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

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 Kazakhstan, 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 1 to 5 March 2021 remotely.

Please recycle

Contents

Abbreviations and acronyms

Annex I Party	Party included in Annex I to the Convention
Annex II Party	Party included in Annex II to the Convention
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CBM-CFS3	Carbon Budget Model of the Canadian Forest Sector
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CTF	common tabular format
ERT	expert review team
ETS	emissions trading scheme
GDP	gross domestic product
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
NA	not applicable
NC	national communication
NE	not estimated
NF_3	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
N_2O	nitrous oxide
PaMs	policies and measures
PFC	perfluorocarbon
SDG	Sustainable Development Goal
SF_6	sulfur hexafluoride
TIMES	The Integrated Market Allocation–Energy Flow Optimization Model System
UNFCCC reporting guidelines on BRs	“UNFCCC biennial reporting guidelines for developed country Parties”
UNFCCC reporting guidelines on CTF tables	“Common tabular format for ‘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 Kazakhstan. 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 Kazakhstan, which provided comments that were considered and incorporated into this final version of the report.

3. The review was conducted together with the review of one other Annex I Party from 1 to 5 March 2021 remotely[2] by the following team of nominated experts from the UNFCCC roster of experts: Takeshi Enoki (Japan), Gabriela Fischerova (Slovakia), Shorai Kavu (Zimbabwe), Kakhaberi Mdivani (Georgia), Francis Mulenga Mwila (Zambia), Sergii Shmarin (Ukraine), Marius Ţăranu (Republic of Moldova) and Harry Vreuls (Netherlands). Mr. Ţăranu and Mr. Vreuls were the lead reviewers. The review was coordinated by Martina Kuehner and Davor Vesligaj (secretariat).

B. Summary

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

1. Timeliness

5. The BR4 was submitted on 1 April 2020, after the deadline of 1 January 2020 mandated by decision 2/CP.17. The BR4 CTF tables were also submitted on 1 April 2020. The BR4 was resubmitted on 19 March 2021 to address issues raised during the review. The resubmission included additional and improved information on GHG emissions and trends, the quantified economy-wide emission reduction target, mitigation actions and their effects, estimates of emission reductions and removals, the use of units from market-based mechanisms, and activities and projections for the LULUCF sector.

6. Kazakhstan did not inform the secretariat about its difficulties with making a timely submission. In accordance with decision 13/CP.20, a Party should inform the secretariat thereof by the due date of the submission in order to facilitate the arrangement of the review process. The ERT noted with great concern the delay in the submission and recommended that Kazakhstan make its next submission on time.

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

7. Kazakhstan made efforts to improve its reporting in the BR4 by addressing the recommendations and encouragements from the previous review report. The ERT noted that the Party had improved:

(a) The transparency of the information on GHG emissions and removals by providing a consistent set of inventory data in CTF table 1 and in the textual part of the BR4;

[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 Kazakhstan had to be conducted remotely.

(b) The transparency of the information on progress in achieving targets by providing information on the assessment of the economic and social consequences of its response measures.

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

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

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendation (s)*
GHG emissions and removals	Complete	Mostly transparent	Issue 1 in table 3
Quantified economy-wide emission reduction target and related assumptions, conditions and methodologies	Complete	Transparent	
Progress in achievement of targets	Mostly complete	Mostly transparent	Issues 1 and 3 in table 5; issues 1, 3 and 5 in table 10
Provision of support to developing country Parties[a]	NA	NA	NA

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

[a] Kazakhstan is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paras. 3–5, of the Convention.

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

9. Total GHG emissions[3] excluding emissions and removals from LULUCF decreased by 1.3 per cent between 1990 and 2018, whereas total GHG emissions including net emissions or removals from LULUCF increased by 4.0 per cent over the same period. Kazakhstan's emissions trajectory shows a decreasing trend after the dissolution of the Soviet Union in 1991 and an overall decline in economic output and energy consumption, with the lowest level of emissions in 1999 and then rapidly increasing owing to population growth, economic recovery and transformation, and the discovery and large-scale production and export of oil and gas in 2000–2018.

10. Table 2 illustrates the emission trends by sector and by gas for Kazakhstan. Note that information in this paragraph and table 2 is based on Kazakhstan's 2020 annual inventory submission, version 5, which has not yet been subject to review. All emission data in subsequent chapters are based on Kazakhstan's BR4 CTF tables unless otherwise noted. The total emissions excluding and including emissions and removals from LULUCF reported in the 2020 annual inventory submission differ from the data reported in CTF table 1 in that higher values are reported for the whole time series in the former. In the latest annual inventory submission, the impact of recalculations on the energy, agriculture, LULUCF and waste sectors generally results in an increasing emission trend, and a decreasing trend for the

[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, unless otherwise specified.

IPPU sector. The most significant differences were noted in the LULUCF sector, varying from 0.8 per cent for 1990 to 628.8 per cent for 2003.

Table 2
Greenhouse gas emissions by sector and by gas for Kazakhstan for 1990–2018

	GHG emissions (kt CO_2 eq)					*Change (%)*		*Share (%)*	
	1990	*2000*	*2010*	*2017*	*2018*	*1990–2018*	*2017–2018*	*1990*	*2018*
Sector									
1. Energy	333 240.64	192 988.12	265 085.25	316 946.08	331 185.68	–0.6	4.5	82.9	83.5
A1. Energy industries	142 368.62	60 805.05	103 753.04	118 473.96	125 236.58	–12.0	5.7	35.4	31.6
A2. Manufacturing industries and construction	19 635.78	22 674.03	30 052.37	37 348.18	36 404.65	85.4	–2.5	4.9	9.2
A3. Transport	22 315.56	9 525.85	21 403.25	24 337.90	26 127.47	17.1	7.4	5.6	6.6
A4. and A5. Other	64 172.67	28 627.89	64 024.25	91 551.62	95 680.96	49.1	4.5	16.0	24.1
B. Fugitive emissions from fuels	84 748.01	71 355.30	45 852.34	45 234.44	47 736.02	–43.7	5.5	21.1	12.0
C. CO_2 transport and storage	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NA	NA	NA	NA
2. IPPU	20 055.58	12 179.06	18 742.14	23 394.34	22 372.62	11.6	–4.4	5.0	5.6
3. Agriculture	43 869.00	29 522.90	30 821.55	34 937.02	36 223.39	–17.4	3.7	10.9	9.1
4. LULUCF	–15 619.55	40 765.05	–17 721.88	720.38	5 315.43	–134.0	637.9	NA	NA
5. Waste	4 706.20	4 289.26	5 610.38	6 654.07	6 788.78	44.3	2.0	1.2	1.7
6. Other[a]	NO	NO	NO	NO	NO	NA	NA	NA	NA
Gas[b]									
CO_2	281 213.95	148 756.16	250 896.96	307 926.54	319 647.41	13.7	3.8	70.0	80.6
CH_4	102 907.32	71 097.88	52 614.62	55 211.73	57 832.67	–43.8	4.7	25.6	14.6
N_2O	17 750.15	18 911.51	15 297.47	17 045.13	17 326.92	–2.4	1.7	4.4	4.4
HFCs	NO, NA	213.79	877.90	1 105.90	1 112.58	NA	0.6	NA	0.3
PFCs	NO, NA	NO, NA	570.63	640.13	648.73	NA	1.3	NA	0.2
SF_6	NO, NA	NO, NA	1.73	2.10	2.15	NA	2.6	NA	0.0
NF_3	NO, NA	NO, NA	NO, NA	NO, NA	NO, NA	NA	NA	NA	NA
Total GHG emissions excluding LULUCF	**401 871.42**	**238 979.34**	**320 259.32**	**381 931.52**	**396 570.47**	**–1.3**	**3.8**	**100.0**	**100.0**
Total GHG emissions including LULUCF	**386 251.88**	**279 744.38**	**302 537.44**	**382 651.90**	**401 885.90**	**4.0**	**5.0**	NA	NA

Source: GHG emission data: Kazakhstan's 2020 annual inventory submission, version 5.
[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. The Party did not report indirect CO_2 emissions.

11. In brief, Kazakhstan's national inventory arrangements were established in accordance with the Environmental Code of the Republic of Kazakhstan of 9 January 2007. Kazakhstan adopted the Regulation on the State System of Inventory Data Collection on the rules for monitoring the completeness, transparency and reliability of the State inventory of GHG emissions and removals on 18 March 2015. No changes in these arrangements were reported in the BR4. However, according to the information provided in the BR4, changes were made to the structure of the Government on 17 June 2019, whereby environmental issues, including climate change, were included within the remit of the newly established Ministry of Ecology, Geology and Natural Resources, which is planning to amend the existing legislation on the national system. During the review of its 2019 annual submission, the Party indicated that significant changes were planned for 2020, explaining that transferring the functions of maintaining the national system and the GHG inventory to the newly formed Ministry of Ecology, Geology and Natural Resources would allow improvements to be made to the national system as a whole.

2. Assessment of adherence to the reporting guidelines

12. The ERT assessed the information reported in the BR4 of Kazakhstan and identified an issue relating to transparency and thus adherence to the UNFCCC reporting guidelines on BRs. The finding is described in table 3.

Table 3
Findings on greenhouse gas emissions and removals from the review of the fourth biennial report of Kazakhstan

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 3 Issue type: transparency Assessment: recommendation	Kazakhstan did not specifically report whether any changes have been made to the national inventory arrangements since its BR3. However, in section 4.1.1 of the BR4, the establishment of the Ministry of Ecology, Geology and Natural Resources was noted. During the review, Kazakhstan explained that, in its view, the BR4 should contain updated information up until 2018. Thus, as the Ministry of Ecology, Geology and Natural Resources was created only in 2019, the BR4 states that there were no changes in the national inventory arrangements compared with the BR3. The Party also considers that the information provided on the newly created Ministry of Ecology, Geology and Natural Resources satisfies the requirement to reflect all information available up until the date of submission and that any changes to the national inventory arrangements occurring after that date will be reflected in the next BR. The ERT recommends that the Party increase the transparency of its reporting by providing consistent information in its BR on whether there have been any changes to its national inventory arrangements since its previous NC or BR. The ERT notes that in this context clear references to the NIR of the most recent inventory submission would be helpful.

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.

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

1. Technical assessment of the reported information

13. For Kazakhstan the Convention entered into force on 15 August 1995. Under the Convention Kazakhstan committed to reducing its GHG emissions by 15 per cent below the 1990 level by 2020. The target includes all GHGs included in the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories", namely CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3. It also includes all IPCC sources and sectors included in the annual GHG inventory. The GWP values used are from the AR4. Emissions and removals from the LULUCF sector are not included in the target. Kazakhstan reported that it does not plan to make use of market-based mechanisms for achieving its target. In absolute terms this means that, under the Convention, Kazakhstan has to reduce its emissions from 401,871.42 kt CO_2 eq (in 1990)[4] to 341,590.71 kt CO_2 eq by 2020.

14. In addition to its 2020 target, Kazakhstan has a longer-term unconditional target of reducing its GHG emissions by 15 per cent and a conditional target of 25 per cent below the 1990 level by 2030. The target includes all GHGs (namely CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3). It also includes all IPCC sources and sectors included in the annual GHG inventory. The GWP values used are from the AR4. Emissions and removals from the LULUCF sector are included in the targets. Kazakhstan reported that it is considering making use of market-based mechanisms for achieving its longer-term targets under the Paris Agreement.

[4] Kazakhstan chose 1990 as the base year for its 2020 target. The emission level in the base year was calculated on the basis of the 2020 inventory submission (see table 2).

2. Assessment of adherence to the reporting guidelines

15. The ERT assessed the information reported in the BR4 of Kazakhstan 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.

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

16. Kazakhstan 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. Kazakhstan 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.

17. Kazakhstan's set of PaMs is similar to that previously reported, with a few exceptions, such as: several planned PaMs were excluded from the IPPU sector; a number of new PaMs were reported for the energy, IPPU, agriculture, LULUCF and waste sectors; and the Party reported that no decision has been made on the planned construction of a nuclear power plant. Kazakhstan also provided information on 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. The most important change is the establishment of the Ministry of Ecology, Geology and Natural Resources in 2019 as the country's central executive body responsible for coordinating matters relating to environmental protection, nature management, protection, control and supervision of the rational use of natural resources, and supervision of the national policy on developing the green economy. The new Ministry assumed a number of functions and powers from the Ministry of Energy, the Ministry of Agriculture and the Ministry of Industry and Infrastructure Development.

18. Kazakhstan has in place a system of State planning with long-, medium- and short-term strategic and planning documents. Kazakhstan has adopted the long-term Kazakhstan 2050 Strategy, which includes the objective of transitioning to a low-carbon green economy. This objective is further defined in the "Concept for transition of Kazakhstan to a green economy" and the related action plan for 2013–2020. Kazakhstan's long-term strategy up until 2050 is implemented by means of 10-year strategic development plans and five-year sectoral action plans and industry programmes. The Strategic Development Plan until 2025, which replaced the Strategic Development Plan until 2020 in 2018, lays the foundation for Kazakhstan's climate policy. It identifies nine tasks required to implement the national green economy and environmental protection policy, namely by achieving the goals of the Paris Agreement; identifying funding sources and approaches to green finance accounting and attracting investment; encouraging investment in green technologies; decarbonizing the economy; increasing the efficiency of water use and protecting water resources; developing renewable energy sources and upgrading traditional energy sources; conserving biodiversity; developing a low-waste economy; and managing production and consumption waste. The SDGs are integrated in the Kazakhstan 2050 Strategy and the Strategic Development Plan until 2025. Kazakhstan presented its first voluntary national review of progress towards achieving the SDGs at the high-level political forum on the review of the 2030 Agenda for Sustainable Development and the SDGs in 2019.

19. The main national legislative instrument regulating GHG emissions in Kazakhstan is the Environmental Code, which was adopted in 2007 and includes a chapter on the regulation of GHG emissions and removals, a list of GHGs subject to State regulation, the regulatory principles and legislative framework for the implementation of various measures, and the market mechanism for GHG emissions and removals from industry (the ETS).

20. In June 2017, Kazakhstan approved rules for GHG allowance allocation and created reserves of assigned amount and volume allowances for different facilities. Under this arrangement, emission allowances are allocated to facilities with reference to their baseline or GHG emission factors, taking into account the commitments to limit or reduce GHG emissions.

21. In its reporting on its PaMs, Kazakhstan did not provide the estimated emission reduction impacts for most of its PaMs, namely cross-sectoral PaMs and PaMs in the energy and IPPU sectors. The Party explained during the review that estimated impacts were not provided for most PaMs in the energy and IPPU sectors owing to a lack of relevant data when preparing the BR4.

22. The key overarching cross-sectoral policy reported by Kazakhstan is the ETS, launched in 2013. The pilot phase was implemented in 2013 and, on the basis of lessons learned, modifications were made for the implementation phase in 2014–2015, as well as for the subsequent implementation phase in 2016–2020. Emissions trading under the ETS was suspended from early 2016 to 2018 to adjust and improve the system. In December 2017, a new national GHG emission quota allocation plan for 2018–2020 was approved. It is based on a benchmarking allocation approach, covers 225 facilities in six sectors (electricity, oil and gas, mining, metallurgy, chemical, and facilities processing construction material (cement, lime, gypsum and brick)). A total of 485,909,138 units were allocated for three years (2018–2020) free of charge and an additional 35,273,634 units were reserved for new facilities.

23. Kazakhstan highlighted the mitigation actions that are under development, such as the draft of the new edition of the Environmental Code of the Republic of Kazakhstan; the ban on food and construction waste disposal to be implemented in 2021; and amendments to the legislation on renewable energy support initiated by the Ministry of Energy in 2019 to incentivize the development of small-scale renewable energy projects (up to 200 kW) for households, farms and small and medium-sized enterprises. Incentives include subsidies and facilitation of grid connectivity. A number of measures have also been proposed to improve the investment environment for large-scale renewable energy projects (MW class), such as extending the validity term of power purchase agreements. Table 4 provides a summary of the reported information on the PaMs of Kazakhstan.

Table 4
Summary of information on policies and measures reported by Kazakhstan

Sector	*Key PaMs*	*Estimate of mitigation impact in 2020 (kt CO_2 eq)*	*Estimate of mitigation impact in 2030 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	ETS	NE	NE
Energy			
Energy efficiency	Replacement of old coal power plants with new ones with higher energy efficiency	NE	NE
Energy supply and renewables	Fuel switching (coal to gas) in thermal power plants	NE	NE
	Promotion of hydropower and wind power	NE	NE
Transport	Increased use of natural gas as motor fuel	NE	NE
IPPU			
	State Programme for Industrial and Innovative Development	NE	NE
	Ban on exporting scrap and non-ferrous (precious) metals	NE	NE
Agriculture	Technology transfer for production of biogas	200	1 000
LULUCF	Fertilizer subsidies	4 000	8 000
Waste	Ban on paper, plastic and glass disposal	100	200

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.

(b) Policies and measures in the energy sector

24. **Energy efficiency.** The Law on Energy Saving and Increasing Energy Efficiency, adopted in 2012, introduced a number of requirements with respect to energy savings by State bodies, the compliance of newly constructed buildings with energy efficiency requirements, and the mandatory use of metering devices for the consumption of cold and hot water, electricity and heat in newly built residential dwellings. The legislation focuses on the active use of energy management tools, expertise in energy saving and energy efficiency, the regulation of energy use, energy audits, and the monitoring and evaluation of energy efficiency for State bodies. It also establishes a special regulatory regime for entities that consume energy above certain levels and provides for the mandatory labelling of electrical devices.

25. Kazakhstan has put in place requirements for mandatory accounting and annual reporting on the implementation of energy saving and energy efficiency measures, applicable to all entities that consume 1,500 t fuel equivalent or more per year, and to State institutions, State-owned enterprises and national companies. These requirements are implemented through the State Energy Register created on 1 January 2011. The entities included in the register are required to develop and implement action plans for energy saving and energy efficiency improvements.

26. Energy saving assessments are mandatory for pre-design and design documentation for the construction of new, or the expansion of existing, buildings, structures and premises that consume 500 t fuel equivalent per year in accordance with the Law on Energy Saving and Increasing Energy Efficiency. Energy efficiency PaMs targeting individual sectors are discussed below.

27. **Energy supply and renewables.** According to the "Concept for transition of Kazakhstan to a green economy", Kazakhstan's targets for reducing the energy intensity of GDP are 25, 30 and 50 per cent below the 2008 level by 2020, 2030 and 2050, respectively.

28. Energy supply issues in Kazakhstan are addressed in the Strategic Plan of the Ministry of Energy for 2017–2021, approved in December 2016. Through implementation of the Strategic Plan, wind and solar energy combined is expected to represent 3 and 10 per cent of power generation by 2020 and 2030, respectively, while gas is expected to represent 20 and 25 per cent by 2020 and 2030, respectively. CO_2 emissions from power generation are expected to be equal to the 2012 level by 2020 and 15 per cent lower than the 2012 level by 2030.

29. The Law on Support for the Use of Renewable Energy Sources, adopted in July 2009, provides financial support for the use of renewable energy sources as one of the tools for meeting the country's international commitments to reduce GHG emissions. In accordance with the Law, fixed tariffs for the supply of electrical energy produced by renewable energy sources were established in 2014. In 2017, the Law was amended to provide for auctions to reduce the cost of electricity among new renewable energy projects (excluding existing ones subject to fixed tariffs).

30. A decision regarding the construction of a nuclear power plant in Kazakhstan is planned to be taken by referendum. Research on the feasibility of constructing nuclear power plants has been already carried out and further research on the subject will continue.

31. **Residential and commercial sectors.** Existing PaMs in the housing and utilities sector of Kazakhstan related to the reduction of GHG emissions are focused on increasing energy saving and energy efficiency, and on making upgrades to housing and facilities. A possible ban on coal combustion in inner city areas is still under discussion. However, this issue is being partly resolved through measures implemented for the gasification of settlements.

32. The Law on Energy Saving and Increasing Energy Efficiency introduces the concept of energy service companies, which are legal entities undertaking energy saving and energy efficiency activities using their own funds and/or funding attracted through investment as set down in energy performance contracts, including with the involvement of contractors. The introduction of energy service companies is aimed at unlocking the potential of energy efficiency through energy performance contracts that help to overcome market barriers.

33. Indirect measures to reduce GHG emissions in the housing and utilities sector of Kazakhstan include a mechanism to upgrade housing stock in line with the National Programme for Regional Development until 2020, which provides for the overhaul of common property in condominium facilities, including by modernizing heating systems, with a projected reduction in heat consumption of up to 30 per cent by 2020.

34. **Transport sector.** The Law on Energy Saving and Increasing Energy Efficiency determines energy efficiency standards in the transport sector. The related action plan on expanding the use of natural gas in motor vehicles for 2019–2022, approved in November 2018, aims to increase the use of natural gas in the transport sector, with the following goals:

(a) Increasing the number of buses and service vehicles upgraded to use compressed or liquefied natural gas as motor fuel from 3,300 vehicles in 2019 to 12,000 vehicles in 2022;

(b) Increasing the demand for compressed natural gas and liquefied natural gas as fuel for motor vehicles in the regions of Kazakhstan that are supplied with natural gas, from 135 million m^3 in 2019 to 500 million m^3 in 2022;

(c) Increasing the number of gas-filling compressor stations and cryogenic filling stations constructed in the regions of Kazakhstan that are supplied with natural gas, from 31 stations in 2019 to 100 stations in 2022.

35. Kazakhstan has already begun implementing smart transport systems in some municipalities. It is expected that digitizing the transport sector will lead to a reduction in road traffic accidents, a reduction in travel time, an improvement in the availability of traffic information for drivers and a reduction in GHG emissions.

36. The BR4 does not include information on how Kazakhstan promotes and implements the decisions of the International Civil Aviation Organization and the International Maritime Organization to limit emissions from aviation and marine bunker fuels.

37. **Industrial sector.** Kazakhstan reported PaMs related to modernizing refineries, developing natural gas infrastructure and using coal bed methane.

38. The "Concept for the development of the fuel and energy complex of the Republic of Kazakhstan until 2030" defines a target for coal-producing companies to produce at least 10 per cent of their electricity needs from coal bed methane by 2030.

39. In 2018, retrofitting of the Atyrau, Pavlodar and Shymkent refineries was completed. This enabled the refineries to increase capacity by 20 per cent, leading to an increase in refinery yields to 80–90 per cent. As a result, the output of oil products compliant with higher national environmental standards has grown in Kazakhstan, with an increase in gasoline by 70 per cent, and a decrease in diesel fuel by 20 per cent and in aviation fuel by 240 per cent.

40. The "General scheme of gasification of the Republic of Kazakhstan for 2015–2030" sets a target to increase natural gas production from 44.2 billion m^3/year in 2015 to 59.8 billion m^3/year in 2030. One of the objectives of the scheme is to create conditions for increasing the share of gas consumption in the fuel and energy complex.

41. The only policy reported in the BR4 for reducing fugitive emissions is the ban on flaring, introduced in 1995. The planned increase in the share of electricity generated from coal bed methane will lead to a decrease in CH_4 emissions from coal production.

(c) Policies and measures in other sectors

42. **Industrial processes.** The main PaMs in the IPPU sector of Kazakhstan are as follows: (1) implementing national plans on the distribution of quotas for GHG emissions for 2013, 2014–2015 and 2016–2020, and introducing trade rules for quotas of GHG emissions and carbon units under the ETS; (2) implementing the Law on Energy Saving and Increasing Energy Efficiency; (3) banning the export of scrap and non-ferrous metals; and (4) implementing the State Programme for Industrial and Innovative Development for 2015–2019.

43. The Kazakhstan Industry and Export Center is currently developing the third five-year State Programme for Industrial and Innovative Development, for 2020–2024. In that period

it will focus on intensifying industrialization, increasing industrial output and expanding the range of industrial products.

44. **Agriculture.** The main PaMs for the agriculture sector are technology transfer for biogas generation, improving cattle, small ruminant and horse breeds, combating degradation and desertification of soils, and subsidizing the consumption of fertilizers. The expected resulting reductions in GHG emissions are 360 kt CO_2 eq and 1,180 kt CO_2 eq by 2020 and 2030, respectively.

45. **LULUCF.** PaMs for this sector are aimed at combating forest fires, reducing the volume of forest felling, and increasing the area of forest land and forest regeneration. The expected resulting reductions in GHG emissions are 4,600 kt CO_2 eq and 8,700 kt CO_2 eq by 2020 and 2030, respectively.

46. **Waste management.** The main PaMs for the waste sector are the ban on paper, plastic and glass disposal, and the ban on food and construction waste disposal. The expected resulting reductions in GHG emissions are 100 kt CO_2 eq and 400 kt CO_2 eq by 2020 and 2030, respectively.

(d) Response measures

47. The Party's initiatives aimed at minimizing adverse impacts include promoting advanced industrialization, whereby new competitive industries expand the range and increase the share of advanced processing products with high added value, apply best available technologies for advanced and clean processing, return materials to the production cycle through a circular economy, increase the efficiency of industrial production, decrease emissions per tonne of industrial output and thus reduce the harmful impact of industry on the environment.

(e) Assessment of adherence to the reporting guidelines

48. The ERT assessed the information reported in the BR4 of Kazakhstan 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 Kazakhstan

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 6 Issue type: transparency Assessment: recommendation	The Party did not report the same set of PaMs in its BR4 and in CTF table 3. Inconsistencies were also noted in the information provided for some PaMs. For example, in table 4.2 of the BR4 it was stated that Kazakhstan wants to achieve a 3 per cent share of wind and solar generation in total power generation by 2020, while table 4.3 states that it aims to achieve a 3 per cent share of electric power generation from renewable energy facilities (e.g. wind farms, solar power plants using photovoltaic solar energy converters, hydropower stations and biogas plants) in total power generation by 2020; in table 4.5 of the BR4, the status of implementation of the mitigation action "Forest expansion and restoration" is "adopted" while in CTF table 3 the status is "implemented". Finally, it was not clear from the textual part of the BR4 which concrete measures were implemented in the IPPU sector and which industries were affected. During the review, Kazakhstan provided information on several important mitigation actions such as its ETS. Kazakhstan explained that the approach used for including PaMs is based on expert knowledge and an analysis of the measures that could lead to changes in the level of GHG emissions. It confirmed that the target of a 3 per cent share in total electricity generation by 2020 corresponds only to solar and wind energy, and not to all renewable energy sources. Regarding the "Forest expansion and restoration" measure, Kazakhstan explained that the Government provides ongoing support for implementation of this policy. Forest is restored and planted each year and the correct status of the action should be "implemented".

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
		In order to increase the transparency of the reporting, the ERT recommends that Kazakhstan provide consistent and comprehensive information in the textual part of the BR and in CTF table 3 on its PaMs.
2	Reporting requirement specified in paragraph 8 Issue type: completeness Assessment: encouragement	Kazakhstan did not provide specific information on the assessment of the economic and social consequences of its response measures. No additional information was provided during the review. The ERT encourages Kazakhstan to provide, to the extent possible, detailed information on the assessment of the economic and social consequences of its response measures in accordance with information provided during the review, in its next BR.
3	Reporting requirement specified in CTF table 3 Issue type: transparency Assessment: recommendation	Kazakhstan did not provide information on quantitative estimates of the mitigation impacts of its individual PaMs for the energy and IPPU sectors. During the review, Kazakhstan explained that the estimated mitigation effects of PaMs in the energy sector were not provided for most PaMs as insufficient data were available at the time of preparation of the report to enable an assessment. In addition, they are mostly cross-sectoral and methodologically difficult to assess. With respect to the IPPU sector, the estimated mitigation effect was not provided for most PaMs because emissions from industrial processes are associated with both combustion and non-combustion processes, and are therefore difficult to estimate. The ERT recommends that Kazakhstan improve the transparency of its reporting by providing quantitative estimates of the mitigation impacts of its individual PaMs or clearly explain why this may not be feasible owing to its national circumstances.
4	Reporting requirement specified in paragraph 24 Issue type: transparency Assessment: encouragement	Kazakhstan did not report on its self-assessment of compliance with its emission reduction targets and national rules for taking action against non-compliance or on progress in establishing national rules for taking local action against domestic non-compliance with emission reduction targets. During the review Kazakhstan informed the ERT that it plans to provide this information as part of an update of its nationally determined contribution in 2021. The ERT encourages Kazakhstan to report, to the extent possible, on the domestic arrangements established for the process of the self-assessment of compliance with emission reduction targets in comparison with emission reduction commitments or the level of emission reduction that is required by science and on its progress in establishing national rules for taking local action against domestic non-compliance with emission reduction targets in its next BR.

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

49. Kazakhstan reported in its BR4 that it does not intend to use units from market-based mechanisms under the Kyoto Protocol, and that it did not use any units from market-based mechanisms in 2016 or 2017. Table 6 illustrates Kazakhstan's total GHG emissions, contribution of LULUCF and use of units from market-based mechanisms towards achieving its target.

Table 6
Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry by Kazakhstan for achieving its target

Year	*Emissions excluding LULUCF (kt CO_2 eq)*	*Contribution of LULUCF (kt CO_2 eq)*[a]	*Use of units from market-based mechanisms (kt CO_2 eq)*	*Net emissions including LULUCF and market-based mechanisms (kt CO_2 eq)*
1990 (base year)	386 908.00	NA	NA	386 908.00
2010	306 783.43	NA	NA	306 783.43
2011	298 394.00	NA	NA	298 394.00
2012	305 171.00	NA	NA	305 171.00
2013	312 754.00	NA	NA	312 754.00
2014	333 480.00	NA	NA	333 480.00
2015	344 801.00	NA	NA	344 801.00
2016	345 758.00	NA	NA	345 758.00
2017	366 174.00	NA	NA	366 174.00
2020 target	328 871.80	NA	NA	328 871.80

Sources: Kazakhstan's BR4 and BR4 CTF tables 1, 2 (a), 4, 4 (a)I, 4 (a)II and 4 (b).
[a] Kazakhstan's emission reduction target does not include emissions or removals from LULUCF.

50. In assessing the Party's progress towards achieving its 2020 target, the ERT noted that Kazakhstan's emission reduction target under the Convention is 15 per cent below the 1990 level (see para. 13 above). In 2017, Kazakhstan's annual total GHG emissions excluding LULUCF were only 5.4 per cent below the base-year level. According to Kazakhstan's 2020 annual inventory submission, version 5, which has not yet been subject to review, in 2018 Kazakhstan's annual total GHG emissions excluding LULUCF were only 1.3 per cent (396,570.47 kt CO_2 eq) below the base-year level (401,871.42 kt CO_2 eq). In addition, the ERT noted that Kazakhstan did not include the LULUCF sector in its target and that it does not plan to use market-based mechanisms towards achieving its 2020 target. As Kazakhstan's GHG emissions have continued to increase since 2000, it is likely that the Party will face challenges in achieving its 2020 target.

51. The ERT noted that Kazakhstan faces challenges in implementing mitigation actions that will deliver the emission reductions needed to make sufficient progress towards its target and may face challenges in achieving its target under the Convention in the light of the little time remaining until 2020.

(b) Assessment of adherence to the reporting guidelines

52. The ERT assessed the information reported in the BR4 of Kazakhstan 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

53. Kazakhstan reported updated projections for 2020 and 2030 relative to actual inventory data for 2017 under the WEM scenario. The WEM scenario reported by Kazakhstan includes PaMs implemented and adopted until 2019.

54. In addition to the WEM scenario, Kazakhstan reported the WAM and WOM scenarios. The WAM scenario includes planned PaMs, while the WOM scenario excludes all PaMs implemented, adopted or planned after 2010. Kazakhstan provided a definition of its scenarios, explaining that its WEM scenario includes policies such as gasification of heat and power plants (combined heat and power and thermal power plants), developing renewable energy power plants and increasing energy efficiency, while its WAM scenario includes measures to double renewable energy capacity by 2025 and 2030 compared with the WEM scenario. The definitions indicate that the scenarios were prepared in accordance with the UNFCCC reporting guidelines on BRs.

55. The projections are presented on a sectoral basis, using different sectoral categories from 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. Kazakhstan reported on factors and activities affecting emissions for each sector.

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

56. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the NC7. Kazakhstan did not provide information on the changes since the submission of its NC7 in the assumptions, methodologies, models and approaches used for the projection scenarios. The TIMES-KZ model was used to develop emission projections for fuel combustion and fugitive sources. The model uses a detailed economic process description of the power industry and represents economic and technical system elements for other industries, including energy supply and demand, GHG emissions, and explicit technologies represented as stepwise functions within the model. For projecting industrial process and other non-fuel combustion emissions, an Excel-based production forecast econometric model was used. For fires and logging in the forestry sector, Kazakhstan adapted the CBM-CFS3 model.

57. To prepare its projections, Kazakhstan relied on key underlying assumptions relating to GDP, population, oil extraction, gasification rate, changes in the area of fires, areas of deforestation and young plantations, and consumption of mineral fertilizers. The assumptions were updated on the basis of the most recent economic developments known at the time of the preparation of the projections.

(c) Results of projections

58. 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 Kazakhstan

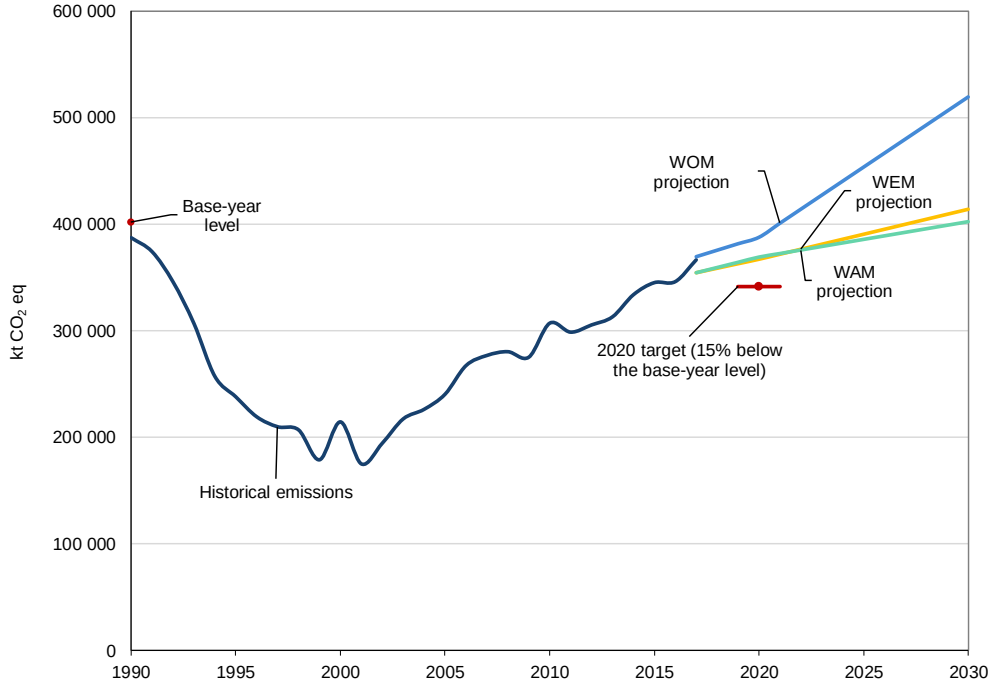
	GHG emissions (kt CO_2 eq/year)	*Change in relation to base-year level (%)*
Quantified economy-wide emission reduction target under the Convention	328 872.65	–15.0
Inventory data 1990 (base year)	386 909.00	NA
Inventory data 2017	366 174.00	–5.4
WOM projections for 2020	387 786.00	0.2
WEM projections for 2020	366 902.00	–5.2
WAM projections for 2020	368 856.00	–4.7
WOM projections for 2030	519 048.00	34.2
WEM projections for 2030	414 036.00	7.0
WAM projections for 2030	402 108.00	3.9

Source: Kazakhstan's BR4 and BR4 CTF table 6.
Note: The projections are for GHG emissions without LULUCF and excluding indirect CO_2.

59. Kazakhstan's total GHG emissions excluding LULUCF are projected to be 366,902.00 kt CO_2 eq and 414,036.00 kt CO_2 eq in 2020 and 2030, respectively, under the WEM scenario, which represents a decrease of 5.2 per cent and an increase of 7.0 per cent, respectively, below the 1990 level. Under the WAM scenario, emissions in 2020 are projected to be lower than those in 1990 by 4.7 per cent and higher by 3.9 per cent in 2030.

60. Kazakhstan's economy-wide target under the Convention is to reduce its total emissions by 15 per cent below the 1990 level by 2020 (see para. 13 above). The 2020 projections suggest that Kazakhstan may face challenges in achieving its 2020 target under the Convention.

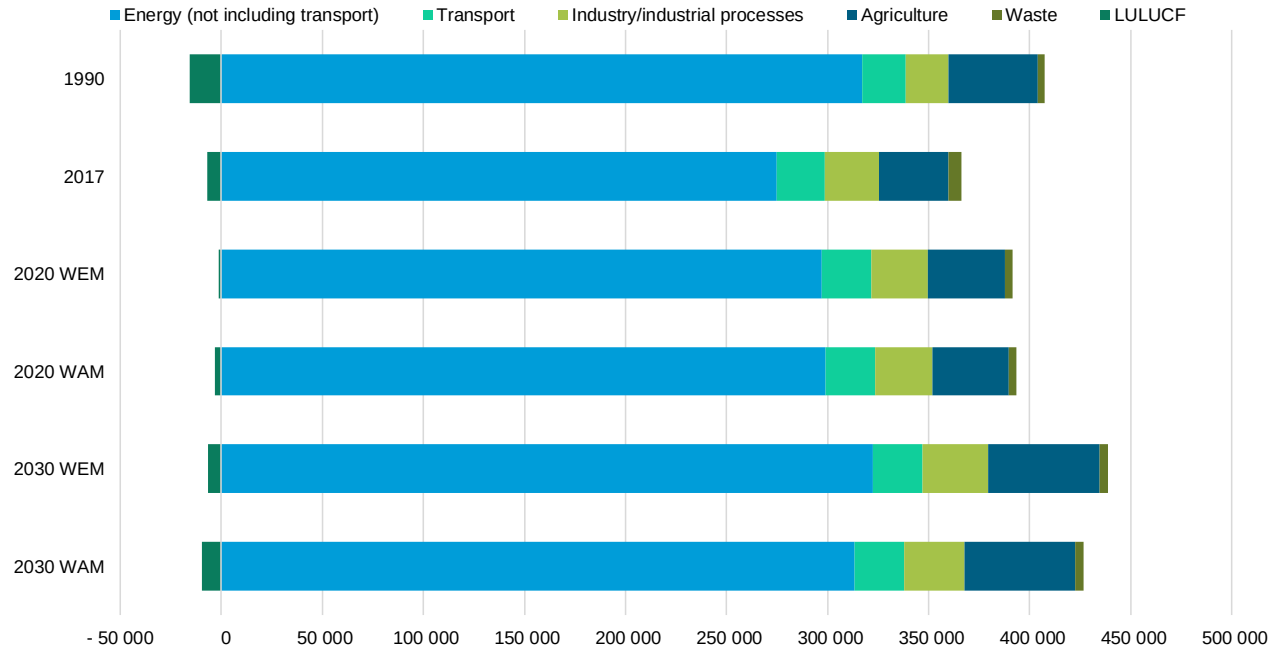
Figure 1
Greenhouse gas emission projections reported by Kazakhstan



Sources: Kazakhstan's BR4 and BR4 CTF tables 1 and 6 (total GHG emissions excluding LULUCF).

61. Kazakhstan 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 Kazakhstan presented by sector
(kt CO_2 eq)



Source: Kazakhstan's BR4 CTF table 6.

Table 8
Summary of greenhouse gas emission projections for Kazakhstan 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)	317 113.00	296 991.00	298 952.00	322 260.00	313 539.00	–6.3	–5.7	1.6	–1.1
Transport	21 609.00	24 648.00	24 654.00	24 686.00	24 544.00	14.1	14.1	14.2	13.6
Industry/ industrial processes	21 012.00	28 106.00	28 106.00	32 684.00	29 750.00	33.8	33.8	55.5	41.6
Agriculture	44 083.00	37 932.00	37 920.00	55 020.00	54 850.00	–14.0	–14.0	24.8	24.4
LULUCF	–15 751.00	–1 227.00	–3 087.00	–6 732.00	–9 587.00	–92.2	–80.4	–57.3	–39.1
Waste	3 723.00	3 874.00	3 874.00	4 070.00	3 968.00	4.1	4.1	9.3	6.6
Total GHG emissions excluding LULUCF	**386 909.00**	**366 902.00**	**368 856.00**	**414 036.00**	**402 108.00**	**–5.2**	**–4.7**	**7.0**	**3.9**

Source: Kazakhstan's BR4 CTF table 6.

62. According to the projections reported for 2020 under the WEM scenario, the most significant absolute emission reductions are expected to occur in the energy (not including transport) and agriculture sectors, amounting to projected reductions of 20,122.00 kt CO_2 eq (6.3 per cent) and 6,151.00 kt CO_2 eq (14.0 per cent) between 1990 and 2020, respectively. The pattern of projected emissions reported for 2030 under the same scenario is significantly different owing to an increase in emissions in the energy sector (not including transport) by 5,147.00 kt CO_2 eq (1.6 per cent) and in the agriculture sector by 10,937.00 kt CO_2 eq (24.8 per cent). Kazakhstan reported information on the projected increase in oil extraction, a key driver of emissions, by 31.8 Mt (26.4 per cent) between 2020 and 2030.

63. If additional measures are considered (i.e. under the WAM scenario), the patterns of emission reductions by 2020 presented by sector remain largely the same, with a slight change for the energy (not including transport) sector where the overall emission reductions are lower and equal to 18,161.00 kt CO_2 eq (5.7 per cent).

64. Kazakhstan 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 Kazakhstan 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]	266 609.00	294 492.00	296 770.00	324 151.00	314 506.00	10.5	11.3	21.6	18.0
CH_4	102 900.00	46 619.00	46 313.00	52 960.00	50 987.00	–54.7	–55.0	–48.5	–50.4
N_2O	17 400.00	23 550.00	23 532.00	34 449.00	34 216.00	35.3	35.2	98.0	96.6
HFCs	–	1 595.00	1 595.00	1 762.00	1 762.00	–	–	–	–
PFCs	–	646.00	646.00	714.00	637.00	–	–	–	–
SF_6	–	–	–	–	–	–	–	–	–
NF_3	–	–	–	–	–	–	–	–	–
Total GHG emissions without LULUCF	**386 909.00**	**366 902.00**	**368 856.00**	**414 036.00**	**402 108.00**	**–5.2**	**–4.7**	**7.0**	**3.9**

Source: Kazakhstan's BR4 CTF table 6.
[a] Kazakhstan did not include indirect CO_2 emissions in its projections.

65. For 2020, the most significant absolute reductions under the WEM scenario are projected for CH_4 emissions: 56,281.00 kt CO_2 eq (54.7 per cent) between 1990 and 2020.

66. For 2030, the most significant absolute reductions under the WEM scenario are projected for CH_4 emissions: 49,940.00 kt CO_2 eq (48.5 per cent) between 1990 and 2030.

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

68. According to the projections reported for 2020 under the WEM scenario, absolute emission reductions are expected to be 20,007.00 kt CO_2 eq lower (by 64 per cent) than the expected absolute emission reductions of 54,978.00 kt CO_2 eq reported in the NC7/BR3. Changes to the key variables and assumptions used in the projection analysis since the previous submission include a change in the international oil price, with oil extraction and gasification values added for population and industries.

(d) Assessment of adherence to the reporting guidelines

69. The ERT assessed the information reported in the BR4 of Kazakhstan and identified issues relating to completeness and 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 Kazakhstan

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 29	Although the status of the State Programme for Industrial and Innovative Development for 2015–2019 is noted as "adopted" in CTF table 3, the measure was not included in the projections under the WEM scenario.
	Issue type: transparency	During the review, the Party confirmed that the overall energy efficiency improvements resulting from implementation of the State Programme should be reported under the WEM scenario.
	Assessment: recommendation	The ERT recommends that Kazakhstan increase transparency by including mitigation measures that are reported as adopted, such as the State Programme for Industrial and Innovative Development, in the projections under the WEM scenario.
2	Reporting requirement[a] specified in paragraph 30	The Party did not report a sensitivity analysis for any of the projections in its BR4.
	Issue type: completeness	During the review, Kazakhstan explained that the sensitivity analysis should be implemented only where possible.
	Assessment: encouragement	The ERT reiterates the encouragement from the previous review report for Kazakhstan to report a sensitivity analysis for its projections in its next BR.
3	Reporting requirement[a] specified in paragraph 34	The Party did not present its projections for the same sectoral categories as for its PaMs (e.g. "heat and power generation sector", "oil-refining sector", "pipeline industry", "housing and utilities", "industrial fuel combustion"), while in the projections there were references to "energy industries sector", "manufacturing", "population, services and agriculture", etc.
	Issue type: transparency	During the review, Kazakhstan noted that inconsistencies in the reporting method are related to the fact that while, in the PaMs section, sectoral categories are broken down by sectors according to the IPCC, the sectors in the section for forecasts are already broken down by sectors that are used in the calculation tools used. For example, for the combustion sector, the TIMES model was used, which has a sectoral breakdown in line with the sectors used in the International Energy Agency fuel and energy balances. The same applies to the IPPU sector and other sectors. Kazakhstan indicated that it will consider reporting projections for sectors in line with those described in the section on PaMs in its next BR, taking into account the new TIMES model developed within the framework of the country's low-carbon economic development strategy.
	Assessment: recommendation	The ERT recommends that Kazakhstan improve the transparency of its next BR by presenting its projections, to the extent possible, using the same sectoral categories used in the PaMs section.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
4	Reporting requirement[a] specified in paragraph 35 Issue type: completeness Assessment: encouragement	The Party did not report information on indirect GHG emissions. During the review, Kazakhstan explained that the information on indirect GHG emissions will be estimated for the next BR. The ERT encourages the Party to improve completeness by providing information explaining the absence of projections of indirect GHG emissions in its next BR.
5	Reporting requirement[a] specified in paragraph 36 Issue type: completeness Assessment: recommendation	Kazakhstan did not report separately emission projections related to fuel sold to ships and aircraft engaged in international transport in its BR4. During the review, Kazakhstan explained that emission projections related to international transport were not reported owing to a lack of data. The ERT reiterates the recommendation from the previous review report that Kazakhstan improve completeness by reporting separately, to the extent possible, emission projections related to fuel sold to ships and aircraft engaged in international transport.
6	Reporting requirement[a] specified in paragraph 38 Issue type: completeness Assessment: encouragement	Kazakhstan did not provide in its BR4 diagrams showing unadjusted inventory data and WEM projections for the transport, agriculture, LULUCF and waste sectors for 1990–2020. During the review, Kazakhstan provided diagrams for the transport, agriculture, LULUCF and waste sectors for 1990–2030. The Party explained that the dates used for the values under the LULUCF sector have been corrected. The ERT encourages Kazakhstan to increase the completeness of its reporting by providing diagrams showing unadjusted inventory data for all sectors in its next BR.
7	Reporting requirement[a] specified in paragraph 45 Issue type: transparency Assessment: encouragement	The Party reported different projection results from those reported in the previous submission without including any information on changes to the methods, assumptions or results presented in its BR4. During the review, Kazakhstan explained that the TIMES model was used for the combustion sector in both reports. The structure of the model is the same, but the results are different due to the following. First, the model is calibrated each year owing to changes in the capacities of existing technologies and in the set of newly available data sets. Second, the TIMES model is demand-driven, meaning that the sectors in the model are developed in accordance with socioeconomic parameters such as GDP, growth of population, per capita GDP, and gross value added and forecasts of sectors as they change year to year. Third, some PaMs and their statuses can change between two reporting periods. The ERT reiterates the encouragement from the previous review report for Kazakhstan to report the main differences in the assumptions, methods employed, and results between projections, in its next BR.
8	Reporting requirement[a] specified in paragraph 46 Issue type: completeness Assessment: encouragement	The Party did not discuss a sensitivity analysis qualitatively or quantitatively for any of the projections in its BR4. During the review, Kazakhstan explained that the sensitivity analysis should be implemented only where possible. The ERT reiterates the encouragement from the previous review report for Kazakhstan to discuss in its next BR the sensitivity of projections to underlying assumptions qualitatively and, where possible, quantitatively. The ERT notes that this could be done by varying the assumptions regarding increases in GDP or oil prices and production levels.
9	Reporting requirement[b] specified in paragraph 12 Issue type: transparency Assessment: encouragement	The Party reported different projection results from those reported in the previous submission without including any information on changes either to the methods or assumptions applied in its BR4. The ERT reiterates the encouragement from the previous review report for Kazakhstan to provide explanations of the differences in projection results in its next BR and supporting documentation.

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] Item 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] Item 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

70. Kazakhstan is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3–5, of the Convention. However, Kazakhstan provided information in its BR4 on its provision of support to developing country Parties. The ERT commends Kazakhstan for reporting this information and suggests that it continue to do so in future BRs.

71. In its BR4, Kazakhstan reported that its voluntary contributions to the United Nations amounted to USD 286,500 for both 2016–2017 and 2018–2019. In addition, Kazakhstan's voluntary contributions to the United Nations Environment Programme for 2017–2019 amounted to USD 100,000 annually.

72. With regard to the provision of support to developing country Parties that are particularly vulnerable to the adverse impacts of climate change, the Party reported in its BR4 that it allocated a number of scholarships under a programme aimed at training Afghan women during 2019–2020. The project complements Kazakhstan's initiative to train 1,000 Afghan civilian specialists under a special education programme with a total budget of USD 50 million, as well as co-funding from the European Union of USD 2.2 million and support from the United Nations Development Programme.

III. Conclusions and recommendations

73. The ERT conducted a technical review of the information reported in the BR4 and BR4 CTF tables of Kazakhstan 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 Kazakhstan towards achieving its target; and the Party's provision of support to developing country Parties.

74. Kazakhstan's total GHG emissions excluding LULUCF covered by its quantified economy-wide emission reduction target were estimated to be 1.3 per cent below its 1990 level, whereas total GHG emissions including LULUCF were 4.0 per cent above its 1990 level, in 2018. Kazakhstan's emissions trajectory shows a decreasing trend after the dissolution of the Soviet Union in 1991 and an overall decline in economic output and energy consumption, with the lowest level of emissions in 1999 and then rapidly increasing owing to population growth, economic recovery and transformation, and the discovery and large-scale production and export of oil and gas in 2000–2018.

75. Under the Convention Kazakhstan committed to achieving a quantified economy-wide emission reduction target of 15 per cent below the 1990 level by 2020. The target covers CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3, expressed using GWP values from the AR4, and covers all sources and sectors included in the annual GHG inventory. Emissions and removals from the LULUCF sector are not included in the target. Kazakhstan reported that it does not plan to make use of market-based mechanisms for achieving its target. In absolute terms, this means that under the Convention Kazakhstan has to reduce its emissions from 401,871.42 kt CO_2 eq (in the base year) to 341,590.71 kt CO_2 eq by 2020.

76. Kazakhstan's main policy framework relating to energy and climate change, the Kazakhstan 2050 Strategy, provides the development framework for the country's transition to a low-carbon green economy, which is further defined in the "Concept for transition of Kazakhstan to a green economy" and the related action plan for 2013–2020. Key legislation supporting Kazakhstan's climate change goals includes the Environmental Code adopted in 2007, which includes the regulation of GHG emissions and removals, a list of GHGs that are subject to State regulation, the regulatory principles and legislative framework for the

implementation of PaMs, and the ETS, which is the market mechanism for GHG emissions and removals from industry. The most significant mitigation impacts are projected to result from implementation of the Strategic Plan of the Ministry of Energy for 2017–2021; the Law of the Republic of Kazakhstan incorporating the rules for the formation and use of the reserve fund for the use of renewable energy sources; the 2014 rules for providing targeted assistance to individual consumers for the purchase of renewable energy facilities; and the 2012 Law on Energy Saving and Increasing Energy Efficiency.

77. For 2017, Kazakhstan reported in CTF table 4 total GHG emissions excluding LULUCF of 366,174.00 kt CO_2 eq, which is 5.4 per cent below its base-year level. Kazakhstan reported that it does not intend to use units from market-based mechanisms or the contribution of LULUCF to achieve its 2020 target.

78. The GHG emission projections provided by Kazakhstan in its BR4 correspond to the WOM, WEM and WAM scenarios. Under these scenarios, emissions are projected to be 0.2 per cent above, and 5.2 and 4.7 per cent below the 1990 level by 2020, respectively. Under the WEM scenario, the total projected GHG emissions excluding LULUCF are estimated to be 366,902.00 kt CO_2 eq, which is 20,007.00 kt CO_2 eq lower than the Party's emissions in 1990 (386,909.00 kt CO_2 eq). On the basis of the reported information, the ERT concludes that Kazakhstan may face challenges in achieving its 2020 target under the WEM and WAM scenarios.

79. Kazakhstan is not an Annex II Party and is therefore not obliged to adopt measures and fulfil obligations defined in Article 4, paragraphs 3–5, of the Convention. However, it provided information on its provision of support to developing countries. The Party allocated a number of scholarships under a programme aimed at training Afghan women during 2019–2020. The project complements Kazakhstan's initiative to train 1,000 Afghan civilian specialists under a special education programme, with a total budget of USD 50 million. Kazakhstan's voluntary contributions to the United Nations amounted to USD 286,500 for both 2016–2017 and 2018–2019. In addition, Kazakhstan's voluntary contributions to the United Nations Environment Programme for 2017–2019 amounted to USD 100,000 annually.

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

(a) To improve the completeness of its reporting by reporting separately, to the extent possible, emission projections related to fuel sold to ships and aircraft engaged in international transport (see issue 5 in table 10);

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

(i) Providing information on changes to its national inventory arrangements since its previous NC or BR (see issue 1 in table 3);

(ii) Providing consistent and comprehensive information in the textual part of the BR and in CTF table 3 on its PaMs (see issue 1 in table 5);

(iii) Providing quantitative estimates of the mitigation impacts of its individual PaMs or clearly explain why this may not be feasible owing to its national circumstances (see issue 3 in table 5);

(iv) Including mitigation measures that are reported as adopted such as the State Programme for Industrial and Innovative Development in the projections under the WEM scenario (see issue 1 in table 10);

(v) Presenting its projections, to the extent possible, using the same sectoral categories used in the PaMs section (see issue 3 in table 10);

(c) To improve the timeliness of its reporting by submitting its next BR on time (see para. 6 above).

Annex

Documents and information used during the review

A. Reference documents

2020 GHG inventory submission of Kazakhstan. Available at https://unfccc.int/ghg-inventories-annex-i-parties/2020.

BR4 of Kazakhstan. Available at https://unfccc.int/BRs.

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B. Additional information provided by the Party

Responses to questions during the review were received from Gulmira Sergazina (United Nations Development Programme), including additional material.