

Constrained Ambition in Climate Action and Progress towards Sustainable Development Goal 13 in Ghana

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Abstract

With less than five years remaining to 2030, systematic assessment of progress towards the Sustainable Development Goals (SDGs) has become increasingly urgent. This paper assesses progress towards SDG 13 (Climate Action) using evidence from Ghana, a climate-vulnerable lower-middle-income country. It develops and applies a five-domain analytical framework aligned with SDG 13 targets, covering institutional and policy development, adaptation outcomes, mitigation trends, climate finance mobilisation, and sub-national delivery capacity. Drawing on national policy documents, Voluntary National Reviews, Nationally Determined Contributions, adaptation plans, climate finance reports, and greenhouse gas inventories, the study evaluates: (1) the evolution of institutional and policy instruments; (2) measurable adaptation and mitigation outcomes; and (3) the structural, fiscal, and political constraints shaping implementation. The findings show that while significant progress has been made in institutionalising climate governance, strengthening reporting under the UNFCCC, and advancing adaptation measures such as early warning systems and local planning integration, mitigation outcomes lag stated commitments. Rising emissions continued fossil fuel dependence, limited climate finance, and uneven sub-national capacity constrain transformative change. The paper characterises this pattern as “constrained ambition,” where ambitious national commitments coexist with limited implementation capacity. These findings contribute to broader debates on SDG implementation by highlighting how structural dependencies and political economy conditions shape climate action outcomes. Achieving SDG 13 will require scaling climate finance, accelerating renewable energy transitions, strengthening land-use governance, and bridging the gap between national ambition and local delivery.

1. Introduction

With less than five years remaining to 2030, progress towards the Sustainable Development Goals (SDGs) remains uneven, while climate change continues to undermine gains in poverty reduction, food security, health, infrastructure, and inequality (United Nations, 2023; Intergovernmental Panel on Climate Change, 2022). The Sixth Assessment Report of the Intergovernmental Panel on Climate Change confirms that climate risks are intensifying across ecological and socio-economic systems, particularly in vulnerable regions. Within this context, SDG 13 calls on countries to “take urgent action to combat climate change and its impacts” (United Nations, 2015). Unlike service-oriented goals, climate action is embedded in complex global dynamics involving long-term mitigation pathways, adaptation planning, and climate finance. Its implementation depends not only on domestic policy reform but also on international cooperation under the UNFCCC and the operationalisation of the Paris Agreement. This multi-level governance structure complicates the measurement of progress and reinforces the persistent gap between stated ambition and realised outcomes (UNFCCC, 2023).

Since 2015, a growing body of literature has highlighted asymmetries in responsibility, capacity, and finance between developed and developing countries in addressing climate change (Okereke & Dooley, 2010; Roberts & Weikmans, 2017). Adaptation scholarship further shows that vulnerability is shaped less by exposure alone than by institutional fragmentation, political economy constraints, and structural inequalities (Pelling, 2011; Eriksen et al., 2021). At the same time, global emissions trajectories remain misaligned with the objective of limiting warming to 1.5°C (IPCC, 2022; UNEP, 2023). For climate-vulnerable countries such as Ghana, SDG 13 is therefore inseparable from broader development concerns. As a lower-middle-income economy in West Africa, Ghana remains heavily dependent on climate-sensitive sectors, including rain-fed agriculture, fisheries, forestry, and extractives. Emerging evidence indicates that climate variability is already affecting cocoa production, coastal settlements, and rural livelihoods, with disproportionate impacts on smallholder farmers and low-income households (Antwi-Agyei et al., 2018; Armah et al., 2020; Arhin, 2023).

At the same time, Ghana has positioned itself as an active participant in global climate governance through updated Nationally Determined Contributions, a National Adaptation Plan process, and the integration of climate objectives into national development strategies. This coexistence of structural vulnerability and institutional ambition makes Ghana a useful analytical entry point for examining how SDG 13 is translated from global commitment into national practice. However, much of the existing literature on climate action in sub-Saharan Africa remains fragmented, often focusing on

sector-specific interventions or local adaptation initiatives without examining broader systemic alignment. There is limited work that integrates institutional development, mitigation outcomes, adaptation progress, and climate finance within a single analytical framework.

This paper addresses this gap by assessing Ghana's progress towards SDG 13 after a decade of implementation. It examines: (1) the institutional and policy instruments developed to advance climate action; (2) measurable progress in adaptation and mitigation; and (3) the financial, structural, and political constraints shaping implementation outcomes. Drawing on national policy documents, including Voluntary National Reviews, NDC submissions, adaptation plans, climate finance reports, and greenhouse gas inventories, the analysis situates Ghana's trajectory within wider debates on equity, capacity, and the political economy of climate governance. The paper uses Ghana as empirical grounding to interrogate how SDG 13 operates under conditions of vulnerability, fiscal constraint, and uneven global support. It argues that progress on climate action is best understood as the outcome of interactions between domestic institutional consolidation and structural limits embedded in the global climate regime—dynamics that will shape the credibility of SDG 13 beyond 2030. The paper contributes to the climate policy literature by advancing an integrated analytical framework for assessing SDG 13 implementation that captures the interaction between institutions, mitigation, adaptation, finance, and sub-national delivery, which are dimensions often examined in isolation. Using Ghana as empirical grounding, it develops the concept of “constrained ambition” to explain a broader and under-theorised pattern in climate governance, where ambitious national commitments are systematically limited by structural dependencies, fiscal constraints, and global political economy dynamics.

2. Assessing SDG 13: The Goal, Targets and Analytical Framework

Sustainable Development Goal 13 calls for urgent action to combat climate change and its impacts within the broader framework of the 2030 Sustainable Development Agenda. The goal is operationalised through targets and indicators that collectively capture resilience-building, emissions reduction, institutional integration, and capacity development. Target 13.1 focuses on strengthening resilience and adaptive capacity to climate-related hazards and disasters. Progress is assessed through indicators tracking disaster-related mortality and affected populations (13.1.1), the adoption and implementation of national disaster risk reduction strategies aligned with the Sendai Framework for Disaster Risk Reduction (13.1.2), and the proportion of local governments implementing disaster risk reduction strategies consistent with national frameworks (13.1.3). These indicators assess both outcome-level resilience and the institutionalisation of disaster risk governance across national and subnational levels.

Target 13.2 addresses the integration of climate change measures into national policies, strategies, and planning systems. Indicator 13.2.1 tracks the submission of nationally determined contributions, long-term low-emission development strategies, national adaptation plans, and adaptation communications to the United Nations Framework Convention on Climate Change. Indicator 13.2.2 measures total annual greenhouse gas emissions, which provide a quantitative measure of mitigation performance and alignment with global temperature goals. Target 13.3 complements these institutional and outcome-oriented indicators by promoting education, awareness, and institutional capacity building through the integration of sustainability and global citizenship education into national education systems.

Assessing progress toward SDG 13 therefore requires an analytical approach that goes beyond cataloguing policies or reporting compliance. In this study, we draw on three strands of scholarship: climate governance, adaptation and resilience theory, and the political economy of climate finance. Climate governance research emphasises the multi-level nature of climate action (Jänicke, 2017). Since the adoption of the Paris Agreement, mitigation and adaptation efforts have been structured around nationally determined contributions (NDCs), transparency mechanisms, and periodic global stocktakes. While this architecture allows flexibility and national ownership, it also shifts implementation responsibility to domestic institutions with uneven administrative capacity (Jordan et al., 2015; Keohane & Victor, 2016). Participation in international agreements therefore does not automatically translate into effective climate action. Institutional coordination, regulatory

enforcement, cross-sectoral integration across sectors such as energy, agriculture, land use, and disaster risk management are equally good pointers (Keohane & Victor, 2016).

Adaptation scholarship highlights that vulnerability is socially and politically produced rather than determined solely by exposure to environmental hazards. Structural factors including poverty, land tenure insecurity, gender inequality, and governance quality shape how climate risks are experienced and managed (Pelling, 2011; Eriksen et al., 2021). This perspective cautions against equating adaptation progress with the existence of plans or projects. Instead, analysis must consider whether interventions reduce structural vulnerability, strengthen resilience in practice, and reach marginalised populations. In climate-sensitive economies such as Ghana’s, adaptation performance must therefore be evaluated in terms of policy implementation and integration into development planning at subnational levels.

Political economy analyses further emphasise the central role of finance in shaping climate outcomes. The ambition embedded in many NDCs frequently exceeds available fiscal resources, particularly in lower-middle-income countries facing high debt burdens and competing development priorities (Roberts & Weikmans, 2017; United Nations Environment Programme, 2023). Climate finance flows remain uneven and access procedures to international funds are often complex. This creates a structural tension between global expectations and domestic implementation capacity. Building on these perspectives, this study conceptualises climate action as a governance process operating across interconnected domains. Consequently, the analytical framework used to evaluate progress toward SDG 13 is organised around five interconnected domains: institutionalisation, adaptation performance, mitigation trajectory, climate finance mobilisation, and subnational integration (See Table 1).

Table 1: The Goal, Targets and Analytical Framework

Domain	Definition	Analytical Focus	Indicative Evidence
1. Institutionalisation	Extent to which climate action is embedded in national legal, policy, planning, coordination, and monitoring systems	Structural anchoring of SDG 13 within state institutions	Climate laws; climate policies; national development plans; institutional mandates; MRV reports
2. Adaptation Performance	Implementation and effectiveness of resilience-building and vulnerability reduction measures	Translation of policy into measurable resilience outcomes	NAPs; sectoral adaptation data; disaster loss statistics; resilience indicators
3. Mitigation Trajectory	Emissions trends and implementation of decarbonisation commitments	Structural transformation toward low-carbon development	GHG inventories; energy transition data; land-use statistics; NDC implementation reports
4. Climate Finance Mobilisation	Mobilisation and alignment of domestic and international climate finance	Matching financial flows to climate ambition and needs	Budget data; climate finance tracking; donor reports; expenditure reviews
5. Subnational Integration	Integration of climate objectives into local governance systems	Vertical policy coherence and local implementation capacity	District development plans; local budgets; decentralisation frameworks; coordination mechanisms

Source: Author’s construct

The first domain, institutionalisation, assesses the extent to which climate objectives are embedded within national governance systems. Institutionalisation refers to the integration of climate priorities into legislation, national development frameworks, coordination mechanisms, and monitoring systems. Rather than focusing on rhetorical commitments, this dimension examines whether climate governance is structurally anchored in state institutions. Key indicators include the presence of climate policy, climate legislations, clearly mandated coordinating bodies, and operational monitoring,

reporting, and verification systems. Strong institutionalisation supports policy continuity, accountability, and long-term implementation capacity.

The second domain, adaptation performance, evaluates progress on the implementation and effectiveness of measures aimed at reducing vulnerability and strengthening resilience. Although many countries have adopted adaptation strategies or National Adaptation Plans, implementation outcomes often vary. This domain therefore focuses on the extent to which adaptation initiatives produce measurable improvements in resilience, integrate disaster risk reduction, and generate sectoral outcomes in areas such as agriculture, water, and health. The emphasis is on observable results rather than the existence of policy documents.

The third domain, mitigation trajectory, examines national emissions pathways and the extent to which mitigation commitments are being implemented. This includes trends in greenhouse gas emissions, expansion of renewable energy, changes in land use and efforts towards decarbonisation. The analysis focuses on trajectory rather than absolute emissions, assessing whether structural shifts toward low-carbon development are occurring.

The fourth domain, climate finance mobilisation, assesses the availability and alignment of financial resources for climate action. Implementation of SDG 13 depends on predictable funding. This domain, therefore, evaluates domestic resource mobilisation and funding efforts, access to international climate finance, and the alignment between identified climate finance needs and resources mobilised.

Finally, subnational integration recognises that climate implementation occurs across multiple governance levels. It evaluates how national commitments are translated into local development plans, district budgeting processes, and the mandates and capacities of subnational authorities. Taken together, these domains provide a structured basis for assessing both the depth of policy ambition and the structural constraints shaping SDG 13 implementation.

3. Methodology

Data for this study were collected through systematic documentary analysis of official national and international sources published between 2015 and 2024. Table 2 provides further details of the main document sources analysed. Primary documents include Ghana’s Voluntary National Reviews submitted to the United Nations High-Level Political Forum, Nationally Determined Contributions (including the updated NDC), the National Adaptation Plan framework and related policy documents, the National Climate Change Policy, national greenhouse gas inventory reports, and climate finance reports submitted to the UNFCCC. Others include the Biennial Updates Reports to UNFCCC, Third National Communications to UNFCCC, Article 6 Annual Progress Reports (2023). These sources provide information on national policy commitments, implementation strategies, emissions trajectories, and climate finance mobilisation. Supplementary materials include peer-reviewed literature on Ghana’s climate governance.

Table 2: Main Document Sources Analysed (2015–2024)

Document Type	Examples	Analytical Contribution
National policy frameworks	National Climate Change Policy, National Adaptation Plan documents	Evidence of institutionalisation
International reporting	NDC submissions, UNFCCC reports, Voluntary National Reviews, Biennial Updates Reports to UNFCCC, Third National Communications to UNFCCC, Article 6 Annual Progress Reports (2023)	Evidence of commitments and reporting compliance
Climate finance documentation	Budget statements, climate finance mobilisation reports	Evidence of funding availability and financing gaps
Sectoral policy documents	Energy transition plans, disaster risk reduction strategies	Evidence of mitigation and adaptation implementation
Academic and institutional reports	Peer-reviewed literature, multilateral assessments	Independent validation and contextual analysis

Source: *Author's construct*

The documents were analysed using qualitative content analysis. A deductive coding scheme was first developed based on the five analytical domains, allowing systematic categorisation of policy content, institutional arrangements, and implementation evidence (Appendix 1). Inductive coding was subsequently applied to identify emergent themes related to institutional capacity, sectoral transformation, implementation challenges, and political constraints. This combined deductive–inductive approach enables structured evaluation while remaining sensitive to context-specific dynamics (Schreier, 2012). Triangulation across multiple national reports and international assessments enhances analytical reliability and reduces dependence on a single reporting source (Bowen, 2009). However, the reliance on secondary documentary evidence introduces potential reporting biases and inconsistencies across datasets. In addition, the absence of primary fieldwork limits insight into local implementation dynamics. Despite these limitations, the documentary approach allows systematic evaluation of policy commitments, institutional development, and implementation trends over time, providing a strong basis for assessing Ghana's progress and constraints in implementing SDG 13.

4. Results

The assessment showed a differentiated pattern of progress across the five domains of SDG 13 implementation. Institutionalisation is rated high, which reflects the strong embedding of climate governance within national systems through updated Nationally Determined Contributions, National Adaptation Plan processes, and integrated financing and planning frameworks. Core institutions such as the Environmental Protection Agency and the National Development Planning Commission provide coordination, monitoring, and reporting functions, although enforcement gaps remain. Adaptation and resilience show moderate progress, with expansion of early warning systems, climate-smart agriculture, and the integration of adaptation into district-level planning. However, implementation remains uneven due to fiscal constraints, technical capacity limitations, and persistent socio-economic vulnerabilities. Mitigation outcomes are similarly moderate. While policy ambition is evident, greenhouse gas inventories indicate rising absolute emissions, continued reliance on fossil fuels, and slow structural shifts towards renewable energy. Climate finance mobilisation is the weakest domain. Despite the establishment of financing frameworks, available resources fall significantly short of NDC requirements, constrained by domestic fiscal pressures and limited international inflows. Subnational integration is moderate but uneven, with climate objectives formally embedded in local planning systems but inconsistently implemented across districts. Table 3 provides details of the assessment.

Table 3
Summary of results of assessment of Ghana's progress towards SDG 13

Domain	Score	Justification Based on Consolidated Findings
1. Institutionalisation (INST)	High	Climate governance is strongly embedded in national systems. Institutional mechanisms include updated NDCs with accounting tools; a National Adaptation Plan (NAP) and Adaptation Communication (AdCom) processes; the Climate Prosperity Plan (CPP); Green Taxonomy; Integrated National Financing Framework (INFF); and Integrated Assessment and Financing Framework (IAFF). The Environmental Protection Agency (EPA) leads MRV and GHG inventory processes; the National Development Planning Commission (NDPC) integrates SDGs into development planning; Disaster Risk Reduction (DRR) aligned with national emergency systems. While coordination and enforcement gaps persist, the institutional architecture is strong procedurally robust.
2. Adaptation and Resilience (ADP)	Medium	National Adaptation Plan implementation ongoing; Adaptation Communication processes operational. Expansion of early warning systems under the EW4ALL roadmap; climate-smart agriculture initiatives; community restoration programmes; and local-level adaptation planning integrated into district frameworks. Disaster risk reduction increasingly mainstreamed. However, scaling is constrained by fiscal pressures, uneven technical capacity, and persistent structural vulnerabilities (poverty, land-use insecurity).
3. Mitigation Trajectory (MIT)	Medium	GHG inventories (including LULUCF) show rising absolute emissions. Energy-sector emissions remain significant, with fossil fuels and natural gas expansion shaping the energy mix. Renewable energy shares are increasing gradually but below transformational thresholds. Deforestation pressures persist despite forestry policies. Emissions intensity shows modest efficiency gains, yet structural decarbonisation remains limited. Mitigation ambition articulated in policy but constrained in structural outcomes.
4. Climate Finance Mobilisation (FIN)	Low	NDC cost estimates significantly exceed mobilised finance. While INFF, IAFF, and CPP provide structured financing mechanisms, domestic allocations are constrained by fiscal pressures and high debt servicing. Moderate access to international climate finance and development of green bond initiatives and Article 6 carbon market pipelines, but funding remains below required scale. Persistent NDC financing gap limits scaling of mitigation and adaptation investments.
5. Subnational Integration (LOCAL)	Medium	Climate objectives integrated into Metropolitan, Municipal, and District Assembly (MMDA) planning guidelines; NDPC mainstreaming processes operational. IAFF pilot initiatives and district-level adaptation plans emerging. However, uptake varies widely across districts and implementation is inconsistent..

4.1 Institutionalisation of SDG 13 (Domain 1)

Assessment of institutionalisation of SDG 13 is anchored primarily in SDG Target 13.2 (integration of climate measures into national policies, strategies and planning) and Target 13.1 (strengthening resilience through disaster risk reduction governance). Indicators 13.2.1 and 13.1.2–13.1.3 provide the empirical basis for evaluating the depth of Ghana's climate governance architecture. Table 4 presents overview of some of the institutional framework/architecture of climate action. Under Indicator 13.2.1, Ghana has submitted updated Nationally Determined Contributions (NDCs), advanced its National Adaptation Plan (NAP) process, and formally communicated its Adaptation Communication (AdCom) to the UNFCCC. These instruments demonstrate procedural compliance with international reporting obligations and reflect policy integration across mitigation and adaptation domains. Climate action is further embedded in national development planning frameworks, with SDG and NDC mainstreaming guidelines issued for Metropolitan, Municipal and District Assemblies (MMDAs), the local authorities of Ghana. This suggests that climate governance has moved beyond declaratory commitment toward structured integration within planning systems. At the centre of the governance architecture is the Ministry of Environment, Science, Technology and Innovation (MESTI), which coordinates national climate policy, including updated Nationally Determined Contributions (NDCs), the Climate Prosperity Plan (CPP) and the Green Taxonomy. These instruments collectively align national development planning with SDG 13 targets, particularly Target 13.2 on integrating climate measures into policies and planning. Technical oversight has strengthened through the Environmental Protection Authority (EPA), which has operationalised a 2023 Greenhouse Gas (GHG) Inventory Report and

an NDC Accounting Tool to improve emissions tracking and sectoral reporting in line with UNFCCC requirements. EPA has also been instrumental in leading the production of key documents submitted to the UNFCCC such as the Biennial Updates Reports, National Communications and the Adaptation Communications (Adcom). The National Development Planning Commission (NDPC) has also mainstreamed SDGs into national and subnational planning templates, while the Ministry of Finance has introduced a Climate Finance Framework and Integrated National Financing Framework (INFF) to align fiscal planning with climate priorities. The Energy Commission’s Renewable Energy Master Plan and the National Disaster Management Organisation’s (NADMO) Disaster Risk Reduction Strategy further demonstrate cross-sector engagement. Early-warning systems, supported by the Ghana Meteorological Agency and aligned with the Early Warnings for All (EW4ALL) roadmap, have expanded coverage across districts. Collectively, these developments signal strong procedural and institutional consolidation. The presence of accounting tools, adaptation communications, and cross-ministerial planning all reflect serious commitment to operationalising SDG 13. Institutionalisation is, therefore, assessed as high in formal integration and reporting compliance.

Table 4
Overview of institutional framework/architecture of climate action

Institution / Agency	Mandate under SDG 13	Key Outputs / Activities	Relevance to SDG 13
MESTI (Ministry of Environment, Science, Technology and Innovation)	National policy coordination; NDCs, NAP, Climate Prosperity Plan	NDC update 2021; Updated NDC; Climate Prosperity Plan; Green Taxonomy Adaptation Communication 2024,	13.2.1
EPA (Environmental Protection Agency)	Technical oversight; emissions monitoring; MRV systems	2023 GHG Inventory Report; Climate Finance Tracking Framework; NDC Accounting Tool	13.2.2
NDPC (National Development Planning Commission)	SDG coordination; integration into plans	SDG mainstreaming guidelines for MMDAs	13.1.3
Ministry of Finance	Climate finance strategy and green bonds	Climate Finance Framework (2024); Green Taxonomy, INFF	13.a
Energy Commission	Renewable energy development and efficiency	Renewable Energy Master Plan (REMP); 2.5% renewables achieved 2024	13.2
NADMO (National Disaster Management Organisation)	Disaster-risk management aligned to Sendai Framework	National DRR Strategy 2017–2030; 29 early-warning districts	13.1
Ghana Meteorological Agency (GMet)	Climate data and early-warning systems	Upgraded forecasting systems; coastal monitoring	13.1
Source: Author’s construct			

4. 2. Adaptation Performance (Domain 2)

Adaptation performance is assessed primarily against SDG Target 13.1 (strengthen resilience and adaptive capacity to climate-related hazards) and Target 13.2 (integration of climate measures into planning), using Indicators 13.1.1, 13.1.2, 13.1.3, and 13.2.1 as empirical anchors. These indicators capture both outcome-level resilience and the degree of institutional embedding of adaptation planning.

Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

In line with its commitments under the Paris Agreement, Ghana's updated Nationally Determined Contribution (NDC) in 2021 outlined 47 priority actions, including 13 adaptation measures. Adaptation priorities focus on agriculture and food security, forest resource management, resilient infrastructure, water resources, climate-related health risks, and the needs of vulnerable groups. Implementation is guided by supporting frameworks such as the National Climate Change Policy and the National Adaptation Policy Framework. Adaptation strategies emphasise climate information services, climate-smart agriculture, integrated landscape management, resilient infrastructure, crop insurance, and livelihood diversification. At the local level, adaptation actions include the promotion of livelihood opportunities for the youth and women in climate-vulnerable agriculture landscapes and food systems, especially in Northern Ghana, integrated water resources management, and reduction and recycling of waste. These efforts are being promoted through initiatives such as the Greater Accra Resilient and Integrated Development Project (GARID), the main objective of which is to develop sustainable capacity for flood risk management; Construction of Sea Defence Walls via Coastal Protection Projects; a Sustainable Land and Water Management Project; and Early Warning and Disaster Risk Management Initiatives at various sub-national levels. Additional interventions include climate risk insurance schemes, REDD+ landscape management, and water security programmes such as WACDEP. A review of interventions to build adaptive capacity and resilience (see Adaptation Communication), however, shows that municipal uptake varies due to limited finance, technical capacity, and data constraints. Also, many interventions remain project-based and donor-driven, limiting scalability and long-term sustainability. Adaptation progress can be characterised as incremental resilience-building. At the strategic level, Ghana is also developing its National Adaptation Plan with support from the Green Climate Fund and UN Environment, including an adaptation database to strengthen data management and reporting. The country has also submitted its first Adaptation Communication to the UNFCCC. In parallel, Ghana is establishing frameworks for Article 6 carbon market and non-market mechanisms to support conditional climate actions

Under Indicator 13.1.1 (Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population), available evidence indicates good progress in disaster risk reduction. Reports from the National Disaster Management Organisation show that the number of persons dying, missing, or directly affected by extreme weather events declined from about 61,080 to 1,579 per 100,000 population between 2021 and 2024 (Fig. 1). This trend suggests improvements in preparedness, early warning dissemination, and community response capacity. On 13.1.2 (Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030), the documents reviewed showed that progress is reinforced by the integration of disaster risk reduction into national planning frameworks, including the National Medium-Term Development Policy Framework (2022–2025), the Early Warnings for All roadmap (EW4ALL), incorporation of disaster risk management within the National Adaptation Plan, and the Ghana Meteorological Agency's Legislative Instrument aimed to regulate climate services to better equip the nation for climate change. Table 5 provides an overview of some of the adaptation governance and policy milestones.

Table 5
Adaptation Governance and Policy Milestones

Instrument / Mechanism	Status (2019–2025)	Functional Contribution to Adaptive Capacity	SDG 13 Linkage
National Adaptation Plan (NAP)	Completed (GCF-supported)	Establishes long-term adaptation priorities; pipeline for sectoral investments	13.2
Adaptation Communication (AdCom)	Submitted to UNFCCC	Enhances transparency; informs Global Stocktake; clarifies adaptation needs	13.2
Adaptation Database	In development	Centralised tracking of adaptation actions and outcomes	13.3
Early Warnings for All (EW4ALL) Roadmap	Adopted	Expands anticipatory risk management systems	13.1
SDG Mainstreaming Guidelines for MMDAs	Implemented	Integrates climate risk into district development planning	13.1.3
<i>Source: Author's construct</i>			

4.3. Mitigation Trajectory (Domain 3)

Mitigation performance is assessed primarily against SDG Target 13.2, particularly Indicator 13.2.2 (total greenhouse gas emissions per year), complemented by Indicator 13.2.1, which captures the submission of nationally determined contributions (NDCs) and long-term strategies. Under Indicator 13.2.1, Ghana demonstrates full procedural compliance. The country has submitted an updated NDC, articulated conditional and unconditional mitigation targets across energy, transport, waste, and forestry, and outlined a long-term net-zero aspiration. These commitments signal alignment with global climate governance frameworks and reflect institutional readiness to pursue decarbonisation. However, Indicator 13.2.2 presents a more constrained picture. Ghana has developed a comprehensive GHG inventory, tracking emissions of carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), SF₆, and fluorocarbons from energy, industrial processes, agriculture, forestry, and waste. In 2021, Ghana's total GHG emissions reached 51.78 million tonnes of CO₂ equivalent (MtCO₂e), a 12 percent increase from 2019 and a significant 372.3 percent rise since 1990, with an annual growth rate of 5.1 percent. Although the updated Nationally Determined Contribution (NDC) articulates both conditional and unconditional targets across energy, transport, waste, and forestry, aggregate greenhouse gas (GHG) emissions continue to rise. National emissions with LULUCF increased from 40,154.7 ktCO₂e in 2016 to 54,758.5 ktCO₂e in 2022, a 36.4% increase. Emissions excluding LULUCF rose by 37.9% over the same period. These trends indicate that mitigation efforts have not yet altered the overall emissions growth pathway. The energy sector is the dominant driver of emissions growth. Energy-related emissions rose by 55.4% between 2016 and 2022, reflecting expanding electricity generation, transport demand, and industrial activity. While renewable energy policies are in place including the Renewable Energy Master Plan and the National Energy Transition Framework actual deployment remains modest. Renewables (excluding large hydropower) account for less than 3% of the electricity mix, and installed renewable capacity per capita increased only marginally from 3.6 watts in 2021 to 4.0 watts in 2024. The share of renewables in total final energy consumption declined from 44.0% to 35.8% in 2020, signalling continued reliance on thermal generation and natural gas as a transition fuel (see Fig. 2). Structural constraints include limited financing, grid integration challenges, and regulatory delays. Land-use dynamics further complicate mitigation outcomes. The Agriculture, Forestry and Other Land Use (AFOLU) sector remains a significant emissions source, increasing by 21% between 2016 and 2022. Deforestation pressures from agricultural expansion (notably cocoa), illegal small-scale mining ("galamsey"), and logging persist despite governance instruments such as forest restoration programmes and wood tracking systems. Waste emissions also increased by 26.6% during the same period, reflecting rapid urbanisation and waste management challenges. Thus, the overall picture emerging from the analysis is that Ghana's mitigation ambition is clearly articulated in policy, but structural decarbonisation remains incremental rather than transformative. Emissions intensity improvements suggest some efficiency gains; however, these have not translated into absolute emissions decline (see Table 6).

Table 6
Trends of Greenhouse Gas Emissions by Sectors

Emissions by sources/ Removals by sinks	TOTAL EMISSIONS(KtCO ₂ e)							Percentage change
	1990	2000	2012	2016	2019	2021	2022	[2016–2022]
National Emissions with LULUCF	17,425.1	20,443.8	36,598.9	40,154.7	49,546.2	52,692.97	54,758.5	36.4%
National Emissions without LULUCF	10,896.7	15,059.2	31,011.0	34,643.5	42,525.6	46,743.07	24,698.60	37.9%
Energy	2,892.18	4,548.64	5,021.61	15,891.11	21,747.87	25,177.19	24,698.60	55.4%
Industrial Processes and Product use	925.27	862.48	1,248.01	1,301.42	1,709.75	1,862.95	1,905.230	46.4%
Agriculture, Forestry, and other land uses	11,260.39	11,293.32	13,959.67	15,242.17	18,008.34	17,551.13	18,382.88	21%
Waste	2,347.3	3,739.3	6,368.7	7,720.0	8,080.3	8,371.70	9,771.83	26.6%
Source: Ghana National Inventory Document, 2024								

4.4 Sub-national integration ((Domain 4)

Subnational integration represents a critical interface between national climate commitments and on-the-ground implementation. While Ghana has made progress in mainstreaming climate objectives into Metropolitan, Municipal, and District Assembly (MMDA) planning guidelines through the National Development Planning Commission's (NDPC) processes, operational depth remains uneven across districts. Climate risk screening templates and disaster risk reduction (DRR) integration frameworks are formally embedded in local development planning procedures, indicating procedural alignment with SDG Target 13.1 (resilience) and 13.2 (policy integration). Available data from the 2025 Voluntary National Reviews published by the Government of Ghana suggests that 57% of MMDAs have integrated DRR measures into their development plans, reflecting measurable improvement in local uptake. However, this also implies that nearly half of districts lack full alignment with national DRR strategies, highlighting uneven territorial coverage under Indicator 13.1.3. Capacity gaps further persist in technical expertise, climate data access, and monitoring systems (Musah-Surugu, Ahenkan, Bawole and Darkwah 2018, ; Oduro-Ofori, Isahaka and Opoku-Antwi, 2022). Recent research has also found out that while local government authorities implement climate change interventions in various forms including public education, land management, and water delivery, about half of the programmes outlined from 2013-to-2020 were not implemented at all and more than 70% of such programmes have not been completely successful (Oduro-Ofori, Isahaka and Opoku-Antwi, 2022). Financial innovation at the subnational level is emerging but remains nascent. Ghana has initiated an Integrated National Financing Framework (INFF) and piloted Integrated Assembly Financing Frameworks (IAFFs) to mobilise domestic and private capital at district levels. These instruments aim to align local development financing with national climate priorities and SDG objectives. However, IAFF pilots are still in early stages, and scalable resource mobilisation mechanisms are not yet institutionalised across districts. As a result, adaptation and mitigation actions at the

local level risk remaining project-based rather than systemic. While climate objectives are increasingly embedded in district plans, mandates are not consistently matched with financial resources or technical capacity.

4.5 Climate Finance ((Domain 5)

Climate finance is assessed primarily against SDG Target 13.a, which calls for the mobilisation of financial resources to support developing countries in mitigation and adaptation, and Target 13.2, insofar as financing determines the implementation of NDCs and adaptation plans. While Ghana has demonstrated institutional innovation in climate finance governance, resource mobilisation remains one of the most binding constraints across all domains of SDG 13 performance. Nationally Determined Contribution (NDC) cost estimates run into multiple billions of US dollars, with projections indicating a financing gap exceeding US\$10 billion by 2030 (Government of Ghana 2021; 2025). This gap affects both mitigation investments such as renewable energy deployment, grid upgrades, and low-carbon transport and adaptation priorities under the National Adaptation Plan (NAP), including resilience infrastructure and nature-based solutions. Under Indicator 13.a.1, therefore, progress remains limited relative to projected needs.

Domestic fiscal constraints compound this challenge. High public debt levels and debt servicing obligations absorb a significant share of government revenue, constraining capital expenditure and limiting fiscal space for climate investments. This macro-fiscal context restricts the government's ability to co-finance large-scale mitigation and adaptation programmes, increasing dependence on concessional and external finance (Government of Ghana, 2025).

The development of a Green Taxonomy is aimed to guide sustainable investment classification, while plans for sovereign green bonds and Article 6 carbon market participation seek to leverage international carbon finance. Project pipelines under Article 6 signal forward-looking ambition, but these instruments remain at an early operational stage and require robust governance safeguards to ensure environmental integrity and social protection. The establishment of an Integrated National Financing Framework (INFF) and pilot Integrated Assembly Financing Frameworks (IAFF) at subnational levels further reflects efforts to crowd in private and domestic capital, though implementation remains nascent. Applying the five-domain analytical lens, climate finance performance is assessed as Low. Institutional frameworks are emerging, but mobilisation levels remain insufficient, fragmented, and uncertain. Finance thus constitutes the principal structural bottleneck constraining the translation of policy ambition into measurable mitigation and adaptation outcomes.

Source: Author's construction

5. Discussion: Constrained Ambition in Climate Governance

This study set up to examine the progress through which Ghana has made in operationalising SDG 13 (Climate Action). Based on insights from the research, this study characterises Ghana's SDG 13 trajectory as one of constrained ambition: national commitments and planning frameworks articulate ambitious climate goals, yet structural dependencies, fiscal limitations, and political economy realities restrict transformative implementation. Thus, the study develops the concept of constrained ambition to explain the recurring pattern in climate governance where ambitious policy commitments are institutionally embedded but systematically limited in their translation into transformative outcomes. The analysis of Ghana's case shows that progress towards SDG 13 is not uniform but shaped by the interaction of four core components: institutional ambition, structural constraints, fiscal constraints, and governance constraints. These dimensions provide a more comprehensive explanation of why climate action often advances procedurally but stalls substantively. The idea of 'constrained ambition' builds on, but extends, existing literature. While implementation theory highlights administrative slippage (Pressman & Wildavsky, 1973) and climate governance scholarship emphasises institutional complexity and fragmentation (Jordan et al., 2015; Keohane & Victor, 2011), these approaches tend to isolate specific dimensions of the problem. Constrained ambition instead conceptualises climate action as the outcome of interacting constraints across multiple domains, thereby offering a more integrated account of the ambition–implementation divide.

5.1 Institutional Ambition and Its Limits

The findings show high levels of institutional ambition, reflected in the expansion of NDCs, adaptation frameworks, and climate finance architectures. This supports arguments that institutionalisation enhances policy coherence and alignment with international regimes. Ghana's climate governance architecture has strengthened considerably over the past decade. Updated NDCs, National Adaptation Plan processes, early-warning roadmaps, and climate finance frameworks reflect a maturing institutional landscape. This embeddedness within global reporting and planning systems illustrates how countries can effectively formalise climate commitments. Yet institutionalisation alone does not guarantee implementation. Classic implementation theory (Pressman & Wildavsky, 1973) reminds us of that policy goals frequently dissipate as they move through administrative layers. In Ghana's case, capacity constraints at Metropolitan, Municipal, and District Assemblies (MMDAs), limited fiscal decentralisation, and cross-sector coordination gaps constrain operational depth. The persistence of capacity gaps at subnational levels and coordination challenges across sectors limits execution. This reinforces the distinction between policy outputs and outcomes, demonstrating that strong institutional design can coexist with weak delivery. Within the constrained ambition framework, institutional ambition represents necessary but insufficient progress, particularly when other constraints remain binding

5.2 Structural Constraints and Uneven Transformation

The analysis highlights the role of structural constraints, particularly economic dependence on climate-sensitive and carbon-intensive sectors. While adaptation interventions have expanded, mitigation outcomes remain limited, with rising emissions and continued reliance on fossil fuels. This aligns with the concept of carbon lock-in (Unruh, 2000), where existing infrastructures and economic interests reinforce high-emissions pathways. The coexistence of adaptation gains and mitigation inertia reflects a deeper structural imbalance. Adaptation aligns with immediate development priorities and is therefore more politically and economically feasible. In contrast, mitigation requires systemic shifts in energy systems and production structures, which are more difficult to achieve. Constrained ambition thus captures how structural conditions shape the direction and pace of climate action, leading to partial and uneven transformation.

5.3 Fiscal Constraints as a Cross-Cutting Limitation

Fiscal constraints emerge as a central mechanism through which ambition is limited across domains. Despite the presence of financing frameworks, available resources fall significantly short of requirements. This confirms existing literature on global climate finance inequities (Okereke & Dooley, 2010; Roberts & Weikmans, 2017), while also demonstrating how these inequities operate in practice. Fiscal limitations affect not only mitigation investments but also the scaling of adaptation and the strengthening of subnational systems. Domestic budget constraints, combined with unpredictable international finance flows, create a structural misalignment between commitments and implementation capacity. Within the constrained ambition framework, fiscal constraints function as a binding condition that mediates the effectiveness of institutional ambition and amplifies other constraints.

5.4 Governance Constraints and Subnational Delivery

The findings further reveal significant governance constraints, particularly at subnational levels. Although climate objectives are formally integrated into local planning systems, implementation remains uneven due to limited technical capacity, weak coordination, and resource disparities across districts. This supports existing evidence that multilevel governance systems often struggle to translate national commitments into local outcomes. However, the contribution of this study is to show how governance constraints interact with fiscal and structural limitations, rather than operating in isolation. Weak subnational capacity is not only an administrative issue but also a reflection of broader resource and institutional constraints, reinforcing the overall pattern of constrained ambition.

The findings presented above demonstrate that constrained ambition is produced through the interaction of high institutional ambition with binding structural, fiscal, and governance constraints. This interaction explains why progress is uneven: strong in policy development and adaptation planning, but weaker in mitigation outcomes, financing, and local

implementation. The concept therefore shifts analysis away from single-factor explanations towards a more systemic understanding of climate governance outcomes.

6. Implications for Climate Policy and SDG 13

The findings have implications that extend beyond the Ghanaian context and contribute to broader debates on SDG 13 implementation. First, they suggest that prevailing approaches to assessing climate action which often focused on institutional development and reporting compliance risk overstating progress. While institutional ambition is essential, this study shows that it must be evaluated alongside structural, fiscal, and governance conditions that determine implementation depth. Second, the analysis highlights the need to address structural constraints if mitigation targets are to be achieved. Incremental policy adjustments are unlikely to overcome entrenched carbon lock-in dynamics. Instead, transformative change requires deliberate shifts in energy systems, production structures, and investment patterns. Without such shifts, mitigation will continue to lag behind ambition. Third, the centrality of fiscal constraints underscores the importance of aligning climate commitments with realistic financing strategies. Strengthening domestic resource mobilisation, improving access to international climate finance, and ensuring predictability of funding are critical for scaling both mitigation and adaptation. Without resolving financing gaps, ambitious policy frameworks will remain largely aspirational. Fourth, addressing governance constraints requires strengthening subnational capacity and improving coordination across sectors and levels of government. Effective climate action depends on the ability of local institutions to translate national frameworks into context-specific interventions. This highlights the importance of decentralised capacity-building and resource allocation. A key insight that emerges from this study is that the concept of constrained ambition provides a transferable analytical lens for understanding climate action in other developing country contexts. It emphasises that progress should be assessed not only in terms of policy ambition but also in relation to the structural conditions that enable or constrain implementation. This perspective moves beyond binary assessments of success or failure and instead focuses on the depth and quality of transformation. The foregoing discussions, therefore, highlight that achieving SDG 13 will require moving beyond institutional compliance towards addressing the underlying structural, fiscal, and governance constraints that limit implementation. Without such shifts, climate action is likely to remain ambitious in design but constrained in practice, with implications for the credibility of global climate commitments beyond 2030.

7. Conclusion

This paper assessed progress towards SDG 13 (Climate Action) using Ghana as empirical grounding and developed the concept of constrained ambition to explain the persistent gap between policy commitments and implementation outcomes. The analysis shows that while Ghana has made notable progress in institutionalising climate governance through policy frameworks, planning systems, and international reporting mechanisms, this progress has not translated into equivalent advances in mitigation, climate finance mobilisation, or subnational delivery. Viewing climate governance into interacting components such as institutional ambition, structural constraints, fiscal constraints, and governance constraints, the study demonstrates that outcomes are shaped less by policy absence than by systemic limitations. Institutional ambition is high, but structural dependence on fossil fuels and climate-sensitive sectors slows mitigation; fiscal constraints limit the scale of investments; and governance gaps weaken implementation at subnational levels. These interacting dynamics produce a condition in which climate action is procedurally advanced but substantively constrained. The paper contributes to the climate policy literature by advancing an integrated analytical framework for assessing SDG 13 and introducing constrained ambition as a lens for understanding how multiple constraints jointly shape climate governance outcomes. The findings suggest that achieving SDG 13 will require targeted interventions across all the domains of the analytical framework. It therefore makes the following recommendations. First, accelerating mitigation will depend on deliberate structural reforms, including scaling renewable energy deployment, reducing dependence on fossil fuels, and strengthening land-use governance to address deforestation. Second, closing the climate finance gap will require strengthening domestic resource mobilisation, improving access to international climate finance, and expanding the use of innovative instruments such as green bonds and carbon markets under robust regulatory frameworks. Third, enhancing

implementation will depend on strengthening subnational capacity through increased fiscal decentralisation, technical support, and improved coordination across sectors and levels of government. Finally, aligning institutional ambition with implementation outcomes will require integrating climate objectives more directly into core economic planning and investment decisions, ensuring that policy commitments are matched with realistic delivery mechanisms. Without addressing these structural, fiscal, and governance constraints, climate action is likely to remain ambitious in design but constrained in practice.

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Author Contributions

AA: Conceptualization, methodology, supervision, investigation, formal analysis, writing – original draft, writing – review & editing.

SEE: Data curation, formal analysis, writing – original draft, writing – review & editing.

EFA: Formal analysis, writing – original draft, writing – review & editing.

PSM: Formal analysis, writing – original draft, writing – review & editing.

NoM: Supervision, formal analysis, writing – original draft, writing – review & editing.

HOA: Data curation, formal analysis, writing – original draft, writing – review & editing.

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Figures

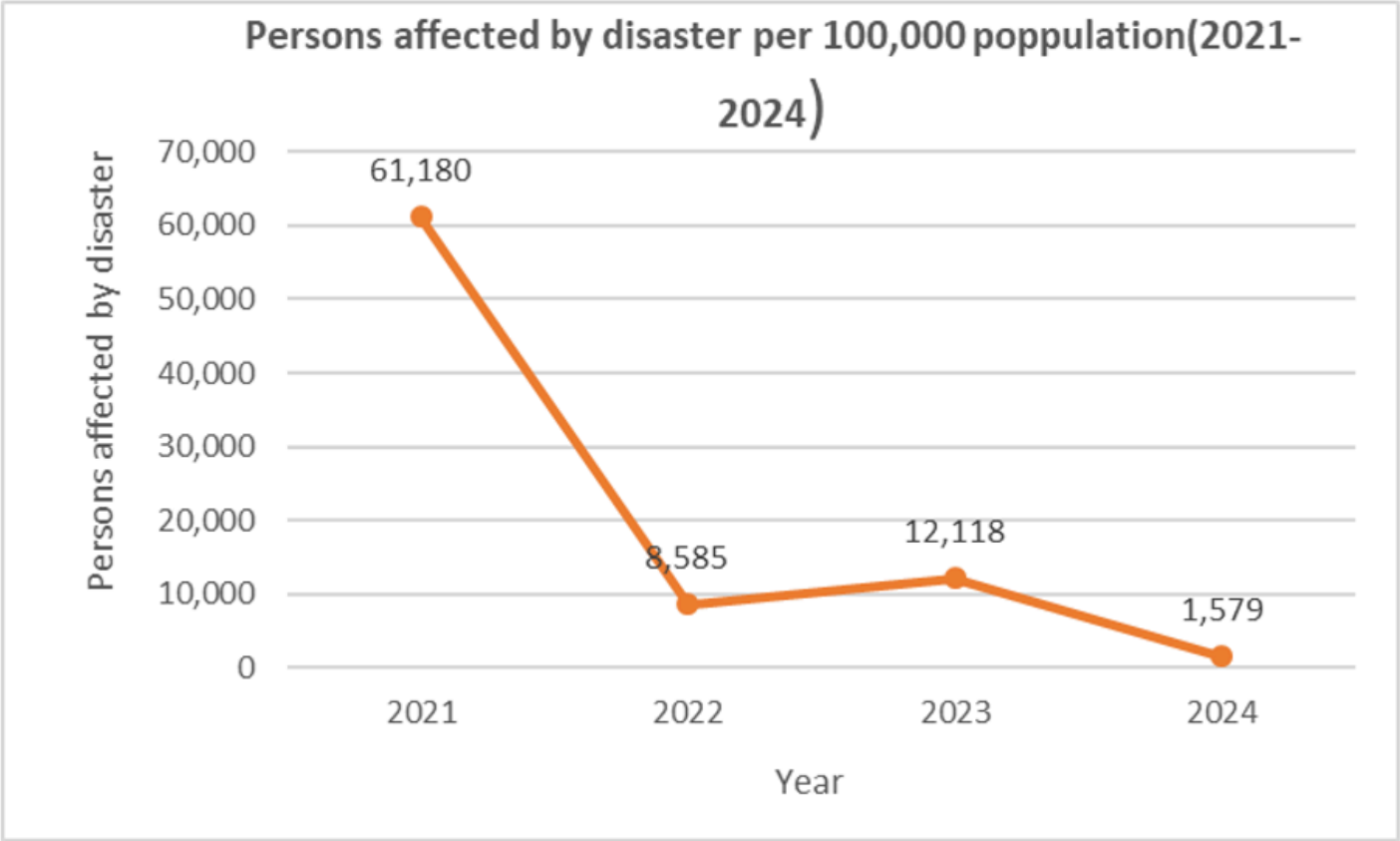


Figure 1

Persons affected by disaster 2021-2024, per 100,000 population

Source: Annual Report, 2024, NADMO

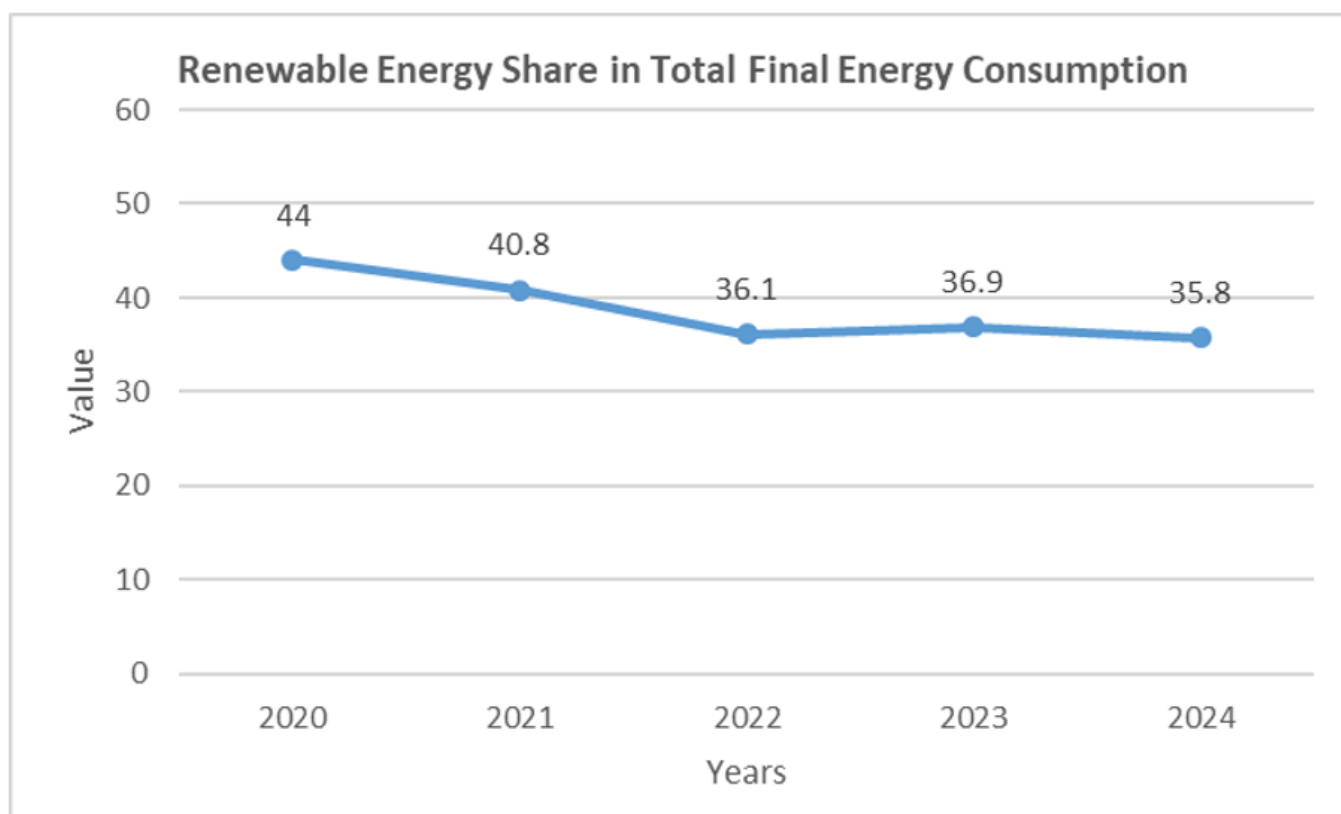


Figure 2

Renewable Energy Share in Total Final Energy Consumption, 2020–2024

Source: National Energy Statistical Bulletin, 2025, Energy Commission