United Nations

Framework Convention on Climate Change

FCCC/TRR.4/NLD

Distr.: General
29 May 2020

English only

Report on the technical review of the fourth biennial report of the Netherlands

Developed country Parties were requested by decision 2/CP.17 to submit their fourth biennial report to the secretariat by 1 January 2020. This report presents the results of the technical review of the fourth biennial report of the Netherlands, 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". The review took place from 9 to 13 March 2020 remotely.

GE.20-07188(E)

2007188

Contents

Abbreviations and acronyms

AEA	annual emission allocation
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CTF	common tabular format
EEA	European Environment Agency
EMEP	European Monitoring and Evaluation Programme
Energy Agreement	Energy Agreement for Sustainable Growth of the Netherlands
ERT	expert review team
ESD	European Union effort-sharing decision
EU	European Union
EU ETS	European Union Emissions Trading System
F-gas	fluorinated gas
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
IE	included elsewhere
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
NA	not applicable
NDC	nationally determined contribution
NE	not estimated
NECP	National Energy and Climate Plan
NF_3	nitrogen trifluoride
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
N_2O	nitrous oxide
OECD	Organisation for Economic Co-operation and Development
PaMs	policies and measures
PFC	perfluorocarbon
PM	particulate matter
SF_6	sulfur hexafluoride
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on CTF tables	common tabular format for the “UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on NCs	“Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications”
WAM	‘with additional measures’
WEM	‘with measures’
WOM	‘without measures’

I. Introduction and summary

A. Introduction

1. This is a report on the centralized technical review of the BR4[1] of the Netherlands. The review was organized by the secretariat in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention", particularly "Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention" (annex to decision 13/CP.20).

2. In accordance with the same decision, a draft version of this report was transmitted to the Government of the Netherlands, which did not provide any comments.

3. The review was conducted in a centralized manner together with the review of one other Party included in Annex I to the Convention from 9 to 13 March 2020 remotely[2] by the following team of nominated experts from the UNFCCC roster of experts: Isaac Nyaneyon (Liberia), Juan Luis Martin Ortega (El Salvador), Daniel Perczyk (Argentina), Ioannis Sempos (Greece), Hansrajie Sukhdeo (Guyana), Caroline Tagwireyi (Zimbabwe), Mark Eassah Tambah (Liberia), Ioanna Tsalakanidou (Greece) and Hannah Wanjiru (Kenya). Mr. Sempos and Ms. Tagwireyi were the lead reviewers. The review was coordinated by Lisa Hanle and James Howland (secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the BR4 of the Netherlands in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

1. Timeliness

5. The BR4 was submitted on 20 December 2019, before the deadline of 1 January 2020 mandated by decision 2/CP.17. The CTF tables were also submitted on 20 December 2019, and were resubmitted on 20 January 2020, prior to the review. The CTF tables were again resubmitted on 12 March 2020 to address issues raised during the review. The resubmission included clarification of footnotes to explain the relationship between the Netherlands' emission reduction target and the joint EU emission reduction target in CTF tables 2 and 4, a correction for waste sector emissions in the WAM scenario for 2020, and a completed documentation box for CTF table 7. Unless otherwise specified, the information and values from the latest submission are used in this report.

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

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by the Netherlands in its BR4 mostly adheres to the UNFCCC reporting guidelines on BRs.

Table 1
Summary of completeness and transparency of mandatory information reported by the Netherlands in its fourth biennial report

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendation(s)*
GHG emissions and removals	Complete	Transparent	

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

[2] Owing to the circumstances related to the coronavirus disease 2019, the technical review of the BR submitted by the Netherlands had to be conducted remotely.

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendation(s)*
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Complete	Mostly transparent	Issues 1–2 in table 3
Progress in achievement of targets	Mostly complete	Mostly transparent	Issues 1–3 in table 5 Issues 2–4 in table 10
Provision of support to developing country Parties	Mostly complete	Mostly transparent	Issues 1–2 in table 13

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below. The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements.

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

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

1. Technical assessment of the reported information

7. Total GHG emissions[3] excluding emissions and removals from LULUCF decreased by 12.6 per cent between 1990 and 2017, whereas total GHG emissions including net emissions or removals from LULUCF decreased by 12.7 per cent over the same period. Emissions peaked in 1996 (at 242,702.80 kt CO_2 eq) and exhibited a continuously declining trend in most years thereafter. Overall, total GHG emissions per capita declined by 23.6 per cent between 1990 and 2017, while GHG intensity fell by 49.4 per cent over the same period. Table 2 illustrates the emission trends by sector and by gas for the Netherlands. Note that information in this paragraph and table 2 is based on the Party's 2019 annual submission, version 1. All emission data in subsequent chapters are based on the Netherlands' BR4 CTF tables unless otherwise noted. The emissions reported in the 2019 annual submission are the same as reported in CTF table 1.

Table 2
Greenhouse gas emissions by sector and by gas for the Netherlands for 1990–2017

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2016*	*2017*	*1990–2017*	*2016–2017*	*1990*	*2017*
Sector									
1. Energy	158 605.17	167 085.10	178 900.65	162 550.49	160 161.38	1.0	5.7	71.8	82.9
A1. Energy industries	53 367.87	64 660.89	67 569.43	67 875.19	63 464.89	18.9	2.2	24.2	32.8
A2. Manufacturing industries and construction	34 560.55	28 130.21	27 965.04	27 530.45	29 107.30	–15.8	–0.5	15.7	15.1
A3. Transport	28 018.67	33 005.04	34 751.32	30 500.56	31 182.86	11.3	–0.5	12.7	16.1
A4. and A5. Other	39 829.74	40 001.64	46 638.29	34 932.10	34 745.09	–12.8	–8.7	18.0	18.0
B. Fugitive emissions from fuels	2 828.34	1 287.32	1 976.58	1 712.19	1 661.24	–41.3	–3.0	1.3	0.9
C. CO_2 transport and storage	NO	NO	NO	NO	NO	NA	NA	NA	NA
2. IPPU	22 924.78	21 698.85	11 891.19	10 660.24	11 091.65	–51.6	4.0	10.4	5.7
3. Agriculture	25 077.39	20 698.38	17 973.31	18 888.65	18 927.23	–24.5	0.2	11.4	9.8

[3] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF and including indirect CO_2 emissions, unless otherwise specified.

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2016*	*2017*	*1990–2017*	*2016–2017*	*1990*	*2017*
4. LULUCF	6 491.47	6 071.82	5 569.05	5 579.14	5 600.07	–13.7	0.4	NA	NA
5. Waste	14 186.29	9 821.86	4 597.88	3 284.93	3 079.66	–78.3	–6.2	6.4	1.6
6. Other[a]	NO	NO	NO	NO	NO	NA	NA	NA	NA
Gas[b]									
CO_2	162 428.19	171 942.60	182 186.12	166 387.00	164 478.45	1.3	–1.1	73.6	85.1
CH_4	31 849.97	24 282.71	19 406.62	18 347.51	18 030.55	–43.4	–1.7	14.4	9.3
N_2O	18 039.59	16 152.11	8 633.89	8 487.42	8 721.13	–51.7	2.8	8.2	4.5
HFCs	5 606.33	4 765.18	2 668.84	1 876.41	1 826.38	–67.4	–2.7	2.5	0.9
PFCs	2 662.85	1 902.81	313.77	151.81	77.03	–97.1	–49.3	1.2	0.0
SF_6	206.70	258.78	153.79	134.16	126.38	–38.9	–5.8	0.1	0.1
NF_3	NO, IE	NO, IE	NO, IE	NO, IE	NO, IE	NA	NA	NA	NA
Total GHG emissions excluding LULUCF	**220 793.63**	**219 304.19**	**213 363.03**	**195 384.32**	**193 259.92**	**–12.5**	**–1.1**	**100.0**	**100.0**
Total GHG emissions including LULUCF	**227 285.10**	**225 376.01**	**218 932.08**	**200 963.45**	**198 860.00**	**–12.5**	**–1.0**	**NA**	**NA**
Total GHG emissions excluding LULUCF, including indirect CO_2	**221 710.82**	**219 835.75**	**213 821.23**	**195 835.04**	**193 712.97**	**–12.6**	**–1.1**	**100.0**	**100.0**
Total GHG emissions including LULUCF, including indirect CO_2	**228 202.29**	**225 907.57**	**219 390.28**	**201 414.18**	**199 313.04**	**–12.7**	**–1.0**	**NA**	**NA**

Source: GHG emission data: the Netherlands' 2019 annual submission, version 1.
[a] Emissions and removals reported under the sector other (sector 6) are not included in the total GHG emissions.
[b] Emissions by gas without LULUCF and excluding indirect CO_2.

8. The decrease in total GHG emissions was driven mainly by the IPPU, waste and agriculture sectors, with reductions in CH_4 and N_2O emissions and F-gases by 43.4, 51.7 and 76.1 per cent, respectively, and a noteworthy decrease in fugitive emissions from fuels in the energy sector by 41.3 per cent. The EU ETS and the 2013 Energy Agreement are the Party's main policy drivers for the emission reductions to date, which are reinforced by measures taken in line with the climate and energy targets for 2020.

9. In brief, the Netherlands' national inventory arrangements were established in accordance with the Greenhouse Gas Monitoring Act of 12 December 2005. There have been no changes in these arrangements since the BR3. The Ministry of Economic Affairs and Climate Policy still functions as the coordinating ministry in the Netherlands with responsibility for policies relating to climate change. In December 2005, the Netherlands Enterprise Agency, a government agency that operates under the auspices of the Ministry of Economic Affairs and Climate Policy, was designated by law as the single national entity under the Kyoto Protocol with overall responsibility for the national inventory. In addition to the coordination of the establishment and maintenance of the national system, the Netherlands Enterprise Agency is responsible for the coordination of quality assurance and quality control activities and for coordinating the Party's cooperation and responses during the UNFCCC review process. It submits the Party's GHG inventory and BR to the secretariat following approval by the Ministry of Economic Affairs and Climate Policy.

2. Assessment of adherence to the reporting guidelines

10. The ERT assessed the information reported in the BR4 of the Netherlands and recognized that the reporting is complete, transparent and thus adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

B. Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies

1. Technical assessment of the reported information

11. For the Netherlands the Convention entered into force on 21 March 1994. Under the Convention the Party 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.

12. The target for the EU and its member States is formalized in the EU 2020 climate and energy package. The legislative package regulates emissions of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 using GWP values from the AR4 to aggregate the GHG emissions of the EU until 2020. Emissions and removals from the LULUCF sector are not included in the quantified economy-wide emission reduction target under the Convention. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms as well as new market mechanisms for compliance purposes, subject to a number of restrictions in terms of origin and type of project and up to an established limit. Operators and airline operators can use such units to fulfil their requirements under the EU ETS, and member States can use such units for their national ESD targets, within specific limitations.

13. The EU 2020 climate and energy package includes the EU ETS and the ESD (see paras. 27–28 below). The EU ETS covers mainly point emissions sources in the energy, industry and aviation sectors. An EU-wide emission cap has been put in place for 2013–2020 with the goal of reducing emissions by 21 per cent below the 2005 level by 2020. Emissions from ESD sectors are regulated through member State specific targets that add up to a reduction at the EU level of 10 per cent below the 2005 level by 2020.

14. The European Green Deal, launched in 2019, represents a commitment by the EU to become climate neutral by 2050 and presents a road map that encompasses all sectors of the economy. It calls for increased ambition in the 2030 emission reduction target to at least 50 per cent below the 2005 level. Member States will translate any increased ambition into action through their revised NECP.

15. The Netherlands has a national target of reducing its total GHG emissions to 16 per cent below the 2005 level by 2020 for emissions under the ESD. This target has been translated into binding quantified AEAs for 2013–2020. The Party's AEAs change following a linear path from 122,948.13 kt CO_2 eq in 2013 to 107,362.87 kt CO_2 eq in 2020.[4]

16. The Netherlands' emissions under the ESD, as cumulative annual values, showed an increasing trend from 2013 to 2017, except for in 2014 (when emissions decreased by 9.6 per cent). The 1.0 per cent increase in emissions under the ESD in 2017 (102,326.63 kt CO_2 eq) compared with those in 2016 (101,333.44 kt CO_2 eq) is attributed to the colder winter and increase in transportation and the size of dairy cattle herds in 2017.

17. The Party included in the BR4 preliminary emission data for 2018 under the ESD (101,857.58 kt CO_2 eq), which were subsequently updated by the Party during the review, showing a decrease in emissions compared with the 2017 level. This decrease in emissions is attributed to increased energy savings in buildings and the agriculture sector, lower sales of fossil fuels for transportation and lower non-CO_2 emissions.

18. In 2015, the Government of the Netherlands was the subject of a court decision in a case filed by the non-governmental organization Urgenda regarding the overall national emission reduction target for 2020. The Government lost the case and the subsequent appeal, and the court ruled that the Government must reduce national GHG emissions by at least 25 per cent compared with the 1990 level by 2020. In 2019, the Government announced steps for implementing the 'Urgenda' judgment in conjunction with the measures contained in the 2019 Climate Agreement and the 2013 Energy Agreement by 2030, with 2020 being a midpoint.

[4] European Commission decision 2017/1471 amended decision 2013/162/EU to revise member States' AEAs for 2017–2020.

19. In 2017, the EU set a new target of an emission reduction of at least 40 per cent below the 1990 level by 2030. The target is split into two components: a 43 per cent emission reduction under the EU ETS and a 30 per cent emission reduction for ESD sectors. Under this target, the Netherlands' contribution was set to be a 36 per cent emission reduction compared with the 2005 level. However, the Party set an ambitious national emission reduction target of 49 per cent below the 1990 level to be achieved by 2030, covering emissions under both the EU ETS and the ESD. The target takes into account compliance with the court ruling on the 'Urgenda' case to increase the emission reduction target to 25 per cent below the 1990 level by 2020.

20. In the technical review report on the Party's BR3,[5] the previous ERT recommended that the Netherlands clarify the economy-wide emission reduction target in its next submission. Specifically, the previous ERT noted that the Party could clarify in the BR and in CTF table 2(f) that the Netherlands is committed to fulfilling the joint EU economy-wide emission reduction target under the Convention, and that, under the ESD, the target for the Netherlands only covers ESD emissions for 2013–2020. The current ERT noted that, while this information was included in the BR4, it was not included in CTF table 2(f) of the original submission. During the review, the Party indicated its willingness to submit revised CTF tables to address this potential issue. The Party officially resubmitted its CTF tables on 12 March 2020, clarifying the economy-wide emission reduction target. The ERT concluded that the resubmission resolved the potential issue.

2. Assessment of adherence to the reporting guidelines

21. The ERT assessed the information reported in the BR4 of the Netherlands and identified issues relating to transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 3.

Table 3
Findings on the assumptions, conditions and methodologies related to the quantified economy-wide emission reduction target from the review of the fourth biennial report of the Netherlands

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 4 Issue type: transparency Assessment: recommendation	The Party reported in its BR4 (p.35) that emissions from outgoing flights are included in the target under the Convention, without providing further details (e.g. which flights are considered as outgoing, or whether outgoing flights are included under the EU ETS or the ESD). CTF table 2(b) does not refer to the inclusion of emissions from outgoing flights in the target. During the review, the Netherlands explained that in CTF table 2(b) the sectors are not described at a detailed level, and that outgoing flights are not a separate sector but are included within the transport sector, which is included in CTF table 2(b). The ERT is of the view that the transparency of the reporting of the target under the Convention in CTF table 2(b) could be improved by including information on the coverage of the transport sector (i.e. that it includes outgoing flights). Moreover, the ERT is of the view that transparency could be improved by providing further detail on the inclusion of outgoing flights in the target, similar to the information provided in the BR4 of the EU (p.149). Specifically, the BR4 of the EU (p.149) indicates that "In principle, the EU ETS should cover CO_2 emissions of all flights arriving at, and departing from, airports in all EU Member States, Norway, Iceland and Liechtenstein and closely related territories. However, since 2012, flights to and from aerodromes from other countries have not been included in the EU ETS … The EU has decided on a reduced scope in the 2013–2016 period (Regulation (EU) No 421/2014 of the European Parliament and of the Council of 16 April 2014). In light of the adoption of a Resolution by the 2016 ICAO Assembly on the global measure, the EU has decided to maintain the geographic scope of the EU ETS limited to intra-EEA flights from 2017 onwards (Regulation (EU) 2017/2392 of the European Parliament and of the Council of 13 December 2017). In the absence of an amendment, the EU ETS will revert to its original full scope from 2024".

[5] FCCC/TRR.3/NLD.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
		The ERT recommends that the Netherlands improve the transparency of the description of its target under the Convention, in particular by providing more information about the inclusion of outgoing flights in the target, both in the textual part and in CTF table 2(f) of its next BR.
2	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: recommendation	The Party reported 0.00 kt CO_2 eq as the possible scale of contributions from market-based mechanisms for ESD sectors in CTF table 2(e). It reported limited information on the use of market-based mechanisms by EU ETS operators in the BR4 (p.35). For example, it indicated that at the EU level more than 1.5 billion certified emission reductions and emission reduction units can be used up until 2020, but did not report on the use of market-based mechanisms by operators in the Netherlands. During the review, the Party explained that the emissions of EU ETS operators in the Netherlands are not relevant to the national target. The Party also explained that the use of market-based mechanisms is regulated by EU decisions on the EU ETS and related information is included in the EU registry. According to paragraph 4 of the UNFCCC reporting guidelines on BRs, Parties shall describe their quantified economy-wide emission reduction target as communicated to the secretariat and contained in document FCCC/SB/2011/INF.1/Rev.1 or any update to that document. This target should be described in CTF tables 2(a–f). For the Netherlands, this target is the joint EU target. The ERT is of the view that the use of market-based mechanisms, which Parties are required to report in accordance with paragraph 5 of the UNFCCC reporting guidelines on BRs, refers to the Party's use of market-based mechanisms to cover it emissions under the EU joint target. Therefore, the Party should provide information in the BR covering the use of market-based mechanisms under both the EU ETS and the ESD. The ERT is also of the view that the Netherlands should provide more information in the BR related to the possible scale of the use of market-based mechanisms by EU ETS operators in addition to for the ESD sectors. This information could include the maximum allowed limit of units that operators in the Netherlands are entitled to use up until 2020, links to additional information such as the relevant EU regulations and the EU registry, or other public data. The ERT recommends that the Party improve in its next BR the transparency of the reported information on the possible scale of contributions from market-based mechanisms that are used to achieve the quantified economy-wide emission reduction target of the Party by including information on the use of market-based mechanisms to offset emissions that were generated within the country and fall under the EU ETS.

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

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

1. Mitigation actions and their effects

(a) Technical assessment of the reported information

22. The Netherlands provided information on its package of PaMs implemented, adopted and planned, by sector and by gas, in order to fulfil its commitments under the Convention. The Party reported on its policy context and legal and institutional arrangements in place for implementing its commitments and monitoring and evaluating the effectiveness of its PaMs.

23. The Netherlands provided information on a set of PaMs similar to those previously reported, with the exception of two PaMs: the ban on the use of coal to generate electricity; and the national minimum price for CO_2 emissions from power generation. The Party indicated that there have been no changes since its previous submission to its institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of progress towards its target.

24. The Netherlands reported information on 50 PaMs in CTF table 3 of its BR4. The ERT noted that, in CTF table 3 of its BR3, the Netherlands reported information on 24 PaMs. During the review, the Party clarified that it included more PaMs in BR4 CTF table 3 in order to improve consistency with the description of PaMs provided in chapter 4 of the BR4. Additionally, the Netherlands clarified that the total mitigation impact in 2020 is the same as that reported in the BR3. The ERT welcomes the enhanced transparency in the BR4 of the Netherlands.

25. In its reporting on its PaMs, the Party provided the estimated emission reduction impacts for 23 of its PaMs. Where estimated impacts were not provided, the Party reported "IE", but did not provide information on where the mitigation impacts of these PaMs are allocated. The Netherlands estimated the impacts of some groups of PaMs (e.g.in agriculture and horticulture, built environment, and industry and mobility/transport) with the aim of avoiding double counting between PaMs affecting the same emissions sources (as described on p.42 of the BR4). The Party described the general methodology used to estimate the impacts of its PaMs.

26. The Netherlands reported on its self-assessment of compliance with its emission reduction targets and national rules for taking action against non-compliance. For the self-assessment of compliance with the 2013 Energy Agreement, which sets the overarching policy direction of the energy and climate PaMs of the country for up until 2020, the Netherlands appointed a standing committee that tracks progress towards its main targets using the information available on projections from the annual national climate and energy outlooks. If the committee finds a deviation from progress towards the targets of the Energy Agreement, new PaMs can be implemented. The Party explained in its BR4 that new actions have been added to the Energy Agreement on the basis of the results of this procedure.

27. The key overarching related cross-sectoral policy in the EU is the 2020 climate and energy package, adopted in 2009, which includes the revised EU ETS and the ESD. The package is supplemented by renewable energy and energy efficiency legislation and legislative proposals on the 2020 targets for CO_2 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. The 2030 climate and energy framework, adopted in 2014, includes more ambitious targets, which are expected to be revised further upwards owing to the European Green Deal.

28. The 2021–2030 EU-wide policies are operationalized through the NECP. The NECP will be periodically updated to reflect changes to EU policy, such as the implementation of the European Green Deal.

29. In operation since 2005, the EU ETS is a cap-and-trade system that covers all significant energy-intensive installations (mainly large point emissions sources such as power plants and industrial facilities), which produce 40–45 per cent of the GHG emissions of the EU. It is expected that the EU ETS will guarantee that the 2020 target (a 21 per cent emission reduction below the 2005 level) will be achieved for sectors under the scheme. The third phase of the EU ETS started in 2013 and the system now includes aircraft operations (since 2012) as well as N_2O emissions from chemical industry, PFC emissions from aluminium production and CO_2 emissions from some industrial processes that were not covered in the previous phases of the EU ETS (since 2013). For 2030, an emission reduction target of 43 per cent below the 2005 level has been set for the EU ETS.

30. The ESD became operational in 2013 and covers transport (excluding domestic and international aviation, and international maritime transport), residential and commercial buildings, agriculture and waste, together accounting for 55–60 per cent of the GHG emissions of the EU. The aim of the ESD is to decrease GHG emissions in the EU by 10 per cent below the 2005 level by 2020, and it includes binding annual targets for each member State for 2013–2020. The effort-sharing regulation, successor to the ESD, was adopted in 2018. It sets national emission reduction targets for 2030 ranging from 0 to 40 per cent below the 2005 level, and trajectories with annual limits for 2021–2030 for all member States and keeps many of the flexibilities of the ESD.

31. The Netherlands highlighted the EU-wide mitigation actions that are under development, such as the revision of the EU ETS directive towards achieving the EU's 2030

emission reduction targets in line with the 2030 climate and energy framework. Among the mitigation actions that will have a significant impact on future emissions are those related to the enforcement of the EU regulation on the governance of the Energy Union and climate action, which was recently addressed in the Netherlands' 2019 Climate Agreement.

32. The Party introduced national-level policies to achieve its targets under the ESD and domestic emission reduction targets. The key policies reported are the subsidy scheme to stimulate sustainable energy production and implement the actions under the 2013 Energy Agreement (e.g. in relation to the EU ecodesign framework directive and the EU energy labelling directive), and the groups of PaMs targeting transport and the built environment. The mitigation effect of the subsidy scheme is the most significant. Other policies that have delivered significant emission reductions are the group of policies to improve energy efficiency in buildings and support the transition to sustainable transport.

33. The Netherlands highlighted the domestic mitigation actions that will be implemented as a result of the 2019 Climate Agreement and the implementation of the 'Urgenda' judgment (see paras. 18–19 above). Among the mitigation actions that provide a foundation for significant additional action are the closure of all coal power stations by 2030, the installation of additional offshore wind farms, the increase of industrial process efficiency, and the optimization of energy use in public buildings. Table 4 provides a summary of the reported information on the PaMs of the Netherlands.

Table 4
Summary of information on policies and measures reported by the Netherlands

Sector	*Key PaMs*	*Estimate of mitigation impact in 2020 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	Reduction programme for non-CO_2 GHGs	400.00
Energy		
Transport	Group of PaMs in transport	3 079.41
Renewable energy	Subsidy scheme to stimulate sustainable energy production	14 900.00
Energy efficiency	EU ecodesign framework directive and EU energy labelling directive	2 000.17
IPPU	Implementation of the EU F-gas regulation	320.00
Agriculture	Group of PaMs in agriculture and horticulture	882.63
Waste	National waste management plan	1 310.00
Other	Group of PaMs in built environment	4 856.85

Note: The estimates of mitigation impact are estimates of emissions of CO_2 eq avoided in a given year as a result of the implementation of mitigation actions. The Netherlands did not report any mitigation actions for the LULUCF sector in CTF table 3.

34. The Netherlands described in the BR4 (p.65) that the mitigation impact of PaMs is estimated by comparing the projections under the WAM scenario with the situation where it is assumed that no policy changes occur after 2012. Additionally, the Party specified in the BR4 that, for non-energy and non-CO_2 PaMs, it is assumed that the effects are all policy-related. The ERT noted that this approach does not take into account the actual effect of policies and is influenced by exogenous parameters, such as economy, demography, fuel prices, technology, and market and human behaviour, which are not related to the effects of the policies. During the review, the Netherlands informed the ERT that a national climate and energy outlook will be published annually by the Netherlands Environmental Assessment Agency, focusing on the expected impact of new PaMs included in the 2019 Climate Agreement. The Party intends to use this information to improve its estimates of the mitigation impact of PaMs for future BRs.

35. During the review, the Party clarified that information on the estimation of the result of the implementation of some PaMs, such as the EU F-gas regulation, is available in annex 1 to the BR4. The ERT noted that the information provided in annex 1 to the BR4 describes the approach followed for estimating projections, but not the assumptions made or the

specific modelling approach followed for considering the impact of each policy or measure (such as the EU F-gas regulation or the national waste management plan). The ERT also noted that the Party could improve the transparency of future BRs by providing further detail on how each policy or measure was considered in the overall projection approach, specifying the assumptions made and any specific modelling parameters adjusted for each policy or measure.

36. In the technical review report on the Netherlands' BR3, the previous ERT noted that the Party had performed ex post estimates of the impact of several PaMs in addition to the ex ante estimates reported. Such information was not reported in the Party's BR4. During the review, the Netherlands clarified that, since the submission of the BR3, new ex post evaluations have been performed of the following PaMs: the overarching policy to drive innovation across sectors, the energy innovation policy, the energy investment tax allowance, and the policy on net metering for renewable energy production. The Party provided links to these ex post evaluations and clarified that the evaluators made suggestions to policymakers to further improve the effectiveness and efficiency of the measures. The Party also clarified that the findings of such evaluations are taken into consideration when modelling the projections. The ERT noted that the Party could enhance the transparency of future BRs by clarifying the PaMs for which ex post evaluations were performed and how the modelling approach was adjusted as a result, if applicable.

(b) Policies and measures in the energy sector

37. The 2013 Energy Agreement sets the overarching policy direction for energy and climate PaMs for up until 2020 and sets three objectives to be reached by 2020: improving energy efficiency by an average 1.5 per cent/year, reaching a 14 per cent share of renewable energy sources in energy consumption, and creating at least 15,000 additional jobs. In accordance with the Energy Agreement, almost all national legislation on climate change has been incorporated into the Environmental Management Act to facilitate its enforcement.

38. **Energy efficiency.** The energy tax introduced in 1996 is one of the key PaMs related to energy efficiency in the Netherlands, which is complemented by a set of PaMs targeting a range of economic activities and emissions sources, such as the long-term agreements on energy efficiency in industry, the subsidy scheme for energy savings and renewable energy in sports facilities and the energy labelling system in the buildings sector. Taxing energy consumption affects the behavioural choices of consumers, leading to overall reductions in energy consumption and GHG emissions. The tariffs of the energy tax are adjusted annually, and the level of the tax depends both on the consumer's energy consumption and on specific agreements between the different sectors and the Government.

39. The Environmental Permitting Act and the Environmental Management Activities Decree ensure the implementation of energy efficiency measures in the country by establishing procedures for businesses to report on energy efficiency related action.

40. **Energy supply and renewables.** The Netherlands will phase out coal-based electricity production by 2030; two coal power plants (out of five) were already closed in 2019. The impact of this measure on fossil fuel energy supply is complemented by a national minimum carbon price for power generation, which will act as a safeguard in case allowance prices under the EU ETS are lower than expected. These PaMs will lead to a reduction in the power generation capacity from fossils fuels, which will be replaced by renewable energy sources.

41. The Netherlands has implemented numerous PaMs aimed at incentivizing use of renewable energy sources, in line with the national target specified in the 2013 Energy Agreement. The policy that has the most significant mitigation impact is the subsidy scheme to stimulate sustainable energy production, which is a sliding feed-in premium system financed by a surcharge on the energy tax paid by the end consumers of natural gas and electricity, from which producers receive financial compensation for the unprofitable component of the renewable energy that they generate.

42. Additional key PaMs targeting renewable energy in the Netherlands are the policy on net metering for renewable energy production, aimed at incentivizing the installation of photovoltaic panels on homeowners' roofs; the regulation on offshore wind energy, which

facilitated the installation of new wind power generation capacity; and the Intergovernmental Wind Energy Agreement, which increased onshore wind power capacity by 3,500 MW by the end of 2018.

43. Furthermore, the investment subsidy for renewable energy and financial insurance for geothermal energy installations PaMs have been implemented to encourage investment in small-scale renewable heat installations (such as heat pumps, biomass boilers, pellet stoves and solar collectors) and geothermal energy installations, respectively. In 2019, the maximum investment subsidy per applicant was increased from EUR 125,000/year to up to EUR 2.5 million/applicant (up to 20 per cent of costs), with a total budget of EUR 87 million. The budget for the financial insurance scheme was EUR 66.6 million in 2019.

44. **Residential and commercial sectors.** A broad package of national policy instruments has been developed over the years for the residential and commercial sectors, which has enabled implementation of EU policy instruments such as the EU energy performance of buildings directive and the EU energy efficiency directive. Energy performance requirements for new buildings are laid down in the Buildings Decree pursuant to the Housing Act. The Buildings Decree empowers municipal authorities to grant building permits.

45. The EU ecodesign framework directive and the EU energy labelling directive, with an estimated emission reduction impact of 2,000.17 kt CO_2 eq by 2020, are the main policy instruments related to household appliances.

46. The implementation of the third EU energy package involved the installation of smart meters in at least 80 per cent of households and small businesses in the Netherlands, with an estimated mitigation impact attributed to resulting energy efficiency benefits of 166.42 kt CO_2 eq by 2020.

47. **Transport sector.** The most significant policies in the transport sector are the EU common and coordinated PaMs transposed by the Netherlands, including implementation of the EU renewable energy directive, which states that each member State should ensure that a minimum share of 10 per cent of all energy consumption in transport comes from renewable sources; the EU fuel quality directive, which sets a mandatory share of biofuels in fuel consumption in the transport sector; and the EU CO_2 emission standard for cars. The transition to a sustainable fuel mix includes increasing to 10 per cent (from 7 per cent in 2020) the share of sustainable biofuel in the fuel mix; and support for innovation and the use of more advanced biofuels.

48. The estimated mitigation impact of all PaMs in the transport sector is 7,481.01 kt CO_2 eq in 2020, making it the second most important sector in terms of mitigation impact after energy.

49. **Industrial sector.** The main PaMs targeting fuel combustion emissions in the industrial sector are the national industrial emissions directive, implemented under the wider Decree on Emission Standards for Medium-Sized Combustion Plants and the EU ETS. In the Netherlands, around 450 companies take part in the EU ETS, which are responsible for around 45 per cent of the total national GHG emissions.

(c) Policies and measures in other sectors

50. **Industrial processes.** The main policy targeting IPPU emissions is the policy for non-CO_2 GHGs in the industrial processes and product use sector. This policy encompasses a list of actions addressing different emissions sources, such as production and consumption of F-gases and production of aluminium and nitric acid. By 2018, an emission reduction of about 52 per cent (relative to the 1990 level) had already been achieved. However, given the limited contribution of the IPPU sector to total national GHG emissions, the mitigation impact of this policy was estimated at only 400.00 kt CO_2 eq by 2020. The reporting of PaMs in this sector includes measures implemented in accordance with the EU F-gas regulation, with an estimated mitigation impact of 320.00 kt CO_2 eq by 2020.

51. **Agriculture.** The main policy framework for the agriculture sector is the Agro Covenant, established in 2008 with the aim of reducing GHG emissions and increasing energy efficiency, which includes a mix of innovation and implementation measures in agriculture, cattle breeding and horticulture. The PaMs for the agriculture sector are mostly

aligned with the energy efficiency measures in the industrial sector, such as the long-term energy efficiency agreements related to horticulture. For non-CO_2 gases, the main PaMs are aimed at reducing manure-based biogas production; improving conditions in stables; and limiting the phosphate load generated by the sector. The estimated aggregate mitigation effect of the PaMs reported for the agriculture sector is 982.63 kt CO_2 eq by 2020.

52. **LULUCF.** The Netherlands explained in its BR4 that there are no national policies that explicitly aim to reduce GHG emissions from LULUCF by 2020. Nevertheless, a 620,000 ha nature network of high-quality nature wetland and terrestrial reserves was completed in 2017 as part of the national forest and nature policy. Additionally, some EU policies, such us the EU nitrates directive, have a direct impact on emissions from cropland and grazing land management and an indirect impact on the carbon content of soils.

53. **Waste management.** The policy framework for waste management in the Netherlands is included in the national waste management plan, which implements the provisions of the EU waste framework directive at the national level. The Party periodically elaborates and implements national waste management plans in line with EU and national climate and environmental targets and objectives. The first plan was established for 2002–2012, the second for 2009–2021 and the third, which was updated in 2019, for 2017–2029. The estimated impact of this policy is an emission reduction of 1,310.00 kt CO_2 eq by 2020.

(d) Response measures

54. The Netherlands reported on its assessment of the economic and social consequences of its response measures. The Party presented several initiatives aimed at minimizing adverse impacts, both in the Netherlands and in developing countries through development cooperation, focusing on both mitigation and adaptation. For mitigation, improving access to renewable energy and halting deforestation are the main focus areas. For adaptation, the areas of focus are supporting climate-smart agriculture and integrated water resource management; providing climate-resilient water and sanitation services; disaster risk reduction; and tackling gender vulnerabilities through capacity-building and by addressing cross-cutting issues.

55. In supporting efforts to address the needs of poor communities and developing countries, the Netherlands works with a multitude of stakeholders, including national, regional and local authorities, and governmental and non-governmental organizations and private sector organizations. The Netherlands supports countries in making use of the advantages of the carbon market by promoting collective innovation and piloting of market-based instruments for the reduction of GHG emissions.

(e) Assessment of adherence to the reporting guidelines

56. The ERT assessed the information reported in the BR4 of the Netherlands and identified issues relating to completeness and transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 5.

Table 5
Findings on mitigation actions and their effects from the review of the fourth biennial report of the Netherlands

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 6 Issue type: completeness Assessment: recommendation	The Party did not report all major new PaMs implemented or planned since the submission of the BR3. For example, although the Party had information on several new PaMs, such as those planned in the context of the 2030 climate and energy framework (including regulations that are directly applied in the country, such as the EU LULUCF regulation), it did not report those PaMs in the BR4. During the review, the Netherlands clarified that it only reported in the BR4 the PaMs that were considered in the projections, namely those that were known and announced before May 2019. The Party explained that the PaMs related to the 'Urgenda' judgment were therefore not included in the projection scenarios (see p.43 of the BR4) as they were announced only at the end of June 2019. The exception was the measure to close the Hemweg coal-fired power plant by 1 January 2020, which is included in CTF table 3 and in both the WEM and WAM projection scenarios. The Party clarified that the PaMs set out in the 2019 Climate Agreement are still in development and

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
		therefore could not be included in the projections or in CTF table 3. The ERT acknowledges that the information on the PaMs related to the 'Urgenda' judgment was not available to the Party in time for inclusion in the BR4. However, the ERT noted that information on several new PaMs related to the 2030 climate and energy framework (such as the EU LULUCF regulation) was available before May 2019 but the PaMs were not reported. The ERT recommends that the Netherlands improve the completeness of its reporting by including information on all major new implemented and planned PaMs in the next submission, including the EU LULUCF regulation and PaMs planned or implemented in the context of the 'Urgenda' judgment and the 2019 Climate Agreement.
2	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment: recommendation	The ERT noted a lack of clarity in the reporting of information in CTF table 3 compared with that reported in the BR4. Specifically, several PaMs were reported twice both in CTF table 3 and table 4.2 of the BR4 (e.g. the Agro Covenant, the EU ecodesign framework directive and the energy tax). The ERT also noted that the energy investment tax allowance was reported as a cross-cutting measure in the BR4 (p.43) but an energy-related measure in CTF table 3. During the review, the Party confirmed that the PaMs included in groups of PaMs were already in place before the introduction of the 2013 Energy Agreement. Any PaMs that have been adjusted since 2013 owing to the Energy Agreement were reported separately from those groups of PaMs in CTF table 3 and table 4.2 of the BR4. Regarding the energy investment tax allowance, the Netherlands clarified that this measure should be regarded as cross-cutting. The ERT recommends that the Netherlands improve the transparency of its reporting by including a detailed description of the difference in scope of the PaMs that are reported twice, or report such PaMs using different titles or descriptions in order to reflect the difference in their scope, and clarify the status of the energy investment tax allowance as a cross-cutting measure in CTF table 3.
3	Reporting requirement specified in CTF table 3 Issue type: transparency Assessment: recommendation	The ERT identified several issues related to the transparency of the Party's reporting in CTF table 3, specifically: (a) The mitigation impacts of 27 PaMs reported in CTF table 3 were reported as "IE"; however, information on where the impacts of those PaMs were reported is not detailed in the BR4 or in CTF table 3. Further, as a result of related information provided by the Party during the review, the ERT noted that the following PaMs were mistakenly reported as "IE": installing gas-free connections in new buildings in accordance with the Gas Act; prohibiting or closing down coal-fired power plants; and implementing the Environmental Protection Act, including mandatory reporting of energy-saving measures. The impacts of these PaMs were not estimated; (b) The Party reported information on PaMs by sector and by gas in its BR4 for all sectors. However, no information was provided on LULUCF sector PaMs in CTF table 3. For example, the forest and nature policy is described in the BR4 (p.60) but not included in CTF table 3; under this policy, a 620,000 ha nature network was completed in 2017. The ERT notes that, as this policy has an impact on GHG emission reductions by 2020, reporting it in CTF table 3 would have contributed to enhancing the transparency of the submission; (c) The ERT noted that the prohibiting or closing down coal-fired power plants is specified as being a planned measure, but that its impact is included under the WEM scenario, as it is marked with an asterisk in CTF table 3. During the review, the Netherlands provided detailed information on the allocation of the mitigation impact of each policy or measure. The ERT noted that this information is essential to understanding the scope of the mitigation impacts reported in CTF table 3. Regarding the reporting of PaMs affecting the LULUCF sector in CTF table 3, the Party stated that it is aware of the actions that affect LULUCF emissions and that the impacts of these actions were considered in its projections (see p.91 of the BR4); however, the specific impacts of PaMs affecting the LULUCF sector could not be estimated for the BR4. Regarding closing coal-fired power plants, the Netherlands clarified that this measure should have been described as implemented in CTF table 3. The ERT recommends that the Netherlands improve the transparency of its reporting by:

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		(a) Including detailed information in the BR or in CTF table 3, for example in the column of the table entitled "Brief description", on where the impacts of PaMs reported as "IE" are allocated, and ensuring the reporting of "IE" selected by the Party for reporting the mitigation impact for the following PaMs accurately reflects their status: installing gas-free connections in new buildings in accordance with the Gas Act; prohibiting/closing down coal-fired power plants; and implementing the Environmental Protection Act, with mandatory reporting of energy-saving measures taken; (b) Including information on the forest and nature policy in CTF table 3; (c) Clarifying whether prohibiting or closing down coal-fired power plants is a planned or implemented measure.

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

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

(a) Technical assessment of the reported information

57. For 2016, the Netherlands reported in CTF table 1 annual total GHG emissions excluding LULUCF and including indirect CO_2 emissions of 195,835.04 kt CO_2 eq, which is 11.7 per cent below the 1990 level. In 2016, emissions from sectors related to the target under the ESD and reported in CTF table 4 amounted to 101,333.44 kt CO_2 eq. The ERT noted that the Netherlands reported information in CTF table 4 for GHG emissions under the ESD only. During the review, the Party indicated that it reported in CTF table 4 on progress towards meeting the ESD target, and that, in its view, the BR4 clearly describes that the national target within the joint EU target under the Convention, as well as the reporting on progress towards it, relates only to emissions under the ESD. The ERT welcomes the footnote added to CTF table 4 in the resubmission to clarify the Party's reporting.

58. For 2017, the Netherlands reported in CTF table 1 annual total GHG emissions excluding LULUCF and including indirect CO_2 emissions of 193,712.97 kt CO_2 eq, which is 12.6 per cent below the 1990 level. In 2017, emissions from sectors relating to the target under the ESD and reported in CTF table 4 amounted to 102,326.63 kt CO_2 eq.

59. The Netherlands reported in its BR4 (p.74) that it does not intend to use units from market-based mechanisms under the Kyoto Protocol to meet its commitment under the ESD. It reported in CTF tables 4 and 4(b) that it did not use any units from market-based mechanisms in 2016 or 2017. Table 6 illustrates the Netherlands' ESD emissions and the use of units from market-based mechanisms to achieve its ESD target.

60. On its use of units from LULUCF activities, the Netherlands reported in CTF tables 4 and 4(a) that in 2016 and 2017 it did not use any units from LULUCF activities. The ERT noted that total GHG emissions excluding LULUCF were not reported for 1990 in CTF table 4. During the review, the Party explained that, as elaborated in the BR4 (p.8), the national emission reduction target within the joint EU target is to reduce emissions from ESD sectors by 16 per cent below the 2005 level by 2020. Since the Party's accounting starts in 2013, in its view there are no base-year (1990) emissions related to the progress reported in CTF table 4. During the review, the Party resubmitted CTF table 4 and included a footnote clarifying that the national target within the joint EU target under the Convention has been met when considering emissions from ESD sectors only, and that emissions are compared with the 2005 level; as such, no emissions were reported for 1990.

Table 6
Summary of information on the use of units from market-based mechanisms by the Netherlands to achieve its target

Year	*ESD emissions (kt CO_2 eq)*	*AEA (kt CO_2 eq)*	*Use of units from market-based mechanisms (kt CO_2 eq)*[a]	*Annual AEA surplus/deficit (kt CO_2 eq)*[b]	*Cumulative AEA surplus/deficit (kt CO_2 eq)*
2013	108 253.39	122 948.13	NA	14 694.74	14 694.74
2014	97 887.34	120 675.93	NA	22 788.59	37 483.33
2015	101 119.72	118 403.73	NA	17 284.01	54 767.34
2016	101 333.44	116 131.52	NA	14 798.08	69 565.42
2017	102 326.63	114 050.54	NA	11 723.91	81 289.33
2018	101 857.58	111 821.32	NA	9 963.73	91 253.07

Sources: The Netherlands' BR4 and CTF tables 4 and 4(b), information provided by the Party during the review and EU transaction log (AEAs).

[a] "NA" indicates that the Party stated in its BR that it does not intend to use market-based mechanisms to achieve its target.

[b] A positive number (surplus) indicates that ESD emissions were lower than the AEA, while a negative number (deficit) indicates that ESD emissions were greater than the AEA.

61. In assessing the progress towards achieving the 2020 joint EU target, the ERT noted that the Netherlands' emission reduction target for the ESD is 16 per cent below the base-year level (see para. 15 above). In 2017, the Party's emissions covered by the ESD were 10.3 per cent (11,723.91 kt CO_2 eq) below the AEA under the ESD. The Netherlands indicated that it does not plan to use market-based mechanisms. The Party has a cumulative surplus of 81,289.33 kt CO_2 eq with respect to its AEAs between 2013 and 2017. The Party provided provisional estimates for 2018. On the basis of these provisional estimates for 2018, emissions covered by the ESD were 8.9 per cent (9,963.73 kt CO_2 eq) below the AEA under the ESD, resulting in a cumulative surplus of 91,253.07 kt CO_2 eq with respect to its AEAs between 2013 and 2018.

62. The ERT noted that the Netherlands is making progress towards its ESD target by implementing mitigation actions that are delivering significant emission reductions.

(b) Assessment of adherence to the reporting guidelines

63. The ERT assessed the information reported in the BR4 of the Netherlands and recognized that the reporting is complete, transparent and thus adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

3. Projections overview, methodology and results

(a) Technical assessment of the reported information

64. The Netherlands reported updated projections for 2020 and 2030 relative to actual inventory data for 2017 under the WEM scenario. The WEM scenario reported by the Party includes PaMs implemented and adopted up until May 2019.

65. In addition to the WEM scenario, the Netherlands reported the WAM scenario. The WAM scenario includes planned PaMs. The Party provided a definition of its scenarios, explaining that its WEM scenario includes policies such as the EU ETS, the energy tax, subsidies for renewable energy use, the abolition of the milk quota and the specific and binding measures of the 2013 Energy Agreement. In addition to the PaMs included in the WEM scenario, the WAM scenario includes planned PaMs that had been published but not yet officially implemented by May 2019, such as additional energy performance standards for new buildings after 2020, a kilometre tariff for trucks, and a tax on flights. Neither scenario includes the 2019 Climate Agreement; although the ban on the use of coal for electricity generation from 2030 onward is included in both the WEM and WAM scenarios. The definitions indicate that the scenarios were prepared according to the UNFCCC reporting guidelines on BRs.

66. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case) for 2020, 2025 and 2030. The projections are also provided in an aggregated format for each sector and for a Party total using GWP values from the AR4. The Netherlands reported on factors and activities affecting emissions for each sector.

67. The Netherlands did not report emission projections for indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides.

68. Emission projections related to fuel sold to ships and aircraft engaged in international transport were reported separately and were not included in the totals.

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

69. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the BR3. In annex 1 to the BR4, the Netherlands described in detail the modelling systems applied to prepare the projections. For the energy sector, the National Energy Outlook Modelling System is the primary modelling suite, which has been developed for over 20 years by the Energy Research Centre of the Netherlands and the Netherlands Environmental Assessment Agency. It simulates the various parts and sectors of the national energy system and enables the exchange of data between 12 optimization and simulation models. For the calculation of the emission projections for the agriculture sector, the National Emission Model for Agriculture is used, which models ammonia, CH_4, nitrogen oxides, N_2O, PM10, PM2.5 and CO_2 emissions from agriculture using a methodology that complies with the *2006 IPCC Guidelines for National Greenhouse Gas Inventories* and the *EMEP/EEA air pollutant emission inventory guidebook 2016*. The model uses historical input data and requires as input the estimated effects of existing policies and expert judgment derived from other models, research and historical trends. For the LULUCF sector, the European Forest Information Scenario model is applied to estimate CO_2 emissions from forestry, while the projections for other categories and gases for the sector are based on expert judgment. The projections for the waste and IPPU sectors are made using calculation sheets that are based on the respective national GHG inventory methodologies used, assumptions about the effects of implemented, adopted and planned PaMs, and assumptions about economic developments according to the national *Climate and Energy Outlook 2019*.

70. To prepare its projections, the Netherlands relied on key underlying assumptions relating to, inter alia, population, number and size of households, energy and CO_2 prices, economic activity indicators, transport activity indicators, heating and cooling degree days, animal population and municipal solid waste data. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections (Matthijsen and Wijngaart, 2015).

71. The Netherlands provided information in CTF table 5 and in the BR4 on the key assumptions, namely that population growth will continue; raising the retirement age will potentially result in a workforce increase in the short term, but this will gradually decrease after 2025; the growth in the number of households will be greater than the growth in the population; the growth of the economy will continue, although the average economic growth in 2015–2030 is not expected to reach the same level as in the years before the recession (2000–2008) until 2030; fuel prices will increase as projected in the *World Energy Outlook 2018*, the use of passenger vehicles and freight transport will increase following the economic growth and population increase; the growth of exports will remain roughly two percentage points above economic growth; growth in consumption (both private and public) will be lower than economic growth; animal population and synthetic fertilizer use will decline; nitrogen input from application of manure will increase up to 2025 as a result of higher animal weights and higher amounts of nitrogen in feed (grass instead of corn), thus compensating for the decline in animal population; and municipal solid waste generated and landfilled will substantially decrease.

72. The Netherlands also provided information on the changes since the submission of its BR3 in the assumptions, methodologies, models and approaches used in the projection scenarios. The Party provided supporting documentation to explain the changes. The

projections reported in the BR3 (submitted in 2017) were based on the *National Energy Outlook 2017*, while the projections reported in the BR4 are based on the national *Climate and Energy Outlook 2019*. The changes in the emission levels in almost all sectors, with the exception of the energy sector, can be attributed to higher levels of economic growth than projected in the *National Energy Outlook 2017*. For the energy sector, the reported projected emission levels are lower owing to higher fuel and CO_2 prices, the closure of the Hemweg power station at the end of 2019, and the ban on the use of coal by power stations from 2030 onward. The Party reported in CTF table 5 the key variables and assumptions used in the preparation of the projection scenarios.

73. The Netherlands further provided information on sensitivity analyses, which focused on assessing the complex interactions of the EU electricity market. Two scenarios were analysed: the first scenario, for 2020, assumes reduced access to electricity generated by nuclear power stations in Belgium and France, and a year with low wind levels in northern Europe and stronger-than-usual fluctuations in energy and CO_2 prices; and the second scenario, for 2030, assumes a more ambitious climate and energy policy is implemented in France, Germany and the United Kingdom of Great Britain and Northern Ireland, which will boost the availability of electricity generated from renewable energy and reduce the availability of coal and nuclear power. According to the analysis of the 2020 scenario, CO_2 emissions will be 4 Mt CO_2 higher in 2020 compared with under the WEM scenario, and the price of electricity will be approximately EUR 2/MWh higher owing to the reduced production of electricity from renewable and nuclear energy both in the Netherlands and abroad. Concerning the 2030 scenario, the lack of coal in the electricity mix means that changes to imports and exports will have little effect on CO_2 emissions, as fluctuations in the electricity market can be accommodated by increasing or decreasing generation at gas-fired power and cogeneration stations.

74. The Netherlands provided information on uncertainty analyses. The analyses cover three types of uncertainty: knowledge and model-related uncertainties about input data and model parameters; general or external uncertainties about assumed growth in GDP and population, fuel and CO_2 prices and the speed of climate change; and specific policy uncertainties about the effects of policies. The calculations produced estimated uncertainties for the Party's total GHG emissions of 9 per cent for 2020 and 16–17 per cent for 2030.

(c) Results of projections

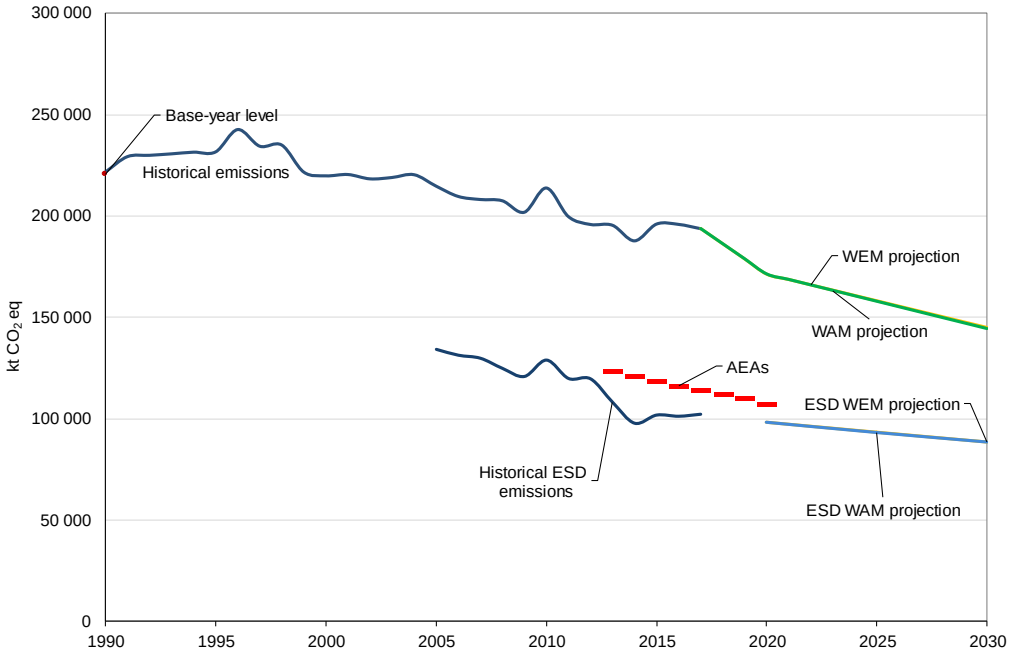
75. The projected emission levels under different scenarios and information on the quantified economy-wide emission reduction target are presented in table 7 and figure 1.

Table 7
Summary of greenhouse gas emission projections for the Netherlands

	Total GHG emissions		*Emissions under the ESD*	
	GHG emissions (kt CO_2 eq per year)	*Change in relation to 1990 level (%)*	*ESD emissions (kt CO_2 eq per year)*	*Comparison with 2020 AEA (%)*
2020 AEA under the ESD[a]	NA	NA	107 362.87	100.0
Inventory data 1990	221 710.82	–	NA	NA
Inventory data 2017	193 712.96	–12.6	102 326.63	–4.7
WEM projections for 2020	171 256.35	–22.8	98 044.41	–8.7
WAM projections for 2020	171 267.94	–22.8	98 050.98	–8.7
WEM projections for 2030	144 986.44	–34.6	88 604.35	NA
WAM projections for 2030	144 297.22	–34.9	88 321.34	NA

Source: The Netherlands' BR4 and CTF table 6, and information provided by the Party during the review.
Note: The projections are for GHG emissions excluding LULUCF and including indirect CO_2.
[a] The quantified economy-wide emission reduction target under the Convention is a joint target of the EU and its member States. The target is to reduce emissions by 20 per cent compared with the base-year (1990) level by 2020. The Netherlands' emission reduction target under the ESD is 16 per cent below the 2005 level by 2020.

Figure 1
Greenhouse gas emission projections reported by the Netherlands



Sources: EU transaction log (AEAs), the Netherlands' BR4 and CTF tables 1 and 6, and information provided by the Party during the review.

76. The Netherlands' total GHG emissions excluding LULUCF and including indirect CO_2 in 2020 and 2030 are projected to be 171,256.35 and 144,986.44 kt CO_2 eq, respectively, under the WEM scenario, which represents a decrease of 22.8 and 34.6 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 and 2030 are projected to be lower than those in 1990 by 22.8 and 34.9 per cent and amount to around 171,267.94 and 144,297.22 kt CO_2 eq, respectively.

77. The Party's target under the ESD is to reduce its ESD emissions by 16 per cent below the 2005 level by 2020 (see para. 15 above). The Netherlands' AEAs, which correspond to its national emission target for ESD sectors, change linearly from 122,948.13 kt CO_2 eq in 2013 to 107,362.87 kt CO_2 eq for 2020. According to the projections under the WEM scenario, ESD emissions are estimated to reach 98,044.41 kt CO_2 eq by 2020. Under the WAM scenario, the Party's ESD emissions in 2020 are projected to be 98,050.98 kt CO_2 eq. The projected level of emissions under both the WEM and WAM scenarios is 8.7 per cent below the AEAs for 2020. Given that the Party's current cumulative surplus of AEAs is 91,253.07 kt CO_2 eq, the ERT noted that this suggests that the Netherlands expects to meet its target under the WEM and WAM scenarios.

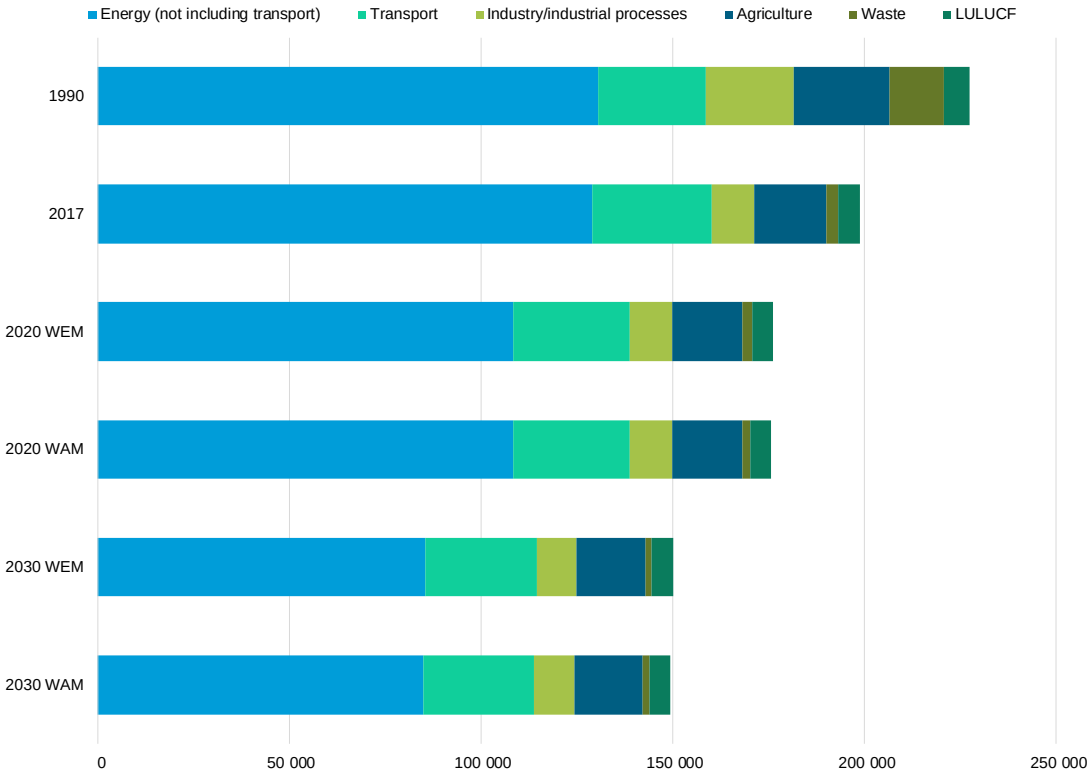
78. In addition to its target under the ESD, in 2017 the Party committed itself to achieving a domestic target of a 49 per cent reduction in emissions below the 1990 level by 2030. The projections indicate that the Netherlands may face challenges in achieving its domestic target. To meet this target, the Government of the Netherlands introduced the 2019 Climate Agreement, which also covers implementation of the 'Urgenda' judgment (see paras. 18–19 above). On 28 July 2019, the Government announced a set of measures that will contribute towards implementing the judgment, including a ban on using coal to generate electricity at the Hemweg power plant with effect from 1 January 2020. Under both the WEM and WAM scenarios, the emission projections for 2020 and 2030 show reductions of less than 25 and 49 per cent, respectively. However, the WEM and WAM scenarios do not include the effect of the implementation of the 2019 Climate Agreement, except the closure of the Hemweg power plant before 2020 and the ban on coal-fired power plants from 2030 onward.

79. The Party reported in the BR4 an initial assessment of the effect of the implementation of the 2019 Climate Agreement. The assessment, which was prepared by the Netherlands Environmental Assessment Agency, concludes that it will result in a 43–48 per cent reduction

in GHG emissions below the 1990 level. As the Netherlands' emission reduction target for 2030 (49 per cent) is higher than this, the assessment indicates that the 2019 Climate Agreement will be insufficient to meet the target.

80. The Netherlands presented the WEM and WAM scenarios by sector for 2020 and 2030, as summarized in figure 2 and table 8.

Figure 2
Greenhouse gas emission projections for the Netherlands presented by sector
(kt CO_2 eq)



Source: The Netherlands' BR4 CTF table 6.

Table 8
Summary of greenhouse gas emission projections for the Netherlands presented by sector

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2020		*2030*		*1990–2020*		*1990–2030*	
Sector	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
Energy (not including transport)	130 586.50	108 296.97	108 308.32	85 429.98	84 893.44	–17.1	–17.1	–34.6	–35.0
Transport	28 018.67	30 591.73	30 591.73	29 100.35	28 951.81	9.2	9.2	3.9	3.3
Industry/industrial processes	22 924.78	10 945.45	10 945.69	10 440.08	10 441.16	–52.3	–52.3	–54.5	–54.5
Agriculture	25 077.39	18 276.40	18 276.40	17 874.70	17 874.70	–27.1	–27.1	–28.7	–28.7
LULUCF	6 491.47	5 339.07	5 339.07	5 615.60	5 615.60	–17.8	–17.8	–13.5	–13.5
Waste	14 186.29	2 692.00	2 692.00	1 674.00	1 674.00	–81.0	–81.0	–88.2	–88.2
Other	NO	NO	NO	NO	NO	NO	NO	NO	NO
Total GHG emissions excluding LULUCF and including indirect CO_2	**221 710.82**	**171 256.35**	**171 267.94**	**144 986.44**	**144 297.22**	**–22.8**	**–22.8**	**–34.6**	**–34.9**

Source: The Netherlands' BR4 CTF table 6.

81. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the energy (excluding transport), IPPU, waste and agriculture sectors, amounting to projected reductions of 22,289.53 kt CO_2 eq (17.1 per cent), 11,979.33 kt CO_2 eq (52.3 per cent), 11,494.29 kt CO_2 eq (81.0 per cent) and 6,800.99 kt CO_2 eq (27.1 per cent) between 1990 and 2020, respectively. These changes are largely attributable to developments in electricity production (growth in energy production from renewables, increase in use of imported energy as a result of greater interconnectivity of the electricity grids, closure of coal-fired power plants, and developments in prices of coal, and gas and carbon allowances), energy conservation measures, the 2017 phosphate reduction plan, and legislation on landfills and waste. The total mitigation effect of PaMs by 2020 is projected to be 38.8 Mt CO_2 eq. The pattern of projected emissions reported for 2030 under the same scenario remains the same, owing mainly to the decrease in emissions from the energy sector (excluding transport), with the absolute decrease in projected emissions from the sector estimated at 22,866.99 kt CO_2 eq for 2020–2030, resulting in a decrease in the projected emissions for the energy sector of 45,156.52 kt CO_2 eq (34.6 per cent) for 2030 compared with the 1990 level. The projected decline in emissions from 2020 onward is mainly attributed to expected developments in electricity production. It is projected that in 2030 emissions will decline sharply following the closure of the last three remaining coal-fired power stations in the Netherlands.

82. Emissions from the transport sector are projected to have increased from 1990 to 2020 by 2,573.06 kt CO_2 eq (9.2 per cent). However, a decrease in emissions is projected for 2018–2020 of around 0.8 Mt CO_2 eq, which is attributed to the increase in the use of renewable energy for transport and more efficient vehicle fleets. It is projected that emissions will fall by a further 1,491.38 kt CO_2 eq from 2020 to 2030.

83. The LULUCF sector is a net source category. Emissions are projected to have decreased from 1990 to 2020 by 1,152.40 kt CO_2 eq (17.8 per cent), and to increase between 2020 and 2030 by 276.53 kt CO_2 eq (5.2 per cent) owing to a gradual decrease in arable land area, a shift from arable land to grassland, and the expansion of urban areas.

84. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by sector remain roughly the same, since the additional policies reflected in the WAM scenario differ only slightly from existing policies.

85. The Netherlands presented the WEM and WAM scenarios by gas for 2020 and 2030, as summarized in table 9.

Table 9
Summary of greenhouse gas emission projections for the Netherlands presented by gas

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
		2020		*2030*		*1990–2020*		*1990–2030*	
Gas	*1990*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*	*WEM*	*WAM*
CO_2[a]	163 345.38	143 233.92	143 245.51	119 270.90	118 586.90	–12.3	–12.3	–27.0	–27.4
CH_4	31 849.97	17 339.10	17 339.10	15 686.92	15 687.23	–45.6	–45.6	–50.7	–50.7
N_2O	18 039.59	8 561.44	8 561.44	8 484.16	8 478.63	–52.5	–52.5	–53.0	–53.0
HFCs	5 606.33	1 845.44	1 845.44	1 326.91	1 326.91	–67.1	–67.1	–76.3	–76.3
PFCs	2 662.85	165.82	165.82	181.00	181.00	–93.8	–93.8	–93.2	–93.2
SF_6	206.70	110.63	110.63	36.55	36.55	–46.5	–46.5	–82.3	–82.3
NF_3	IE, NO	IE	IE	IE	IE	IE	IE	IE	IE
Total GHG emissions without LULUCF	**221 710.82**	**171 256.35**	**171 267.94**	**144 986.44**	**144 297.22**	**–22.8**	**–34.3**	**–34.6**	**–34.9**

Source: The Netherlands' BR4 CTF table 6 and information provided by the Party during the review.
[a] The Netherlands included indirect CO_2 emissions in its projections.

86. For 2020, the most significant reductions are projected for CO_2, CH_4 and N_2O emissions: 20,111.46 kt CO_2 eq (12.3 per cent), 14,510.87 kt CO_2 eq (45.6 per cent) and 9,478.15 kt CO_2 eq (52.5 per cent) between 1990 and 2020, respectively. The reduction in

CO_2 emissions is mostly due to developments in the energy sector. The reduction in CH_4 emissions is mainly related to developments in the waste sector (decline in emissions from landfill sites owing to measures targeting the reduction of waste material and degradable carbon per t waste) and, to a lesser extent, developments in the agriculture sector. Regarding N_2O emissions, a substantial reduction in emissions occurred, mainly in relation to the production of nitric acid between from 2008, owing to reduction measures introduced following the inclusion of the production of nitric acid under the EU ETS. N_2O emissions are projected to decrease further owing to lower levels of nitrogen transferred to the soil via livestock manure during grazing.

87. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by gas remain the same.

(d) Assessment of adherence to the reporting guidelines

88. The ERT assessed the information reported in the BR4 of the Netherlands and identified issues relating to transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 10.

Table 10
Findings on greenhouse gas emission projections reported in the fourth biennial report of the Netherlands

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 28 Issue type: completeness Assessment: encouragement	The Party reported WEM and WAM scenarios in its BR4. In the BR4 (p.76), the Party provided the rationale for not reporting a WOM scenario, concluding that constructing a WOM scenario assuming no new policies after 2000 would be very difficult, highly theoretical and unrealistic. However, the ERT noted that, in order to estimate the mitigation effects of PaMs, the Netherlands made use of a scenario included in the *National Energy Outlook 2017* entitled "without the Energy Agreement" (the 2013 Energy Agreement is the pivotal cross-sectoral policy for climate and energy for up to 2020). The ERT also noted that, in order to estimate the effects of PaMs, the "without the Energy Agreement" scenario was adjusted to include the effects of measures preceding the 2013 Energy Agreement. During the review, the Netherlands explained that the scenario "without the Energy Agreement" included in the *National Energy Outlook 2017* was not updated in the national *Climate and Energy Outlook 2019*, and for that reason was not included in the BR4 as a WOM scenario. The ERT is of the view that the adjusted "without the Energy Agreement" scenario, applied with a starting point of 2013 (or earlier), is in line with the definition of a WOM scenario in the UNFCCC reporting guidelines on BRs and the UNFCCC reporting guidelines on NCs. Given that the WOM scenario has a functional use in the BR (i.e. it is used to estimate the effects of PaMs), reporting this scenario would improve the completeness of the reporting in the BR. The ERT encourages the Party to include a WOM scenario in the next BR, in particular where it has a functional role, such as for estimating the effects of PaMs.
2	Reporting requirement[a] specified in paragraph 29 Issue type: transparency Assessment: recommendation	The Party did not include in the BR4 a clear description of whether the ban on the use of coal for electricity production from 2030 onward was included in both the WEM and WAM scenarios or in the WAM scenario only. During the review, the Netherlands clarified that the ban on the use of coal for electricity production is included in both the WEM and WAM scenarios. While acknowledging the difficulties in reflecting recently adopted policies in the BR, the ERT recommends that the Party improve the description of the projection scenarios in the next BR by transparently describing which PaMs are included in each scenario.
3	Reporting requirement[a] specified in paragraph 34 Issue type: transparency Assessment: recommendation	The ERT noted from comparing the WEM and WAM scenarios (data from CTF tables 6(a) and 6(c)) that the "Total with LULUCF" and "Total without LULUCF" reported in CTF tables 6(a) and 6(c) are different from the sum of emissions from the individual sectors. The difference ranges from around 450 to 920 kt CO_2 eq for all historic and projected years. During the review, the Netherlands explained that the difference between the sum of emissions from the individual sectors and the reported totals with and without LULUCF is due to the inclusion of indirect GHGs in the totals only.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		The ERT recommends that the Party transparently explain that the difference in CTF tables 6(a) and 6(c) between the sum of the emissions from the individual sectors and the total reported emissions is due to the fact that indirect GHGs are included in the totals only.
4	Reporting requirement[a] specified in paragraph 35 Issue type: transparency Assessment: recommendation	In CTF table 1s, the Party reported NF_3 emissions as "NO, IE". In the BR4 (p.19), the Party explained that there is no separate reporting of NF_3 in the Netherlands and therefore NF_3 emissions are included with PFC emissions. The ERT noted that, in CTF tables 6(a) and 6(c), the cells for reporting NF_3 emissions were empty. During the review, the Party explained that NF_3 emissions are included in the PFC emission projections in CTF tables 6(a) and 6(c). The ERT recommends that the Netherlands transparently report in the next BR and in CTF tables 6(a) and 6(c) whether NF_3 emissions are included in the reported projections and under which category and group of gases.
5	Reporting requirement[a] specified in paragraph 35 Issue type: completeness Assessment: encouragement	The Party did not report separate projections of the indirect GHGs carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides in its BR4. During the review, the Netherlands explained that work on the national air pollutant emission projections for up to 2030 has not yet been concluded, and they are expected to be published at the end of March 2020. The ERT encourages the Party to improve the completeness of its reporting by including in the next BR projections of the indirect GHGs carbon monoxide, nitrogen oxides, non-methane volatile organic compounds and sulfur oxides.
6	Reporting requirement[a] specified in paragraph 43 Issue type: transparency Assessment: encouragement	The Party reported in its BR4 (p.88) that the projections of emissions associated with the use of F-gases were estimated taking into consideration the EU F-gas regulation that came into force on 1 January 2015, which requires the amount of HFCs placed on the market to be reduced by 79 per cent from 2015 to 2030. The Party did not, however, include in the BR4 information on how the provisions of the regulation were reflected in the projections. For example, the Party did not explain how the specific measures of the regulation related to the prevention of leakages, the ban on new applications and gases with a high GWP, and the training and certification activities were modelled in the projections. During the review, the Netherlands explained that the measures in the EU F-gas regulation had already been implemented in national policy owing to the earlier introduction of the national reduction programme for non-CO_2 gases. The effect of the national policy is reflected in data from the national refrigerant registration system. The Party can use these data to track the exact quantities of refrigerant refilled as a result of leakage and to determine the extent to which shifts to using low-GWP refrigerants are occurring. The projections are based on the assumption that the use of HFCs will fall by 79 per cent from 2015 to 2030. The ERT encourages the Netherlands to improve the transparency of the reporting on the approach used to estimate projections of F-gas emissions, in particular by including in the next BR information on the assumptions used and how the effects of the respective PaMs were considered in the projections.
7	Reporting requirement[b] specified in paragraph 47 Issue type: transparency Assessment: encouragement	The ERT made the following observations concerning the key underlying assumptions and variables reported in CTF table 5: (a) The reported international gas price is about USD 0.20/barrel of oil equivalent. Given that one barrel of oil equivalent is equal to 5.8 million British thermal units, which is a common unit for natural gas, the ERT is of the view that the reported prices are very low; (b) The Party did not provide a definition of heating degree days and cooling degree days for the Netherlands; (c) The cells in CTF table 5 for the GDP growth rate are empty; (d) Although the Party reported in the BR4 (p.90) that the 0.2 Mt CO_2 eq reduction in N_2O emissions between 2017 and 2020 resulted from lower levels of nitrogen transferred to the soil via livestock manure, the nitrogen input from the application of manure reported in CTF table 5 increased from 310.54 kt nitrogen in 2015 to 319.75 kt nitrogen in 2020.

No.	Reporting requirement, issue type and assessment	Description of the finding with recommendation or encouragement
		During the review, the Netherlands explained that: (a) The international gas price was incorrectly reported in euros; (b) Heating degree days are defined as the sum of the difference between the mean temperature and 18 °C for all days with a mean temperature of below 18 °C. Cooling degree days are defined as the sum of the difference between the mean temperature and 18 °C for all days with a mean temperature of above 18 °C; (c) Regarding GDP growth rate, the Party clarified that the annual figures should be 2.1 per cent for 2005; 1.3 per cent for 2010; 2.0 per cent for 2015; 1.5 per cent for 2020; 2.2 per cent for 2025; and 1.6 per cent for 2030; (d) The reduction in N_2O emissions was caused by a lower nitrogen input during grazing. The total nitrogen input from application of manure (in stables only) shows an increasing trend, which is due to higher animal weights and higher amounts of nitrogen in feed (being grass instead of corn), which compensates for a decrease in animal numbers. The ERT encourages the Netherlands to improve the transparency of the reporting on key assumptions in CTF table 5, in particular by ensuring the consistency of reported numbers and units; providing its definition of heating degree days and cooling degree days; reporting the GDP growth rates applied in modelling; and clarifying the reported information on livestock-related trends and manure application with associated emission trends in the BR and CTF table 5.

Note: The reporting on the requirements not included in this table is considered to be complete, transparent and thus adhering to the UNFCCC reporting guidelines on NCs and on BRs.

[a] Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs, as per para. 11 of the UNFCCC reporting guidelines on BRs.

[b] Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs.

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

1. Technical assessment of the reported information

(a) Approach and methodologies used to track support provided to non-Annex I Parties

89. In its BR4 the Netherlands reported information on its provision of financial, technological and capacity-building support to non-Annex I Parties.

90. The Netherlands provided details on how the support it has provided is "new and additional", including how it has determined resources as being "new and additional". The Party's definition is that all climate finance is "new and additional". The Netherlands' process for determining whether resources are "new and additional" is based on the annual budget approval process, and the assumption that, since all financial disbursements are approved by Parliament annually, all climate finance in the final approved budget is "new and additional". The ERT noted that the Netherlands could enhance the transparency of future submissions by providing further details on its rationale for considering all climate finance disbursements approved by Parliament as "new and additional", and specifying whether the funds are considered additional to official development assistance expenditure or to any other predefined level of climate finance.

91. The Netherlands reported the support that it has provided to non-Annex I Parties, distinguishing between support for mitigation and adaptation activities and recognizing the capacity-building elements of such support. It explained how it tracks finance for adaptation and mitigation using the Rio markers.

92. The BR4 includes information on the national approach to tracking the provision of support, indicators (for financial support), delivery mechanisms used and allocation channels tracked, but does not include information on tracking indicators for technology transfer and capacity-building. The Netherlands did not include information on how it has refined its

approach to tracking climate support and methodologies as compared with what was reported in its seventh national communication. However, during the review, the Party clarified that it previously tracked the provision of financial support only, but now tracks the provision of support for technology transfer and capacity-building as well.

93. The Netherlands described the methodology and underlying assumptions used for collecting and reporting information on financial support, including guidelines and indicators. The methodology used for preparing information on international climate support is based on the Rio markers.

(b) Financial resources

94. The Netherlands reported information on its provision of financial support to non-Annex I Parties as required under the Convention, including on financial support provided, committed and pledged, allocation channels and annual contributions.

95. The Party 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 in mitigating GHG emissions and adapting to the adverse effects of climate change and any economic and social consequences of response measures, and contribute to technology development and transfer and capacity-building related to mitigation and adaptation.

96. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, the Netherlands reported that its climate finance has been allocated on the basis of priority areas, such as renewable energy and halting deforestation (for mitigation), climate-smart agriculture, integrated water resource management, and the provision of climate-resilient water, sanitation and hygiene services, with an overall focus on poverty alleviation. The Party also considers gender as an important cross-cutting issue related to finance for climate action. Table 11 summarizes the information reported by the Netherlands on its provision of financial support.

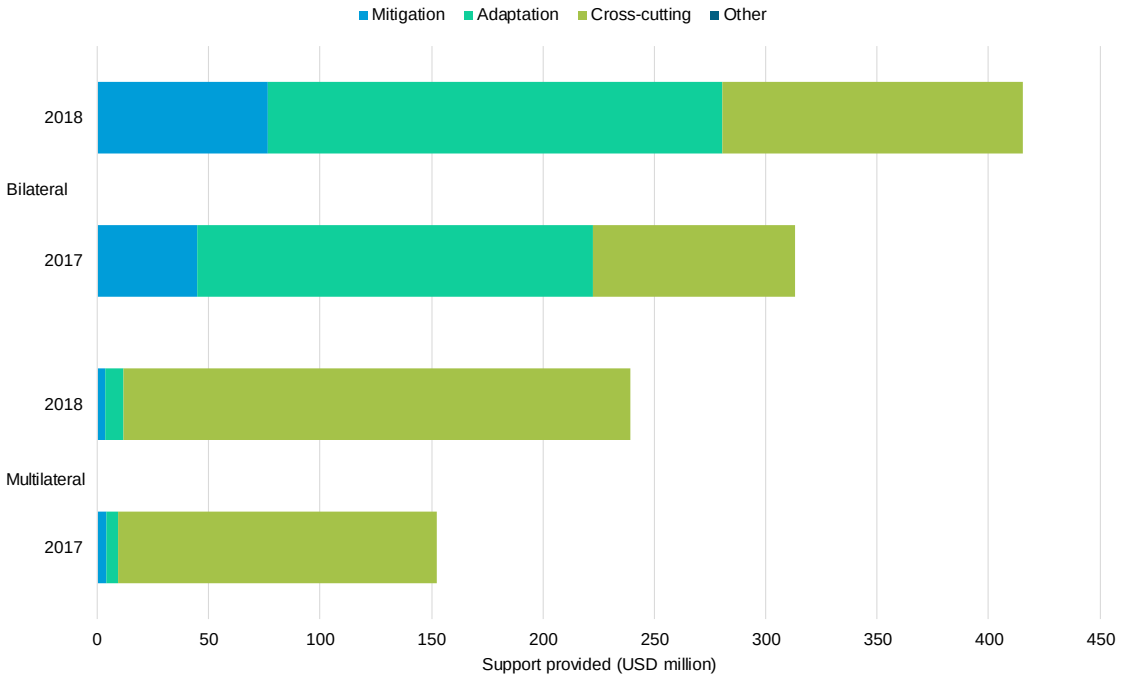
Table 11
Summary of information on provision of financial support by the Netherlands in 2017–2018
(Millions of United States dollars)

	Year of disbursement	
Allocation channel of public financial support	*2017*	*2018*
Official development assistance	4 571.95	5 217.11
Climate-specific contributions through multilateral channels, including:	36.60	55.00
Global Environment Facility	15.20	28.19
Least Developed Countries Fund	–	9.10
Green Climate Fund	17.33	13.98
Other multinational climate change funds	4.07	3.73
Financial institutions, including regional development banks	66.12	155.73
United Nations bodies	49.45	28.31
Climate-specific contributions through bilateral, regional and other channels	312.97	415.17

Sources: BR4 CTF tables and Query Wizard for International Development Statistics, available at http://stats.oecd.org/qwids/.

97. The Netherlands reported on its climate-specific public financial support, totalling USD 465.15 million in 2017 and USD 654.21 million in 2018. It increased its contributions by 22.0 per cent in 2018 compared with the level of support reported for 2016 in the BR3, as reported in its local currency. During the reporting period, the Netherlands placed a particular focus on the poorest communities and countries, particularly in Africa and the Middle East. Information on financial support from the public sector provided through multilateral and bilateral channels and the allocation of that support by target area is presented in figure 3 and table 12.

Figure 3
Provision of financial support by the Netherlands in 2017–2018



Source: The Netherlands' BR4 CTF tables 7, 7(a) and 7(b).

Table 12
Summary of information on channels of financial support used in 2017–2018 by the Netherlands
(Millions of United States dollars)

	Year of disbursement				*Share (%)*	
Allocation channel of public financial support	*2017*	*2018*	*Difference*	*Change (%)*	*2017*	*2018*
Detailed information by type of channel						
Multilateral channels						
Mitigation	4.07	3.73	–0.34	–8.3	2.7	1.6
Adaptation	5.44	7.97	2.53	46.6	3.6	3.3
Cross-cutting	142.67	227.33	84.66	59.3	93.7	95.1
Other	–	–	–	–	–	–
Total multilateral	**152.18**	**239.04**	**86.86**	**57.1**	**100.0**	**100.0**
Bilateral channels						
Mitigation	44.67	76.75	32.08	71.8	14.3	18.5
Adaptation	177.80	203.74	25.94	14.6	56.8	49.1
Cross-cutting	90.50	134.69	44.19	48.8	28.9	32.4
Other	–	–	–	–	–	–
Total bilateral	**312.97**	**415.17**	**102.20**	**32.7**	**100.0**	**100.0**
Total multilateral and bilateral	**465.15**	**654.21**	**189.06**	**40.6**	**100.0**	**100.0**

Source: The Netherlands' BR4 CTF tables 7, 7(a) and 7(b).

98. The BR4 includes detailed information on the financial support provided though multilateral, bilateral and regional channels in 2017 and 2018. More specifically, the Netherlands contributed through multilateral channels, as reported in the BR4 and in CTF table 7(a), USD 152.18 million and USD 239.04 million for 2017 and 2018, respectively. The contributions were made to specialized multilateral climate change funds, such as the Green Climate Fund, the Global Environment Facility and the Least Developed Countries

Fund. The largest recipients of funding through multilateral channels were the World Bank (15.0 and 47.4 per cent of total multilateral funding in 2017 and 2018, respectively), followed by the International Fund for Agricultural Development (14.6 per cent in 2017), the Global Environment Facility (10.0 and 11.8 per cent in 2017 and 2018, respectively), the Asian Infrastructure Development Bank (12.1 and 7.4 per cent in 2017 and 2018, respectively) and the Green Climate Fund (11.4 and 5.8 per cent in 2017 and 2018, respectively).

99. The BR4 and CTF table 7(b) also include detailed information on the total financial support provided though bilateral, regional and other channels in 2017 and 2018 (USD 312.97 million and USD 415.17 million, respectively).

100. The BR4 provides information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7 for 2017, the shares of the total public financial support allocated for mitigation, adaptation and cross-cutting projects were 10.5, 39.4 and 50.1 per cent, respectively. In addition, 32.7 per cent of the total public financial support was allocated through multilateral channels and 67.3 per cent through bilateral, regional and other channels. In 2018, the shares of total public financial support allocated for mitigation, adaptation and cross-cutting projects were 12.3, 32.4 and 55.3 per cent, respectively. Furthermore, 36.5 per cent of the total public financial support was allocated through multilateral channels and 63.5 per cent through bilateral, regional and other channels.

101. The ERT noted that in 2017 a majority of financial contributions made through multilateral channels were allocated to the sector other, as reported in CTF table 7(a). During the review, in response to a request by the ERT for clarification on the composition of the sector other, the Party indicated that specific funds target certain sectors; as such, no general clarification can be provided. For instance, according to the Netherlands, World Bank funding focuses mainly on the agriculture sector and on energy generation, distribution and efficiency, whereas the International Finance Corporation and the Food and Agriculture Organization of the United Nations funding focuses mainly on agriculture. In 2017 and 2018 a majority of financial contributions made through bilateral and regional channels were allocated to cross-cutting or other sectors, as reported in CTF table 7(b).

102. CTF tables 7(a) and 7(b) include information on the types of financial instrument used for providing assistance to developing countries, which reflects the use of grants sourced from official development assistance. The ERT noted that the grants provided in 2017 and 2018 accounted for most of the total public financial support.

103. The Netherlands reported information on the mobilization of private finance. The Party clarified that private finance is mobilized through a variety of bilateral instruments in the water, food and energy (including renewable energy infrastructure) sectors. It reported on how it uses public funds to promote private sector financial support for developing countries in order to increase mitigation and adaptation efforts in developing countries by mobilizing the private sector to take part in the transformative change that is needed for low-carbon, climate-resilient development. The Netherlands reported in its BR4 that it mobilized EUR 334.80 million and EUR 411.21 million in private finance in 2017 and 2018, respectively.

104. The Party explained its approach to reporting on private financial flows leveraged by bilateral climate finance for mitigation and adaptation activities in non-Annex I Parties. Specifically, the Netherlands described its work as part of the OECD Research Collaborative on Tracking Private Climate Finance, which collaborated with the OECD Development Assistance Committee to refine methods for tracking such financial flows. During the review, the Party explained that it had some difficulty in generating estimates owing to a lack of sufficiently detailed information from multilateral development banks, but reported that the OECD Development Assistance Committee is in contact with these banks to find a solution.

105. The ERT noted that, in its original BR4 submission, the Party left the documentation box for CTF table 7 blank, although information had been provided in that box in the BR3. During the review, the Party indicated that it had inadvertently omitted information from the documentation box, and provided the missing information. The Party officially resubmitted its CTF tables on 12 March 2020. No issues were identified with the documentation box of the revised submission. The ERT welcomes the enhanced transparency of CTF table 7.

(c) Technology development and transfer

106. The Netherlands provided information on steps, measures and activities related to technology transfer, access and deployment benefiting developing countries, including information on activities undertaken by the public and private sectors. The Party provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties in the BR4 (p.108), such as via the Energising Development partnership programme, the Integrated Seed Sector Development programmes in Ethiopia and Uganda and the Ghana Climate Innovation Centre.

107. The ERT took note of the information provided in CTF table 8 on recipient countries, target areas, measures and focus sectors of technology transfer programmes. Projects target mitigation and adaptation at the global level as well as at the country level (e.g. in Bangladesh, Burundi, Ethiopia, Ghana, Indonesia and Uganda). Technology development and transfer programmes include several activities supporting water resource management and disaster risk reduction, which are priority areas for the Netherlands.

108. The ERT noted that the Netherlands reported on its measures and 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. The ERT noted that the Party did not report on any planned technology development and transfer activities. During the review, the Party confirmed that all known activities are in the implementation phase. In the BR4, the Party reported on both success and failure stories related to its activities, with the main indicator of success being the uptake of new technological solutions. The key success story highlighted by the Party was the promotion of household solar systems, which benefited from advances in technology and innovative finance over the course of nearly three decades. According to the Party, the development of *Jatropha* as a sustainable biofuel crop in Indonesia and sub-Saharan Africa was less successful. Although there was significant interest in and several projects to support the effort, no technological breakthrough was realized.

109. The ERT noted that all technology development and transfer activities listed in CTF table 8 are reported as implemented; no planned activities related to technology transfer were reported. During the review, the Party indicated that it was not aware of any planned activities related to technology development and transfer. The ERT noted that the Party could improve the transparency of its reporting by clarifying in the BR if no planned activities were identified.

(d) Capacity-building

110. In its BR4 and CTF table 9, the Netherlands supplied general information on how it has provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. The Party described individual measures and activities related to capacity-building support in textual and tabular format. The Netherlands reported on support provided at the global level (e.g. via the Climate and Development Knowledge Network, whereby global and local research is used to help countries become climate-resilient), regional level (e.g. via Cooperation in International Waters in Africa, which addresses transboundary water management to enhance sustainability and climate resilience) and national level (e.g. via the Integrated Seed Sector Development programme in Myanmar).

111. The Netherlands reported that it has supported climate-related capacity development activities relating to adaptation, mitigation and cross-cutting areas. The Party also reported in general terms on how it has responded to the existing and emerging capacity-building needs of non-Annex I Parties by cooperation between donors and across programmes, noting in the BR4 that the processes for responding to these needs vary by donor. The ERT noted that the Party could further improve the transparency of its reporting by elaborating in its BR, to the extent possible, its overall strategy for ensuring that its capacity-building efforts meet the existing and emerging needs of non-Annex I Parties, or by providing examples of how the implementing agencies meet these needs.

2. Assessment of adherence to the reporting guidelines

112. The ERT assessed the information reported in the BR4 of the Netherlands and identified issues relating to completeness and transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 13.

Table 13
Findings on provision of support to developing country Parties from the review of the fourth biennial report of the Netherlands

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 14 Issue type: completeness Assessment: recommendation	The ERT welcomed the Party's improved reporting in its BR4 compared with that in its BR3, noting that in addition to providing a description of its national approach to tracking the provision of financial resources, the Netherlands also described its approach to tracking technological and capacity-building support. The ERT noted, however, that the Party did not report information on the indicators relevant to these types of support. During the review, the Party clarified that the national results framework for development cooperation, of which climate action is an integral part, does not include specific indicators for capacity-building or technology transfer support for climate change, as these are usually one element of more wide-ranging activities. Further, the Party noted that its indicators are geared towards measuring the results of the activity as a whole rather than individual elements of it. The ERT reiterates the recommendation from the previous review report that the Netherlands provide, in its next BR, a description of the indicators relevant to the tracking of technological and capacity-building support, if appropriate, or, if this is not possible, provide relevant explanations.
2	Reporting requirement specified in paragraph 16 Issue type: transparency Assessment: recommendation	The Party reported in the BR4 that it works with multiple actors to ensure that the activities it supports meet the needs of developing countries. According to the BR4 (p.99), each actor has its own processes to ensure that the project meets the needs of the target population. The Party did not provide further information on its overall strategy for ensuring that the support effectively meets the needs of recipient countries, or examples of the types of process put in place by the various actors. During the review, the Netherlands explained that, in its view, as a donor, it is not best placed to describe the processes that its implementing partners have in place. The Party noted, however, that the Green Climate Fund, the Global Environment Facility, the Climate Investment Funds and the NDC Partnership have in place procedures and processes to ensure that their funding meets the needs of developing countries. The Party also noted that such policies are a prerequisite for the provision of funding support from the Netherlands. The ERT recommends that, to improve the transparency of the BR, the Party describe how it seeks to ensure that the resources it provides effectively address the needs of developing countries, for example by providing information on the its overall strategy for this or by providing examples of the types of process established by its implementing partners to achieve this objective.

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

III. Conclusions and recommendations

113. The ERT conducted a technical review of the information reported in the BR4 and CTF tables of the Netherlands in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and provides an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; the progress of the Netherlands towards achieving its target; and the Party's provision of support to developing country Parties.

114. The Netherlands' total GHG emissions excluding LULUCF and including indirect CO_2 covered by its quantified economy-wide emission reduction target were estimated to be 12.6 per cent below its 1990 level, whereas total GHG emissions including LULUCF and including indirect CO_2 were 12.7 per cent below its 1990 level, in 2017. Emission decreases were driven by changes in the IPPU, waste and agriculture sectors. These emission decreases were offset by increased emissions from energy industries and transport (by 18.9 and 11.3 per cent, respectively, between 1990 and 2017).

115. Under the Convention, the Netherlands committed to contributing to the achievement of the joint EU quantified economy-wide emission reduction target of a 20 per cent reduction in emissions below the 1990 level by 2020. The target covers all sectors and CO_2, CH_4, N_2O, HFCs, PFCs and SF_6, expressed using GWP values from the AR4. Emissions and removals from the LULUCF sector are not included. The EU generally allows its member States to use units from the Kyoto Protocol mechanisms and new market mechanisms for compliance purposes up to an established limit and subject to a number of restrictions on the origin and the type of project. Companies can make use of such units to fulfil their requirements under the EU ETS.

116. Under the ESD, the Netherlands has a target of reducing its emissions by 16 per cent below the 2005 level by 2020. The 2013–2020 progression in the Party's AEAs (its national emission target under the ESD) is 122,948.13–107,362.87 kt CO_2 eq. In addition, the Netherlands committed to achieving a domestic target of a 49 per cent reduction in emissions below the 1990 level by 2030.

117. In 2017, the Netherlands' ESD emissions were 10.3 per cent (11,723.91 kt CO_2 eq) below the AEA under the ESD. In addition, the ERT noted that although market-based mechanisms were not used in 2017, the Netherlands has a cumulative surplus of 81,289.33 kt CO_2 eq with respect to its AEAs. The Party's inclusion of provisional information on emissions for 2018 indicates that the Party is continuing to make progress towards achieving its target. On the basis of these provisional estimates, in 2018 the Netherlands' emissions from ESD sectors were 8.9 per cent (9,963.73 kt CO_2 eq) below the AEA under the ESD, resulting in a cumulative surplus of 91,253.07 kt CO_2 eq with respect to its AEAs.

118. The GHG emission projections provided by the Netherlands in its BR4 correspond to the WEM and WAM scenarios. Under both scenarios, emissions are projected to be 22.8 per cent below the 1990 level by 2020. According to the projections under the WEM scenario, ESD emissions are estimated to reach 98,044.41 kt CO_2 eq by 2020. Under the WAM scenario, the Netherlands' emissions from ESD sectors in 2020 are projected to be 98,050.98 kt CO_2 eq. The projected level of emissions under both the WEM and WAM scenarios is 8.7 per cent below the AEAs for 2020. The ERT noted that the Party's cumulative surplus of AEAs is 91,253.07 kt CO_2 eq, which suggests that the Party expects to meet its target under both the WEM and WAM scenarios. However, the ERT noted that the projections presented in the BR4 indicate that the Netherlands may face challenges in achieving its national targets for 2020 and 2030 (i.e. the target established following the 'Urgenda' judgment to reduce emissions by at least 25 per cent below the 1990 level by 2020, and the target established in the 2019 Climate Agreement to reduce emissions by 49 per cent below the 1990 level by 2030).

119. The Party's main policy framework relating to energy and climate change is the 2013 Energy Agreement and the 2019 Climate Agreement. Key legislation supporting the Netherlands' climate change goals includes the Environmental Management Act, the Environmental Permitting Act and the Housing Act. The mitigation actions with the most significant mitigation impact are the subsidy scheme to stimulate sustainable energy production and the group of PaMs for built environment and transport. Together these policies focus on enhancing renewable energy consumption, improving energy efficiency and phasing out coal.

120. The Netherlands continues to provide climate financing to developing countries in line with its climate finance programmes, such as for improving access to renewable energy, halting deforestation, and supporting climate-smart agriculture, integrated water resource management and the climate-resilient water, sanitation and hygiene programme. It increased its contributions by 22.0 per cent in 2018 compared with the level of financial support

reported in the BR3 for 2016; its public financial support in 2017 and 2018 totalled USD 465.15 million and USD 654.21 million per year, respectively. For those years, the Netherlands provided relatively less support for mitigation than for adaptation. The biggest share of financial support went to cross-cutting activities, followed by projects and programmes in the agriculture, water and sanitation, and energy sectors.

121. The Party provided information on support for technology development and transfer and capacity-building, where priority was given to projects and programmes in water resource management and disaster risk reduction at the global and national level. A highlight was the promotion of solar installations in households, which benefited from advances in technology and innovative finance over the course of nearly three decades. Another good example is the support for capacity-building provided through the Partners for Resilience project, which contributes to strengthening the resilience of communities by integrating climate change adaptation, ecosystem management and restoration into disaster risk reduction. The ERT welcomes the Party's provision of information in its BR for the first time on its processes for tracking technology development and transfer and capacity-building support. The Party undertakes initiatives at the global, regional and national level, focusing on poverty alleviation and taking into consideration gender issues.

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

(a) To improve the completeness of its reporting by:

(i) Including information on all major new implemented and planned PaMs, including the EU LULUCF regulation and PaMs planned or implemented in the context of the 'Urgenda' judgment and the 2019 Climate Agreement (see issue 1 in table 5);

(ii) Providing a description of the indicators relevant to the tracking of technological and capacity-building support or, if this is not possible, providing relevant explanations (see issue 1 in table 13);

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

(i) Providing a more transparent description of the quantified economy-wide emission reduction target and related conditions, namely on the inclusion of outgoing flights in the target, both in the textual part of the BR and in CTF table 2(f) (see issue 1 in table 3);

(ii) Including a more transparent description of the quantified economy-wide emission reduction target and related conditions, namely on the use of market-based mechanisms to offset emissions that were generated within the country and fall under the EU ETS (see issue 2 in table 3);

(iii) Including a detailed description of how double counting is avoided for the PaMs that are reported twice, and clarifying the status of the energy investment tax allowance as a cross-cutting measure in CTF table 3 (see issue 2 in table 5);

(iv) Addressing the following in CTF table 3 (see issue 3 in table 5):

a. Including detailed information in the BR or in CTF table 3, for example in the column of the table entitled "Brief description", on where the impacts of PaMs reported as "IE" are allocated, and reviewing the reporting of "IE" selected by the Party for reporting the mitigation impact for the following PaMs accurately reflects their status: installing gas-free connections in new buildings in accordance with the Gas Act; prohibiting/closing down coal-fired power plants; and implementing the Environmental Protection Act, with mandatory reporting of energy-saving measures taken;

b. Including information on the forest and nature policy in CTF table 3;

c. Clarifying whether prohibiting or closing down coal-fired power plants is a planned or implemented measure;

(v) Describing progress in achievement of targets in more detail by specifying which PaMs are included in each GHG emission projection scenario (see issue 2 in table 10);

(vi) Describing progress in achievement of targets in more detail by explaining that the reason for the difference in CTF tables 6(a) and 6(c) between the sum of emissions from the individual sectors and the total reported emissions is due to the fact that indirect GHGs are included in the totals only (see issue 3 in table 10);

(vii) Describing progress in achievement of targets in more detail by clarifying in the BR and CTF tables 6(a) and 6(c) whether NF_3 emissions are included in the reported projections and under which category and group of gases (see issue 4 in table 10);

(viii) Describing how it ensures that the funding it provides effectively addresses the needs of developing countries (see issue 2 in table 13).

Annex

Documents and information used during the review

A. Reference documents

2019 GHG inventory submission of the Netherlands (national inventory report). Available at https://unfccc.int/documents/194893.

2019 GHG inventory submission of the Netherlands (common reporting format tables). Available at https://unfccc.int/documents/194970.

BR4 of the European Union. Available at https://unfccc.int/documents/204815.

BR4 of the Netherlands. Available at https://unfccc.int/documents/204835.

BR4 CTF tables of the Netherlands. Available at https://unfccc.int/documents/210457.

"Common tabular format for 'UNFCCC biennial reporting guidelines for developed country Parties'". Decision 19/CP.18. Available at https://unfccc.int/resource/docs/2012/cop18/eng/08a03.pdf.

Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention. Available at https://unfccc.int/topics/mitigation/workstreams/pre-2020-ambition/compilation-of-economy-wide-emission-reduction-targets-to-be-implemented-by-parties-included-in-annex-i-to-the-convention.

EEA. 2016. *EMEP/EEA air pollutant emission inventory guidebook 2016*. Luxembourg: Publications Office of the European Union. Available at https://www.eea.europa.eu/publications/emep-eea-guidebook-2016.

European Green Deal. Available at https://ec.europa.eu/info/files/communication-european-green-deal_en.

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

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/1999/7. Available at http://unfccc.int/resource/docs/cop5/07.pdf.

"Guidelines for the 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.

International Energy Agency. 2018. *World Energy Outlook 2018*. Paris: OECD/International Energy Agency. Available at https://www.iea.org/weo2018/.

IPCC. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. S Eggleston, L Buendia, K Miwa, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at http://www.ipcc-nggip.iges.or.jp/public/2006gl.

National Energy and Climate Plan of the Netherlands. Available at https://ec.europa.eu/energy/sites/ener/files/documents/nl_final_necp_main_en.pdf.

Report on the individual review of the annual submission of the Netherlands submitted in 2019. FCCC/ARR/2019/NLD. Available at https://unfccc.int/sites/default/files/resource/arr2019_NLD.pdf.

Report on the technical review of the BR3 of the Netherlands. FCCC/TRR.3/NLD. Available at https://unfccc.int/documents/181342.

"UNFCCC biennial reporting guidelines for developed country Parties". FCCC/SBSTA/2014/INF.6. Annex I to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

B. Additional information provided by the Party

Responses to questions during the review were received from Harry Vreuls and Jorieke Rienstra (Netherlands Enterprise Agency), including additional material. The following documents[1] were provided by the Netherlands:

Brink (2019) Projectie ETS-prijs ten behoeve van besluitvorming minimum CO_2-prijs elektriciteitsproductie. *(Future ETS price for decision-making regarding the introduction of a minimum CO_2 price for electricity generation)*. Available at: https://www.pbl.nl/publicaties/projectie-ets-prijs-volgens-uitgangspunten-concept-wetvoorstel-minimum-co2-prijs-elektriciteitsproductie.

Matthijsen, J. and Wijngaart, (2015). *Welvaart en Leefomgeving (Welfare, Prosperity and the Human Environment)*. Available at https://www.wlo2015.nl/rapporten-wlo/klimaat-en-energie.

Schoots, K. and P. Hammingh (2017). National Energy Outlook 2017. Available at https://www.pbl.nl/en/publications/national-energy-outlook-2017.

Schoots, K. and P. Hammingh (2019). Climate and Energy Outlook 2019. Available at: https://www.pbl.nl/en/publications/climate-and-energy-outlook-2019.

The Linde Group. *Pure CO_2 for Greenhouses.* More information available at http://ocap.nl.

[1] Reproduced as received from the Party.