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Technical analysis of the third biennial update report of Mexico submitted on 30 June 2022

Summary report by the team of technical experts

Summary

According to decision 2/CP.17, paragraph 41(a), Parties not included in Annex I to the Convention, consistently with their capabilities and the level of support provided for reporting, were to submit their first biennial update report by December 2014. Further, paragraph 41(f) of that decision states that Parties not included in Annex I to the Convention shall submit a biennial update report every two years, either as a summary of parts of their national communication in the year in which the national communication is submitted or as a stand-alone update report. As mandated, the least developed country Parties and small island developing States may submit biennial update reports at their discretion. This summary report presents the results of the technical analysis of the third biennial update report of Mexico, conducted by a team of technical experts in accordance with the modalities and procedures contained in the annex to decision 20/CP.19.



Abbreviations and acronyms

2006 IPCC Guidelines	2006 IPCC Guidelines for National Greenhouse Gas Inventories
2019 Refinement to the 2006 IPCC Guidelines	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories
AD	activity data
AFOLU	agriculture, forestry and other land use
AR	Assessment Report of the Intergovernmental Panel on Climate Change
BTR	biennial transparency report
BUR	biennial update report
CDM	clean development mechanism
CH_4	methane
CICC	Inter-Secretariat Commission on Climate Change
СО	carbon monoxide
CO_2	carbon dioxide
CO ₂ eq	carbon dioxide equivalent
EF	emission factor
ETF	enhanced transparency framework under the Paris Agreement
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	greenhouse gas
GWP	global warming potential
HFC	hydrofluorocarbon
HWP	harvested wood products
ICA	international consultation and analysis
IE	included elsewhere
INECC	National Institute of Ecology and Climate Change
IPCC	Intergovernmental Panel on Climate Change
IPCC good practice guidance	Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories
IPCC good practice guidance for LULUCF	Good Practice Guidance for Land Use, Land-Use Change and Forestry
IPPU	industrial processes and product use
LULUCF	land use, land-use change and forestry
MRV	measurement, reporting and verification
N ₂ O	nitrous oxide
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NF ₃	nitrogen trifluoride
NIR	national inventory report
NMVOC	non-methane volatile organic compound
NO	not occurring
non-Annex I Party	Party not included in Annex I to the Convention
NO _X	nitrogen oxides
PFC	perfluorocarbon
QA/QC	quality assurance/quality control
REDD+	reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management

	of forests; and enhancement of forest carbon stocks (decision 1/CP.16, para. 70)
Revised 1996 IPCC Guidelines	Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories
SF_6	sulfur hexafluoride
TTE	team of technical experts
UNFCCC guidelines for the preparation of NCs from non- Annex I Parties	"Guidelines for the preparation of national communications from Parties not included in Annex I to the Convention"
UNFCCC reporting guidelines on BURs	"UNFCCC biennial update reporting guidelines for Parties not included in Annex I to the Convention"

I. Introduction and process overview

A. Introduction

1. The process of ICA consists of two steps: a technical analysis of the submitted BUR and a facilitative sharing of views under the Subsidiary Body for Implementation, resulting in a summary report and a record respectively.

2. According to decision 2/CP.17, paragraph 41(a), non-Annex I Parties, consistently with their capabilities and the level of support provided for reporting, were to submit their first BUR by December 2014. In addition, paragraph 41(f) of that decision states that non-Annex I Parties shall submit a BUR every two years, either as a summary of parts of their NC in the year in which the NC is submitted or as a stand-alone update report.

3. Further, according to paragraph 58(a) of the same decision, the first round of ICA is to commence for non-Annex I Parties within six months of the submission of the Parties' first BUR. The frequency of developing country Parties' participation in subsequent rounds of ICA, depending on their respective capabilities and national circumstances, and the special flexibility for small island developing States and the least developed country Parties, will be determined by the frequency of the submission of BURs.

4. Decision 14/CP.19, paragraph 7, outlines that developing country Parties seeking to obtain and receive payments for results-based actions can submit relevant information and data through the BUR in the form of a technical annex as per decision 2/CP.17, annex III, paragraph 19.¹ Decision 14/CP.19, paragraph 8, outlines that the submission of the technical annex is voluntary and in the context of results-based payments. As mandated by decision 14/CP.19, paragraphs 10–14, the technical annex submitted by Mexico has been subject to technical analysis by two LULUCF experts who are included as members of a TTE. The results of the technical analysis are captured in a separate technical report.²

5. Mexico submitted its second BUR on 28 November 2018, which was analysed by a TTE in the thirteenth round of technical analysis of BURs from non-Annex I Parties, conducted from 27 to 31 May 2019. After the publication of its summary report, Mexico participated in the ninth workshop for the facilitative sharing of views, convened virtually on 26 November 2020.

6. This summary report presents the results of the technical analysis of the third BUR of Mexico, undertaken by a TTE in accordance with the provisions on the composition, modalities and procedures of the TTE under ICA contained in the annex to decision 20/CP.19.

B. Process overview

7. In accordance with the mandate referred to in paragraph 2 above, Mexico submitted its third BUR on 30 June 2022 as a stand-alone update report. The submission was made within three years and eight months from the submission of the second BUR.

8. During the technical analysis, the Party clarified that the delay occurred for two reasons: it took more than one year to acquire finances, since the financing requirements and related procedures for BUR preparation are complicated and the coronavirus disease 2019 caused setbacks in the operation of government offices and data-collection processes, particularly for subnational actions, owing to an insufficient remote working infrastructure. The Party expressed the need for multilateral institutions to streamline their procedures for providing BUR and BTR funding for it to comply with requirements under the ETF.

9. The technical analysis of Mexico's BUR was conducted from 30 January to 3 February 2023 in Bonn and was undertaken by the following TTE, drawn from the UNFCCC

¹ The technical annex on the results of implementing REDD+ activities.

² FCCC/SBI/ICA/2023/TATR.1/MEX. At the time of publication of this report, the technical report was being prepared.

roster of experts on the basis of the criteria defined in decision 20/CP.19, annex, paragraphs 2–6: Bertha Argueta Tejeda (Honduras), Rocío D. Cóndor-Golec (Italy), Larissa Felip Spalding (Paraguay), Excellent Hachileka (Zambia), Medeia Inashvili (Georgia), Dovilé Karloniené (Lithuania), Zammath Khaleel (former member of the Consultative Group of Experts from Maldives), Andrew Lister (United States of America), Brittany Meighan (Belize), Katherine Ovalle (Colombia) and Brian Zutta (Peru). Rocío D. Cóndor-Golec and Excellent Hachileka were the co-leads. The technical analysis was coordinated by Anna Sikharulidze and Jeeyoon Jung (secretariat).

10. During the technical analysis, in addition to the written exchange, in the virtual team room, to provide technical clarifications on the information reported in the BUR, the TTE and Mexico engaged in consultation³ on the identification of capacity-building needs for the preparation of BURs and participation in the ICA process. Following the technical analysis of Mexico's third BUR, the TTE prepared and shared a draft summary report with Mexico on 2 May 2023 for its review and comment. Mexico, in turn, provided its feedback on the draft summary report on 1 September 2023.

11. The TTE responded to and incorporated Mexico's comments referred to in paragraph 10 above and finalized the summary report in consultation with Mexico on 16 October 2023.

II. Technical analysis of the biennial update report

A. Scope of the technical analysis

12. The scope of the technical analysis is outlined in decision 20/CP.19, annex, paragraph 15, according to which the technical analysis aims to, without engaging in a discussion on the appropriateness of the actions, increase the transparency of mitigation actions and their effects and shall entail the following:

(a) The identification of the extent to which the elements of information listed in paragraph 3(a) of the ICA modalities and guidelines (decision 2/CP.17, annex IV) have been included in the BUR of the Party concerned (see chap. II.B below);

(b) A technical analysis of the information reported in the BUR, specified in the UNFCCC reporting guidelines on BURs (decision 2/CP.17, annex III), and any additional technical information provided by the Party concerned (see chap. II.C below);

(c) The identification, in consultation with the Party concerned, of capacitybuilding needs related to the facilitation of reporting in accordance with the UNFCCC reporting guidelines on BURs and to participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention (see chap. II.D below).

13. The remainder of this chapter presents the results of each of the three parts of the technical analysis of Mexico's BUR outlined in paragraph 12 above.

B. Extent of the information reported

14. The elements of information referred to in paragraph A.12(a) above include the national GHG inventory report; information on mitigation actions, including a description of such actions, an analysis of their impacts and the associated methodologies and assumptions, and information on progress in their implementation; information on domestic MRV; and information on support needed and received.

15. According to decision 20/CP.19, annex, paragraph 15(a), in undertaking the technical analysis of the submitted BUR, the TTE is to identify the extent to which the elements of information listed in paragraph 14 above have been included in the BUR of the Party concerned. The TTE considers that the reported information is mostly consistent with the

³ The consultation was conducted via videoconferencing.

UNFCCC reporting guidelines on BURs. Specific details on the extent of the information reported for each of the required elements are provided in the tables included in annex I.

16. The current TTE noted improvements in the reporting in Mexico's third BUR compared with that in its second BUR. Information on the GHG inventory and on mitigation actions and their effects reported in the Party's third BUR demonstrates that it has taken into consideration the areas for enhancing the transparency of the extent of the information noted by the previous TTE in the summary report on the technical analysis of the Party's previous BURs. With regard to the GHG inventory, the main area of improvement is the reporting of detailed information in the NIR, including category descriptions, methodology, uncertainties, QA/QC and verification, recalculations and future improvements. With regard to mitigation actions, the TTE noted that the Party made further efforts to identify a larger set of mitigation measures at the federal and subnational level and to estimate the impact of these measures.

C. Technical analysis of the information reported

17. The technical analysis referred to in paragraph A.12(b) above aims to increase the transparency of information reported by the Parties on mitigation actions and their effects, without engaging in a discussion on the appropriateness of those actions. Accordingly, the focus of the technical analysis was on the transparency of the information reported in the BUR.

18. For information reported on national GHG inventories, the technical analysis also focused on the consistency of the methods used for preparing those inventories with the appropriate methods developed by the IPCC and referred to in the UNFCCC reporting guidelines on BURs.

19. The results of the technical analysis are presented in the remainder of this chapter.

1. Information on national circumstances and institutional arrangements relevant to the preparation of national communications on a continuous basis

20. As per the scope defined in paragraph 2 of the UNFCCC reporting guidelines on BURs, the BUR should provide an update to the information contained in the most recently submitted NC, including information on national circumstances and institutional arrangements relevant to the preparation of NCs on a continuous basis. In their NCs, non-Annex I Parties report on their national circumstances following the reporting guidance contained in decision 17/CP.8, annex, paragraphs 3–5, and they could report similar information in their BUR, which is an update of their most recently submitted NC.

21. In its third BUR, Mexico provided an update on its national circumstances, including a description of national and regional development priorities and information on geographical and socioeconomic characteristics that the Party states make it very vulnerable to the adverse effects of climate change and/or the impact of the implementation of response measures, as referred to in Article 4, paragraph 8, and, as appropriate, paragraphs 9–10, of the Convention. The information provided covered, more specifically, climate, precipitation, extreme events (e.g. tropical cyclones, droughts and forest fires) and their costs, as well as water resources, ecosystems, demography, poverty and inequality, climate vulnerability, energy and gender issues, and a summary of the main characteristics of its key categories (i.e. energy/oil and gas, primary energy and electricity generation, transport, industry, agriculture and waste management).

22. In addition, Mexico provided tables and maps that help to illustrate its national circumstances, including principal economic sectors, population indicators by gender, poverty by municipalities, vulnerability to climate change in municipalities, and knowledge production and civil society networks on gender and energy.

23. Mexico transparently reported in its third BUR an update on its existing institutional arrangements relevant to the preparation of its NCs and BURs on a continuous basis. The description covers key aspects of the institutional arrangements, including the legal status and roles and responsibilities of the overall coordinating entity; the involvement and roles of other institutions and experts that are part of the National System for Climate Change;

mechanisms for information and data exchange; QA/QC procedures; provisions for public consultation and other forms of stakeholder engagement; and economic instruments that stimulate compliance with the objectives of the national climate change strategy.

24. The institutional arrangements are supported by the General Law on Climate Change, which was implemented in 2012 and contains climate policy instruments at the federal, state and municipal level. The General Law establishes the National System for Climate Change, which promotes coordination at the government level on implementing the national climate change strategy and comprises CICC, the Climate Change Council, the governments of the federal entities, national associations of municipal authorities, the Congress of the Union and INECC. INECC has as one of its main objectives compiling the information needed for preparing Mexico's NCs.

25. Mexico reported in its third BUR an update on its domestic MRV arrangements. The MRV system, which continues to be developed and strengthened, is designed at the national and subnational level and covers the GHG inventory system, the national GHG registry and mitigation actions, as well as the climate policies of federal entities and specific actions within the framework of the Special Climate Change Programme. The two latter areas constitute new MRV platforms on which Mexico, through its environment ministry (the Secretariat of Environment and Natural Resources), is working in preparation for developing capacities to establish an MRV system.

2. National greenhouse gas emissions by sources and removals by sinks

26. As indicated in table I.1, Mexico reported information on its GHG inventory in its BUR mostly in accordance with paragraphs 3–10 of the UNFCCC reporting guidelines on BURs and paragraphs 8–24 of the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties, contained in the annex to decision 17/CP.8.

27. Mexico submitted its third BUR in 2022 and the GHG inventory reported is for 1990–2019. The GHG inventory is consistent with the requirements for the reporting time frame.

28. Mexico submitted an NIR as a stand-alone document in conjunction with and referenced in the BUR and the document was made publicly available on the UNFCCC website.⁴

29. GHG emissions and removals for the BUR covering the 1990–2019 inventories were estimated using a combination of tier 1 and tier 2 methodologies from the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines. In the BUR, the Party reported that all CO₂ emissions for subcategory 1.A.1 (fuel combustion activities) in the energy sector except for coal were estimated using tier 2 methodologies with country-specific EFs for CO_2 . Tier 2 methodologies were also used for CO_2 emissions for subcategory 3.B.1 (forest land); CH₄ emissions for subcategories 3.A.1.a (enteric fermentation for cattle), 3.A.2.a (manure management for cattle), 3.A.2.h (manure management for swine), 4.A (solid waste disposal), 4.C.1 (waste incineration) and 4.D.1 (wastewater treatment and discharge); and HFC emissions for subcategory 2.F.1 (refrigeration and air conditioning). During the technical analysis, Mexico clarified that tier 2 methodologies were also used for CO₂ emissions from coal combustion in energy industries, for CO₂ emissions for flaring emissions for subcategory 1.B.2 (oil and natural gas) and for subcategory 2.A.4 (other uses of carbonates). The TTE commends Mexico for using the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines and for estimating emissions for more categories using higher-tier methods compared with the previous submission, noting progress since the previous submission.

30. Information on the Party's total GHG emissions for 1990–2019 is reported in Gg CO_2 eq in tables 2.4 and 2.10 in annex 1 to the BUR. The TTE noted that the values provided in table 2.4 do not match those in table 2.10. During the technical analysis, Mexico provided a corrected table for the GHG emissions for all sources and GHGs and all years.

⁴ <u>https://unfccc.int/documents/512232</u>.

31. Information on the Party's total GHG emissions by gas for 1990–2019, as provided during the technical analysis, is outlined in table 1. It shows a 62.7 per cent increase in emissions excluding land and HWP since 1990 (466,834.04 Gg CO_2 eq).

Gas	GHG emissions (Gg CO ₂ eq) including land and HWP ^a	% change 1990–2019	GHG emissions (Gg CO ₂ eq) excluding land and HWP ^a	% change 1990–2019
CO ₂	318 343.86	NA^b	520 284.83	62.9
CH_4	175 635.76	48.9	175 635.76	48.9
N ₂ O	41 419.36	46.1	41 419.36	46.1
HFCs	21 731.81	2 757.1	21 731.81	2 757.1
PFCs	26.17	-94.0	26.17	-94.0
SF_6	400.92	997.9	400.92	997.9
Other (NF ₃)	2.47	NA	2.47	NA
Total	557 560.35	NA ^b	759 501.32	62.7

 Table 1

 Greenhouse gas emissions by gas of Mexico for 2019

^{*a*} 2006 IPCC Guidelines AFOLU category 3.B (land) and, if reported, 3.D (HWP (3.D.1) and other emissions (3.D.2)).

^b CO₂ emissions for AFOLU category 3.B (land) were not estimated for 1990.

32. Mexico also reported information on black carbon emissions, which amounted to 65.82 Gg in 2019.

33. Information on other emissions, such as NO_X , CO and NMVOCs, was not reported by Mexico. During the technical analysis, the Party clarified that these emissions have been estimated for an air pollutant inventory and explained that the information was not included in the BUR owing to limited coordination between the institutions responsible for preparing the GHG inventory and the air pollutant inventory.

34. Mexico did not apply notation keys in tables where numerical data were not provided. Instead, Mexico included in annex 2 to its BUR tables containing lists of the categories that were reported as "NE" (table 2.11), "IE" (table 2.12) and "NO" (table 2.13). The TTE noted that the information in tables 2.11–2.13 does not provide a clear understanding of the extent of information reported on Mexico's GHG inventory. During the technical analysis, Mexico further clarified the categories where emissions were reported as "NE", "NO" or "IE" (see paras. 40, 42, 42 and 48 below).

35. Mexico reported comparable information addressing the sectoral reporting tables annexed to the Revised 1996 IPCC Guidelines.

36. Comparable information addressing the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF was not clearly reported in Mexico's BUR. The TTE noted that some relevant information was reported in annex 1 to the BUR (table 2.10); however, the sectoral table for the LULUCF sector was not provided. During the technical analysis, the Party provided comparable information for 2000–2019.

37. The shares of emissions that different sectors contributed to the Party's total GHG emissions excluding land and HWP (categories 3.B and 3.D), as provided by the Party during the technical analysis, in 2019 are reflected in table 2.

	GHG emissions		% change
Sector	$(Gg \ CO_2 \ eq)$	% share ^a	1990–2019
Energy	490 764.12	64.6	60.1
IPPU	73 672.41	9.7	126.6
AFOLU	-61 133.74	NA	NE
Livestock (category 3.A)	110 272.20	14.5	14.9
Land (category 3.B)	-192 753.93	NA	NE

 Table 2

 Shares of greenhouse gas emissions by sector of Mexico for 2019

Sector	GHG emissions (Gg CO ₂ eq)	% share ^a	% change 1990–2019
Aggregate sources and non-CO ₂ emissions sources on land (category 3.C)	30 535.04	4.0	79.7
HWP and other emissions (category 3.D)	-9 187.04	1.2	-107.5
Waste	54 257.56	7.2	267.9

^{*a*} Share of total without 2006 IPCC Guidelines AFOLU category 3.B (land) and, if reported, 3.D (HWP (3.D.1) and other emissions (3.D.2).

38. Mexico reported information on its use of GWP values consistent with those provided by the IPCC in its AR5 based on the effects over a 100-year time-horizon of GHGs.

39. For the energy sector, information was clearly reported on GHG emissions, methodological tier levels, AD and their sources, EFs, key categories and other information specific to the sector. The most significant key categories and main gases throughout the time series were CO_2 emissions from electricity and heat production (1.A.1.a) and road transport (1.A.3.b), followed by various activities under manufacturing industries and construction (1.A.2) (CO₂), and CO₂, CH₄ and N₂O emissions under subcategory 1.A.4 (other sectors). AD for these categories are mostly from Mexico's national energy balance. In BUR table 2.11, Mexico reported that it did not estimate emissions from spontaneous combustion and burning of coal dumps (1.B.1.b) owing to a lack of available AD.

40. The TTE noted that, in its NIR, Mexico reported "NE" for subcategories 1.C.1 (transport of CO_2) and 1.C.2.b (storage of CO_2); however, this information was not included in BUR table 2.11. During the technical analysis, the Party clarified that, although there are indications of these activities, there is not enough information from official sources to be able to estimate emissions. The Party is currently working in partnership with relevant organizations to gather information on these activities.

41. For the IPPU sector, information was clearly reported in the BUR and the NIR on GHG emissions, methodologies and tier levels, AD and their sources, EFs, key categories, notation keys used, uncertainties, recalculations and other information specific to the sector. Overall the Party reported eight categories emitting emissions of CO_2 , CH_4 , N_2O , HFCs, PFCs, NF₃ and SF₆. Among the combinations of GHGs and categories, eight were key. The emissions for the IPPU sector show an increasing trend and, correspondingly, the share of the sector in the national total increased from 6.9 per cent in 1990 to 13.2 per cent in 2019. The main contributor to the total sectoral emissions for 2019 was category 2.A (mineral industry) (42.0 per cent), followed by category 2.F (product uses as substitutes for ozone depleting substances) (27.6 per cent); the latter having exceeded, since 2000, category 2.C (metal industry) (23.5 per cent) – the third highest contributor. The AD in the IPPU sector were obtained from the statistical annual reports of Mexico, and annual and monthly reports from the manufacturing industries and from individual industries.

42. Information on the estimates for fluorinated gases for individual subcategories on a gas-by-gas basis was not reported in Mexico's BUR. The Party clarified that it faced difficulties in obtaining corresponding AD for each subcategory for various reasons, such as unavailability of some AD, dispersion of other AD among different industries and the Party's limited resources to organize the data-collection process. In addition, the notation keys for these gases from all sources were omitted from table 2.10 in annex 1 to the BUR. During the technical analysis, the Party provided the historical time series for these gases.

43. GHG emission estimates for various subcategories in the IPPU sector were not reported in Mexico's BUR, namely 2.D.3 (solvent use), 2.E.4 (heat transfer fluid), 2.G.2 (SF₆ and PFCs from other product uses), 2.G.3 (N₂O from product uses) and 2.H.3 (other). Mexico listed emissions for these subcategories as "NE" in BUR tables 2.11-2.13 and provided as justification a lack of necessary information, but the reasons for this lack of information were not clear to the TTE. In addition, no information was provided on subcategory 2.G.4 (other) (SF₆), and it was not clear to the TTE whether these emissions were not occurring or not estimated. There was also inconsistent information provided in the NIR and the BUR on the occurrence of CO₂ emissions from magnesium production (2.C.4). During the technical analysis, Mexico clarified that the emissions were not estimated owing to a lack of AD in the

different institutions responsible for those industries and/or absence of a database with historical and/or complete information for these subcategories. The Party further clarified that CO_2 emissions from magnesium production (2.C.4) should be reported as "NE" instead of "NO", adding that it is possible that there is magnesium production in the country but that it has not been reported because the information is not available for the entire time series. Mexico indicated that it will try to obtain the necessary information for the next inventory.

44. For the agriculture sector (AFOLU categories 3.A and 3.C), the Party reported emissions for nine subcategories. In 2019, emissions associated with subcategories 3.A.1 (enteric fermentation) and 3.A.2 (manure management) were 82,287.31 Gg CO₂ eq and 27,984.89 Gg CO₂ eq respectively, which is an increase of 9.9 and 32.7 per cent respectively compared with 1990. The key categories were 3.A.1 (enteric fermentation), 3.A.2 (manure management), and 3.C.4 and 3.C.5 (direct and indirect N₂O emissions from managed soils respectively). The Party reported that AD, including the number of animals per type of livestock, milk production and average weights, were obtained from the Agrifood and Fisheries Information Service under the Secretariat for Agriculture and Rural Development. The amounts of nitrogen fertilizer applied to soils were obtained from the National Institute of Statistics and Geography.

45. The TTE noted that the time-series data for the GHG emissions, AD and EFs were provided in charts rather than as numerical data. During the technical analysis, the Party clarified how AD for dairy and non-dairy cattle for 1990 were obtained, shared the time series of the national parameters and EFs used for estimating GHG emissions for dairy cattle and swine, and shared the numerical time series of emissions for the subcategories under categories 3.A and 3.C.

46. For categories 3.B and 3.D (land and HWP respectively), Mexico reported emissions and removals for all six subcategories of category 3.B and for subcategory 3.D.1 (HWP), of which subcategories 3.B.1 (forest land), 3.B.2 (cropland), 3.B.3 (grassland) and 3.D.1 (HWP) were reported as key categories. The Party applied the stock-change method from the 2006 IPCC Guidelines for all six main land-use subcategories, using AD and EFs from the national forest and soil inventory and a reference mesh.

47. The TTE noted that information on Mexico's emissions and removals for category 3.B was provided in charts in the NIR rather than as numerical data. Furthermore, the TTE noted inconsistencies in the reporting of emissions and removals for category 3.B between the BUR (1990–2019) and the NIR (2000–2019). During the technical analysis, the Party clarified that the time series for category 3.B reported in the BUR was prepared using AD for 2000–2019, whereas a linear regression was performed for 1990–1999. The Party also explained that AD for category 3.B were based on a sampling approach, which consists of the photointerpretation and analysis of sampling points over time, mainly using freely available high- and very-high-resolution satellite images, and that access to this type of data for 1990–1999 is very limited. The Party referred to its forest reference emission level submission⁵ for detailed information related to the estimation of AD.

48. The TTE noted that Mexico reported "NE" in BUR table 2.11 for subcategory 3.B.4.a (wetlands remaining wetlands); however, it was not mentioned in the list for future improvements in NIR section 5.7.7.6 and the reason was not clear to the TTE. During the technical analysis, the Party clarified that those emissions for subcategory 3.B.4.a are reported elsewhere (under other land uses in NIR section 5.7.7) and the resulting emissions were 107.73 Gg CO₂ eq. These emissions include changes in use for wetlands, such as conversion to dams and fish farming, while it was assumed that wetlands where no changes occurred remained in balance, in accordance with the 2006 IPCC Guidelines. Mexico further stated that it is working towards improving estimations related to wetlands.

49. For the waste sector, information was clearly reported on GHG emissions, methodological tier levels, AD and their sources, EFs, key categories, uncertainties, QA/QC, recalculations, improvements planned and other information, for all categories included in the sector. The sectoral emissions show a steadily increasing trend since 1990. The main sources of emissions are categories 4.A (solid waste disposal) and 4.D (wastewater treatment

⁵ Available at <u>https://redd.unfccc.int/submissions.html?country=mex</u>.

and discharge), accounting for 53.5 and 42.6 per cent of the sectoral emissions respectively. Both these categories are identified as key sources by both level and trend. The main driver for the increase in sectoral emissions is the influence of the increasing population on categories 4.A and 4.D. For category 4.B (biological treatment of solid waste), Mexico reported only emissions of CH_4 and N_2O from composting, because anaerobic digestion did not occur in the country in the reporting period. The main source of the AD is the Basic Diagnostics for Waste Management elaborated on the basis of the National Census of Municipal and Delegational Governments published by the National Institute of Statistics and Geography. AD for category 4.C (incineration and open burning of waste) are based on expert assumptions about the fractions of waste incinerated and burned in open air.

50. The BUR does not present AD in tabular format for category 4.C; however, during the technical analysis the Party provided these AD for the whole time series in tabular format.

51. N_2O emissions from industrial wastewater (4.D.2) were not estimated and no information or explanation was provided in the BUR. During the technical analysis Mexico clarified that N_2O emissions could not be estimated because it was not possible to characterize the information on the treated flow in terms of nitrogen content. For future inventories, it will request the information on the treated flow by industrial sector in order to estimate the nitrogen content.

The BUR states that CH₄ recovery is practised in the country relating to activities 52. under categories 4.A and 4.D, but neither the BUR nor the NIR provide information on the amounts of CH₄ recovered for energy use. During the technical analysis, Mexico clarified that CH₄ recovery occurs under these categories and its amount was considered in the emission estimates: at plants where there is methane recovery, emissions were subtracted from the totals for these sectors, and when methane is used in the form of biogas to generate electricity, the corresponding emissions are reported in the energy sector (1.A.1.a). Further, it clarified that, regarding CH₄ from activities under category 4.D, there is information on 29 plants that perform CH₄ recovery: the emissions from these plants were estimated according to the 2006 IPCC Guidelines and subtracted from the total CH₄ emissions for category 4.D. For 2019 this amounted to 156,858 t CH₄. In the case of CH₄ recovered from managed waste disposal sites (4.A.1), emissions are estimated by site and, for those sites that have CH₄ recovery, that amount is subtracted from the totals. There are 61 CH₄ recovery sites in the country, and 917,050,421 m³ biogas was recovered in 2019. In all cases, when recovered CH₄ is used in the form of biogas to generate electricity, the corresponding emissions are reported in the energy sector (under subcategory 1.A.1.a), since all plants that generate electricity must report their consumption and generation to the Energy Regulatory Commission of Mexico, and this information is used for estimating emissions from the generation of electricity in the country.

53. The NIR provides an update to most of the GHG inventories reported in the Party's previous NCs and BURs. The information reported provides an update of the Party's second BUR, with recalculations performed to ensure the consistency of the anthropogenic emissions and removals for 1990–2019 for the energy, IPPU, waste, agriculture (categories 3.A and 3.C) and HWP and other emissions (category 3.D) using the methodologies contained in the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines. Information on the recalculation for category 3.B (forest land) for 1990–2000 was not clearly reported in the NIR and the BUR. However, during the technical analysis, the Party provided clarifications, as described in paragraph 47 above.

54. Mexico described in its BUR the institutional framework for the preparation of its 2019 GHG inventory. The Party reported that CICC is the government body responsible for its climate change policy and INECC is responsible for preparing the GHG inventory, which was prepared in accordance with article 74 of the General Law on Climate Change and in accordance with provisions in the UNFCCC reporting guidelines on BURs and under the IPCC. The United Nations Development Programme assisted Mexico in designing its GHG inventory report. The Party also identified improvements in the information reported, such as in the process of obtaining information, estimation of categories not currently estimated and application of new quality control activities.

55. In its BUR, Mexico explained that INECC administers a quality management system for the national GHG inventory under the principle of continuous improvement. The collection of updated, accurate and timely information is made possible by a collaboration between dependencies of the federal public administration, as well as local governments, research centres, higher education institutions and private organizations across different sectors. During the technical analysis, the Party clarified that the information used for preparing the GHG national inventory is documented and stored through a management system, and that it includes AD, assumptions, expert judgment and studies.

56. Mexico clearly reported that a key category analysis was performed for the level of and trend in emissions for 1990–2019. An overview of the results, indicating which categories are key according to each of the approaches used, is also presented in annex I to the NIR. Overall, 53 key categories and main gases were identified by level and by trend.

57. The BUR (p.81) provides information on QA/QC measures for all sectors. The information reported explains that the QC process took place following a quality management system aligned with international standards and made up of six microprocesses, and that a QA process was carried out by independent consultants at the beginning of 2022, the findings of which will be implemented for the next GHG cycle. The TTE commends Mexico for providing information in accordance with the IPCC good practice guidance.

58. Mexico clearly reported information on CO_2 fuel combustion emissions using both the sectoral and the reference approach. The information reported indicates that the combustion emissions estimated under the sectoral and the reference approach both show an upward trend. The difference between the estimates calculated using the two approaches was reported as being mostly below 5 per cent and was considered insignificant.

59. Information was reported on international aviation bunker fuels (1.A.3.a.i).

60. Information on international marine bunker fuels (1.A.3.d.i) was not reported in Mexico's BUR. However, the Party provided relevant clarification in its BUR that this information was not available, although it did not provide the reasons. During the technical analysis, the Party clarified that there is no tracking system to disaggregate international marine activities from domestic marine activities, and it is challenging to address this data-collection activity owing to competing priorities.

61. Mexico reported information on the uncertainty assessment (level) of its national GHG inventory for 2019. The uncertainty analysis was based on the tier 1 approach of the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines and covers all source categories and all direct GHGs. The results obtained, as reported in the BUR, reveal that the level uncertainty for emissions is 17.3 per cent excluding LULUCF.

62. The TTE noted that the transparency of the information reported on GHG inventories could be enhanced by addressing the areas noted in paragraphs 30, 33, 34, 36, 40, 42, 42, 45 47, **Error! Reference source not found.**, 50, 51, 52, 55 and 60 above, which could facilitate a better understanding of the information reported on GHG inventories.

3. Mitigation actions and their effects, including associated methodologies and assumptions

63. As indicated in table I.2, Mexico reported in its BUR, mostly in accordance with paragraphs 11–13 of the UNFCCC reporting guidelines on BURs, information on mitigation actions and their effects, to the extent possible.

64. The information reported provides a clear and comprehensive overview of the Party's mitigation actions and their effects. In its third BUR, Mexico reported contextual information on sectoral goals and objectives in terms of emissions mitigation and sectoral development. Policies and programmes that support mitigation actions are sector specific and are being implemented at the national and subnational level to reduce GHG emissions. The TTE commends Mexico for its efforts to identify and report on actions at both the national and the subnational level.

65. Mexico reported that climate change has been mainstreamed in its economic financial instruments, development of regulations and state-level development plans, including

mitigation. Most of the mitigation actions are in the energy sector. Further, the implemented mitigation actions contributed to estimated emission reductions of 150 Mt CO_2 eq from 2018 to 2020, with the energy sector being the main source of emission reductions, contributing to about 59 per cent of overall national emission reductions.

66. The Party reported a summary of its mitigation actions in tabular format in accordance with decision 2/CP.17, annex III, paragraph 11. Fifty-nine mitigation actions covering the energy, industry, AFOLU and waste sectors are summarized in the BUR (pp.189–293).

67. The Party also reported information on its mitigation actions in narrative format for additional actions identified at the subnational level that are currently under implementation. During the technical analysis, the Party clarified that it is making progress in strengthening local capacities to collect data and report the information in tabular format.

68. Consistently with decision 2/CP.17, annex III, paragraph 12(a), Mexico clearly reported the names of mitigation actions, coverage (sector and gases) and progress indicators for all mitigation actions in the BUR (pp.189–293). A clear description of most of the mitigation actions was provided in the BUR.

69. Information on quantitative goals was not clearly reported for all the measures presented in Mexico's BUR and the reason for this was not clear to the TTE. Although the Party reported objectives for all the measures, often including the expected result, the quantitative goal and the year of fulfilment were not clearly reported for many measures. During the technical analysis, the Party clarified that quantitative goals are reported when there is information available to support that reporting. Mexico further provided detailed clarifications for different mitigation actions where challenges in setting up quantitative goals were identified. For example, for the application of the "Mexican regulations on electrical and thermal energy efficiency", the objectives were established according to the technical content of each standard and this cannot be easily translated into quantitative goals. The Party is now working on collecting data and developing a methodology that will allow it to define quantitative goals for all measures.

70. Mexico clearly reported information on the objectives of the actions and on the results achieved, in terms of estimated emission reductions for all mitigation actions in the energy, AFOLU, waste and industry sectors. Mexico also provided a general overview of the cobenefits of its mitigation actions, including their contributions to Sustainable Development Goals 5 (gender equality), 6 (clean water and sanitation), 7 (affordable and clean energy), 9 (industry, innovation and infrastructure), 12 (responsible production and consumption) and 15 (climate action).

71. Mexico reported 41 mitigation actions in tabular format for the energy sector, covering power generation, energy efficiency and transport. Three actions are presented as oriented towards gender equality in the electricity sector. The mitigation actions in power generation focus mainly on increasing the share of renewable energy in the national energy mix and fuel switching, and were reported as implemented. Those power generation actions have the potential for achieving the most significant GHG emission reductions for 2018-2020 (69 Mt CO₂ eq). The mitigation actions in energy efficiency focus mainly on increasing the efficiency of new equipment and replacing very old equipment, with a mitigation potential amounting to 9.5 Mt CO₂ eq for 2018–2020. In the residential and commercial sector actions focus mainly on improving the efficiency of energy consumption through ecodesign and new equipment, and the inclusion of renewable sources for self-generation, with an estimated emission reduction of 1.2 Mt CO_2 eq. The mitigation actions in the transport sector aim to optimize the system (through improving routes or using other modes, increasing energy efficiency and switching fuels). In this case the potential for emission reductions is about 8 Mt CO₂ eq for 2018–2020.

72. The mitigation actions in the industry sector focus mainly on actions leading to reductions in HFC emissions taken by domestic refrigeration companies and, in the vehicle industry, concerning air conditioning, as well as actions taken by the sugar and cement industries to reduce their fossil fuel consumption through cogeneration with biomass and waste-to-energy recycling by co-processing. These mitigation actions are all reported in tabular format. All of the actions are ongoing, with the exception of the actions in the cement industry, which are planned. Additionally, Mexico reported in narrative format on mitigation

measures being implemented by chemical industry plants in BUR table 3.18, including measures to reduce electricity consumption through replacement of lighting fixtures, replacement of the hydrochlorofluorocarbon used in foam production, thermal use of biogas and reconditioning of refrigerant gases. The Party reported the results of implementing its mitigation actions as emission reductions. The measures implemented by the sugar industry achieved the highest cumulative mitigation, amounting to 0.354 Mt CO₂ eq for 2018–2019. Total cumulative emission reductions for the industry sector between 2018 and 2020 amounted to 0.8557 Mt CO₂ eq. The TTE noted that Mexico included for the first time mitigation actions targeting HFCs. The TTE commends the Party for its efforts to include these actions.

73. Information on measures aimed at reducing emissions of SF_6 was not reported in Mexico's BUR. However, the Party provided relevant clarification in its BUR on steps taken to improve reporting and to include this gas in future submissions.

74. The mitigation actions in the AFOLU sector focus mainly on community forest management and payment for environmental services, the management of protected natural areas, actions to increase the federal conservation area, the establishment of agroforestry production systems, the promotion of sustainable agronomic practices aimed at soil carbon sequestration, and actions implemented by the federal states, including reforestation actions, sustainable forest management, sustainable agricultural practices and the installation of biodigesters, all of which were reported in tabular format. Mexico also reported in narrative format on the strategies and plans of the federal states. All AFOLU mitigation actions at the national level have been initiated, and the actions focused on promoting sustainable agronomic practices aimed at soil carbon sequestration were reported as implemented. The actions, reported in narrative format by the federal states, were reported as either planned, implemented or ongoing. The Party reported the results of implementing its mitigation actions as emission reductions. The community forest management and payment for environmental services programmes achieved the highest cumulative mitigation, amounting to emission reductions of 39.77 Mt CO₂ eq between 2018 and 2020. Of this total, 10.92 Mt CO_2 eq was achieved through reductions in CO_2 emissions owing to deforestation avoided as a result of the implementation of the programmes, while increases in forest carbon stocks resulted in emission reductions of 28.84 Mt CO₂ eq. All AFOLU actions together achieved emission reductions of 48.62 Mt CO₂ eq between 2018 and 2020.

75. The mitigation actions in the waste sector focus mainly on reducing GHG emissions from thermal oxidation of CH₄ in landfills and in municipal wastewater treatment plants with energy recovery, or through an increase in wastewater treatment. These mitigation actions were reported in tabular format as implemented. Public policies planned or under implementation in federal states were also reported, in narrative format. The Party reported the results of implementing its mitigation actions as emission reductions for 2018–2020, namely actions to reduce direct GHG emissions from thermal oxidation of CH₄ in landfills with energy recovery achieved a cumulative reduction of 3.76 Mt CO₂ eq, actions that increased municipal wastewater treatment in wastewater treatment plants achieved a cumulative reduction of 3.35 Mt CO₂ eq and actions aimed at reducing direct GHG emissions from the thermal oxidation of CH₄ in municipal wastewater treatment plants achieved a cumulative reduction of 4.96 Mt CO₂ eq. In total, waste sector actions achieved a cumulative emission reduction of 12.07 Mt CO₂ eq between 2018 and 2020.

76. Mexico implemented mitigation actions at the national and subnational level, and made an effort to standardize mitigation information at the subnational level. However, in some subnational cases it was not always clear to the TTE how emission reductions were calculated, because the methodology and assumptions were not clearly reported. For example, the methodology was included only in terms of the formula calculation used, without additional information on the base year, reference scenarios, assumptions and data sources. Additionally, progress results were not reported as specific metrics for most actions. During the technical analysis, the Party clarified that including the mitigation information of subnational governments in the report had been a challenge, especially regarding the application of mitigation methodologies and data standardization for mitigation information. Thus, Mexico reported it has been making efforts to improve capacities at the subnational level to implement these methodologies. Mexico also clarified that, in the case of private sector actions, reporting is voluntary and the provision of information received depends on the private sector.

77. For all sectors, information on steps taken or envisaged to achieve the action was not reported for the majority of actions in Mexico's BUR, with the exception of the measures for reducing thermal oxidation of CH_4 in landfills with energy recovery, where this information was clearly included. The reason for this was not clear to the TTE. During the technical analysis, the Party indicated that it would collect more detailed information in future to enhance clarity. It further clarified that Mexico has more than 2,400 municipalities, which represents a challenge in terms of access to and availability and homogenization of information. Currently, online courses are being offered to subnational governments in order to strengthen their capacity to report on steps taken or envisaged to achieve the action, as well as on other areas related to GHG mitigation.

78. Information was not reported for all measures in all sectors on progress of implementation and whether the actions are progressing or were implemented as planned, and the reasons for this lack of information were not clear to the TTE. In terms of clarity, although many actions were reported as implemented, the end period of each of these actions is not clear. For example, the action leading to reduction in emissions from thermal oxidation of CH₄ in landfills with energy recovery was reported as implemented from 2013 to 2020; however, it is not clear whether this is the case for all 93 landfill sites considered. During the technical analysis, the Party clarified that for actions implemented at the subnational level, a tabular format was used to collect information, which did not allow for a progress evaluation and for the level of detail required to clearly assess the status of the action. The Party indicated that it would collect more detailed information in future to enhance clarity.

79. Mexico provided information on its involvement in international market mechanisms as a Party to the Kyoto Protocol. Mexico documented four CDM projects under the UNFCCC CDM process, which were included in tabular format as one of the mitigation actions implemented by Mexico. The statistics include information on the total projects, sectors covered and emission reductions (t CO_2 eq) for 2018–2020.

80. Mexico reported information on its domestic MRV arrangements in accordance with decision 2/CP.17, annex III, paragraph 13. The information reported indicates that Mexico is in the process of designing and developing a domestic MRV system for mitigation actions taking into account the different types of implementing entity (federal, private sector and state). Mexico reported that it is currently developing two platforms: the first will monitor and verify the results of the actions being implemented by Mexico's 32 subnational entities, and the second platform is being developed for the national level. Mexico outlined the steps on a proposed pathway for establishing an enhanced MRV system, including strengthening capacity at the national and subnational level, defining mitigation accounting standards and identifying processes to improve MRV arrangements by sector.

81. The TTE noted that the transparency of the information reported on mitigation actions could be further enhanced by addressing the areas noted in paragraphs 66, 68 and 75–78 above, which could facilitate a better understanding of the information reported on mitigation actions.

82. In paragraphs 55 and 59 of the technical analysis of Mexico's second BUR (FCCC/SBI/ICA/2019/TASR.2/MEX), the previous TTE noted that the transparency of the reporting on mitigation actions could be further enhanced by the Party including information on more mitigation actions (such as those related to HFCs). The current TTE noted the improvements referred to in paragraph 72 above and commends the Party for enhancing the transparency of its reporting.

4. Constraints and gaps, and related technology, financial, technical and capacitybuilding needs, including a description of support needed and received

83. As indicated in table I.3, Mexico reported in its BUR, mostly in accordance with paragraphs 14–16 of the UNFCCC reporting guidelines on BURs, information on finance, technology and capacity-building needs and support received.

84. Mexico reported information on constraints and gaps, and related financial, technical and capacity-building needs in accordance with decision 2/CP.17, annex III, paragraph 14. In its BUR, Mexico outlined the following barriers for implementing climate change activities as well as for fulfilling the reporting requirements: (1) the lack of training in modelling and analysis of the different scenarios of low-carbon technologies that will support various mitigation and adaptation measures; (2) the lack of clear definitions at the national and international level to standardize the information associated with the impact of actions on climate change mitigation and adaptation; (3) the need to incorporate and review the classification of different types of resources (donations, loans, technical cooperation, bonds, etc.) in a way that prevents double counting; (4) a high rate of staff turnover in government agencies; (5) the lack of formal approval of national, state and municipal regulations for promoting new transport technologies and modernizing the public transport fleet; (6) outdated regulations at the federal and municipal level for the disposal, transport and use of waste, and for the implementation of mechanisms for the recovery of municipal, agricultural or industrial waste; (7) the lack of or outdated technology needs assessments for prioritizing technologies in certain sectors; and (8) the lack of AD, which translates into a lack of completeness of the national GHG inventory.

85. Mexico reported that its financial needs are primarily in the areas of implementing 35 mitigation measures in seven sectors of the economy to meet its NDC targets and funding actions on gender. The Party reported that its technical and capacity-building needs are mainly in the areas of building institutional capacity for managing national climate policy instruments; preserving institutional knowledge; enhancing the efficiency of information exchange between public and private institutions and quality control systems for the preparation of the GHG inventory; strengthening the communication system for disseminating the results of the GHG inventory; enhancing the capacity to strengthen its MRV systems; improving the regulatory framework regarding technologies, information flow, carbon market, transportation and waste; and creating an enabling environment for the development and transfer of technology.

86. Information on whether the Party needs any further financial resources for implementing climate change activities and for fulfilling the reporting requirements, apart from the ones outlined in its BUR for implementing 35 mitigation measures to meet its NDC targets and for funding actions on gender, was not clearly reported in the Party's BUR. During the technical analysis, the Party clarified that it needs financial resources for preparing and submitting BURs and BTRs as well as for implementing the climate change activities contained in such reports.

87. Mexico reported information on financial resources, technology transfer, capacitybuilding and technical support received in accordance with decision 2/CP.17, annex III, paragraph 15. In its BUR, Mexico reported that it received USD 352,000 from the GEF for the preparation of its third BUR, with the United Nations Development Programme and INECC as the implementing and execution agency respectively. Information on financial support received from the GEF, the GCF and multilateral, bilateral and national sources was reported.

88. Information on which entities (GCF, GEF, Parties included in Annex II to the Convention, etc.) provided the capacity-building and technical support received was not clearly reported in Mexico's BUR. During the technical analysis, the Party clarified that it is currently not possible to specify each source of capacity-building and technical support received since there are no guidelines under the Convention on how to separate capacity-building support received from technical and technology support received. Therefore, the Party emphasized that it has been challenging to report the available information separately, including on the entities providing support. However, the Party pointed out that, in general, most of the technical and capacity-building support received is provided through the operating entities of the Financial Mechanism.

89. Mexico reported information on nationally determined technology needs with regard to the development and transfer of technology in accordance with decision 2/CP.17, annex III, paragraph 16. In its BUR, Mexico summarized its technology needs for implementing climate policy and meeting its commitments under the Convention. The information reported in its NC6 and documents prepared by INECC in 2021 and by the Ministry of Energy in 2020

were the basis for the technology needs reported in the BUR. The assessment highlighted technology needs to mitigate emissions from the following sectors: transport, electricity generation, residential, oil and gas, industry, waste, LULUCF, and agriculture and livestock.

90. Information on whether Mexico received technology support was not reported in its BUR and the reason for this was not clear to the TTE. During the technical analysis, the Party clarified that it has the information; however, owing to the lack of guidelines under the Convention on how to differentiate technology support from other type of support received, it has not been possible to report the information separately. Also, the Party mentioned that there needs to be more information in its BUR regarding the support received by the Climate Technology Centre and Network on assessing the status of the circular economy for Mexico. The Party noted that it would report information in its next submission regarding the support received from the Technology Mechanism, provided that the Party obtains country-level information on resources provided by the Climate Technology Centre and Network.

91. The TTE noted that the transparency of the information reported on needs and support received could be enhanced by addressing the areas noted in paragraphs 86, **Error! Reference source not found.** and **Error! Reference source not found.** above, which could facilitate a better understanding of the information reported on needs and support received.

92. Mexico reported in its BUR that it supports international climate financing through the operating entities of the Financial Mechanism (i.e. the GCF and the GEF) and carries out various international technical cooperation programmes for fellow developing countries, which are tracked by the Mexican Agency for International Development Cooperation. The TTE commends Mexico for its activities and notes that this information could be useful for understanding the circumstances of Mexico with regard to support needed and provided.

5. Any other information

93. Mexico reported its gender perspective as a cross-cutting issue, noting that it has established a feminist foreign policy and reiterated its commitment to the UNFCCC gender action plan. The Party presented a review of mitigation actions in traditionally masculine sectors, such as energy, where advances and gaps to be bridged were detected, with the conviction that climate change mitigation must be performed with a gender perspective and that the new low-carbon economy must put women at the centre of solutions.

94. Mexico reported information about actions targeting black carbon emissions. These included actions in the energy industries, with a 24 per cent reduction in black carbon emissions, from 10.55 Gg for 2013 to 8.04 Gg for 2019; in oil refining and gas processing, with cuts of 43 and 76 per cent respectively; and in the food sector, where emissions are mainly from sugar mills, with a 45.3 per cent reduction from 1,635 to 1,495 t black carbon for 2013–2019.

D. Identification of capacity-building needs

95. In consultation with Mexico, the TTE identified the following needs for capacitybuilding that could facilitate the preparation of subsequent BURs and participation in ICA, and facilitate transition to the ETF:

(a) Enhance national capacity to estimate emissions and removals and carbon stocks from HWP;

(b) Enhance national capacity to estimate and report on GHG emissions and removals from soils in the land categories;

(c) Enhance national capacity on the use of the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands;

(d) Enhance national capacity to report GHG inventory results using the common reporting tables;

(e) Enhance national capacity to access the data and tools from international partners to address issues related to the forestry sector, such as assessment of forest degradation;

(f) Enhance capacity to estimate the growing carbon stocks in forest land remaining forest land;

(g) Enhance capacity to improve the transparency of the reporting by providing the correct notation keys in reporting tables for sources of emissions and removals for which quantitative estimates are not available;

(h) Enhance capacity to collect the AD and select corresponding EFs in order to estimate emissions of the industrial gases HFCs, PFCs, NF_3 and SF_6 for all the categories that are not currently estimated even though those gases are emitted;

(i) Enhance capacity to collect the AD in order to estimate emissions related to categories included in BUR table 2.11 and NIR table 4;

(j) Enhance capacity to disaggregate AD on international maritime transport activities from total maritime navigation;

(k) Enhance capacity to develop and implement the most appropriate splicing technique from the 2006 IPCC Guidelines to fill in the AD gaps for category 3.B (land) for 1990–1999;

(1) Enhance capacity to improve the QA/QC plan for reporting on the national GHG inventory;

(m) Continue to enhance capacity at the local and state level to develop and apply methodologies for estimating the impacts of mitigation actions, including the development of scenarios for projecting the impact of GHG mitigation actions;

(n) Develop capacity to participate in international market mechanisms, including the development of registries;

(o) Develop capacity to identify financial sources, and develop financial schemes and business models to facilitate the implementation of mitigation actions;

(p) Enhance national capacity to undergo technical expert review of the BTR.

96. The TTE noted that, in addition to those identified during the technical analysis, Mexico reported the following capacity-building needs in its BUR, which include capacitybuilding needs for future BURs and transitioning to implementing the ETF:

(a) Building institutional capacity to manage national climate policy and mitigation actions instruments;

(b) Preserving and disseminating institutional knowledge and experiences;

(c) Developing sectoral programmes for addressing climate change;

(d) Enhancing the information exchange mechanism between public and private institutions and between public institutions of different levels;

(e) Introducing a communication system for disseminating the results of the GHG inventory;

(f) Enhancing QC systems for the preparation of the GHG inventory;

(g) Strengthening MRV systems;

(h) Improving the regulatory framework regarding technologies, information flow on the application of actions and monitoring of results, carbon market, transportation and waste management;

(i) Developing and transfer of technology;

(j) Building capacities for the understanding, management and systematization of applying the common reporting format.

97. In paragraph 80 of the summary report on the technical analysis of Mexico's second BUR, the previous TTE, in consultation with Mexico, identified capacity-building needs. In its third BUR, Mexico reflected that some of those capacity-building needs have been addressed. In particular, Mexico presented in BUR table 3.20 proposed actions to address some of the most important observations that the previous TTE made, mainly in the areas of mitigation and MRV, and outlined its plans to improve its national GHG inventory in the fourth BUR.

III. Conclusions

98. The TTE conducted a technical analysis of the information reported in the third BUR of Mexico in accordance with the UNFCCC reporting guidelines on BURs and concludes that the information reported is mostly consistent. It provides an overview of national circumstances and institutional arrangements relevant to the preparation of the third BUR; the national inventory of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol, including an NIR; mitigation actions and their effects, including associated methodologies and assumptions; constraints and gaps, and related financial, technical and capacity-building needs, including a description of support needed and received; the level of support received to enable the preparation and submission of BURs; and domestic MRV. During the technical analysis, additional information was provided by Mexico on its national circumstances, national GHG inventory, mitigation actions and support needed and provided. The TTE concludes that the information analysed is mostly transparent.

99. Mexico reported updated information on the institutional arrangements relevant to the preparation of its BURs, which is framed in the General Law on Climate Change. The General Law serves as a basis for establishing institutional arrangements that enable the sustainable preparation of the BUR, such as setting up the National System for Climate Change, which promotes coordination at the government level on implementing the national climate change strategy and comprises CICC, INECC, the Climate Change Council, the governments of the federal entities, national associations of municipal authorities and the Congress of the Union.

In its third BUR, submitted in 2022, Mexico reported information on its national GHG 100. inventory for 1990–2019. This included GHG emissions and removals of CO₂, CH₄, N₂O, HFCs, PFCs, SF₆ and NF₃. The inventory was developed on the basis of the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines. The total GHG emissions for 2019 were reported as 759,501.32 Gg CO₂ eq (excluding categories 3.B (land) and 3.D (HWP)) and 557,560.35 Gg CO₂ eq (including categories 3.B and 3.D). Fifty-three key categories and main gases were identified by level and by trend. Mexico did not apply notation keys in tables where numerical data were not provided. Instead, Mexico provided tables listing the categories where emissions were reported as "NE", "IE" and "NO". However, these lists were not comprehensive enough to provide the TTE with a transparent understanding regarding the completeness of Mexico's GHG inventory. Mexico reported consistent time series for all categories for 1990-2019 other than for category 3.B (land), for which emissions were reported for 2000–2019. For many categories and sources time series were provided only in graphs and figures, but the Party provided relevant data during the technical analysis.

101. Mexico reported information on mitigation actions and their effects in both tabular and narrative format, including actions at the federal level and those undertaken by states and municipalities; and the relevant economic instruments to advance carbon pricing policies that the country has approved and implemented. Mexico reported planned, implemented, ongoing and/or completed actions in the energy, industry, AFOLU and waste sectors that cover a wide range of activities. The cumulative GHG emission reductions in Mexico for 2018–2020 amounted to 150 Mt CO_2 eq. The Party reported the progress of implementation of its mitigation actions and the results achieved, including that the highest emission reduction was reported for the energy sector, amounting to 88.4 Mt CO_2 eq between 2018 and 2020. Mexico reported a general overview of the co-benefits of its mitigation actions, including their contributions to specific Sustainable Development Goals. The Party also reported information on its involvement in international market mechanisms and on MRV arrangements.

102. Mexico reported information on key constraints, gaps and related needs, including the barriers preventing the Party from implementing climate change activities and fulfilling its reporting requirements. Information was reported on the financial, technical and capacity-building support received, including that the Party received financial support from the GEF, the GCF and multilateral, bilateral and national sources, including USD 352,000 from the GEF for preparing its latest BUR. The Party further reported information on technology needs based on its NC6 and documents prepared by INECC in 2021 and the Ministry of Energy in 2020. Information on technology support received, as clarified by the Party during the technical analysis.

103. The current TTE noted improvements in the reporting in the Party's third BUR compared with that in its previous BUR, mainly regarding the mitigation actions. The information reported demonstrates that the Party has taken into consideration the areas for enhancing the transparency of the information reported.

104. The TTE, in consultation with Mexico, identified 16 capacity-building needs listed in chapter II.D above and needs for capacity-building that aim to facilitate reporting in accordance with the UNFCCC reporting guidelines on BURs and participation in ICA in accordance with the ICA modalities and guidelines, taking into account Article 4, paragraph 3, of the Convention, and to facilitate transition to the ETF. Mexico prioritized all the capacity-building needs referred to in paragraph II.D.95 above, with those referred to in paragraph 95(b–f), (k) and (m) above being of the highest priority, those referred to in paragraph 95(a), (i) and (n–p) above being of medium priority and those referred to in paragraph 95(g–h), (j) and (l) above as being the lowest priority.

Annex I

Extent of the information reported by Mexico in its third biennial update report

Table I.1

Identification of the extent to which the elements of information on greenhouse gases are included in the third biennial update report of Mexico

Decision	Provision of the reporting guidelines	Assessment of whether the information was reported	Comments on the extent of the information provided
Decision 2/CP.17, paragraph 41(g)	The first BUR shall cover, at a minimum, the inventory for the calendar year no more than four years prior to the date of the submission, or more recent years if information is available, and subsequent BURs shall cover a calendar year that does not precede the submission date by more than four years.	Yes	Mexico submitted its third BUR in June 2022; the GHG inventory reported is for 1990– 2019.
Decision 2/CP.17, annex III, paragraph 4	Non-Annex I Parties should use the methodologies established in the latest UNFCCC guidelines for the preparation of NCs from non- Annex I Parties approved by the Conference of the Parties or those determined by any future decision of the Conference of the Parties on this matter.	Yes	Mexico used a combination of the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines.
Decision 2/CP.17, annex III, paragraph 5	The updates of the section on national inventories of anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol should contain updated data on activity levels based on the best information available using the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF; any change to the EF may be made in the subsequent full NC.	Partly	Mexico presented AD for the entire time series (1990–2019) for all categories, other than for 1990–1999 for the land category (3.B).
Decision 2/CP.17, annex III, paragraph 6	Non-Annex I Parties are encouraged to include, as appropriate and to the extent that capacities permit, in the inventory section of the BUR:		
	(a) The tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF;	Partly	Some comparable information was reported in BUR table 2.10, but comparable information required by the tables included in annex 3A.2 to the IPCC good practice guidance for LULUCF was not reported.
	(b) The sectoral report tables annexed to the Revised 1996 IPCC Guidelines.	Yes	Comparable information was reported.
Decision 2/CP.17, annex III, paragraph 7	Each non-Annex I Party is encouraged to provide a consistent time series back to the years reported in its previous NCs.	Partly	The time series reported in the BUR does not include 1990–1999 for category 3.B.
Decision 2/CP.17, annex III, paragraph 8	Non-Annex I Parties that have previously reported on their national GHG inventories contained in their NCs are encouraged to submit summary information tables of inventories for	Yes	This information was reported for 1990–2000.

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Decision	Provision of the reporting guidelines	Assessment of whether the information was reported	Comments on the extent of the information provided
2	previous submission years (e.g. for 1994 and 2000).	nger namen was reported	ngo manon pro naca
Decision 2/CP.17, annex III, paragraph 9	The inventory section of the BUR should consist of an NIR as a summary or as an update of the information contained in decision 17/CP.8, annex, chapter III (National greenhouse gas inventories), including:		
	(a) Table 1 (National greenhouse gas inventory of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol and greenhouse gas precursors);	Partly	Comparable information was reported in BUR table 2.10 for 1990 and 2019 only. GHG precursors were not included in this table.
	(b) Table 2 (National greenhouse gas inventory of anthropogenic emissions of HFCs, PFCs and SF ₆).	Partly	Comparable information was reported in BUR table 2.10 for 1990 and 2019 only. Mexico presented HFCs, PFCs and SF ₆ emissions in an aggregate manner, but not a breakdown by compound.
Decision 2/CP.17, annex III, paragraph 10	Additional or supporting information, including sector-specific information, may be supplied in a technical annex.	Yes	The Party submitted a REDD+ technical annex to its BUR and an NIR as a stand-alone document.
Decision 17/CP.8, annex, paragraph 12	Non-Annex I Parties are also encouraged, to the extent possible, to undertake any key source analysis as indicated in the IPCC good practice guidance to assist in developing inventories that better reflect their national circumstances.	Yes	Mexico reported a key source analysis in its third BUR.
Decision 17/CP.8, annex, paragraph 13	Non-Annex I Parties are encouraged to describe procedures and arrangements undertaken to collect and archive data for the preparation of national GHG inventories, as well as efforts to make this a continuous process, including information on the role of the institutions involved.	Yes	
Decision 17/CP.8, annex, paragraph 14	Each non-Annex I Party shall, as appropriate and to the extent possible, provide in its national inventory, on a gas-by-gas basis and in units of mass, estimates of anthropogenic emissions of:		
	(a) CO ₂ ;	Partly	CO ₂ emissions were not estimated for subcategory 1.B.1.b (spontaneous combustion and burning of coal dumps).
	(b) CH ₄ ;	Yes	
	(c) N ₂ O.	Partly	NO ₂ emissions from some categories were not estimated, for example, subcategory 2.G.3 (N ₂ O from product uses).

Decision 17/CP.8, Non-Annex I Parties are encouraged, as annex, appropriate, to provide information on paragraph 15 anthropogenic emissions by sources of:

Decision	Provision of the reporting guidelines	Assessment of whether the information was reported	Comments on the extent of the information provided
	(a) HFCs;	Yes	
	(b) PFCs;	Yes	
	(c) SF ₆ .	Yes	
Decision 17/CP.8, annex, paragraph 16	Non-Annex I Parties are encouraged, as appropriate, to report on anthropogenic emissions by sources of other GHGs, such as:		
	(a) CO;	No	
	(b) NO _X ;	No	
	(c) NMVOCs.	No	
Decision 17/CP.8, annex, paragraph 17	Other gases not controlled by the Montreal Protocol, such as sulfur oxides, and included in the Revised 1996 IPCC Guidelines may be included at the discretion of Parties.	Yes	The Party reported on other gases such as black carbon.
Decision 17/CP.8, annex, paragraph 18	Non-Annex I Parties are encouraged, to the extent possible, and if disaggregated data are available, to estimate and report CO_2 fuel combustion emissions using both the sectoral and the reference approach and to explain any large differences between the two approaches.	Yes	
Decision 17/CP.8, annex, paragraph 19	Non-Annex I Parties should, to the extent possible, and if disaggregated data are available, report emissions from international aviation and marine bunker fuels separately in their inventories:		
	(a) International aviation;	Yes	
	(b) Marine bunker fuels.	No	
Decision 17/CP.8, annex, paragraph 20	Non-Annex I Parties wishing to report on aggregated GHG emissions and removals expressed in CO ₂ eq should use the GWP provided by the IPCC in its AR2 based on the effects of GHGs over a 100-year time-horizon.	NA	The Party used the GWP provided in the AR5.
Decision 17/CP.8, annex, paragraph 21	Non-Annex I Parties are encouraged to provide information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol, including a brief explanation of the sources of EFs and AD. If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe the source and/or sink categories, methodologies, EFs and AD used in their estimation of emissions, as appropriate. Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building:		
	(a) Information on methodologies used in the estimation of anthropogenic emissions by sources and removals by sinks of GHGs not controlled by the Montreal Protocol;	Yes	The Party used the 2006 IPCC Guidelines and the 2019 Refinement to the 2006 IPCC Guidelines.
	(b) Explanation of the sources of EFs;	Yes	
	(c) Explanation of the sources of AD;	Yes	

Decision	Provision of the reporting guidelines	Assessment of whether the information was reported	Comments on the extent of the information provided	
(d) ant cou par sho	(d) If non-Annex I Parties estimate anthropogenic emissions and removals from country-specific sources and/or sinks that are not part of the Revised 1996 IPCC Guidelines, they should explicitly describe:	Yes	The Party used a national methodology for black carbon emissions.	
	(i) Source and/or sink categories;			
	(ii) Methodologies;			
	(iii) EFs;			
	(iv) AD;			
	(e) Parties are encouraged to identify areas where data may be further improved in future communications through capacity-building.	Yes		
Decision 17/CP.8, annex, paragraph 22	Each non-Annex I Party is encouraged to use tables 1–2 of the guidelines annexed to decision 17/CP.8 in reporting its national GHG inventory, taking into account the provisions established in paragraphs 14–17. In preparing those tables, Parties should strive to present information that is as complete as possible. Where numerical data are not provided, Parties should use the notation keys as indicated.	Partly	Notation keys were not used in tables where numerical data were not provided. Instead, the Party provided tables in annex 2 to its BUR listing the relevant categories (see para. 34 of this document).	
Decision 17/CP.8, annex, paragraph 24	Non-Annex I Parties are encouraged to provide information on the level of uncertainty associated with inventory data and their underlying assumptions, and to describe the methodologies used, if any, for estimating these uncertainties:			
	(a) Level of uncertainty associated with inventory data;	Yes		
	(b) Underlying assumptions;	Yes		
	(c) Methodologies used, if any, for estimating these uncertainties.	Yes		

Note: The parts of the UNFCCC reporting guidelines on BURs on reporting information on GHG emissions by sources and removals by sinks in BURs are contained in decision 2/CP.17, paras. 3–10 and 41(g). Further, as per para. 3 of those guidelines, non-Annex I Parties are to submit updates of their national GHG inventories in accordance with paras. 8–24 of the UNFCCC guidelines for the preparation of NCs from non-Annex I Parties, contained in the annex to decision 17/CP.8. The scope of such updates should be consistent with the non-Annex I Party's capacity and time constraints and the availability of its data, as well as the level of support provided by developed country Parties for biennial update reporting.

Table I.2

Identification of the extent to which the elements of information on mitigation actions are included in the third biennial update report of Mexico

Decision	Provision of the reporting guidelines	Assessment of whether the information was reported	Comments on the extent of the information provided
Decision 2/CP.17, annex III, paragraph 11	Non-Annex I Parties should provide information, in tabular format, on actions to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all GHGs not controlled by the Montreal Protocol.	Yes	
Decision 2/CP.17, annex III, paragraph 12	For each mitigation action or group of mitigation actions, including, as appropriate, those listed in document FCCC/AWGLCA/2011/INF.1, developing		

Decision	Provision of the reporting guidelines	Assessment of whether the information was reported	Comments on the extent of the information provided
	country Parties shall provide the following information, to the extent possible:		
	(a) Name and description of the mitigation action, including information on the nature of the action, coverage (i.e. sectors and gases), quantitative goals and progress indicators;	Partly	Information on quantitative goals was not reported for most of the mitigation actions.
	(b) Information on:		
	(i) Methodologies;	Yes	
	(ii) Assumptions;	Yes	
	(c) Information on:		
	(i) Objectives of the action;	Yes	
	(ii) Steps taken or envisaged to achieve that action;	Partly	For most of the measures presented for the energy, LULUCF and waste sectors, the steps taken to achieve actions are not presented (such as reduction of technical losses in the transmission and distribution network or waste-to-energy recycling by co-processing).
	(d) Information on:		
	(i) Progress of implementation of the mitigation actions;	Partly	The Party reported most of the mitigation actions but did not indicate the status of implementation (i.e. implemented, ongoing or planned) most of the mitigation actions. For example, for some of the measures in power generation (i.e. replace conventional steam-fired thermal power plants with natural gas-fired combined cycle plants) the ending year for the measure is not reported.
	(ii) Progress of implementation of the underlying steps taken or envisaged;	No	Progress is not clearly measured: the status of progress indicators is rarely reported and the implementation steps are not outlined.
	(iii) Results achieved, such as estimated outcomes (metrics depending on type of action) and estimated emission reductions, to the extent possible;	Yes	The Party reported on emission reductions for most of the mitigation actions in the energy, IPPU, LULUCF and waste sectors.
	(e) Information on international market mechanisms.	Yes	
Decision 2/CP.17, annex III, paragraph 13	Parties should provide information on domestic MRV arrangements.	Yes	

Note: The parts of the UNFCCC reporting guidelines on BURs on the reporting of information on mitigation actions in BURs are contained in decision 2/CP.17, annex III, paras. 11–13.

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Table I.3

Identification of the extent to which the elements of information on finance, technology and capacity-building needs and support received are included in the third biennial update report of Mexico

Decision	Provision of the reporting requirements	Assessment of whether the information was reported	Comments on the extent of the information provided
Decision /CP.17, annex III,	Non-Annex I Parties should provide upda information on:	ited	
paragraph 14	(a) Constraints and gaps;	Yes	
	(b) Related financial, technical and capacity-building needs.	Yes	
Decision /CP.17,	Non-Annex I Parties should provide:		
annex III, paragraph 15	(a) Information on financial resources technology transfer and capacity-building received from the GEF, Parties included in Annex II to the Convention and other developed country Parties, the GCF and multilateral institutions for activities relat to climate change, including for the preparation of the current BUR;	a, Partly n ing	Information on technology transfer was not reported.
	(b) Information on technical support received from the GEF, Parties included i Annex II to the Convention and other developed country Parties, the GCF and multilateral institutions for activities relat to climate change, including for the preparation of the current BUR.	Partly n ing	Mexico reported on capacity-building and technical support received as "yes/no" in BUR tables 4.13–4.15. However, it did not mention whether this support received was provided by one of the organizations or countries specified in the reporting provision.
Decision /CP.17, annex III, paragraph 16	With regard to the development and trans of technology, non-Annex I Parties should provide information on:	fer d	
	(a) Nationally determined technology needs;	Yes	
	(b) Technology support received.	No	The Party reported about needs to improve the enabling environment for the development and transfer of technology rather than the technology support received in itself.

Note: The parts of the UNFCCC reporting guidelines on BURs on the reporting of information on finance, technology and capacity-building needs and support received in BURs are contained in decision 2/CP.17, annex III, paras. 14–16.

Annex II

Reference documents

A. Reports of the Intergovernmental Panel on Climate Change

IPCC. 1997. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. JL Houghton, LG Meira Filho, B Lim, et al. (eds.). Paris: IPCC/Organisation for Economic Co-operation and Development/International Energy Agency. Available at https://www.ipcc-nggip.iges.or.jp/public/gl/invs1.html.

IPCC. 2000. Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories. J Penman, D Kruger, I Galbally, et al. (eds.). Hayama, Japan: IPCC/Organisation for Economic Co-operation and Development/International Energy Agency/Institute for Global Environmental Strategies. Available at http://www.ipcc-nggip.iges.or.jp/public/gp/english/.

IPCC. 2003. *Good Practice Guidance for Land Use, Land-Use Change and Forestry*. J Penman, M Gytarsky, T Hiraishi, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at <u>http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html</u>.

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.

IPCC. 2019. 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. E Calvo Buendia, K Tanabe, A Kranjc, et al. (eds.). Hayama, Japan: Institute for Global Environmental Strategies. Available at <u>https://www.ipcc-nggip.iges.or.jp/public/2019rf/index.html</u>.

B. UNFCCC documents

Second and third BURs of Mexico. Available at https://unfccc.int/BURs.

NC6 of Mexico. Available at https://unfccc.int/non-annex-I-NCs.

Summary report on the technical analysis of the second BUR of Mexico, contained in document FCCC/SBI/ICA/2019/TASR.2/MEX. Available at https://unfccc.int/ICA-reports.

C. Other documents

The following references may not conform to UNFCCC editorial style as some have been reproduced as received:

GHG emissions inventories by categories and by gas for 1990-2019, in Excel format.

Activity data for GHG inventories for several categories for 1990-2019, in Excel format.

Lissette Mendoza Barrón, Richard Prem, Susanne Wendt, Introduction to Energy Efficiency and Systems of Energy Management in SMEs in Mexico, Physical-Technical Federal Institute Brunswick and Berlin, National Metrology Institute, August 2017.