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

Developed country Parties are requested, in accordance with decision 2/CP.17, to submit their first biennial report to the secretariat by 1 January 2014. This report presents the results of the technical review of the first 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. For Sweden, the Convention entered into force on 23 June 1993 and the Kyoto Protocol on 16 February 2005. Under the Convention, Sweden will as part of the European Union (EU) take on a quantified economy-wide emission reduction target jointly with all EU member States to reduce its greenhouse gas (GHG) emissions by 2020. The EU and its member States have communicated an independent quantified economy-wide emission reduction target of a 20 per cent emission reduction by 2020 compared with 1990 levels.¹
2. Under the EU climate and energy package, this target will be met by the EU and its member States through a 21 per cent reduction, from the 2005 level, in GHG emissions from installations under the European Union Emissions Trading System (EU ETS) and a 10 per cent reduction, compared with 2005, in GHG emissions in non-ETS² sectors (primarily transport, some industrial processes, agriculture and waste). According to the decision on EU effort sharing for the non-ETS target, Sweden is to reduce its GHG emissions outside the EU ETS by 17 per cent, from the 2005 level, by 2020.
3. Sweden has set an ambitious domestic target to reduce its emissions not covered by the EU ETS by 40 per cent, or around 20,000 kilotonnes of carbon dioxide equivalent (kt CO₂ eq), by 2020, compared with 1990 levels.
4. This report covers the in-country technical review of the first biennial report (BR1)³ of Sweden, coordinated 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” (decision 23/CP.19).
5. The review took place from 7 to 12 April 2014 in Stockholm, Sweden, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: Ms. Tuğba İçmeli (Turkey), Mr. Mahendra Kumar (Fiji), Ms. Tahira Munir (Pakistan) and Mr. Erik Rasmussen (Denmark). Mr. Kumar and Mr. Rasmussen were the lead reviewers. The review was coordinated by Mr. Bernd Hackmann (secretariat).
6. During the review, the expert review team (ERT) reviewed each section of the BR1.
7. In accordance with decision 23/CP.19, 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.

B. Summary

8. The ERT conducted a technical review of the information reported in the BR1 of Sweden according to the “UNFCCC biennial reporting guidelines for developed country Parties” (hereinafter referred to as the UNFCCC reporting guidelines on BRs).
9. During the review, Sweden provided further relevant information on its inventories, targets, clarifications on progress made towards the targets and financial resources and technology transfer to developing country Parties.

¹ FCCC/SB/2011/INF.1/Rev.1 and FCCC/AWGLCA/2012/MISC.1.

² ETS = emissions trading system.

³ The biennial report submission comprises the text of the report and the common tabular format (CTF) tables. Both the text and the CTF tables have been subject to the technical review.

1. Completeness and transparency of reporting

10. Gaps and issues related to the reported information identified by the ERT are presented in table 1 below.

2. Timeliness

11. The BR1 was submitted on 20 December 2013, before the deadline of 1 January 2014 mandated by decision 2/CP.17. The common tabular format (CTF) tables were submitted on 20 December 2013. During the review, Sweden informed the ERT about a planned resubmission of the BR1 and the CTF tables due to corrections of minor errors and the inclusion of additional non-mandatory information. Sweden submitted a revised version of its BR1 on 23 April 2014, within two weeks of the review, in accordance with the UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention. The ERT took note of this resubmission and the provided information. However, the ERT encourages Sweden to improve the completeness of its reporting by performing, before submitting its next biennial report (BR) and CTF tables, sufficient quality control steps in advance of the submission deadline in accordance with decision 23/CP.19, paragraph 65.

3. Adherence to the reporting guidelines

12. The information reported by Sweden in its BR1 is mostly in adherence to the UNFCCC reporting guidelines on BRs as per decision 2/CP.17 (see table 1).

Table 1

Summary of completeness and transparency issues of reported information in the first biennial report of Sweden^a

<i>Sections of the biennial report</i>	<i>Completeness</i>	<i>Transparency</i>	<i>Reference to paragraphs</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	31, 40
Projections	Complete	Transparent	
Provision of support to developing country Parties	Mostly complete	Mostly transparent	54, 67, 69

^a A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in the chapter on conclusions.

II. Technical review of the reported information

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

13. Sweden has provided a summary of information on GHG emission trends for the period 1990–2011 in its BR1 and CTF table 1. This information is mostly consistent with the 2013 national GHG inventory submission with a few inconsistencies that is using the same numbers while rounding off the figures. Thus, the ERT encourages Sweden to improve the transparency of its reporting by ensuring consistency between common reporting format tables, national inventory report and BR1 GHG inventory data.

14. Total GHG emissions⁴ excluding emissions and removals from land use, land-use change and forestry (LULUCF) decreased by 15.5 per cent between 1990 and 2011, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 26.3 per cent over the same period. The decrease in total GHG emissions between 1990 and 2011 was mainly attributable to the decrease in carbon dioxide (CO₂) emissions by 14.5 per cent, the decrease in methane (CH₄) emissions by 28.2 per cent and the decrease in nitrous oxide (N₂O) emissions by 20.2 per cent.

15. In its BR1, Sweden reported that in 2011 the largest sources of emissions were domestic transport (32.5 per cent), energy industries (17.4 per cent), manufacturing industries (15.5 per cent), agriculture (12.6 per cent) and industrial processes (10.8 per cent).

16. Sweden provided complete, transparent and detailed information on its national inventory arrangements for preparing GHG inventories and on the changes made to these arrangements since its last national communication. Further information on the national inventory arrangements are contained in the national inventory report of the 2013 inventory submission from Sweden.

17. Further information on the review of emission and emission trends is provided in chapter II.A of the report of the technical review of the sixth national communication (IDR/NC6).

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

18. In its BR1 and CTF table 2, Sweden reported a description of its target, including associated conditions and assumptions. Under the Convention, Sweden will as a member State of the EU take on a quantified economy-wide emission reduction target jointly with the remaining EU member States to reduce its GHG emissions by 2020. The EU and its member States have communicated an independent quantified economy-wide emission reduction target of a 20 per cent reduction by 2020 compared with 1990 levels. The joint EU target is implemented through binding legislation in place since 2009 (climate and energy package), including the EU ETS and the effort-sharing decision.

19. Under the EU climate and energy package, this target will be met by the EU and its member States through a 21 per cent reduction from 2005 in GHG emissions from installations under the EU ETS and a 10 per cent reduction in GHG emissions from 2005 in the non-ETS sectors (primarily transport, some industrial processes, agriculture and waste). According to the EU burden sharing of the non-ETS target, Sweden is to reduce its GHG emissions outside the EU ETS by 17 per cent between 2005 and 2020.

20. In its BR1, Sweden described the joint EU target and how it defines 1990 as base year for CO₂, methane and nitrous oxide, and 1995 for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. Furthermore, it sets the period for achieving the target for 2013–2020. It covers the energy sector, including transport, the industrial processes sector, including solvent and other product use sectors; agriculture and waste; and the aviation sector. For all included gases the global warming potential from the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report are used. With regard to the role of LULUCF, the EU pledge under the Convention does not include emissions/removals from land use, land-use change and forestry, while the national

⁴ 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.

commitment under the second commitment period of the Kyoto Protocol includes the LULUCF sector according to 2/CMP.7, 1/CMP.8 and 2/CMP.8.

21. As referred to in the Doha Amendment, the European Union reiterated its conditional offer, as part of a global and comprehensive agreement for the period beyond 2012, to move to a 30 per cent reduction by 2020 compared to 1990 levels, provided that other developed countries commit themselves to comparable emission reductions and developing countries contribute adequately according to their responsibilities and respective capabilities.

22. Sweden has reported in its NC6 that it plans to achieve its national target for the non-EU ETS sector using additional policies and measures (PaMs) as well as climate investment in other countries (e.g. carbon credits obtained from the Kyoto Protocol mechanisms).

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

23. In its BR1 and CTF tables 3 and 4, Sweden has reported information on its mitigation actions implemented and planned since its fifth national communication (NC5) to contribute to the achievement of the joint EU quantified economy-wide 20 per cent emission reduction target compared with 1990. Sweden has also reported on the use of units from market-based mechanisms and LULUCF to achieve its targets. The information in the text of the BR1 on the LULUCF sector and the use of units from market-based mechanisms is consistent with the information provided in the CTF tables.

24. The BR1 does include in the CTF tables some information on progress with units from LULUCF activities under Articles 3, paragraphs 3 and 4, of the Kyoto Protocol and some information on progress with units from market-based mechanisms under Articles 6 and 12 of the Kyoto Protocol. However, as explained by Sweden in its BR1, the data reported on progress with LULUCF and Kyoto Protocol mechanisms in 2008–2011 and 2011–2012, respectively, in the CTF tables relate to the first commitment period of the Kyoto Protocol (2008–2012).

25. To improve transparency, the ERT encourages Sweden to include, in its next reporting of the BR, appropriate notes to the tables on progress in the CTF (tables 4, 4a(II) and 4(b)) explaining how the reported information can or cannot be used to assess progress made in Sweden's contribution to the achievement of the joint EU quantified economy-wide emission reduction target for 2020.

26. The ERT reviewed the reported information and provided its assessment of progress made towards achieving the target. The ERT noted significant progress made by Sweden in reducing its GHG emissions from 1990 to the first commitment period of the Kyoto Protocol, as this can be seen as a stepping stone for further reductions in the period until 2020, where Sweden will contribute to the achievement of the joint EU quantified economy-wide emission reduction target for 2020, particularly in the sectors not covered by the EU ETS.

27. Sweden's projections estimate 59,200 kt CO₂ eq as its 2020 emissions, which is a 18.6 per cent reduction from the 1990 level. These projection estimates suggest that Sweden will continue contributing to EU-wide emission reductions and to the achievement of the EU target under the Convention.

28. According to Sweden's 'with measures' projection for 2013–2020, its GHG emissions in the non-ETS sectors are expected to be below the emission target trajectory established under EU legislation as Sweden's contribution to the achievement of the joint

EU target under the Convention. Sweden's non-EU ETS emissions are projected to reach 35,400 kt CO₂ eq in 2020, corresponding to around 22.0 per cent reduction from the 2005 level. The ERT noted that this suggests that Sweden is expected to meet, and possibly exceed its target for 2020 by approximately 1,000 kt CO₂ eq, under the 'with measures' scenario.

29. However, to achieve the more ambitious domestic target, which is a 40 per cent reduction in GHG emissions in the non-ETS sectors from 1990 to 2020, will be a challenge as the 'with measures' scenario projection only shows a reduction of 28 per cent by 2020. During the review, Sweden provided additional information, elaborating on its plan to use 6.7 million credits from Sweden's joint implementation (JI)/clean development mechanism (CDM) activities towards meeting its domestic target in 2020. The ERT welcomed this information and noted that additional information on Sweden's domestic target would contribute to the transparency of its reporting.

1. Mitigation actions and their effects

30. Sweden has provided in its BR1 comprehensive and well-organized information on its package of mitigation actions introduced to achieve its target. The BR1 provided information on mitigation actions organized by sector and to some extent by gas in the sense that the chapters on sectors contain information about which gases are affected by the mitigation actions described. However, a clear subdivision by gases is not provided.

31. The ERT recommends that Sweden improve the transparency of its reporting by providing, in its next biennial report, information on mitigation actions with a clear subdivision by gas for each sector. A detailed review of the reported information is provided in chapter II.B of the IDR/NC6. The information on existing and planned PaMs is consistent with the information provided in the NC6 except for the additional information in relation to Article 3, paragraphs 3 and 4, of the Kyoto Protocol and the exclusion of information reported under Article 2 of the Kyoto Protocol contained in the NC6.

32. In Sweden, environmental and climate change related policies have a long track record and have been developed progressively since the 1980s. It was among the first countries to introduce energy and carbon taxes in the early 1990s. Climate policies have shifted in recent years towards stronger EU integration and closer international cooperation. In CTF table 3, information on existing PaMs is provided. This information is consistent with the overview information of Sweden's portfolio of PaMs provided in its NC6.

33. The ERT noted that the success of Sweden's climate policy since the 1990s has been largely based on fuel switching from fossil fuels to biomass based energy for district heating. This was largely influenced by the energy and carbon taxes in the 1990s, the green electricity certificate system introduced in 2003 and the continued use of nuclear power. While most of the biofuels used for district heating can be covered by domestic biomass, the biofuels used in the transport sector have to be largely and increasingly imported.

34. Sweden's key cross-cutting policies and policy instruments are in the core of its policy portfolio, driving successful emission reductions across all sectors, encompassing the EU ETS, energy and carbon taxes, and support provided for research and development. The ERT noted that the economic policy instruments complement one another and are supported by energy-related research aiming to strengthen those synergies.

35. In its NC6, Sweden reported that the EU ETS covers around 33 per cent of Sweden's total GHG emissions, with around 80 per cent of these emissions coming from industrial installations. An energy tax is levied on fossil fuels. In 2013 the energy tax on natural gas, coal and fuel oil was equivalent to 0.82 Swedish kronor (SEK) per kilowatt-

hour. The energy tax on petrol (environmental class 1) amounted to SEK 0.346/kWh and that on diesel (environmental class 1) to SEK 0.177/kWh. The carbon dioxide tax, introduced in 1991, has been raised in stages, since its introduction, to SEK 1.08/kg CO₂ in 2012.

36. The effect of these key measures has been complemented by the effect of a number of other measures, such as the green electricity certificate system that promotes the use of renewables, the improvement of energy efficiency in energy-intensive industry and in the building sector, and legislation such as the ban on the landfilling of household organic waste. The 2009 climate and energy bill titled “An Integrated Climate and Energy Policy” sets ambitious climate and energy targets for the period ending in 2020. Furthermore, it specifies the long-term vision that, in 2050, Sweden will release zero net emissions into the atmosphere. To achieve this long-term target, the Government of Sweden has adopted a programme to further tighten its policy instruments. New PaMs may also have to be put in place to achieve this ambitious long-term goal. An in-depth evaluation of progress towards the ambitious domestic 2020 target will be undertaken by the Government in 2015.

37. The BR1 contains estimates of the effects of some of the PaMs or collections of PaMs expected to contribute to GHG emission reductions in Sweden and to help the country achieve its international and domestic targets. For energy-related emissions in particular, the impact assessment is based on the prevalent economic instruments – the energy and carbon taxes. This impact is aggregated for the following sectors: heat (from district heating) and electricity production; transport; the residential and services sector; and energy combustion in the industrial sector. The assessment of the impact of PaMs in the waste sector is based on the reduction in CH₄ emissions due to the landfill ban.

38. The ERT encourages Sweden to continue its assessments of PaMs and to expand its efforts by assessing and reporting the effects of existing PaMs, such as on legislation, as well as the effects of planned PaMs and of potential additional PaMs, in its next national communication.

39. Table 2 provides a concise summary of the key mitigation actions implemented by Sweden to achieve its target.

Table 2

Summary of information on policies and measures reported by Sweden

<i>Sectors affected</i>	<i>List of key policies and measures</i>	<i>Estimate of mitigation impact (kt CO₂ eq)</i>
<i>Policy framework and cross-sectoral measures</i>	EU ETS ^a	NE
	Environmental Code	NE
	New Planning and Building Act	NE
	Research and development	NE
<i>Energy</i>		
Production of electricity and district heating, including energy supply, renewable energy and energy efficiency	Economic measures, including energy tax, carbon dioxide tax, electricity certificates system and EU ETS ^a	16 000 ^b
	Special support for wind power	NE
	Central government support for installation of solar cells	NE
Residential and commercial /institutional sectors	Energy tax, carbon dioxide tax, building regulations – energy efficiency standards, energy performance certificates, ecodesign directive and mandatory energy labelling	NE ^b
	Technology procurement	NE

<i>Sectors affected</i>	<i>List of key policies and measures</i>	<i>Estimate of mitigation impact (kt CO₂ eq)</i>
	Support for solar heating	NE
Transport	Vehicle fuel taxes (energy and carbon dioxide taxes)	2 000
	Targeted instruments to promote introduction of renewable transport fuels	NE ^b
	CO ₂ -based annual vehicle tax	NE
	CO ₂ standards for new vehicles ^a	NE
	Tax relief on transport biofuels/quota obligation	NE
	Incentives for green vehicles	NE
Industrial sectors (Industrial emissions from fuel combustion and processes (including emissions of fluorinated GHGs))	Economic measures, including energy tax, carbon dioxide tax, electricity certificates system and EU ETS ^a	NE ^b
	Reduced carbon dioxide tax relief for industry outside the EU ETS, and energy tax on fossil fuels for heating in industry	400
	F-gas regulation and mobile air conditioning directive ^a	700
	Programme for Energy Efficiency in Energy-Intensive Industry	NE
	Environmental Code	NE
Agriculture	Targeted agri-environment payments under the Rural Development Programme ^a	NE ^b
	Energy and carbon dioxide taxes	NE
	Support for biogas	NE
Forestry/LULUCF	Provisions of the Forestry Act on forest management, etc.	NE
	Provisions of the Environmental Code on land drainage	NE
	Provisions on nature reserves and habitat protection areas in the Environmental Code, and nature conservation agreements	NE
Waste management	Rules on municipal waste planning and on producer responsibility for certain products, landfill tax (2000), bans on landfill of separated combustible waste (2002) and of organic waste (2005) ^a	NE ^b
	Methane recovery	NE
	Recycling	NE

Note: The greenhouse gas reduction estimates given for some measures (in parentheses) are reductions in CO₂ or CO₂ eq for 2020.

Abbreviations: EU ETS = European Union Emissions Trading System, F-gas = fluorinated gas, GHGs = greenhouse gases, LULUCF = land use, land-use change and forestry, NE = not estimated.

^a EU instrument.

^b The greenhouse gas reduction estimates given are the estimates reported in Sweden's first biennial report (either in the text or in the common tabular format table 3). Further estimates have been reported in Sweden's sixth national communication.

40. In its BR1, Sweden did not provide 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 towards its target. During the review, Sweden provided additional information on its relevant domestic institutional arrangements. The ERT recommends that Sweden provide information on any changes in this regard – or state that there has been no change – in its next biennial report.

41. Sweden did not provide information on the assessment of the economic and social consequences of response measures in its BR1. The ERT encourages Sweden to provide this information in its next biennial report.

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

42. Sweden has reported in its BR1 and CTF table 4 information on the use of market-based mechanisms under the Convention and on the contribution from LULUCF to achieve its target under the Convention. Under the Convention, the EU and its member States made a commitment to reduce their GHG emissions jointly by 20 per cent by 2020 compared with 1990 levels. The EU target does not include emissions and removals from LULUCF. The EU target generally allows member States to use certified emission reductions and emission reduction units from the Kyoto Protocol mechanisms, as well as units from 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.

43. Table 3 illustrates how Sweden reported on the use of units from market-based mechanisms and LULUCF to achieve its target.

44. Sweden reported in its BR1 that carbon credits from international markets can generally be used for compliance purposes under the EU quantified economy-wide emission reduction target. However, Sweden reported in CTF table 2(e)I 0.00 (zero) kt CO₂ eq as the possible scale of contributions from market-based mechanisms under the Convention. Sweden further reported in its BR1 and CTF table 4 on its plans to only use units from market-based mechanisms under the Kyoto Protocol towards its domestic non-ETS target for 2020 (see para. 29 above).

45. In the textual part of its BR1, Sweden has explained that the numbers reported in CTF table 4(b), and therefore also CTF table 4, are surrendered units for the EU ETS for 2011 and 2012, to be counted towards the achievement of Sweden's Kyoto Protocol target for the first commitment period, and that final data on the use of flexible mechanisms and LULUCF have not been available for the BR1. The ERT noted that the numbers reported by Sweden in CTF tables 4 and 4(b) relate to the years 2010 and 2011 and not, as reported, to the years 2011 and 2012. The ERT, therefore, encourages Sweden in its next submission of CTF tables to provide the correct numbers for the reported years (see also the encouragement in para. 11 above).

46. The ERT also noted that Sweden has included in the reported data on use of units from market-based mechanisms in CTF tables 4 and 4(b) all the units surrendered by installations in Sweden under the EU ETS, including assigned amount units (AAUs) issued by Sweden (i.e. not only AAUs acquired through the use of the international emissions trading flexible mechanisms under Article 17 of the Kyoto Protocol). The ERT also notes, that it is not clear from footnote d in CTF table 4(b) if all surrendered AAUs should be reported or only the AAUs acquired under Article 17 of the Kyoto Protocol. However, the clarity of the information reported could be improved by adding a footnote to this table explaining how the data reported are contributing to progress. The ERT, therefore, encourages Sweden in its next submission of CTF tables to provide a footnote explaining

how the data reported in table 4(b) are contributing to progress towards the achievement of the quantified economy-wide emission reduction target.

Table 3

Summary 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 towards achievement of the target by Sweden

<i>Year</i>	<i>Emissions excluding LULUCF (kt CO₂ eq)</i>	<i>LULUCF emissions/removals (kt CO₂ eq)^a</i>	<i>Emissions including LULUCF (kt CO₂ eq)^a</i>	<i>Use of credits from the international carbon market</i>
Base year	72 750.39	NA	NA	
2010	65 551.42	NA	NA	22 637 902 ^b
2011	61 447.45	NA	NA	20 207 834 ^b

Abbreviation: LULUCF = land use, land-use change and forestry.

^a The EU unconditional commitment to reduce GHG emissions by 20 per cent by 2020 compared with 1990 does not include emissions/removals from LULUCF.

^b As explained by Sweden during the review the numbers reported in common tabular format (CTF) table 4(b), and therefore also CTF table 4, are surrendered units for the European Union Emissions Trading System for 2011 and 2012, to be counted towards the achievement of Sweden's Kyoto Protocol target for the first commitment period, and that final data on the use of flexible mechanisms were not available for the BR1.

3. Projections

47. Sweden has provided in its BR1 and CTF tables 5 and 6 comprehensive information on its updated projections for 2020 and 2030. A detailed review of the reported information is provided in chapter I.I.C of the IDR/NC6.

48. The ERT noted information reported by Sweden on projected emission trends for the periods ending in 2020 and 2030. The results from the GHG emission projections show an overall decreasing trend in emissions in the projection period from 2011 to 2030. The reported emission trends project emissions to be 18.6 and 21.2 per cent below the base year level by 2020 and 2030, respectively. On the basis of these projections, the ERT noted that Sweden is expected to continue contributing to the achievement of the joint EU target under the Convention.

49. Under the EU climate and energy package, Sweden's target is to reduce its GHG emissions from the non-EU ETS sector by 17 per cent by 2020, or – after the EU decision on adjustments – to 36,400 kt CO₂ eq from the 2005 level of 45,500 kt CO₂ eq. According to the presented projections in the 'with measures' scenario, the non-EU ETS emissions are estimated to reach 35,400 kt CO₂ eq in 2020, corresponding to a 22.0 per cent reduction from 2005. The ERT noted that this suggests that Sweden is expected to meet, and possibly exceed its target with approximately 1,000 kt CO₂ eq, under the 'with measures' scenario. In the 'with additional measures' scenario, including additional measures at both the EU and national levels, Sweden's emissions in 2020 are projected to decrease by a further 500 kt CO₂ eq by 2020.

50. In addition to the 17 per cent target for the non-EU ETS sector set at the EU level, Sweden has set a national target for emissions from these sectors to decrease by 40 per cent from the 1990 level by 2020. Sweden plans to achieve its national target for the non-EU ETS sector using additional PaMs and climate investment in other countries (e.g. carbon credits obtained from the Kyoto Protocol mechanisms). Projections in Sweden's NC6 indicate that Sweden is also on track to achieve its domestic target, since it plans to achieve

one third of the planned reduction, about 6,700 kt CO₂ eq, by means of investment in emission reductions in other countries.

51. The ERT noted that in the BR1, the projection scenario ‘without measures’ is not included. Therefore, the ERT encourages Sweden to provide a ‘without measures’ scenario in its next BR submission.

52. The ERT also noted that reported information by Sweden in its NC6/BR1 is not exactly the same, as in key assumptions information reported in CTF table 5, which states that gross domestic product is assumed to be increased by 2.4 per cent/year between 2010 and 2015 and 1.9 per cent/year between 2020 and 2030, while in NC6 table 5.2.1, it is 2.4 per cent between 2010 and 2020. Therefore, the ERT encourages Sweden to maintain consistency between projections reported in its BRs and NCs when the next due dates for these reports coincide.

53. In its BR1, Sweden provided information on the changes since the previous NC in the methodologies used for the preparation of projections. The methodology used to prepare the projections has briefly been described in an annex to NC6. Different approaches and models are used to calculate the projections for different sectors such as the MARKAL-Nordic Energy System Model, the Environmental Medium Term Economic Model of the Swedish Economy, the Swedish Agricultural Sector Model, Hugin calculation system, a model developed by the IPCC for the waste sector and Sweden’s demand and supply model.

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

1. Provision of financial support to developing country Parties

54. In its BR1 and CTF table 5, Sweden reported information on the provision of financial, technological and capacity-building support required under the Convention. The information provided in the BR1 is complete and mostly transparent. The ERT commends Sweden for mostly adhering to the UNFCCC reporting guidelines on BRs. The ERT recommends that Sweden improve the transparency of its reporting of the financial figures in its next biennial report by clarifying the contributions, on an annual basis, to the Global Environment Facility (GEF) replenishment, the level of support catalysed from the private sector and the level of support for technology transfer in addition to the estimated volumes generated through private-sector participation.

55. In its BR1, Sweden provided details on what “new and additional” financial resources it has provided and clarified how these resources are “new and additional”. Sweden refers to the common definition used by many countries, that is ‘climate financing should be additional to the international development aid goal of 0.7 per cent of gross national income (GNI)’. Since Sweden’s development cooperation has for many years been 1.0 per cent of its GNI, all climate financing could be viewed as “new and additional”. During the review, Sweden provided further clarifications on the finances, in particular the proportion of climate specific contributions as a fraction of the official developmental assistance (ODA).

56. The ERT recommends that Sweden include in its next BR information on the proportion of climate-specific contributions as a fraction of the ODA determining “new and additional” financial resources so as to increase the transparency of its reporting.

57. Sweden has reported that in 2011 it contributed climate-specific financial support to developing countries of USD 152 million through multilateral channels and of USD 324 million through bilateral, regional and other channels. For 2012, Sweden reported that it

contributed climate-specific financial support to developing countries of USD 106 million through multilateral channels and of USD 358 million through bilateral, regional and other channels. Table 4 includes some of the information reported by Sweden on its provision of financial support.

58. Sweden described how its resources address the adaptation and mitigation needs of Parties not included in Annex I to the Convention (non-Annex I Parties). The ERT commends Sweden for the clear and objective methodology it adopted in tracking finances for adaptation and mitigation using the Rio Markers. The ERT further commends Sweden for enhancing contributions to adaptation activities in developing countries.

59. During the review, Sweden provided additional information, elaborating on how it attributed resources to mitigation, adaptation and cross-cutting issues. The ERT commends Sweden for the clear and objective methodology it adopted in classifying actions as primary, secondary and cross-cutting covering response measures and capacity-building and technology transfer for mitigation and adaptation, and encourages Sweden to improve the transparency of its reporting by including this information in its next BR.

60. In its BR1, Sweden has clarified that private finance is mainly related to goods and services exports in the environmental sector. However, Sweden has also reported on how it promotes financial support to developing countries from the private sector through public funds, which it sees as pivotal to effectively increasing both mitigation and adaptation efforts in developing countries. Through Sida, Sweden aims to channel financial flows from the private sector for climate change activities in developing countries by providing development loans and guarantees as part of its development cooperation, and “environmental” loans focusing on improved energy efficiency and renewable energy, management of water, sewage and waste, and transportation. Through these loans Sweden links grant aid with market finance and allows for mobilization of capital, including the domestic capital of partner countries. Sida’s role is to insure eligible projects against losses relating to different market risks. Swedfund, one of Sweden’s bilateral development finance institutions, offers through Swedpartnerships financial support to small and medium-sized enterprises for investments in new businesses in developing countries.

Table 4

Summary of information on provision of financial support in 2011–2012

(Millions of United States dollars)

<i>Allocation channel of public financial support</i>	<i>Years of disbursement</i>	
	<i>2011</i>	<i>2012</i>
Official development assistance	5 600	5 200
Total climate-specific contributions through multilateral channels, including:	151.9	105.8
Contributions to the Global Environment Facility	11.7	9.1
Climate-specific contributions through bilateral, regional and other channels	324	358
Contributions to the Green Climate Fund	0	0.7
Fast-start finance (2010–2012)		1 200

2. Approach used to track support provided

61. Sweden provided a detailed listing of the financial flows through multilateral and bilateral channels. The trends were mixed. For example, from 2011 to 2012, the contributions to Convention trust funds, the Least Developed Countries Fund (LDCF), the

Global Facility for Disaster Risk Reduction, the Clean Technology Fund, the Forest Investment Programme, the World Bank International Development Association, Consultative Group on International Agricultural Research decreased but increased for the United Nations International Strategy for Disaster Reduction, the World Food Programme, Sustainable Energy for All, the Scaling Up Renewable Energy Programme and the International Fund for Agricultural Development. The bilateral contributions showed increase in allocation for mitigation, adaptation and cross-cutting issues.

62. With regard to its most recent financial contributions for enhancing the implementation of the Convention by developing countries, Sweden provided support of USD 0.7 million for the start-up of the Green Climate Fund. With regard to fast-start finance for enhancing the implementation of the Convention by developing countries, Sweden's contribution amounted to about USD 1.2 billion (approximately SEK 8 billion) for 2010–2012. The ERT noted that this contribution makes Sweden one of the largest per capita contributors to the fast-start finance initiative for assistance to developing countries. Sweden also provided SEK 100 million per year from 2010 to 2012 to the Adaptation Fund and SEK 380 million to the LDCF.

63. The traditional recipients of Sweden's development assistance in the areas of energy, sanitation and water, such as Bolivia (Plurinational State of), Kenya, Mali, Mozambique and the United Republic of Tanzania, continue to be the largest beneficiaries of climate change related development cooperation. During the review, Sweden clarified that this list of countries will change as its relationships with various countries and their priorities evolve.

64. In its BR, Sweden provided detailed information on bilateral, regional and global finance channelled through the Swedish International Development Cooperation Agency (Sida) to non-Annex I Parties. Tracking has been done through the use of the Rio Markers for climate change mitigation and adaptation. These markers, developed and defined within the Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD DAC), is a new methodology developed since the NC5 and used by many developed countries to track public climate finance. Through a system of allocating a scale in the range of 0–2, depending on whether the objective is 'primary', 'significant' or 'not targeted', Sweden was able to demonstrate its contribution to mitigation, adaptation and cross-cutting issues. The ERT commends Sweden for the information by country, region and global, as well as by sectors according to the OECD DAC classification.

65. Sweden also provided examples of funding through non-governmental organizations, Swedish authorities and universities to assist with programmes and activities in developing countries. It also provided examples of cooperation by Sida with the private sector through its 'Innovations against Poverty' programme designed as a risk sharing mechanism for sustainable business ventures. Many of the projects focus on climate-smart solutions, and also entail a component of technology transfer. Under its ordinance for Financing of Development Loans and Guarantees for Development Cooperation, the Swedish Government facilitates environmental loans and guarantees to enable private-sector resources for economic development by linking grant aid to market finance. The ERT commends Sweden for this information and encourages it report it more transparently in future BRs.

3. Technology development and transfer

66. In its BR1 and CTF table 8, Sweden has provided information on activities related to the transfer of technology to developing countries, including information on the public and private sectors. CTF table 8 in the BR1 provides examples of Sweden's activities related to the transfer of technology to developing countries, including information on the recipient

country and/or region, the target area (mitigation, adaptation or both), the sector, source of funding for the technology transfer, whether the activities are undertaken by the public or private sector or both and the status of the implementation.

67. Increased participation by the private sector was evidenced from ‘exports’, amounting to SEK 38.9 billion corresponding to 2.2 per cent of Sweden’s total exports, over 2009–2011. The Government’s role in this process seems mainly catalytic. The ERT commends Sweden for its bilateral technological cooperation especially with China and India and recommends that it provides more clarity on the technology transferred from public resources and the basis of the estimated financing generated from private sources.

68. The BR outlined the various initiatives that the Swedish Government, through its agencies such as the Swedish Energy Agency, the Swedish Agency for Economic and Regional Growth and the Swedish Trade and Invest council, has undertaken under its environmental technology strategy. During the review, Sweden clarified its definition of technology, which encompasses hard and soft technologies, as well as building capacity in developing countries to receive, use and develop technology.

69. The ERT commends Sweden for this information and for the examples of provision of technology transfer and support, which are mainly in the areas of waste management and recycling. It recommends that Sweden provides greater clarity on its support for the development and enhancement of endogenous capacities and technologies of developing countries, by quoting examples of such activities. The ERT also encourages Sweden to report more fully on success and failure stories in technology transfer, and to distinguish specific technology transfer and/or capacity-building contributions in future reports.

4. Capacity-building

70. In its BR1 and CTF table 9, Sweden has provided information on how it has provided capacity-building support for mitigation, adaptation and technology. CTF table 9 in the BR1 provides some examples of Sweden’s activities related to capacity-building support to developing countries, including information on the recipient country and/or region, the target area, the programme’s or project’s title and a short description of the programme or project.

71. In its BR Sweden reports that capacity-building is a cross-cutting issue, relevant for developing countries to be able to receive financial and technology related support for adaptation and mitigation. It provides examples of capacity-building activities done in partnership with national institutions, which are aimed at enhancing research, training and empowerment of local communities.

72. The ERT acknowledges that capacity-building is an integral part of most of the programmes and activities and encourages Sweden to provide greater clarity as to the extent of such activities.

III. Conclusions

73. The ERT conducted a technical review of the information reported by Sweden in its BR1 and CTF tables in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the BR1 and CTF tables provide a good overview of information on emissions and removals related to the quantified economy-wide emission reduction target, a description of the target, progress made by Sweden to achieve its target, and provision of support to developing country Parties. During the review, Sweden provided additional information on inventories, target and clarifications on progress made towards the target, on financial resources and on technology transfer to developing country Parties. To increase

transparency, the ERT encourages Sweden to make more use of explanatory footnotes and/or notation keys for empty cells in CTF tables in its next BR.

74. Sweden's total emissions and removals in 2011 were estimated to be 15.5 per cent below its 1990 level excluding LULUCF and 26.3 per cent below including LULUCF. Emissions decreases were driven by a partial change in the fuel mix towards greater use of renewables, biomass and biofuels that is supported by the electricity certificate scheme, the EU ETS and the increased use of wind power together with a decline in the use of oil, coal and peat.

75. The ERT noted that despite significant economic growth of 57.8 per cent in gross domestic product between 1990 and 2011, Sweden achieved the notable emission reduction of 15.5 per cent over the same period and thus achieved a decoupling of total GHG emissions from economic growth.

76. Under the Convention, the EU and its member States, including Sweden, communicated an independent quantified economy-wide emission reduction target of a 20 per cent emission reduction by 2020 compared with 1990 levels. The target will be fulfilled jointly by the European Union and its member States, including Sweden. The joint EU target defines 1990 as the base year for CO₂, CH₄ and N₂O, and 1995 for HFCs, PFCs and SF₆. It covers the energy sector, including transport, the industrial processes sector, including solvents, other product use sectors, agriculture and waste. For all included gases, the global warming potential values from the IPCC Fourth Assessment Report are used. Emissions or removals from LULUCF are excluded from the joint target.

77. In the BR1, Sweden has presented GHG projections for 2015, 2020, 2025 and 2030 in tabular formats as well as graphically. The BR1 includes a 'with measures' scenario. In its CTF tables, Sweden included a 'with measures' and 'with additional measures' scenario. The projected emissions for 2020 and 2030 are 18.6 per cent and 21.2 per cent, respectively, lower than in 1990.

78. The projections indicate that Sweden's GHG emissions in the non-trading sectors will stay below the Party's EU non-ETS targets trajectory for 2013–2020, where the 2020 target is 17 per cent below the 2005 level, and the projections show a reduction of around 22.0 per cent. The Swedish Government has set up a domestic milestone target, which is a 40 per cent reduction in non-ETS emissions from 1990 to 2020. The 'with measures' projection also indicates that this target can be met if one third of the credits from Sweden's JI/CDM programme are taken into account.

79. The ERT noted that significant progress had been made by Sweden towards the 2020 target. By 2011 Sweden had already reduced its total emissions without LULUCF by 15.5 per cent below the base-year level. It projects its total emissions without LULUCF to be 18.6 per cent below the base-year level by 2020. On the basis of these trends and projections, Sweden is expected to continue contributing to the achievement the joint EU target under the Convention,

80. The most important PaMs to meet Sweden's targets are the energy and carbon taxes as well as the EU ETS. The effect of these key measures has been complemented by the effect of a number of other measures, such as the green electricity certificate system that promotes the use of renewables, the improvement of energy efficiency in energy-intensive industry and in the building sector, and legislation such as the ban on the landfilling of household organic waste. The 2009 bill (An Integrated Climate and Energy Policy) sets ambitious climate and energy targets for the period ending in 2020. Also, it specifies the long-term vision that, in 2050, Sweden aims to release zero net emissions into the atmosphere. To achieve this long-term target, the Government of Sweden has adopted a programme to further tighten its policy instruments. New PaMs may also have to be put in place to achieve this ambitious long-term goal.

81. In its BR, Sweden provided information on the provision of support as required under the Convention and its Kyoto Protocol. In 2011, Sweden contributed climate-specific financial support to developing countries of around USD 152 million through multilateral channels and USD 324 million through bilateral, regional and other channels. In 2012, Sweden contributed climate-specific financial support to developing countries of around USD 106 million through multilateral channels and USD 358 million through bilateral, regional and other channels. The greatest share of Sweden's bilateral and regional contributions for the period 2009–2012 was allocated to adaptation measures focusing on interventions in the water, education, health and agriculture sectors, disaster risk management and research.

82. Technology transfer activities are an important component of Sweden's development support. They include both 'soft' and 'hard' components and are implemented mainly through bilateral and multilateral initiatives and the private sector. In this context Sweden has signed cooperation agreements focusing on environmental and energy technology with a number of developing countries, including Brazil, China and India. Although the size of the private-sector contribution compared to that of the public contribution was not very clear, the ERT's understanding was that the role of the Swedish Government in this process is mainly catalytic.

83. In the course of the review, the ERT formulated several recommendations relating to the completeness and transparency of Sweden's reporting under the Convention. The key recommendations⁵ are that Sweden:

(a) Improve the completeness of reporting by including in the next BR the following 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 towards its target, or the statement that there has been none (see para. 40 above);

(b) Improve the transparency of reporting by including in the next biennial report the following information:

(i) A clear subdivision by gas for each sector in the reporting of PaMs (see para. 31 above);

(ii) Transparent information in the reporting of the financial figures by clarifying the contributions, on an annual basis, to the GEF replenishment, the level of support catalysed from the private sector and the level of support for technology transfer in addition to the estimated volumes generated through private-sector participation (see para. 54 above);

(iii) Information on the technology transferred from public resources and the basis of the estimated financing generated from private sources (see para. 67 above);

(iv) Information on its support to the development and enhancement of endogenous capacities and technologies of developing countries, by quoting examples of such activities (see para. 69 above).

⁵ The recommendations are given in full in the relevant sections 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>>.

Common tabular format (CTF) for “UNFCCC biennial reporting guidelines for developed country Parties”. Annex to decision 19/CP.18. Available at

<<http://unfccc.int/resource/docs/2012/cop18/eng/08a03.pdf>>.

“Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention”. Annex to decision 23/CP.19. Available at

<<http://unfccc.int/resource/docs/2013/cop19/eng/10a02.pdf#page=20>>.

FCCC/ARR/2012/SWE. Report of the individual review of the annual submission of Sweden submitted in 2012. Available at <<http://unfccc.int/resource/docs/2013/arr/swe.pdf>>.

FCCC/ARR/2013/SWE. Report of the individual review of the annual submission of Sweden submitted in 2013. Available at <<http://unfccc.int/resource/docs/2014/arr/swe.pdf>>.

FCCC/IRR/2007/SWE. Report of the review of the initial report of Sweden. Available at <<http://unfccc.int/resource/docs/2007/irr/swe.pdf>>.

FCCC/IDR.5/SWE. Report of the in-depth review of the fifth national communication of Sweden. Available at <<http://unfccc.int/resource/docs/2011/idr/swe05.pdf>>.

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 Sweden. Available at

<http://unfccc.int/files/national_reports/biennial_reports_and_iar/submitted_biennial_reports/application/pdf/swe_2014_v1.0.pdf>.

2013 GHG inventory submission of Sweden. Available at

<http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/7383.php>.

2014 GHG inventory submission of Sweden. Available at

<http://unfccc.int/national_reports/annex_i_ghg_inventories/national_inventories_submissions/items/8108.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Maja Cederlund (Swedish Environmental Protection Agency), including additional material on updated

policies and measures, greenhouse gas projections, the national registry and recent climate policy developments in Sweden. The following documents¹ were also provided by Sweden:

Ministry of the Environment, Ministry of Enterprise, Energy and Communications. 2009. *En sammanhållen klimat- och energipolitik* (An Integrated Climate and Energy Policy). Klimat Prop. 2008/09:162. Stockholm. Available in Swedish at <<http://www.regeringen.se/content/1/c6/12/27/78/4ce86514.pdf>> and available in English at <<http://www.government.se/content/1/c6/12/34/66/1a1aa683.pdf>>.

Finansdepartementet. 2009. *Vissa punktskattefrågor med anledning av budgetpropositionen för 2010*, Prop. 2009/10:41. Stockholm. Available in Swedish at <<http://www.regeringen.se/sb/d/108/a/134192>>.

National Institute of Economic Research. 2008. *En samhällsekonomisk granskning av Klimatberedningens handlingsplan för svensk klimatpolitik*, NIER: SPECIALSTUDIE NR 18, JUNI 2008 UTGIVEN AV KONJUNKTURINSTITUTET. Stockholm. Available in Swedish at <<http://www.konj.se/5.70c52033121865b13988000112299.html>>; summary available in English at <http://www.konj.se/download/18.70c52033121865b13988000113120/Specialstudie_18_C_omprehensive+Summary.pdf>.

National Institute of Economic Research. 2012. *Miljö, ekonomi och politik 2012* (Analysis of Govt. Bill Prop. 2009/10:41). Stockholm. NIER, pp. 47–49. Available in Swedish at <<http://www.konj.se/744.html>>.

The Swedish National Audit Office. 2012. *Klimatrelaterade skatter – Vem betalar?*, RiR 2012:1 - Riksrevisionen granskar: Hållbar utveckling – Klimat. Stockholm. Available in Swedish at <<http://www.riksrevisionen.se/sv/rapporter/Rapporter/EFF/2012/Klimatrelaterade-skatter--Vem-betalar/>>.

Organisation for Economic Co-operation and Development (OECD). 2011. *OECD Economic Surveys: SWEDEN 2011*. Paris: OECD. Available at <<http://browse.oecdbookshop.org/oecd/pdfs/product/1011011e.pdf>>.

Näringsdepartementet. 2013. *Fossilfrihet på väg* (Fossil-free Road Transport), Statens offentliga utredningar (SOU 2013:84). Stockholm. Available in Swedish at <<http://www.regeringen.se/sb/d/17075/a/230739>> and summary in English available at <<http://www.sou.gov.se/content/1/c6/21/33/36/aa2e5cb3.pdf>>).

The Swedish Government. 2014. *Förslag till statens budget för 2014: Areella näringar, landsbygd och livsmedel*. Stockholm. Available in Swedish at: <<http://www.regeringen.se/content/1/c6/22/37/09/4d48e26d.pdf>>; information on the adoption of the bill is available in Swedish at <<http://www.riksdagen.se/sv/Dokument-Lagar/Utskottens-dokument/Betankanden/Arenden/201314/FiU10/>>.

Statistics Sweden. 2012. *The Future Population of Sweden 2012–2060*. Stockholm. Available at <http://www.scb.se/statistik/_publikationer/BE0401_2012I60_BR_BE51BR1202ENG.pdf>.

The Swedish Ministry for Foreign Affairs. 2010. *Policy for Environmental and Climate Issues in Swedish Development Cooperation 2010–2014*. Stockholm: [Publisher?]
]Available at <<http://www.government.se/content/1/c6/15/64/98/24249736.pdf>>.

Swedish International Development Cooperation Agency (Sida). 2011. *Adapting to a Changing Climate – The Swedish Government’s Special Climate Change Initiative 2009–2012*. Stockholm: Available at <<http://energy6.net/download.php?id=22430>>.

¹ Reproduced as received from the Party.

Sida. 2013. *Final Report on the Swedish Government's Special Climate Change Initiative 2009–2012: Bilateral and Regional Interventions*. Stockholm: Available at <http://www.sida.se/Global/About%20Sida/V%c3%a5ra%20%c3%a4mnesomr%c3%a5den/%c3%96vers%c3%a4ttning%20DHO63_6th%20version_31Jan14.pdf>.
