parties is provided in annex 2 of the BR2 (underlying data for CTF tables 7 and 7(a)).

64. Sweden reported that its financial support addresses the needs of Parties not included in Annex I to the Convention (non-Annex I Parties) and provides funding for mitigation and adaptation activities, recognizing the capacity-building elements of such support. Sweden made reference in the BR2 to a website⁷ where extensive information on projects supported by the Swedish International Development Cooperation Agency (Sida) is reported.⁸

65. During the review, Sweden provided additional information, elaborating on lessons learned from regional and bilateral interventions on climate change, including through technology transfer and capacity-building. Information is contained in a Sida report⁹ that extensively discusses lessons learned as the need: to integrate projects into existing programmes; for donor harmonization; and for stakeholder ownership linked to capacity development, sustainability and flexibility across the implementation. Further, Sweden provided a reference to the website of the International Aid Transparency Initiative (IATI), an initiative of Sweden that allows free access to all information on aid, development and humanitarian resources, with the aim to increase the transparency and openness of aid. The ERT suggests that Sweden report on such lessons learned and add the reference to the IATI data set in its next biennial report.

66. Sweden explained how it determines how much of its support is new and additional. According to Sweden, the portion of official development assistance (ODA) that exceeds the international development aid goal of 0.7 per cent of gross national income (GNI) is considered new and additional. In 2013 and 2014, Sweden's ODA was equal to approximately 1 per cent of GNI; further, in 2015, the Swedish Government set aside SEK 250 million as climate financing beyond the 1 per cent of GNI. This was disbursed as part of the Swedish contribution to the Green Climate Fund.

67. Sweden included in its BR2 information on how it has refined its approach to tracking climate support and methodologies, including through the guidelines provided by the European Commission when collecting and reporting information. It provided information on the methodology that it adopted for tracking finance for adaptation and mitigation using the Rio markers. The methodology used for preparing information on international climate support for the BR2 is based on including as climate finance: 100 per cent of the funding for contributions with mitigation and/or adaptation as a 'primary objective', and only 40 per cent of the funding for contributions with mitigation and/or

⁷ <<http://www.openaid.se/aid/2015>>.

⁸ The database cannot be searched for the words: 'climate change', 'mitigation' or 'adaptation'.

⁹ *Final Report on the Swedish Government's Special Climate Change Initiative 2009–2012: Bilateral and Regional Interventions*. Available at <http://www.Sida.se/globalassets/global/about-Sida/vara-annesomraden/oversattning-dho63_6th-version_31jan14.pdf>.

adaptation as a 'significant objective'. The latter is a change from the BR1 where 50 per cent of the funding for contributions with mitigation and/or adaptation as a 'significant objective' was included.

1. Finance

68. In its BR2 and CTF tables 7, 7(a) and 7(b), Sweden reported information on the provision of financial support required under the Convention, including on financial support provided, committed and pledged, allocation channels and annual contributions (see para. 73 below). The summary information was reported for 2013 and 2014.

69. Sweden described how its resources address the adaptation and mitigation needs of non-Annex I Parties. It also described how those resources assist non-Annex I Parties to mitigate and adapt to the adverse effects of climate change and any economic and social consequences of response measures, and contribute to capacity-building and technology transfer related to mitigation and adaptation (see chapters II.D.2 and II.D.3 below). The Swedish policy on global development establishes that all activities supported have to be equitable and sustain global development, and be under the ownership of the recipient country and therefore aligned with existing national systems and processes of the recipient country. The effectiveness of planned activities is evaluated through an impact assessment including an appraisal of the risk of adverse effects on other countries; further, remedial measures are taken where needed.

70. Sweden provided information on the types of instrument used in the provision of its assistance (see para. 76 below). In addition, Sweden reported information on its private financial flows from bilateral sources directed towards mitigation and adaptation activities in non-Annex I Parties. It also reported information on PaMs that promote private investment in mitigation and adaptation activities in developing country Parties (see para. 77 below).

71. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, Sweden reported that its climate finance has been allocated on the basis of multilateral mechanisms, such as the Global Environmental Facility, the Green Climate Fund, the UNFCCC Trust Fund, the Least Developed Countries Fund, the Adaptation Fund, the Climate Investment Funds and the Nordic Development Fund, as well as bilateral ODA projects through Sida. The private sector is engaged through the following channels: Public Private Development Partnerships; Challenge Funds, such as the Innovation Against Poverty challenge fund aimed at reducing the risks of investors; Swedfund, which seeks to establish sustainable and profitable companies in developing countries that contribute to poverty reduction and are environmentally, socially and climate smart; and Swedpartnership, which provides financial support for investments in knowledge transfer and equipment for new businesses established in developing countries. Sweden also reported that its aid policy framework is under revision and the new policy framework, which will be ready by 2016.

72. Important sectors for mitigation include energy and multisector initiatives, and most of the support goes to government and civil society organizations. Most adaptation contributions are dedicated to environmental protection, and go to government and civil society organizations for improving natural resource management and building capacity. There are also emergency response initiatives such as for water supply and sanitation in case of flooding or extreme droughts. Many contributions create synergies and may benefit both mitigation and adaptation, such as all projects in the agriculture sector.

73. Sweden reported on its climate-specific public financial support provided in 2013 and 2014, totalling USD 341.35 million in 2013 and USD 303.18 million in 2014. With regard to the future financial pledges aimed at enhancing the implementation of the

Convention by developing countries, Sweden committed itself to providing an additional USD 580 million to the Green Climate Fund by 2018 and USD 195 million to the Global Environment Fund by 2024, which would make Sweden the largest per capita donor for these funds. Although the amount of finance for mitigation provided in 2014 decreased by 42.9 per cent below that for 2013, the amount of total finance committed in 2014 was 38.6 per cent higher than that in 2013. Sweden has clarified that the inconsistency in trends of finance provided for mitigation has been due to: a major repayment from the International Finance Corporation (IFC) of the World Bank to Sida because, in a trust fund for supporting sustainable energy, Sida and IFC did not reach agreement on how payouts should be regulated; and delays in support for sustainable energy in the United Republic of Tanzania because of limited capacity in conducting procurements. During the reporting period, Sweden placed a particular focus on Mozambique, Kenya, United Republic of Tanzania, Zambia and Mali.

74. The BR2 includes detailed information on the financial support provided through multilateral channels, and bilateral and regional channels in 2013 and 2014. More specifically, Sweden contributed, through multilateral channels, as reported in its BR2 and in CTF table 7(a), USD 71 and 20 million for 2013 and 2014, respectively. These contributions were made to specialized multilateral climate change funds, such as the Global Environment Facility, the Least Developed Countries Fund, the Special Climate Change Fund, the Adaptation Fund, the Green Climate Fund, the Nordic Development Fund and the UNFCCC Trust Fund for Participation. The BR2 and CTF table 7(b) also include detailed information on the total financial support provided through bilateral and regional channels (USD 271 and 284 million), that is, through Sida, in 2013 and 2014. Table 5 includes some of the information reported by Sweden on its provision of financial support.

Table 5

Summary of information on provision of financial support in 2013–2014 by Sweden
(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Years of disbursement</i>	
	<i>2013</i>	<i>2014</i>
Official development assistance ^a	4 497.02	5 424.07
Climate-specific contributions through multilateral channels, including:	70.63	19.61
Global Environment Facility	6.91	5.64
Least Developed Countries Fund	17.66	2.19
Adaptation Fund	15.35	–
Green Climate Fund	0.77	1.46
Trust Fund for Supplementary Activities	0.23	0.22
Other	29.72	10.11
Financial institutions, including regional development banks:	508.8	430.95
World Bank	335.77	322.09
African Development Bank	133.17	88.88
Asian Development Bank	25.04	18.19
Inter-American Development Bank	1.24	1.79
Other	13.58	–
United Nations bodies	91.1	101.41

<i>Allocation channel of public financial support</i>	<i>Years of disbursement</i>	
	<i>2013</i>	<i>2014</i>
Climate-specific contributions through bilateral, regional and other channels	270.71	283.56

^a *Source:* Query Wizard for International Development Statistics, available at <<http://stats.oecd.org/qwids/>>.

75. The BR2 provides information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7 for 2013, the shares of total public financial support allocated for mitigation, adaptation and cross-cutting projects corresponding to these channels were 20.8, 32.6 and 46.6 per cent, respectively. 20.7 per cent of the total public financial support was allocated through multilateral channels and 79.3 per cent of it was through bilateral, regional and other channels. In 2014, the shares of total public financial support allocated for mitigation, adaptation and cross-cutting projects corresponding to these channels were 13.3, 34.0 and 52.7 per cent, respectively. 6.5 per cent of the total public financial support was allocated through multilateral channels and 93.5 per cent of it was through bilateral, regional and other channels.

76. The ERT noted that, in 2013, 3.3 per cent of financial contributions made through multilateral channels was allocated to energy and the remaining 96.7 per cent to funding for activities that are cross-sectoral and cross-cutting across mitigation and adaptation, as reported in CTF table 7(a). The corresponding value for 2014 was 100 per cent cross-sectoral and cross-cutting across mitigation and adaptation. The ERT notes that reporting disaggregated information on the sectors (in CTF tables 7(a) and 7(b)) to which funds for mitigation are allocated will increase the transparency of the report.

77. CTF tables 7(a) and 7(b) include information on the types of financial instrument used in the provision of assistance to developing countries, which include grants only. The ERT noted that in the BR2, loans and guarantees to reduce risk credits have also been listed as instruments to support the mobilization of private climate finance.

78. In its BR2, Sweden reported that private finance is related mainly to establishing businesses associated with exports of household products, technologies and services in waste management, recycling, bioenergy and agriculture, solar power, wind power and energy efficiency. It also reported on how it promotes the provision of financial support to developing countries from the private sector through public funds. Sweden views this as being pivotal to effectively increasing both mitigation and adaptation efforts in developing countries by the Sida guarantee facility designed to overcome market failures by helping lenders deal with these risks through insuring eligible projects against losses related to any market risks. If the borrower fails to repay its bank loans, Sida covers part of the loss. Sida guarantees are based on a set of simple core principles and conditions: additionality, risk-sharing, risk reflecting premiums charged and ensuring that the guarantee is non-distortionary of market conditions. This leveraging is calculated for each project, following the Development Assistance Committee methodology of the Organisation for Economic Co-operation and Development.

79. Sweden highlighted its success stories (see table 5.3 of the BR2) in reporting on private financial flows leveraged by bilateral climate finance for mitigation and adaptation activities in non-Annex I Parties owing to the established practice of reporting by Sida on private funding. According to the information reported, for each USD 1 of investment guaranteed by Sida, USD 2 is mobilized by the project. This has led to a leverage effect of 100 per cent.

2. Technology development and transfer

80. In its BR2 and CTF table 8, Sweden provided information on measures and activities related to technology transfer, access and deployment benefiting developing countries, including information on activities undertaken by the public and private sectors. Sweden provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties (see para. 81 below).

81. The ERT noted that, in its BR2, including CTF table 8, Sweden reported on its measures or activities, as well as success and failure stories in relation to technology transfer, and in particular on measures taken to promote, facilitate and finance the transfer and deployment of climate-friendly technologies. In its BR2, Sweden provided information on measures taken to support the development and enhancement of the endogenous capacities and technologies of non-Annex I Parties. These include, for instance: support in India to Nuru Energy for manufacturing and distributing affordable, clean, safe and sustainable lighting and energy solutions to rural households; the promotion of sustainable urban development through the Symbiocity Approach in Kenya based on exchange of experience, expertise and technology between Swedish and Kenyan partners; and the collaboration between Krinova Science Park and Lund University to initiate a Clean Tech Centre of Expertise within the Botswana Innovation Hub, with the aim to develop environmental sustainable business, including climate smart technologies, with support from academic institutions.

3. Capacity-building

82. In its BR2 and CTF table 9, Sweden supplied information on how it provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. Sweden described individual measures and activities related to capacity-building support in textual and tabular formats.

83. Sweden reported that it supported climate-related capacity development activities relating to adaptation and mitigation. Sweden also reported that it responded to the existing and emerging capacity-building needs of non-Annex I Parties by following the principles of national ownership, stakeholder participation, cooperation between donors and across programmes, and impact assessment and monitoring. Sida research cooperation promotes development-oriented research and aims to strengthen the research capacity of partner countries, including by supporting the establishment of enabling research environments within the countries. Sweden promotes capacity-building by supporting local partners and combining studies locally and abroad for key groups such as civil servants, researchers and students; this approach has proved successful in enabling participants to remain in their home countries after completing their education, and preventing capacity loss through 'brain drain'.

84. The BR2 and CTF table 9 include information describing a number of individual capacity-building measures and activities carried out during the reporting period. Examples include: capacity development for the Rural Energy Agency and Rural Energy Fund, Ministry of Energy of the United Republic of Tanzania, to promote and facilitate improved access to modern, sustainable energy services in rural areas; establishment of the African Risk Capacity, a specialized agency of the African Union, for assisting member States to improve their capacities to better plan, prepare and respond to extreme weather events and natural disasters, to protect food security; and participation in the European Capacity Building Initiative to build and sustain the negotiating capacity of, and trust between, developing and developed country climate change negotiators, in support of the UNFCCC negotiations.

III. Conclusions

85. The ERT conducted a technical review of the information reported in the BR2 and CTF tables of Sweden 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 Sweden in achieving its target; and the Party's provision of support to developing country Parties.

86. Sweden's total GHG emissions excluding LULUCF related to its quantified economy-wide emission reduction target were estimated to be 22.4 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 54.0 per cent below its 1990 level for 2013. The emission decrease was driven by the relatively high use of hydropower and nuclear power and low use of fossil fuels, as well as the use of the energy tax, the CO₂ tax, the EU ETS and other mitigation PaMs.

87. Under the Convention, Sweden 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 (except for LULUCF) and the gases CO₂, CH₄, N₂O, HFCs, PFCs and SF₆, expressed using GWP values from the AR4. The EU does not plan to make use of market-based mechanisms to achieve the target, although companies can make use of such mechanisms to fulfil their commitments under the EU ETS.

88. Under the ESD, Sweden has a target to reduce its emissions by 17 per cent (below the 2005 level) by 2020. In absolute terms, this means that Sweden has to reduce emissions from the non-ETS sectors to 37,204 kt CO₂ eq by 2020. In addition, Sweden committed itself to achieving a domestic target of a 40 per cent reduction in emissions below the 1990 level by 2020.

89. Sweden's key legislation supporting Sweden's climate change goals is the Integrated Climate and Energy Policy. The mitigation actions with the most significant expected mitigation impact in 2020 include the energy tax, the CO₂ tax, the electricity certificate system and the EU ETS.

90. For 2013, Sweden reported in CTF table 4 total GHG emissions excluding LULUCF at 55,774.13 kt CO₂ eq. Sweden reported that units from the market-based mechanisms have not been used, up to now, to achieve its target.

91. The GHG emission projections provided by Sweden in its BR2 include those for the WEM scenario. Under this scenario, emissions are projected to be 23.0 per cent below the 1990 level in 2020. Sweden's total GHG emissions under the ESD under the WEM scenario are projected to decrease from 34,149 kt CO₂ eq in 2015 to 32,085 kt CO₂ eq by 2020, well below the AEAs during the same period. These suggest that Sweden is contributing to the progress towards the EU target as well as its target for non-ETS sectors by 2020. Further, the WEM projections indicate that Sweden expects to achieve its domestic target of 40 per cent reduction in emissions below the 1990 level by 2020 through a combination of domestic measures and the use of market-based mechanisms.

92. Sweden continues to allocate climate financing in line with the climate finance programmes such as the Global Environmental Facility, the Green Climate Fund, the UNFCCC Trust Fund, the Least Developed Countries Fund, the Adaptation Fund, the Climate Investment Funds and the Nordic Development Fund, as well as bilaterally through its cooperation agency (Sida) and with the involvement of the private sector, especially through Swedfund and Swedpartnership. Sweden's public financial support in 2013 and

2014 totalled USD 341.35 and 303.18 million per year, respectively. For these years, Sweden's support provided for mitigation actions was lower than support provided for adaptation.¹⁰ Support on technology transfer has focused on the development of endogenous capacities in developing countries such as the Clean Tech Centre of Expertise within the Botswana Innovation Hub. Sweden provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by the recipient country.

93. In the course of the review, the ERT formulated the following recommendations for Sweden to improve its adherence to the UNFCCC reporting guidelines on BRs in its next biennial report:¹¹

- (a) Improve the completeness of its reporting by:
 - (i) Providing information on planned PaMs (see para. 22 above);
 - (ii) Providing, to the extent possible, emissions from international bunkers in CTF table 6(a) (see para. 46 above);
- (b) Improve the transparency of its reporting by:
 - (i) Providing explanations for any missing estimates of the mitigation impacts of each individual PaM in CTF table 3 (see para. 24 above);
 - (ii) Reporting the correct data for "Product use and other" and "Working machinery" in its next BR2 and CTF table 6 (see para. 45 above).

¹⁰ See table 5.2 in the BR2.

¹¹ 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/SWE. Report on the individual review of the annual submission of Sweden submitted in 2014. Available at <<http://unfccc.int/resource/docs/2015/arr/swe.pdf>>.

FCCC/IDR.6/SWE. Report of the technical review of the sixth national communication of Sweden. Available at <<http://unfccc.int/resource/docs/2014/idr/swe06.pdf>>.

FCCC/TRR.1/SWE. Report of the technical review of the first biennial report of Sweden. Available at <<http://unfccc.int/resource/docs/2014/trr/swe01.pdf>>.

2015 greenhouse gas inventory submission of Sweden. Available at <http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8812.php>.

Sixth national communication of Sweden. Available at

<http://unfccc.int/files/national_reports/annex_i_natcom/submitted_natcom/application/pdf/swe_nc6_resubmission.pdf>.

First biennial report of Sweden. Available at

<http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/se_br1_resubmission.pdf>.

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

<http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/swe_2014_v2.0.pdf>.

Second biennial report of Sweden. Available at

<http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/sweden_br2.pdf>.

Common tabular format tables of the second biennial report of Sweden. Available at

<http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/swe_2016_v1.0_formatted.pdf>.

2015 Reporting of Sweden pursuant to Article 23 of Commission implementing Regulation (EU) No. 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. Available at <http://cdr.eionet.europa.eu/se/eu/mmr/art04-13-14_lcds_pams_projections/envvtenwq/>.

B. Additional information used during the review

Responses to questions during the review were received from Ms. Maja Cederlund (Swedish Environmental Protection Agency), including additional material and the following documents¹ provided by Sweden:

Swedish Environmental Protection Agency. 2015. *Report for Sweden on Assessment of Projected Progress*. Available at <<https://www.naturvardsverket.se/upload/miljoarbete-i-samhallet/uppdelat-efter-omrade/klimat/prognoser-for-Sveriges-utslapp/report-sweden-assessment-projected-progress-2015.pdf>>.

¹ Reproduced as received from the Party.