



# A Case Study of Ghana's Power Purchase Agreements

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## Summary

Ghana's electricity sector faces an urgent crisis of immense financial strain that calls for a new, more transparent approach for contracting power in the future. Public information on current contracts is highly limited, which has contributed to overcapacity, weakened sector planning, mounting debt, and rising concerns over public accountability. In order to reduce costs, pay down debt, improve electricity supply, and build a competitive market, much more information should be disclosed to the public about Power Purchase Agreements (PPAs). This case study, written in collaboration with the Institute of Economic Affairs (IEA Ghana), identified 32 PPAs currently in force for the provision of electricity generation. We have summarized the implications of these contracts, and compiled all available public information into a downloadable Annex. The purpose of the case study is to illuminate the problem of non-disclosure in Ghana and encourage future contracts to be far more transparent.

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## Context

In 2011-16, Ghana experienced the 'dumsor' emergency of extended blackouts. While generation has increased and reliability has improved, the electricity sector faces an urgent new crisis of immense financial strain, including a drain on public funds, mounting debt, rising tariffs, and a dearth of investment. The power sector's acute problems call for a new, more transparent approach in order to reduce costs, pay down debt, improve electricity supply, and rebuild public confidence.

Ghana currently has 32 identifiable contracts, or Power Purchase Agreements (PPAs), in force for the provision of electricity generation. Both Volta River Authority (VRA) and the Electricity Company of Ghana (ECG) have PPAs in place with private Independent Power Projects (IPPs). The Ministry of Energy has also contracted PPAs with Emergency Power Producers (EPPs). Known PPAs for operating or near-operational projects number 14 with a total installed power generation capacity of 2,825 megawatts (MW). Of these, two are solar, three are EPPs and the rest are gas or gas/hybrid IPPs. The remaining 18 PPAs with a further installed capacity of 4,107 MW have been signed but are not yet under construction. Of these, eleven are solar, five gas, one biomass, and one sea wave power. Public information on these contracts is highly limited. We have summarized available information into the Annex.

Several factors make many of these contracts problematic. To date, the country has relied almost entirely on unsolicited proposals to source new energy projects and negotiate PPAs, which limits competition and risks higher prices. In addition, most of these contracts were agreed on a take-or-pay basis, which means that the government of Ghana must pay for the generation capacity even if no electricity is consumed. The only publicly-disclosed aspects of these PPAs are the names of the project, contract type, technology/fuel, location, and total project cost. Most information needed to evaluate project viability or understand the substantial fiscal implications of new power procurement is not available to the public. Moreover, the accumulation of multiple contracts with undisclosed details also hampers public understanding of the aggregate effects on the cost, stability, and sustainability of the broader power system.

In addition to the public accountability concerns, non-disclosure of PPAs has also significantly contributed to poor sector planning and coordination. During the 2011-2016 power crisis, ECG committed to 43 PPAs while the Ministry of Energy signed three additional PPAs with EPPs. Some were hastily signed in the lead-up to the 2016 election, partially in an effort to assuage the power crisis, but this left the newly-elected government forced to deal with the fiscal ramifications. These parallel negotiations led to an excess of generation capacity, for which the government was required to pay even though it did not need the electricity. The fiscal burden of these charges pushed the government to review the existing PPAs, during which the Energy Sector Recovery Programme (ESRP) found that based on demand projections no additional power generation would be needed until 2027.<sup>2</sup>

Following this review, the government began an effort to address the sector's financial crisis by renegotiating or restructuring PPAs for many active or near-operational power projects. In some cases, the take-or-pay contract type changed to take-and-pay, which relieved off-takers

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<sup>2</sup> [Energy Sector Recovery Programme \(ESRP\)](#) 2019 Report, page 24.

from the obligation to pay for unused capacity, tariffs were adjusted, and some planned commercial operation dates were rescheduled. The current government terminated 11 PPAs signed by ECG under the previous administration.<sup>3</sup> The public has very little access to information behind any of these contracts. This has incited public dispute about the existence and number of PPAs, as well as the actual impact of the government's PPA terminations.<sup>4</sup>

## PPAs & Electricity Sector Challenges

These 32 PPAs contain obligations and provisions that greatly affect the cost and service quality of Ghana's electricity, have sizable fiscal effects for the public purse, and a substantial impact on infrastructure and industrial planning.

### Non-Competitive Prices

PPAs signed by non-competitive direct negotiation, and in the absence of transparent market price information, often result in higher project costs that pass through to consumers in the form of higher tariffs. Prices may occasionally be a lower priority for the government when PPAs are signed in times of a power crisis, as they were in Ghana, even when outside organizations or the public raise concerns. This was the case for the AMERI deal for example, a 250 MW combined cycle gas plant approved at a staggering cost of \$510 million, or roughly twice the price of comparable projects.<sup>5</sup> After these emergency projects are commissioned, high tariffs create inordinate fiscal burden for consumers and the government. Ghana has some of the highest electricity prices across West Africa,<sup>6</sup> which makes regional economic competitiveness extremely challenging and limits Ghana's ability to export electricity to neighboring countries.

### Fiscal Payments and Accumulated Debt

Build-up of excess capacity charges guaranteed by the government lead to enormous fiscal challenges and threaten the viability of the power sector as a whole. The Public Utilities Regulatory Commission (PURC), which oversees tariff-setting methodology, excludes capacity charges and financing costs from its tariff calculations, adding to the shortfall. In 2018, excess generation capacity contracted under take-or-pay PPAs cost the government \$320 million in capacity charges, estimated to increase to \$620 million annually with the addition of new plants in 2019.<sup>7</sup>

These unused supply charges are one of the most significant sources of financial strain on the sector.<sup>8</sup> Cumulative net sector debt was \$2,748 million in 2018, with 30% payable to the private

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<sup>3</sup> Michael Creg Afful, "[Gov't terminates 11 Power Purchasing Agreements signed under Mahama](#)," Ghana News, September 21, 2018.

<sup>4</sup> Peace FM, "[Produce details of 11 cancelled PPAs - Amewu, Gabby et al challenged](#)," Ghana News, April 11, 2019.

<sup>5</sup> Bright Simmons, "[IMANI Insight: The AMERI Power Deal Was Over Priced And Over Paid](#)," IMANI, April 10, 2017.

<sup>6</sup> The latest tariffs for industry can be as high as \$0.22/kwh and up to \$0.43/kWh for mining firms. See [PURC notice](#), June 2019.

<sup>7</sup> ESRP, page 19.

<sup>8</sup> Caused by many factors including excess capacity charges, gas supply, non-payment of electricity bills by some Ministries, Departments and Agencies (MDAs), technical and commercial losses, electricity tariffs that do not cover all associated costs of the sector, delayed application of the Automatic Adjustment Formula (AAF), and delays in gas infrastructure completion.

sector. This sum is equivalent to 33% of the government's 2018 tax revenue, highlighting the scale of the financial burden. The government was forced to issue two series of bonds totalling GHS 5.66 billion in 2017 and 2018 to pay 50% of legacy debt owed to several energy sector actors, including various banks, VRA, ECG, and the Northern Electricity Distribution Company (NEDCo). Left unresolved, the sector's total shortfalls are projected to accumulate to over \$12.5 billion by 2023.<sup>9</sup>

## Renegotiation Risk

The government renegotiated several PPAs due to the effects of their excess capacity charges and the high cost of plants and tariff rates. This initiative began in 2018 after a review committee recommended that the government:

- Terminate 11 PPAs at a cost of \$402 million, instead of maintaining them and paying an annual average capacity cost of \$586 million over the next 13 years;<sup>10</sup>
- Maintain eight PPAs with a total capacity of 2,070 MW;
- Postpone seven PPAs with a total capacity of 2,960 MW.

These and the other operating hydro and VRA plants will add up to 11,000 MW installed capacity -- far in excess of the 2,900 MW estimated peak demand. This renegotiation will save the country money, but perhaps at the cost of investor confidence if the sector remains over-supplied and contracts are subject to regular renegotiation.

The Minister of Finance's budget statement in 2020 revealed that detailed legal and financial analysis and Electricity Sector Reform Programme (ESRP) consultation were conducted for 15 existing and near-operational power projects. These consultations resulted in several strategic interventions currently under consideration to improve efficiency and lower costs, such as reducing capacity charges. A moratorium has since been placed on signing new PPAs, Gas Supply Agreements, Put-Call Option Agreements and long-term take-or-pay contracts. The government is now requiring that all future PPAs be conducted through open and transparent competitive procurement processes.

## Governance Concerns

The public is unaware of the existence of most PPAs signed by ECG, and essential details of the few that are known to exist are not fully disclosed. Since the public is obstructed from the information needed to understand these agreements, they cannot hold electricity providers accountable, or trust future government decisions. Parliament even struggles to progress PPAs in the chamber for approval, potentially due to fear of disclosure allowing criticisms to prevent an agreement. In some instances, as in the case of Karpower's transactions during the 2011-2016 power crisis, individual Members of Parliament had to ask the courts to compel the

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<sup>9</sup> ESRP, 2019, page 31.

<sup>10</sup> "[Gov't cancels 11 power agreements ...state to pay US\\$402m in settlement](#)," Reporting Oil and Gas, November 21, 2017. An additional [\\$134 million judgement](#) was made against the government in February 2021 for cancellation of one contract.

government to present PPA deals to Parliament.<sup>11</sup> Concealed PPA agreements also encourage public suspicions of corruption.

## Unreliability

Though PPAs have contributed to excess generation capacity relative to demand, Ghana still suffers from unreliable electricity and intermittent blackouts. This is due in part to a fuel supply gap to run thermal generators. The government struggles to consistently fuel the plants, while State Owned Enterprises have accumulated gas-related debts in the sector.<sup>12</sup> At times, firms have threatened to cut gas supply when debts were not paid. In 2018, Nigeria reduced the flow of gas through the West African Gas Pipeline in order to force the government of Ghana to offset its debt.<sup>13</sup> This induced several blackouts in the country, which had a major effect on businesses and the economy at large.

The high number of solar PPAs in the pipeline -- 11 projects with more than 1,000 MW of installed capacity -- also raise potential future reliability questions if there are no corresponding investments to upgrade the transmission system or invest in storage. Other countries, such as Kenya, have struggled to maintain grid stability with increasing penetration of intermittent sources of power. Lack of clarity over Ghana's solar PPAs add to this uncertainty and hamper planning to build grid flexibility and resilience.

## Inhibiting Power Sector Planning

PPAs are often signed for durations of 25 to 30 years. The long-term nature of these contracts coupled with their lack of transparency makes power sector planning difficult, and can derail Ghana's strategic sector goals. This is heightened in an era of a rapid technological change and the global shift to intermittent wind and solar energy sources amidst climate concerns. In the race to a low carbon future, Ghana aims for 10% of total generation from renewable sources by 2030.<sup>14</sup> But since existing PPAs created an oversupply of conventional sources alone, the sector may already be too crowded to significantly grow renewable power. Any further attempt to increase renewable generation may need to wait until a thermal plant retires or a PPA expires. Issuance of renewable generation licenses has halted since October 2018, and only 3 of the existing 124 licenses have been developed.

## Current Legal Structure Regarding PPAs

Ghana does not have a comprehensive legal document regarding PPAs. However, the Constitution, along with several other regulations provides some legal framework for PPAs. The Energy Commission Act (1997) and the Public Utility and Regulatory Commission Act (1997) govern sector participation and established the Energy Commission. The Commission's primary mandates are sector planning and issuing licenses across generation, transmission and distribution, and IPPs. Licenses are issued based on supply and demand projections, then

<sup>11</sup> [Yeboah v Electricity Company of Ghana and Others\] GHASC 42](#), Ghana Legal Information Institute, July 28, 2016.

<sup>12</sup> Citi FM, "[VRA debt owed Ghana Gas hits \\$735 million](#)," Reporting Oil and Gas, February 20, 2019.

<sup>13</sup> Gbenga Bada, "[Nigeria reduces gas supply to Ghana by 50% over \\$40.3million debt](#)," Business Insider, April 5, 2018.

<sup>14</sup> ESRP, 2019, page 16.

gazetted and published in the media. There is also a provision to maintain a publicly available register of awarded licenses. Under the Public Utility and Regulatory Act (1997), PURC develops the tariff guidelines and approves tariff rates.

The Renewable Energy Act of 2011 creates a separate legal framework to increase electricity generation from diverse renewable sources. The Ministry, Energy Commission, and PURC each have separate responsibilities under this legislation, but use a collaborative approach for attracting investments. The Act's provision for a feed-in tariff (FIT) scheme concerning public FIT rates, renewable energy purchase obligation, and transmission and distribution is applicable to PPAs and disclosure concerns. PURC regulates tariff rates and ensures the integration of relevant renewable energy projects into the power system. FIT rates are approved and published by PURC in the gazette and in at least one national newspaper. No electricity distribution utility can negotiate a PPA with an electricity generator or buy power from a generator without the written approval of PURC.

The Energy Commission gives recommendations for exemptions from customs, levies and other duties, and for suitable equipment. In consultation with PURC, the two bodies also recommend financial incentives for development, production and utilisation of renewable projects. By these recommendations, the minister may use legislative instruments to regulate the conditions of licenses and fees, and prescribe standards for construction, operation and maintenance of facilities and installations. Provisions for license modification and Alternative Dispute Resolution (ADR) are also considered in the Renewable Energy Act.

Articles 181(5) and (6) in the Constitution grant that any state activity concerning international business including guarantees or loans must be approved by Parliament. The Public Procurement Act of 2003 (Act 663) as amended by the Public Procurement Act of 2016 (Act 916) enjoins State Owned Enterprises, Ministries, Departments, and Agencies in procurement procedures. The Act allows for high confidentiality and non-disclosure, however. Applications, negotiations and discussions are all confidential, and breaching this confidentiality is a legal offense. According to the Section 95 of the Act, the Public Procurement Authority ensures that administration rulings are promptly made available to the public. The amended Act in Sections 96 (1) and (2) also indicates that any international grant or loan to the government is "subject to prior review and 'no objection' of procurement procedures by the Authority."

Corruption practices are subject to Article 284 of the Constitution and the Criminal Offenses Act of 1960 (Act 29). However, the recently passed Right to Information Act is yet to be enforced. MPs who must vote to approve a government guarantee attached to any PPA may see the contract, but must sign a nondisclosure agreement.

Through the ESRP and World Bank-supported Energy Sector Transformation Initiative Project (GESTIP), the government has taken steps to ensure future PPAs are signed through competitive tendering to heighten transparency. The Ministry of Energy developed a Policy Guidance for Least Cost Fuel Procurement and the Policy for Competitive Procurement of Energy Supply and Services Contracts, which mandates the procurement of electricity to align with demand and supply forecasts, and ensures that additional capacities are subject to open,

competitive processes.<sup>15</sup> It is still unclear, however, whether these policy changes will lead to greater transparency of PPAs.

## Barriers to PPA Transparency in Ghana

As with sovereign borrowing and oil contracts, greater transparency of PPAs would help generate market competition, enhance planning, improve sector governance, and encourage citizen accountability of public officials. However, PPA disclosure faces several barriers.

### Politics of Government Cycles

Political influences on the timing of power sector decisions are a major barrier to greater transparency. New administrations often reveal previous flaws, but remain silent about current issues - leaving citizens unaware of the state of the power sector. The government does not disclose information regarding sector failures, such as erratic power supply or a nationwide electricity crisis, in order to avoid unfavorable public opinion. Recent political cycles have demonstrated that the power sector is largely driven by the biases of the current ruling government, leaving little incentive to promote transparency for the future.

### Policy Does Not Sufficiently Promote Transparency

Current laws provide no regulation or requirement for public disclosure of PPAs. Though some details are released to the public, these are generally far from adequate to enable citizens to understand what exactly has been signed on their behalf. At times disclosure is actually illegal, as indicated in the Public Procurement Act. Transparency in contract negotiations particularly has been overlooked, leaving the public under the impression that contracts are strictly confidential.

### Commercial Confidentiality

Some legitimate rationales exist for contract details to remain private, especially during the negotiation process. However, other global experiences with oil contracts and government procurement, suggest the needs for keeping details confidential are far more limited than often argued and are easy to implement with no direct cost to the government. Most of the core details in PPAs could be released without violating commercial privacy and with the effect of enhancing competition to the public benefit. Credible international firms should welcome transparent markets, while the government should question why some firms might prefer non-disclosure.

### History of State Monopoly

Previously, the power sector was bundled and the state had absolute control over generation, transmission, and distribution. The sector was completely opaque, and nothing was available to the public. Any mention of electricity was minimal, beyond a major power crisis or a tariff

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<sup>15</sup>Ministry of Energy, "[Policy Guidelines for Least Cost Fuel Procurement & Competitive Procurement of Energy Supply & Services Contracts](#)," May 7, 2019.

review. However, it has since been unbundled, allowing local and international private firms to work with state institutions. The sector now requires a new approach to transparency, especially with the involvement of new firms, and is now more capital intensive. Transparency is essential for Ghana to work with these outside firms, and to maintain public approval.

## Conclusion

Ghana could take a major step forward in building a low-cost, competitive, and sustainable power sector by committing to disclosure of future PPAs. This would level the playing field for all firms, reduce the governance and investment risks in the sector, and help to build public confidence about the government's management of a sector that is crucial to all national goals.



## Annex: List of Ghana's PPAs & Disclosed Information

Disclosure/ Plant	Project Name & Location	Status	Award Process	Signatories	Dates			Technology	Installed Capacity (MW)	Guarantees	Payment obligation
					Signed	Commission	Term				
Sunon Asogli Power Co.	SAPP I, Tema (GA)	O	D			Sep, 2011		Gas (C)	200		T or P
Sunon Asogli Power Co.	SAPP II, Tema (GA)	O	D			Mar, 2017		LCO/Gas (CCG)	330		T or P
Karpower Ghana Ltd.	Karpower, W. Takoradi (EPP)	O	D		5 Jun, 2014	Sep, 2019		HFO (CCG)	470		T or P
AKSA Energy Ghana	AKSA, Tema (GA) (EPP)	O	D		2015	Aug, 2017		HFO (CCG)	370		T or P
Cenpower Generation Company	Cenpower, Tema (GA)	O	D		6 Jun, 2012	Jun, 2019		LCO/Gas (C)	360		T or P
Amandi Energy	Amandi, Tema (GA)	O	D		31 Jul, 2013	Completed, TBD		LCO/Gas (CCG)	194		T or P
Meinergy Solar	Meinergy Solar Plant, Winneba	O	D			Sep, 2018		Solar	20		T & P
Cenit Energy Limited	CENIT, Tema (GA)	O	D			Oct, 2013		LCO/Gas (CCG)	126		T or P
Early Power Ltd	Early Power	U	D		Oct 2016	Jan, 2024*		LPG/Gas (C)	405.5		T or P
BXC Co.	BXC Solar, Winneba	O	D			Jan, 2016		Solar	20		T & P
Safisana Company Ltd.	Safisana, Ashaiman (GA)	O	D			Sep, 2016		MSW-Landfill Gas	0.1		T or P
Trojan Power Ghana	Trojan	O						Diesel/Gas	44		
Ameri Power	Ameri, W. Aboadze (EPP)	O				Feb, 2016		Gas (C)	250		
Marinus Energy Ltd.	Marinus, W. Atuabo	U			2015	Jan, 2021*		Gas (CCG)	35		
Corks Energy Ltd.	Tema Industrial Area	P			N/A			LCO/Gas (CCG)	420		
Jacobsen Jelco Ghana	Aboadze	P			20 Dec, 2012			LCO/Gas, (CCG)	360		
Astro Power Ltd.	Takoradi	P			13 Oct, 2014			LCO/Gas, (CCG)	390		

Chrispod Hydro Power Ltd.	Aboadze	P			13 Oct, 2014			LCO/Gas, (CCG)	350		
Rotan Power	Takoradi	P			13 Dec, 2014			LCO/Gas, (CCG)	550		
Windiga-IDC Energy Ltd.	Tilli	P						Solar	20		
TC's Energy Ltd.	Ada (GA)	P						Wave	1,000		
Sun Investment Ltd.	Sede (GA)	P						Solar	100		
Savanna Solar Ltd.	N. Kusawgu	P						Solar	400		
WhiteCap Development Ltd.	N. Tampion	P						Solar	100		
Signik Energy Ltd.	N. Bodi	P						Solar	50		
Avior Energy Ltd.	Jema, Brong Ahafo	P						Solar	70		
TFI Company Ltd.	Mahe-Obomshai	P						Solar	30		
Upwind Ayitepa Ltd.	Ayitepa (GA)	P						Wind	225		
Energy One Gh. Ltd.	Prampra (GA)	P						Solar	157		
Sada Solargiga Power Company Ltd.	N. Nabogu	P						Solar	40		
Global Innovation Consortium	N. Tamale	P						Solar	50		
African Plantations for Sustainable Development Ltd.	Atebubu, Brong Ahafo	P						Biomass	60		

**Abbreviations:** (Location) GA= Greater Accra; EPP = emergency power producer, (Status) O=Operating, U=Under Construction, P=Pre-construction; (Award) D= Direct Negotiation; (Technology) C=Combustion, CCG=Combined Gas Cycle; (Payment) T or P= Take or Pay, T & P = Take and Pay, Blue = undisclosed or unavailable

\*Proposed commissioning date

Source: Energy Commission