

PDR I/ISSER Policy Brief 1: Diagnosing commitments, contradictions, and realities of Ghana's sustainable energy journey

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Key takeaways:

- Energy has long been known to be a key catalyst for growth and development. In recent times, the choice of energy has become a great concern to the world given its role in our changing climate.
- Ghana, like many countries across the globe, has made commitments to implement certain mitigation actions, amongst them, clean cooking solution and increased renewable energy in the national energy mix.
- However, most of the strategic mitigation targets captured in policy instruments like the national communications to the UNFCCC, have been missed on multiple times. Evidence suggests 'brown' energy projects are preferred by policy makers.
- Global sustainability is an imperative for policy makers in Ghana and the world at large. There is a need to go beyond the policies and commitments on the drawing board to taking proactive actions.

Background

The world was brought to a standstill by the COVID-19 pandemic, starting in the latter part of 2019. Over 420 million people are believed to have been infected and almost 6 million people have lost their lives to the virus as of 21 February 2022, according to the World Health Organization (WHO). Despite the unprecedented challenges COVID-19 has presented to global public health, food systems and the world of work, climate change remains one of the most significant threats to humanity (Elias, 2018). Scientists, naturalists, national policy makers, and international agencies have been urged to cooperate in order to find lasting mitigation and adaptation solutions to climate change, especially for vulnerable groups in developing regions.

One major contributor to climate change is production and use of energy. Final energy is a key source of economic growth and development because nearly all production and consumption activities require it as a basic input (Asghar, 2008; Twerefou et al., 2018). Growth in energy use has been shown to be positively linked to growth in GDP (Stern, 2011; Ayres et al., 2019). Nonetheless, production and consumption of final energy contribute to the global CO₂ emissions stock. The energy sector is estimated to have contributed about 40% of global CO₂ emissions as of 2020, mainly from fossil fuels. The sector had been identified as critical to averting a global catastrophe if sustainable energy production and consumption are increased while consumption of fossil-fuel is reduced. At various United Nations' (UN) Climate Change conferences since Stockholm 1972, countries have pledged to cut national emissions through various mechanisms including the 2015 Nationally Determined Contributions (NDCs). This policy brief assesses Ghana's pledges to mitigate climate change via sustainable energy strategies as documented in various policy instruments against their observable achievements. Policy implications are then drawn out from this assessment.

Conceptualization

The UN expounds the achievement of sustained economic growth, social equity and justice as well as environmental equilibrium for the present generation without diminishing the opportunities of future generations at global, regional, and national levels. As a result, the UN set the Sustainable Development Goals (SDGs) to end global poverty, protect the planet, ensure gender equality and prosperity for all with specific targets ambitiously earmarked to be achieved by 2030. Ensuring sustainable energy as stipulated in SDG 7 (ensuring access to affordable, reliable, sustainable, and modern energy for all by 2030) is central to the achievement of other SDGs. For instance, expanding access to electricity and clean cooking fuels will reduce the dependency of households on solid fuels that are responsible for household-air pollution related deaths, especially in developing countries. This saves money for the household, reduces health burdens on the household and the government, and reduces stress on the environment. Achieving SDG 7 therefore has the potential to reduce poverty, ensure gender equality and social justice, reduce income inequality, and ensure environmental balance.

National position on sustainable energy since 2000

Ghana has a good reputation and track record for producing comprehensive and strategic policy documents. Two prominent energy related documents, the National Communications (NC) to the United Framework Convention on Climate Change (UNFCCC); and the Nationally Determined Contributions (NDCs), are reviewed in this policy brief.

Ghana became a party to the UNFCCC in 1995 and advanced various domestic policies aimed at combating climate change in conjunction with national economic development policies. Since 2001, has Ghana produced and published 4 NCs as its obligations under Articles 4 and 12 of the UNFCCC. These communications present the country's national circumstances and institutional arrangements relevant to climate change; national greenhouse gas inventory; greenhouse gas mitigation assessments; vulnerability, impacts and adaptation assessments; technological development and transfer; research and systematic observations; and the financial, technical, and capacity needs of the country to the UNFCCC. The first NCs in 2001 and 2011 were not very explicit on the mitigation targets, but broadly specified the policy targets that government intended to achieve. The latter two, however, specified clear mitigation targets. Government sought to promote the adoption of clean cooking solutions like Liquefied Petroleum Gas (LPG) fuel and energy efficient cookstoves, increase renewables in the national energy mix, promote the adoption of energy efficient lighting and appliances technologies, switch from crude oil to natural gas thermal plants, and promote institutional biogas usage. A significant observation made in the NCs is that while the main mitigation targets have remained constant over considerable periods, the expected end dates (in years) have often been pushed out. 2020 was the date specified in the NC3 for 50% LPG penetration. It was 2030 in. Similarly, 10% renewables in the national energy mix was earmarked to be achieved by 2020 as stated in NC2. In NC4, the target date was 2030. These shifts in target dates suggest implementation lags which caused targets to be deferred.

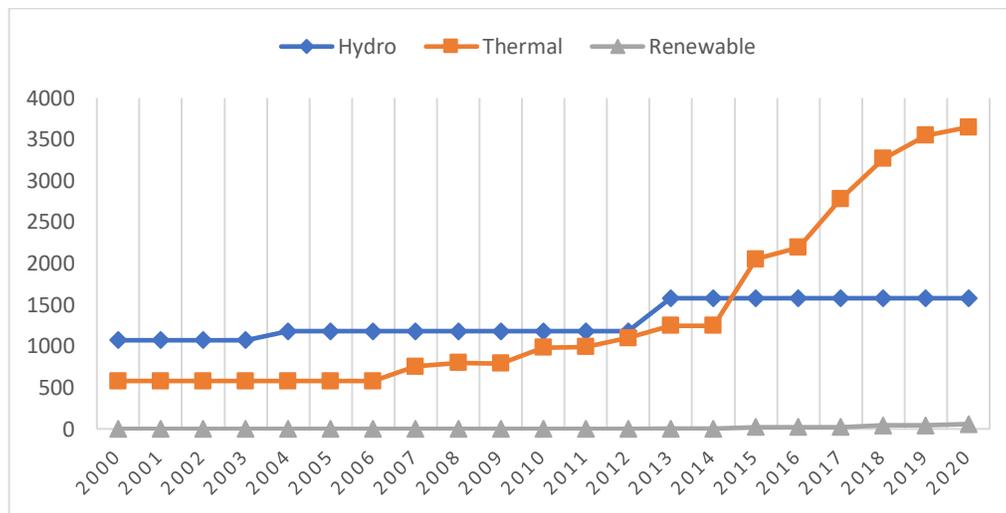
In the 2015 NDCs document and a subsequent update in 2021, energy-related mitigation actions were more target-specified. The government seeks to scale up renewable energy penetration by 10% by 2030, promote clean rural household lighting through a 2 million solar lantern distribution programme, expand LPG penetration by 50% and reach 2 million efficient cookstoves for households, and ensure 20% energy efficiency in power plant and industrial facilities. These policy actions are supported by various policy instruments such as the National Energy Policy, national Renewable Energy Act, Sustainable Energy Action Plan and national Natural Gas Master Plan. Other mitigation strategic plans such as the Nationally Appropriate Mitigation Actions (NAMAs) and National Action Plan to Mitigate Short-Lived Climate Pollutants (SLCPs) have similar strategies as documented in the mitigation instruments above. Clearly, successive governments have responded positively to the development of climate change mitigation strategies and actions. Lack of rigorous implementation of these strategies have been the key challenge.

Mixed commitments to sustainable energy

Insufficient climate change mitigation finance/investment sources and the lack of strong political will have been identified as the topmost constraints to effective implementation of the mitigation strategies discussed in the preceding section (Ali et al., 2021). While most of the strategic mitigation targets have been missed despite existing policy instruments, evidence suggests policy makers are committed to other counter-sustainable energy projects.

After the installed hydro power capacity had peaked at 1580MW in 2013 from the three main sources Akosombo, Kpong, and Bui Hydro Power Plants, investment in thermal facilities soared rapidly, rendering the installed thermal generation capacity the dominant electricity generation source since 2015 (Fig 1). As of 2020, there were as many as 14 installed thermal plants constituting about 69 percent of the total installed generation capacity in 2019 compared to 7 and 8 in 2012 and 2014 respectively. It must be said that the beginning of the dominance of the thermal plants coincided with a period in which Ghana was in desperate need of solutions to the 2012 – 2016 power crisis. For various political, financial, and technical reasons, the government looked to thermal as a guaranteed solution rather than renewables as a sustainable solution.

Figure 1: Installed generation capacity (MW) 2000-2019



Source: Constructed by the author using data from the Energy Commission, Ghana

The thermal plants had initially depended more on crude oil and imported natural gas, predominantly from Nigeria. But since 2015, the thermal plants have used more natural gas with a significant proportion coming from the Atuabo Gas Processing Facility in Ghana. This has been made possible following the commercial production of oil and natural gas from the Jubilee, Twenneboa, Enyenra, and Ntomme (TEN), and Sankofa fields since 2010. This is a noticeable achievement regarding the mitigation strategy of shifting thermal plants onto natural gas.

The downside of the oil and gas discovery and the subsequent commercial production is the possibility of an ‘oil curse syndrome’ where the oil sector attracts more investment, attention, and development to the detriment of other sectors including sustainable energy sources. This is fast becoming the case in Ghana. The oil sector in Ghana has received significant foreign direct investment and is regarded highly by the government for its potential to deliver accelerated growth and development. In 2016, the then Minister of Energy and Petroleum stated that government had projected 80% thermal power generation which would depend on the cheapest source of fuel, gas, in the next 10 years. This pronouncement was received with mixed feelings as some environmentalists questioned the future of renewables in the energy mix despite government’s climate change commitments.

The evidence presented in the preceding sections suggests that the energy sector is at the heart of government. Historical change of governments has shown that the energy sector has the potential to make or unmake a government. The erratic nature of power supply during the 2012-2016 period was judged as one of the contributing factors to the NDC government losing power to the NPP government in the 2016 general elections (Min, 2019). Energy strategies adopted during and after the 2012-2016 power crisis period seem to portray a strong recovery evident in the excess supply of electricity particularly from newly invested thermal plants. But weak supply infrastructure ensured that supply challenges remained. The recent development in the energy sector also reveals a major concern. Government has shown little faith in the sustainable energy strategies outlined. As shown in Table 1, most of the sustainable energy targets set to be completed by 2030 are unlikely to be achieved. Some of the target dates have been changed multiple times already, and are likely to be deferred further.

Table 1: Major energy related targets versus achievement status

Policy targets	Most current state of target	Remarks
Scale up renewable energy penetration by 10% by 2030	The share of renewables in national energy mix was 0.28% by 2020	Target of 10% unachievable by 2030
Increase solar lanterns in rural non-electrified households to 2 million	By 2016, 68,521 solar lanterns distributed to off-grid population nationwide	2 million solar lanterns by 2030 is unlikely; some sources have revealed a revised target of 1 million lanterns by 2030
Scale up adoption of LPG to 50% in peri-urban and rural households by 2030	By 2017, about 24.5% of households in Ghana	Target of 50% unlikely by 2030 due to

	were using LPG for cooking	increasing LPG prices at the pump
Scale up access and adoption of 2 million efficient cookstoves by 2030	It is unknown how many efficient cookstoves are in use by households as of 2021	The target of 2 million efficient cookstoves by 2030 is achievable since such cookstoves are more popular now and more available in the market
Shift to natural gas from crude oil for electricity generation in thermal plants	About 80% of the 95.2 tbtu of natural gas produced, and about 98% of the 24.4 tbtu of natural gas imported are used for power generation	Target on course to be achieved
Scale up of installation of power factor correction devices in 1,000 commercial and industrial facilities	It is unknown how many of the power factor correction devices have been distributed	In 1995, the government enacted a policy to penalise large companies without power factor correction measures. By this policy, such devices would have been installed by some companies, but the number of such installations is unavailable online.
7 million LED bulbs in use by 2030	It is unknown how many LED bulbs are in use as of 2021	LED bulbs have flooded the light bulb market recently. Most households in most towns in Ghana have at least one LED bulb. 7 million LED bulbs by 2030 appears achievable
Prohibit importation of inefficient electronic appliances	There are still energy inefficient refrigerators flooding the appliance market, particularly the used-goods market	Due to lack of strong political will and weak regulatory and enforcement units, this target is unlikely to be achieved by 2030

Source: Author's construct

Policy Lessons

Based on the evidence provided in this brief on the slow development of sustainable energy in Ghana compared to the fast-developing fossil fuel sector, a different set of strategies will be required to give impetus to Ghana's sustainable energy development agenda. The following are recommended:

- **Walk the talk:** It is about time politicians, policy makers, and government officials started acting on their statements. So much had been pledged and promised at the international stage, yet so little has been delivered locally on climate change mitigation actions. Sustainable energy futures will only look bright with stronger political will and commitment.
- **Applying the pressure:** When left to act alone, the government has not delivered desired levels of sustainable energy development in Ghana. All key stakeholders, including the citizenry, the media, environmentalists/naturalists, scientists, academics, pressure groups and civil society need to become more proactive in pressuring government to act in the interest of the environment and climate.
- **Balancing the energy ship:** Despite the overwhelming preference for fossil fuels because of oil discoveries, exploration and their economic benefits, the government needs to deliberately find a balance between economic, social and environmental development, as well as between fossil fuel and sustainable energy development. A continual sacrifice of sustainable energy for fossil development will only compound global environmental challenges.

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