



# Ghana

## Updated Nationally Determined Contribution under the Paris Agreement (2020 - 2030)



Source: <https://www.kasaghana.org/wp-content/uploads/Northern-Ghana-Picture.jpeg>. Gbanu near Nanton in the Nanton District in the Northern Region of Ghana

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Republic of Ghana

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## **Updated Nationally Determined Contribution under the Paris Agreement (2020 - 2030)**

November 2021

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## Foreword



Ghana believes that if no rapid action is taken to address climate change and its negative impacts now, the future cost will be prohibitive and counterproductive to the socio-economic gains made today. Therefore, responding to climate change issues is top on the national development agenda. That is why Ghana committed to implementing thirty-one mitigation and adaptation actions across seven economic sectors in its nationally determined contribution to the United Nations Framework Convention on Climate Change (UNFCCC) in 2015.

In line with Article 4 of the Paris Agreement and UNFCCC decisions 1/CP.21 and 4/CMA.1, Ghana has updated its nationally determined contribution under the Paris Agreement from 2020 to 2030, considering its unique circumstances. The update affirms the country's resolve to address the impacts of climate change on the country's economy and its vulnerable people.

The update covers 19 policy areas and translates into 47 adaptation and mitigation programmes of action. The 47 climate actions are expected to build the resilience of over 38 million people, generate absolute greenhouse gas emission reductions of 64 MtCO<sub>2e</sub>, create over one million jobs, avoid 2,900 deaths due to improved air quality by 2030.

The update of the nationally determined contribution was based on extensive stakeholder consultations with relevant institutions at both national and sub-national levels, with the involvement of Ministries, Departments and Agencies, Metropolitan, Municipal, and District Assemblies, development partners, private sector, academia and Civil Society Organisations. The Ministry of Environment, Science, Technology and Innovation will work with relevant sector institutions and stakeholders to implement the nationally determined contribution to accelerate our development efforts and enhance the well-being of our people.

It is my cherished hope that the Updated Nationally Determined Contribution will serve as a blueprint for transitioning into a climate-resilient low carbon economy that will accelerate our development efforts and enhance the well-being of our people without sacrificing the quality of the environment and its resources.

  
**NANA ADDO DANKWA AKUFO-ADDO**  
PRESIDENT OF THE REPUBLIC OF GHANA

# Abbreviations

AU	Africa Union
APR	Annual Progress Report
BTR	Biennial Transparency Report
CDM	Clean Development Mechanism
CLIMFINTRACK	Climate Finance Tracking
CARP	Climate Ambitious Report Programme
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COVID-19	Coronavirus disease
CARES	COVID-19 Alleviation and Revitalization of Enterprises Support
CoP	Conference of parties
CSO	Civil Society Organizations
EPA	Environmental Protection Agency
EMEP/EEA	European Monitoring and Evaluation Programme/European Environment Agency
GDP	Gross Domestic product
GHG	Greenhouse Gas
GACMO	Greenhouse Gas Abatement Cost Model
HFCs	Hydrofluorocarbons
IPPU	Industrial Processes and Product Use
IPCC	Intergovernmental Panel on Climate Change
ITMOs	Internationally Transferred Mitigation Outcomes
Kt/year	Kilotons per year
LULUCF	Land use land-use change and forestry
LEAP	Low Emissions Analysis Platform
MDA	Ministries, Department and Agencies
MESTI	Ministry of Environment, Science, Technology and Innovation
M&E	Monitoring and Evaluation
MMDAs	Metropolitan, Municipal and District Assemblies
MtCO <sub>2</sub> e	Million Tonnes of Carbon Dioxide Equivalent
NDPC	National Development Planning Commission
NDC	Nationally Determined Contribution
PM <sub>2.5</sub>	Particulate Matter 2.5
SDG	Sustainable Development Goals
SLCPs	Short-Lived Climate Pollutants
SO <sub>2</sub>	Sulphur Dioxide
UNFCCC	United Nations Framework Convention on Climate Change
VOCs	Volatile Organic Compounds
VALCO	Volta Aluminium Company
WOGA	Whole-Ghana-Approach

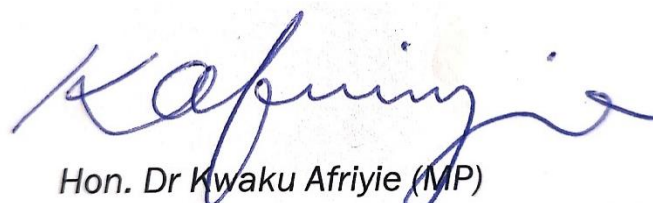
## Acknowledgement

The preparation of Ghana's revised nationally determined contribution to the UNFCCC has been two years of a great learning experience, collaborations and amazing teamwork. On behalf of the Government of Ghana, the Ministry of Environment, Science, Technology and Innovation (MESTI) wishes to show appreciation and recognise the immense contribution of all those who offered their distinguished service to prepare this report.

The Government appreciate the UNDP and the Donors of NDC Support Programme for funding the entire revision process and the technical inputs. We are particularly very grateful for the enthusiastic partnership with the UNDP. We greatly benefitted from great insight, advice and guidance. We hope that our existing organic partnership will grow in leaps and bounds in implementing the programmes in the nationally determined contribution. It is also worthwhile to extend our gratitude to the following for their immense support to the preparation of Ghana's revised nationally determined contribution:

- All state institutions, the private sector, academia, CSOs and the Donor Partners engaged in the process. We truly appreciate the level of dedication and commitment you exhibited.
- The Chief Director of MESTI, Executive Director and Management of EPA provide strategic technical guidance and direction in the revision process.
- The nationally determined contribution team (at MESTI, EPA, and all the MDAs) is dedicated and supported to the national assignment.
- The national experts provided technical inputs and advice to enrich the process and quality of the document.
- All the international partners that provided the technical report.

In this regard, we want to recognise contributions we received from the Initiative for Climate Action Transparency (ICAT) Project, EU Delegation, GIZ and the UK Government. Ghana further acknowledges the contribution of the Climate and Clean Air Coalition (CCAC) Supporting National Action and Planning on SLCP mitigation (SNAP) initiative and the Stockholm Environment Institute Centre at the University of York for their support regarding the inclusion of Short-Lived Climate Pollutants and air pollution benefits within the revised Nationally Determined Contribution.



*Hon. Dr Kwaku Afriyie (MP)*  
*Minister for Environment, Science, Technology & Innovation*

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## 1. Introduction

Ghana is pleased to announce its updated and enhanced nationally determined contribution under the Paris Agreement for 2020 to 2030, per Article 4 of the Paris Agreement and UNFCCC decisions 1/CP.21 and 4/CMA.1. By this communication, and consistent with UNFCCC decision 1/CP. 21, paragraph 24, Ghana affirms the nationally determined contribution it put forward in 2015. There is an urgent need for collective, ambitious and meaningful global efforts to keep the global temperature well below two degrees and avoid the irreversible consequences on the climate-vulnerable countries. Ghana is a member of the Africa Union (AU) and holds in high esteem the geopolitical position of Africa in pursuing the agenda 2063.

In updating the nationally determined contribution, Ghana was mindful of the need to:

- embrace the AU and align to new policy changes to safeguard the development prospects of the country;
- enhance implementation of climate actions by strengthening the mobilisation of public, private and grassroots participation; and
- increasing the investment credentials and ambition across mitigation, finance and adaptation.
- put Ghana's development on an accelerated path for achieving" *a resilient and low carbon society by promoting economic growth, climate protection and air quality benefits, youth and women empowerment and social inclusion in the next decade and beyond*".

To this end, the revised and enhanced nationally determined contribution reflect aspirations of goal 1, paragraphs 15, 16, 17 and 18 of the AU's agenda 2063.

## 2. Ghana's Updated Nationally Determined Contribution

The national development strategy to build a resilient society that can adequately withstand the impacts of climate change and contribute to mitigating global emissions is well on course. As part of the national strategy, Ghana has developed 19 policy actions in 10 priority areas to achieve nationally determined contribution goals in the next decade. The 19 policy actions translate into 13 adaptation and 34 mitigation programmes of action (referred to as measures). The 19 policy actions that have the potential to maximise the synergies between adaptation and economic diversification, resulting in mitigation co-benefits, will lead to the following outcomes in the long term:

- Accelerate sustainable energy transition
- Build resilient economies and societies
- Enhance early warning and disaster risk management
- Enhance landscape restoration
- Ensure responsible production and consumption
- Foster social inclusion focusing on youth and women
- Provide smart and safe communities

Ghana expects that implementing the 19 policy actions will achieve the following by 2030:

- Generate absolute greenhouse gas (GHG) emission reductions of 64 MtCO<sub>2e</sub>.
- Avoid at least 2,900 premature deaths per year from improved air quality.
- Create over one million<sup>1</sup> decent and green jobs and
- Benefit cumulatively nearly 38 million people, with the majority being the youth and women.

The 13 adaptation measures are divided into seven unconditional<sup>2</sup> and six conditional<sup>3</sup> programmes of action. For the 34 mitigation measures, Ghana aims to implement nine unconditional programmes of action that would result in 8.5 MtCO<sub>2e</sub> GHG reductions by 2025 and a further 24.6 MtCO<sub>2e</sub> by 2030 compared to the 2020-2030 cumulative emissions in a baseline scenario. Ghana can also adopt additional 25 conditional programmes of action that have the potential to achieve 16.7 MtCO<sub>2e</sub> by 2025 and 39.4 MtCO<sub>2e</sub> by 2030 if financial support from the international and private sector is made available to cover the full cost for implementation.

### **3. Nationally Determined Contribution and National Development**

Ghana anticipates that the updated nationally determined contribution will play a key role in achieving the long-term national development objectives for the country and the global sustainable development goals. That is why this updated nationally determined contribution document strongly aligns with the various national and sector policies and is backed by concrete programmes that the Ministries Department and Agencies (MDA), Metropolitan, Municipal and District Assemblies (MMDAs), private sector, and civil society organisations can implement. The updated and enhanced nationally determined contribution responds to the sustainability priorities in the following national policy documents:

- Ghana @ 100 frameworks and the accompanying national Infrastructure plan.
- Coordinated Programme of Economic and Social Development Policy.
- 2022 to 2025 Medium-Term Development Policy Framework.
- Ghana Beyond Aid Charter Strategy Document.
- COVID-19 Alleviation and Revitalisation of Enterprises Support

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<sup>1</sup> Ghana plans to conduct a comprehensive analysis of job potentials and economic diversification opportunities for each of the nationally determined contribution sectors and at the economy-level.

<sup>2</sup> Climate measures that the financial resources have been secured to cover the full or partial cost of implementation at the time of publication. It is also including measures that have high socio-economic benefits, aligns with the Government priorities, have received financial commitment, and is cost-effective, for which the Government do not need external support for its implementation.

<sup>3</sup> Climate measures that are outside the scope of the unconditional definition, and facing market, regulatory and technological barriers and unlikely to receive Government support to implement them.

## **4. Making the Nationally Determined Contribution Work**

Removing the systematic institutional, policy, and financial barriers is the surest way to make the nationally determined contribution work and positively affect the lives of the vulnerable. It means that the updated nationally determined contribution must fully respond to government policy needs; be coordinated by capable national institutions, and have access to adequate finance and technology from the international and private sectors.

### **4.1 Institutional Support for Ghana's Nationally Determined Contribution**

The Ministry of Environment, Science, Technology and Innovation (MESTI) coordinates the updated nationally determined contribution process and advocates resource allocation at the Cabinet and parliamentary levels. MESTI will also facilitate the future periodic updates of the nationally determined contribution, considering inputs from the global stocktake and the latest scientific evidence. The Environmental Protection Agency (EPA) will track and report the progress of implementing the nationally determined contribution across the nation and regularly publish progress, achievements, and challenges in the Biennial Transparency Report (BTR) consistent with the UNFCCC Decision 18/CMA.1 on Modalities, Procedures and Guidelines for the Transparency Framework. To this end:

- The EPA and MESTI will advocate adopting appropriate carbon pricing measures, including the operationalisation of Article 6 and other international carbon market instruments to support green businesses, create jobs and facilitate technology transfer.
- The Ministry of Finance (MOF) will continue to mobilise and track inflows from the Government, development partners, and the private sector to implement nationally determined contributions.
- The National Development Planning Commission (NDPC) will continue to facilitate the mainstreaming of the nationally determined contribution into the sector and district plans and annual progress report to monitor the nationally determined contribution.

### **4.3 Financial Needs for Implementing the Revised Nationally Determined Contribution**

Ghana requires between US\$ 9.3 and US\$ 15.5 billion<sup>4</sup> of investment to implement the 47 nationally determined contribution measures from 2020 to 2030. US\$ 3.9 billion would be required to implement the 16 unconditional programmes of action till 2030. The remaining US\$ 5.4 billion for the 31 conditional programmes of action would be mobilised from the public, international, and private sector sources and carbon markets. Ghana will need an additional US\$ 3 million biennially to support coordination actions and the regular international reporting of the nationally determined contribution.

### **4.4 Technology and Capacity Needs for the Revised Nationally Determined Contribution**

Technology and know-how are a catalyst for implementing the 47 measures to deliver the nationally determined contribution. Ghana will continue to promote rapid technology deployment and support the transfer of suitable emerging technologies to meet the country's needs.

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<sup>4</sup> Detailed investment estimate will be provided in the NDC investment strategy. Furthermore, Ghana will report on the actual investments in the nationally determined contribution in its biennial transparency report to the UNFCCC consistent with UNFCCC decision 18/CMA.1 Annex 5 sections C and D.

Ghana also plans to integrate capacity development into the overall implementation plan for the nationally determined contribution. Emphasis will be on continuous staff training, deliberate involvement of academic institutions in the training programme, research and evidence gathering to inform the regular update of nationally determined contribution and participation in the global stocktake. Furthermore, Ghana hopes to strengthen the involvement of civil society organisations and traditional authorities to mobilise public support and ensure the flow of information from the national to the community levels and vice versa.

## **5. National Arrangement for Tracking Nationally Determined Contribution**

Article 13 of the Paris Agreement provides the transparency framework for reporting progress and achievement of the nationally determined contribution, the national greenhouse inventory and climate support. Ghana aims to operationalise its integrated climate data and carbon registry platform for managing and reporting transactions involving Internationally Transferred Mitigation Outcomes (ITMOs) under the cooperative approaches under Article 6 of the Paris Agreement consistent with UNFCCC Decision 18/CMA.1 paragraph 77 (d).

Ghana will use the established structures for the Climate Ambitious Report Programme (CARP) and Annual Progress Report (APR) as the National Monitoring and Evaluation (M&E) backbone to regularly track and report progress and achievement of all the 47 measures. Information from the APR (managed by the National Development Planning Commission), climate data and carbon registry system (hosted by the Environmental Protection Agency) and the CLIMFINTRAC, (managed by the Ministry of Finance) for tracking climate finance will feed into the annual nationally determined contribution progress report for the Ghana Government and the international reports such as National Communication, National Adaptation Communication, Biennial Transparency Report and National Greenhouse Gas Inventory Document.

## 6. Annexes

### 6.1 Annexe 1: Information to facilitate clarity, transparency and understanding of Ghana's revised and enhanced nationally determined contribution according to the guidance in Annex 1 of Decision 4/CMA.1 for 2020 to 2030

1. Quantifiable information on the reference point (including, as appropriate, a base year)	
a. Reference year(s), <b>base year(s)</b> , reference period(s) or other starting point(s)	Base year - 2019
b. Quantifiable information on the reference indicators, their values in the reference year(s), <b>base year(s)</b> , reference period(s) or other starting points (s), and, as applicable, in the <b>target year</b>	The 2019 base year of 58.8 MtCO <sub>2</sub> e emissions were estimated using the IPCC 2006 Guidelines for National Greenhouse Inventories. There is a possibility of recalculating the 2019 greenhouse gas emission value in 2025 to respond to policy changes and improved data availability. The final value for the 2030 target year would be reported in the National Greenhouse Gas Inventory document covering the period up to 2030.
c. For strategies, plans and actions referred to in Article 4, paragraph 6, of the Paris Agreement, or policies and measures as components of nationally determined contributions where paragraph 1(b) above is not applicable, Parties to provide other relevant information.	Not Applicable
d. Target relative to the reference indicator, expressed numerically, for example, in percentage or amount of reduction.	Ghana aims to implement 34 mitigation measures to achieve absolute emission reductions of 64 MtCO <sub>2</sub> e by 2030. Out of the 34, nine unconditional measures are expected to lead to a 24.6 MtCO <sub>2</sub> e emission reduction amount. An additional 25 conditional measures can be implemented to further achieve 39.4 MtCO <sub>2</sub> e if financial support from the international and private sector is made available to cover the full cost for implementation.
e. Information on sources of data used in quantifying the reference point(s).	Data sources for the quantifying information on the base year was based on 2019 greenhouse gas inventory results.

f. Information on the circumstances under which the Party may update the values of the reference indicators	The base year (2019) value would be subjected to recalculations and technical corrections in response to policy changes (to include the effects of Ghana's plans to accelerate the utilisation of extractive resources, development of nuclear energy to support the sustainable industrialisation plan), the best available science and availability of improved data per UNFCCC decision 18/CMA.1 in 2025. Accordingly, information on the base year value updates would be documented and reported in the Biennial Transparency Reports and National inventory documents.
<b>2. Time frames and periods for implementation</b>	
a. Time frame and/or period for implementation, including start and end date, consistent with any further relevant decision adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA)	Ghana would be implementing the nationally determined contribution measures over nine years, starting from 2021 and ending in 2030 with a review in 2025 consistent with Article 4.9 and decision 1/CP.21 paragraph 24 to contribute to the Global stocktake as envisaged in Article 14 of the Paris Agreement. The breakdown of the timeframe of implementation is as follows: <ul style="list-style-type: none"> <li>• Period of implementation: 2021 – 2030 (10 years)</li> <li>• Cycle 1: 2021 – 2025 (5 years)</li> <li>• Mid-Term review: 2025</li> <li>• Cycle 2: 2026 – 2030 (5 years)</li> </ul>
b. Whether it is a single-year or multi-year target, as applicable	Ghana adopts an absolute single-year target approach, with 2019 being the base year and 2030 as the target year.
<b>3. Scope and coverage</b>	
a. General description of the target	The absolute mitigation goal covers an average of 88% of the sources and removals of greenhouse gases of the economy.
b. Sectors, gases, categories and pools covered by the nationally determined contribution, including, as applicable, consistent with Intergovernmental Panel on Climate Change (IPCC) guidelines	Gases covered: CO <sub>2</sub> , N <sub>2</sub> O, CH <sub>4</sub> , HFCs (CH <sub>4</sub> and HFCs are relevant Short-Lived Climate Pollutants - SLCPs). SLCPs and co-emitted air pollutants were included in the mitigation assessment to inform the nationally determined contribution. For SLCPs like methane and HFCs, their reduction in emissions is included in the overall GHG reduction target. For black carbon and other air pollutants (NO <sub>x</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , organic carbon, VOCs, carbon monoxide), the reduction in these

	<p>pollutants is not included in the overall GHG reductions but reflected as a co-benefit of the implementation of the nationally determined contribution measures. Some of the measures, including improved cookstoves and electric vehicles, are expected to reduce black carbon emissions for better public health outcomes).</p> <p>Sectors covered - The expected emission reduction amount constitutes 88% of emissions in the following sectors: Energy, Industrial Processes and Product Use, LULUCF and Waste consistent with 2006 IPCC guidelines. All categories and biomass pools in LULUCF are covered.</p>
<p>c. How the Party has taken into consideration paragraph 31(c) and (d) of decision 1/CP.21;</p>	<p>Ghana has included all categories of anthropogenic emissions and removals in the nationally determined contribution except emissions from agriculture and selected extractive and manufacturing industries, consistent with the ultimate objective under Article 2 of the United Nations Framework Convention on Climate Change, and for the following reasons:</p> <ul style="list-style-type: none"> <li>• The food production systems are vulnerable (unmechanised and rainfed).</li> <li>• Agriculture is the main source of livelihood support for the rural economy.</li> <li>• Challenges in the agriculture data management system.</li> <li>• Unexplored emission reduction potentials in production systems.</li> <li>• Exclusion of future development in the extractive and manufacturing industry.</li> </ul>
<p>d. Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans, including a description of specific projects, measures and initiatives of Parties' adaptation actions and/or economic diversification plans.</p>	<p>Ghana aims to highlight the expected mitigation co-benefits in the nationally determined adaptation actions in the agriculture and health sectors as follows:</p>

	<ul style="list-style-type: none"> <li>• Adopting climate-smart agricultural practices is part of the country's agenda to create jobs and promote sustainable land management practices.</li> <li>• Nature-based solutions for promoting eco-tourism as a means for enhancing biodiversity through forest conservation and landscape restoration.</li> <li>• The pursuit of the Green Ghana initiative that incorporates the planting will contribute to the maintenance of the vegetation or landscape and serve as an adaptation measure against the increasing number of extreme weather events in urban areas.</li> <li>• The automation and the use of renewable energy to back the strengthening and full-scale deployment of the disease surveillance system and climate early warning systems as envisaged in all districts are expected to contribute to the mitigative effect of reduction in fossil fuel use for electricity generation.</li> </ul> <p>Ghana's 2020 – 2025 COVID-19 Alleviation and Revitalisation of Enterprises Support (CARES) is a flagship policy in better building the economy through safeguarding jobs. It is envisaged that the economic gains from the CARES programme would, after 2025, serve as the basis for the Government to continue its economic diversification efforts in the face of the transition towards a resilient and low carbon future.</p>
<b>4. Planning processes</b>	
<p>a. Information on the planning processes that the Party undertook to prepare its nationally determined contribution and, if available, on the Party's implementation plans, including, as appropriate:</p>	<p>The process for updating the nationally determined contribution was government-led, consultative and used the best available national data. The process was divided into planning and formulation, public consultation and</p>



<p>i. Domestic institutional arrangements, public participation and engagement with local communities and indigenous peoples in a gender-responsive manner.</p>	<p>engagement, approval stages<sup>5</sup>. The process began with developing a 7-point update plan to secure high-level political buy-in from relevant sector Ministers during the official launch update in September 2020.</p> <p>A diagnosis of 2015 nationally determined contribution was made to assess progress and identify and prioritise challenges and investments into implementing the programmes in the nationally determined contribution. The findings from the comprehensive gender analysis also informed the revision of the nationally determined contribution. The Whole-Ghana-Approach (WoGA) strategy was employed to consult all the relevant stakeholders<sup>6</sup> during the update process to ensure the buy-in of the relevant stakeholders.</p> <p>The findings from the diagnostics, the consultations and the need to respond to new government priorities; strengthen the implementation of the nationally determined contribution; boost private sector interest, the analytical work that ensued culminated in completing the information required in Annex 1 of Decision 4/CMA.1 Information to facilitate clarity, transparency and understanding of Ghana's revised and enhanced nationally determined contribution. The draft revised nationally determined contribution. A background paper on the socio-economic and political implications was used for high-level engagement and political endorsement. Following cabinet approval, the updated nationally determined contribution was officially published and transmitted to the UNFCCC.</p>
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<sup>5</sup> The approval stages - Ministerial approval to start the review process, and cabinet approval before the publication of the nationally determined contribution.

<sup>6</sup> Ministries (such as Ministries of Finance, Energy, Transport, Agriculture, Lands and Natural Resources, Sanitation and Water Resources, Gender, Children and Social Protection, Local Government, Decentralisation and Rural Development), National Development Planning Commission, Private sector (Banks, Business Association, Project Developers), Development Partners and Academia, Civil Society Organisations (Kasa, Nature Conservation and Research Centre, GEF CSO Platform and Ghana Civil Society (CSO) Platform on Sustainable Development Goals (SDGs)

<p>ii. Contextual matters, including, <i>inter alia</i>, as appropriate:</p> <ul style="list-style-type: none"> <li>a. National circumstances, such as geography, climate, economy, sustainable development and poverty eradication;</li> <li>b. Best practices and experience related to the preparation of the nationally determined contribution; and</li> <li>c. Other contextual aspirations and priorities acknowledged when joining the Paris Agreement</li> </ul>	<p>Ghana, located in West Africa, has a total land area of 239,460 km<sup>2</sup>. Ghana is a democratic nation with power shared among the Executive, Legislature and Judiciary. Ghana's climate is tropical and strongly influenced by the West Africa monsoon winds. The climate is generally warm, with variable temperatures masked by seasons and topography. The northern part of the country typically records one rainy season, which begins in May and lasts until September. Southern Ghana records two rainy seasons from April to July and from September to November. The different rainfall patterns present different climate change vulnerabilities to the northern and southern divides of the country.</p> <p>Ghana's 2020 population is estimated at 30.9 million and represents a 26% increase over 2010 levels of 24.6 million at an annual growth rate of 2.3%. Under a tenth (8.2%) of the population live in extreme poverty, outstandingly high in rural Savannah at 36.1%. Poverty and livelihoods, gender and geographic locations determine the level of climate change vulnerabilities in the country.</p> <p>In the last 30 years, the economy expanded more than four times, consequently halving poverty to 23% by 2016 <sup>78</sup>. Ghana's sustained economic growth has been influenced by the inflows of proceeds from commodity exports (gold, cocoa, timber, and recently crude oil). In 2019, out of US\$22 billion international trade value, gold accounted for 50%, followed by crude oil (22%), cocoa (11%) and other merchantable (17%)<sup>9</sup>. On the other hand, the cost of environmental degradation was valued at approximately US\$ 6.3 billion (World Bank, 2020). Much of the rural livelihoods depend on a natural resource base. Statistics show that 71% of rural people are employed in agriculture, forestry, and fishing (World Bank, 2020).</p>
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<sup>7</sup> <https://openknowledge.worldbank.org/handle/10986/33726>

<sup>8</sup> [https://www2.statsghana.gov.gh/docfiles/publications/GLSS7/Poverty%20Profile%20Report\\_2005%20-%202017.pdf](https://www2.statsghana.gov.gh/docfiles/publications/GLSS7/Poverty%20Profile%20Report_2005%20-%202017.pdf)

<sup>9</sup> [https://oec.world/en/visualize/tree\\_map/hs92/export/gha/all/show/2019/](https://oec.world/en/visualize/tree_map/hs92/export/gha/all/show/2019/)

	<p>The devastating effects of COVID-19 made the economy grow by only 1.1% in 2020, a 6.5% shortfall before the pandemic. Besides COVID-19, Ghana is saddled with development challenges associated with high employment, urbanisation, and illegal mining. Climate change presents an additional long-term development risk that Ghana is addressing in the tight fiscal constraints. Despite the economic challenges, climate change remains a priority in Ghana. That is why its recent national development policy outlines climate change as a priority area for action. The commitment to tackle climate on all fronts has been shown in this nationally determined contribution's high ambition climate actions.</p>
<p>b. Specific information applicable to Parties, including regional economic integration organisations and their member States, that have reached an agreement to act jointly under Article 4, paragraph 2, of the Paris Agreement, including the Parties that agreed to act jointly and the terms of the agreement, in accordance with Article 4, paragraphs 16–18, of the Paris Agreement</p>	<p>Not Applicable</p>
<p>c. How the Party's preparation of its nationally determined contribution has been informed by the outcomes of the global stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement;</p>	<p>Not applicable since the first global stocktake has not taken place yet</p>
<p>d. Each Party with a nationally determined contribution under Article 4 of the Paris Agreement that consists of adaptation action and/or economic diversification plans resulting in mitigation co-benefits consistent with Article 4, paragraph 7, of the Paris Agreement to submit information on:</p>	<p>Not applicable</p>

<ul style="list-style-type: none"> <li>i. How the economic and social consequences of response measures have been considered in developing the nationally determined contribution;</li> <li>ii. Specific projects, measures and activities to be implemented to contribute to mitigation co-benefits, including information on adaptation plans that also yield mitigation co-benefits, which may cover, but are not limited to, key sectors, such as energy, resources, water resources, coastal resources, human settlements and urban planning, agriculture and forestry; and economic diversification actions, which may cover, but are not limited to, sectors such as manufacturing and industry, energy and mining, transport and communication, construction, tourism, real estate, agriculture and fisheries.</li> </ul>	
<p>5. Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals</p>	
<ul style="list-style-type: none"> <li>a. Assumptions and methodological approaches used for accounting for anthropogenic greenhouse gas emissions and removals corresponding to the Party's nationally determined contribution, consistent with decision 1/CP.21, paragraph 31, and accounting guidance adopted by the CMA;</li> </ul>	<p>The figures from Ghana's greenhouse gas inventories were the main input for the accounting. The accounting methodologies for the nationally determined contribution are consistent with UNFCCC decision 1/CP.21, paragraph 31, and UNFCCC decision 4/CMA.1. The accounting approaches and the assumptions for accounting for the nationally determined contribution have been provided in this document and will be reported in the Biennial Transparency Reports (BTRs) under the Paris Agreement, consistent with UNFCCC decisions 4/CMA.1 and 18/CMA.1</p>

<p>b. Assumptions and methodological approaches used for accounting for the implementation of policies and measures or strategies in the nationally determined contribution;</p>	<p>Not Applicable</p>
<p>c. If applicable, information on how the Party will take into account existing methods and guidance under the Convention to account for anthropogenic emissions and removals, in accordance with Article 4, paragraph 14, of the Paris Agreement, as appropriate;</p>	<p>Refer to 5d below.</p>
<p>d. IPCC methodologies and metrics used for estimating anthropogenic greenhouse gas emissions and removals;</p>	<p><b>IPCC Methodologies</b>  Ghana used 2006 IPCC guidelines for estimating the anthropogenic greenhouse gas emissions and removals in 2019. In accounting for the nationally determined contribution, Ghana intends to use the IPCC 2006 guidelines, the 2019 Refinement to the 2006 IPCC guidelines or any future updated IPCC guidelines that the CMA may agree upon.</p> <p><b>Global Warming Potential Metric</b>  Ghana will continue to use 100-year global warming potential from the AR4 or consider using the latest metric that the CMA may agree upon for estimating anthropogenic emissions and removals.</p>
<p>e. Sector-, category- or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, as appropriate, including, as applicable:</p>	
<p>(i) Approach to addressing emissions and subsequent removals from natural disturbances on managed lands.</p>	<p>Ghana will address emissions and subsequent removals from natural disturbances due to forest fires on managed forest lands in accounting for its nationally determined contribution. Similar accounting approaches for natural disturbances due to forest fires will be consistently applied to the base year (2019) and target year (2030). The associated emissions/removals from natural</p>

	disturbances due to forest fires would be included in the national greenhouse inventory estimates consistent with IPCC 2006 guidelines and any subsequent version or refinement, as applicable, as well as Annex II to Decision 4/CMA.1. For non-forest land, there will be no provisions for natural disturbances.
(ii) Approach used to account for emissions and removals from harvested wood products	Harvested wood products are not accounted for. However, Ghana may report on the emissions/removals from Harvested wood products using a production approach defined in the IPCC Guidelines (mainly wood for export) in future.
(iii) Approach used to address the effects of age-class structure in forests	The effects of the age-class structure in forests are not addressed.
f. Other assumptions and methodological approaches used for understanding the nationally determined contribution and, if applicable, estimating corresponding emissions and removals, including:	
(i) How the reference indicators, baseline(s) and/or reference level(s), including, where applicable, sector-, category- or activity-specific reference levels, are constructed, including, for example, key parameters, assumptions, definitions, methodologies, data sources and models used;	<p>Ghana's base year emissions for 2019 is from the latest national greenhouse inventory using the 2006 IPCC Guidelines. The 2019 net emissions include Energy, IPPU, Agriculture and LULUCF, and Waste sectors using a mix of tiers 1, 2 and 3 approaches. Tier 1 methodology was used to estimate greenhouse emissions for all the activities in the Energy and Agriculture sectors.</p> <p>For the IPPU sector, the tier 1 approach was applied to estimate emissions for all the categories except the metal industry, where tier 2 methodology was used to estimate emissions from aluminium production in the Volta Aluminium Company (VALCO). In the Waste sector, tier 2 was used to estimate emissions from the solid waste disposal category, while tier 1 was applied to the rest of the categories. In the LULUCF sector, tier 3 methodology was used to estimate the net greenhouse gas emissions from the forestland, cropland, and grassland. Tier 2 was used for wetlands, settlements, and other lands. In the LULUCF sector, all areas are considered as part of managed lands.</p>

	<p>Refer to Ghana's Fourth National Greenhouse Gas Inventory Report for comprehensive information on assumptions, methodologies, data sources for the greenhouse emissions for the base year (2019). Furthermore, Ghana used the Greenhouse Gas Abatement Cost Model (GACMO) and Low Emissions Analysis Platform (LEAP Model) to calculate the emission reductions for individual mitigation measures and aggregated the emission reductions into sectoral and national targets.</p> <p>Some of the assumptions in the GACMO and LEAP model relate to macro-economic indicators (GDP sector-value addition trends, incomes), demographic indicators (changing in size and number of households in urban and rural), technology penetration, existing and planned policies, financial indicators (energy and electricity prices, currency exchanges, discount rates) and CDM approved methodologies.</p>
<p>(ii) For Parties with nationally determined contributions that contain non-greenhouse-gas components, information on assumptions and methodological approaches used in relation to those components, as applicable</p>	<p>The reduction in emissions of SLCPs (including black carbon in the form of PM<sub>2.5</sub>) and co-emitted air pollutants (organic carbon, NO<sub>x</sub>, VOCs, and CO) was included in the GHG mitigation assessment to inform the nationally determined contribution, to quantify the co-benefits for SLCP and air pollutant emission reductions, due to the additional climate, air pollution and health benefits that can be achieved simultaneously to GHG emission reductions.</p> <p>The LEAP tool was used for this assessment, as described for GHGs in Section 5. f(i). Emission factors for SLCPs and air pollutants were integrated into the GHG mitigation assessment in LEAP from international emission inventory databases (EMEP/EEA 2019 air pollutant emission inventory guidebook). The full implementation of the NDC was estimated to reduce national total BC, PM<sub>2.5</sub>, OC, NO<sub>x</sub>, VOC, and CO emissions by 31%, 36%, 39%, 5%, 28%, and 30% in 2030 compared to a baseline scenario.</p>

(iii) For climate forcers included in nationally determined contributions not covered by IPCC guidelines, information on how the climate forcers are estimated;	Not Applicable. Ghana's nationally determined contribution includes only climate forcers included in the IPCC guidelines as indicated in section 3b.
(iv) Further technical information, as necessary;	Not Applicable
g. The intention to use voluntary cooperation under Article 6 of the Paris Agreement, if applicable.	Ghana intends to use voluntary cooperation under Article 6.2 of the Paris Agreement to achieve up to 55% (which is about 24 million tonnes of emission reductions) of its conditional absolute emission reductions. Accounting and reporting for emissions reductions emanating from the voluntary cooperation under Article 6 of the Paris Agreement would be consistent with the guidance adopted by CMA1 and any further guidance agreed by the CMA.
<b>6. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances</b>	
a. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances	<p>To demonstrate its firm commitment to the collective global efforts toward achieving the long-term temperature goal, Ghana has considerably increased the ambition of its updated nationally determined contribution. Ghana's updated nationally determined contribution represents a reasonable share of the global effort to tackle climate change. Thus, Ghana considers its updated nationally determined contribution to be fair and ambitious for the following reasons:</p> <ul style="list-style-type: none"> <li>• As a developing and climate-vulnerable country, Ghana has prioritised addressing its developmental and public health challenges resulting from the COVID-19 pandemic. Despite these challenges, the country is still making significant efforts to address climate change head-on amid the tight fiscal space.</li> <li>• Ghana undertakes a formal emission reduction obligation to control the growth of its GHG emissions, despite having emitted 0.1% of global GHG emissions in 2018<sup>10</sup>.</li> </ul>

<sup>10</sup> [https://www.climatewatchdata.org/ghg-emissions?end\\_year=2018&start\\_year=1990](https://www.climatewatchdata.org/ghg-emissions?end_year=2018&start_year=1990) and Ghana's BUR3 to the UNFCCC, 2021.



	<ul style="list-style-type: none"> <li>Added new programmes of actions in relevant sectors, revised target upwards, included new greenhouse and short-lived climate pollutants and linked the nationally determined contribution to the Government efforts to achieving the medium-long-term low emission development goals.</li> </ul>
b. Fairness considerations, including reflecting on equity	Refer 6a
c. How the Party has addressed Article 4, paragraph 3, of the Paris Agreement	Refer 3a and 3b
d. How the Party has addressed Article 4, paragraph 4, of the Paris Agreement	Refer 3a
e. How the Party has addressed Article 4, paragraph 6, of the Paris Agreement	Not Applicable
<b>7. How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2</b>	
a. How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2	Ghana views its updated and enhanced nationally determined contribution to be in line with the objective of the UNFCCC and the long-term goal of the UNFCCC Paris Agreement, as explained in 6a and 6b.
b. How the nationally determined contribution contributes towards Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement	Refer to 6a and 7a

## 6.2 Annexe 2: Adaptation and Mitigation Contribution Table<sup>11</sup>

Nationally determined contribution policy actions	Climate Objective	Socio-economic Outcomes	Jobs Prospects (No)	Funding (US\$ mil)	Beneficiaries (No.)	Emission Reduction (kt)	Gender* Responsive	SLCP** mitigation Relevance
Manage climate-induced and gender-related health risks.	Adaptation	Social Inclusion/Early Warning and disaster risk management	130	117	31,500,000		High	Low
City-wide resilient infrastructure planning.	Adaptation	Resilience Building	1,025	827	500,000		Medium	
Integrated water resources management.	Adaptation	Resilience Building/Social Inclusion	20	108	200,000		High	
Enhance climate services for efficient weather information management.	Adaptation	Early Warning and disaster risk management	50	10	1,000,000		High	
Early warning and disaster risk management.	Adaptation	Early Warning and disaster risk management	40	15	500,000		High	
Build resilience and promote livelihood opportunities for the youth and women in climate-vulnerable Agriculture landscapes and food systems.	Adaptation	Food and Landscape Restoration/Building Resilience	210,000	1,855	4,300,000		High	High
Enhance climate resilience of women and the vulnerable.	Adaptation	Social Inclusion	500	2.2			High	
Promote gender-responsive sustainable forest management	Mitigation/Adaptation	Food and Landscape Restoration	712,168	392.5	640,400	23,565	High	High
Expansion of inter-and-intra-city transportation modes.	Mitigation	Smart communities/Sustainable mobility	5,500	1,890.5	1,555,811	109.9	Low	High
Promotion of energy efficiency in homes, industry and commerce	Mitigation	Sustainable Energy Transition	4,608	786.94		1,899.3	Low	Low
Refrigeration and Air Conditioning (RAC).	Mitigation	Sustainable Energy Transition	2,700	3.2		3,874.2	Medium	High

<sup>11</sup> Comprehensive information on the individual programme of actions, the justification for conditional and unconditional status is available at the nationally determination contribution coordinating entity at EPA and MESTI.

Nationally determined contribution policy actions	Climate Objective	Socio-economic Outcomes	Jobs Prospects (No)	Funding (US\$ mil)	Beneficiaries (No.)	Emission Reduction (kt)	Gender* Responsive	SLCP** mitigation Relevance
Sustainable production in Industry.	Mitigation	Responsible Production	15,000	7.4		1,480.7	Low	Low
Low carbon electricity generation.	Mitigation	Sustainable Energy Transition	70	141.4		4,439.4	Low	Low
Expand the adoption of market-based cleaner cooking solutions.	Mitigation	Social Inclusion/ Sustainable Energy Transition/smart communities	24,000	386.4		4,214.2	High	High – 2,617 tonnes black carbon avoided in 2030
Promote sustainable charcoal production, including youth and women entrepreneurs.	Mitigation	Responsible Production	1,200	292.1		1,542.99	High	High – 31% reduction in black carbon emissions from charcoal production.
Promote clean rural households lighting.	Mitigation	Social Inclusion/Smart communities	1,000	35.7		175.14	High	High
Scale-up renewable energy penetration by 10% by 2030.	Mitigation	Sustainable Energy Transition	18,700	2,296.9		1,338.42	Low	Low
Decarbonisation of oil and gas production.	Mitigation	Sustainable Energy Transition	30	31.5		74.6	Low	High – 20% reduction in fugitive methane from oil and gas infrastructure.
Adopt alternative urban solid waste management.	Mitigation	Smart communities	820	60.4		21,313.0	Medium	High

\* Gender responsive scores (0-1 = low), (2-3 = medium), (4-5 = high) \*\*nationally determined contribution expected to mitigate emissions of SLCP