

Electricity Regulation

in Ghana

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Contributors

Ghana



Kafui Quashigah
kafui@kimathilegal.com
Kimathi & Partners Corporate Attorneys



Kimathi Kuenyehia, Sr
kimathi@kimathilegal.com
Kimathi & Partners Corporate Attorneys



Kojo Amoako
kojo@kimathilegal.com
Kimathi & Partners Corporate Attorneys



Sarpong Odame
sarpong@kimathilegal.com
Kimathi & Partners Corporate Attorneys



REGULATION OF ELECTRICITY UTILITIES – POWER GENERATION

Authorisation to construct and operate generation facilities

What authorisations are required to construct and operate generation facilities?

By virtue of the Energy Commission Act, participation in any segment of the power sector, either for generation, transmission, wholesale supply, distribution or sale of electricity, requires a licence.

The Energy Commission is required to make a decision regarding any application within a maximum period of 16 days. Applications will be granted as a matter of course unless there is compelling reason not to do so. Such reasons must be founded on technical data, national security concerns, public safety or any other reasonable justification.

Generators wishing to be connected to the transmission system must enter into an electrical connection agreement or transmission services agreement with GridCo.

Under the Renewable Energy Act, every person who intends to engage in a commercial activity in the renewable energy sector requires a licence. The commercial activities in the renewable energy industry are production, transportation, storage, distribution, sale and marketing, importation, exportation and re-exportation and installation and maintenance.

The licensing requirements are subject to compliance with the Energy Commission (Local Content and Local Participation) (Electricity Supply Industry) Regulations, 2017 (L.I. 2354) which apply to all persons engaged in the energy supply industry.

Grid connection policies

What are the policies with respect to connection of generation to the transmission grid?

The policy for the transmission market is to provide an adequate, safe and reliable electricity transmission network. To achieve this, the Board of the Energy Commission in 2008, put in place the Electricity Transmission (Technical, Operational and Standards of Performance) Rules, 2008 (the Transmission Rules). The purpose is to establish the requirements, procedures, practices and standards that govern the operation and use of the NITS.

Under the Transmission Rules, GridCo is required to operate the NITS to offer fair, transparent, open access and non-discriminatory services to grid participants.

In order to connect to the NITS, the operator of a generation facility is required, among others, to design, install and maintain its plant and equipment to meet the requirements of the connection requirements of GridCo. Further, the operator must operate its plant and equipment in accordance with dispatch instructions of GridCo and to meet system performance and reliability requirements in a manner that is consistent with the reliable operation of the transmission system.

Alternative energy sources

Does government policy or legislation encourage power generation based on alternative energy sources such as renewable energies or combined heat and power?

Available renewable energy sources

In Ghana, the government has policy and legislation frameworks to encourage power generation based on alternative energy sources. It is government policy to increase access to modern forms of energy. The Implementation of the Renewable Energy Master Plan reinforces governments desire to increase the utilisation of renewable energy sources.

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According to the Renewable Energy Act, renewable energy includes energy obtained from non-depleting sources including wind, solar, hydro, biomass, biofuel, landfill gas, sewage gas, geothermal energy and ocean energy. Ghana is well endowed with renewable energy resources, particularly biomass, solar, wind energy resources, and to a limited extent mini-hydro.

The goal of the renewable energy sub-sector is to increase the proportion of renewable energy, particularly solar, wind, mini hydro and waste-to-energy in the national energy supply mix and to contribute to the mitigation of climate change.

The development and use of renewable energy and waste-to-energy resources have the potential to ensure Ghana's energy security and mitigate the negative climate change impacts of energy production and use as well as solve sanitation problems.

Biomass is Ghana's dominant energy resource in terms of endowment and consumption. Biomass resources cover about 20.8 million hectares of the 23.8 million hectare land mass of Ghana, and is the source of supply of about 60 per cent of the total energy used in the country. The vast arable and degraded land mass of Ghana has the potential for the cultivation of crops and plants that can be converted into a wide range of solid and liquid biofuels.

The production, transportation, sale and pricing of wood fuels are all undertaken by the private sector except for taxes and levies, which are regulated by local government authorities. The wood fuels business will continue to be operated and managed by the private sector.

The development of alternative transportation fuels such as gasohol and other biofuels can provide substitute fuels for the transportation sector and help diversify and secure future energy supplies of Ghana.

The major challenge in biomass energy supply is how to reverse the decline in the wood-fuel resource base of the country and further sustain its production and use by improving the efficiency of production and use.

The biomass policy focuses on improved production and efficient use of biomass in the short term while increasing regeneration and fuel substitution in the medium to longer term, as well as shifting from the use of biomass to alternative sources of energy.

By virtue of its geographic location, Ghana is well endowed with solar resources that could be exploited for electricity generation and low heat requirements in homes and industries. Solar energy utilisation has, however, been limited owing to its comparatively higher cost.

The government is committed to improving the cost-effectiveness of solar and wind technologies by addressing the technological difficulties, institutional barriers, as well as market constraints that hamper the deployment of solar and wind technologies.

A major challenge in the development of solar and wind is the high cost of these energy sources owing to the current state of their technology.

Waste-to-energy projects have become a very important mechanism for the management of the growing sanitation problem facing urban communities as well as a means of contributing to energy supply and security. Significant amounts of wastes are generated in Ghana. These include municipal waste (both solid and liquid), industrial waste and agricultural waste.

There are many energy technologies which can convert these waste materials into electricity, heat and fuel. The conversion technologies include combustion, gasification, pyrolysis, anaerobic digestion, fermentation and esterification.

Some waste-to-energy technologies that have been developed in Ghana are anaerobic fermentation of municipal waste and industrial liquid wastes to produce biogas for heating and electricity generation, combustion of solid wastes to produce electricity in combined heat and power (CHP) systems.

Government policies and legislative framework

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The Renewable Energy Act is the most recent energy related legislation geared towards the encouragement of Ghana's drive to boost the renewable energy sector in Ghana.

The key policy focus is to engage Ghanaian engineers and scientists to cooperate with other experts to bring down the cost of renewable energy technologies in order to make them competitive as well as creation of fiscal and pricing incentives to enhance the development and use of renewable energy. Renewable energy technologies that are competitive will be promoted.

The government intends to diversify the national energy mix by implementing programmes to support development and use of renewable energy sources. Under the Renewable Energy Act, there are financial incentives (including a lucrative feed-in tariff) for renewable energy projects.

More specifically, the PURC has the power to mandate feed-in tariffs for renewables which includes a requirement that, for each energy purchase, an offtaker will have to obtain a certain per centage from renewable sources to benefit. The commission is tasked with recommending exemptions from taxes, duties and levies with respect to machinery, equipment and other input into renewable projects.

The feed-in tariff set by the PURC remains in force for a 10-year period and subsequently subject to review, every two years thereafter.

Free zone developers and enterprises granted licences under the Free Zones Act are exempted from the payment of income tax on profits for the first 10 years. The income tax rate after 10 years does not exceed a maximum of 8 per cent of the profit.

The benefits enjoyed by operators in the free zones include guarantee against expropriation, unconditional transfers of profits, dividends, charges and fees, remittances and other payments through an authorised dealer bank in free convertible currency.

Climate change

What impact will government policy on climate change have on the types of resources that are used to meet electricity demand and on the cost and amount of power that is consumed?

Environmental concerns are a prominent part of every industry today and the electric power industry is no exception. Climate change emerged on the political agenda in the mid-1980s with the increasing scientific evidence of human interference in the global climate system and with the growing public concern about the environment.

Electricity supply is currently vulnerable to climate change. About 67 per cent of electricity generation in the country is from hydropower and 33 per cent is from thermal generation using diesel (Energy Statistics 2006), with a small contribution (less than 1 per cent) from small-scale solar systems. By 2020 the energy supply is expected to be more diversified, according to the National Energy Plan for 2006-2020 and the Renewable Energy Master Plan, with a larger contribution from natural gas and renewables and, potentially, from nuclear power.

The production and use of energy impact on the environment and global climate in varying degrees. The exploitation of biomass for energy purposes results in deforestation, while the use of fossil-based fuels contributes to climate change.

Ghana's participation in the Stockholm Conference in 1972 signified the beginning of the country's desire and willingness to make concerted and conscious efforts at the management of its environment.

At the Earth Summit in Rio de Janeiro 20 years later, Ghana and the world moved closer to the objective of living in harmony with our environment by signing the Rio Conventions.

Before a person undertakes any activity or operation in relation to electricity, that person must obtain the necessary environmental approvals and permits valid for a period of 18 months. The EPA will not grant an environmental permit unless the applicant submits an environmental impact assessment (EIA).

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In addition to the granting of a licence by the Energy Commission, before any project can take place, the EPA must give a permit for the project after a detailed environmental impact assessment has been carried out as regards the potential effects of the project on the environment.

Ghana generates most of its power from hydroelectric facilities, which do not cause emissions of harmful elements into the atmosphere. But their large reservoirs have some impact on the environment by flooding large areas, dislocating people, changing the ecology and causing silt formation.

Transmission lines may require intrusion on natural areas. They may be visible from scenic areas or intrude on residential neighbourhoods. They may destroy or disrupt wildlife habitats. Therefore prospective operators in the electricity market seeking to obtain licence must provide environmental disclosure to the Energy Commission. Prior to construction, the applicant must acquire siting clearance (siting permit).

The applicant for licence must provide an EIA report certified by the EPA and an environmental permit or permanent environmental certificate issued by the EPA.

The government's policy on climate change is that there will be a shift towards generation from renewable energy sources. Thermal generation using crude oil will shift towards the use of natural gas. Consumption of power will decline owing to energy conservation methods and cost of electricity might increase owing to the high cost of generation from using renewable energy technologies.

The medium-term policy objectives for the achievement of the energy sector goals include steps to minimise environmental impacts of energy supply and consumption through increased renewable energy and efficient energy delivery.

The government's strategic goal is to ensure that energy is produced, supplied and used in an environmentally sustainable manner. The strategies will focus on the conduct of strategic environmental assessment and EIA studies and social impact assessment studies of all energy projects, with associated adaptation and mitigation plans for environment and climate change.

The government's policy on climate change in relation to the energy sector includes the following resolutions:

- to adopt an inter-sectorial approach to energy planning and development that integrates energy development with energy conservation, environmental protection and sustainable utilisation of renewable energy resources;
- to reduce the pressure on forests for wood-fuels and encourage the use of renewable energy resources in order to reduce the use of fossil energy;
- to ensure that rigorous feasibility studies are undertaken for hydro-electricity facilities and other significant generating facilities all of which must be subjected to environmental impact assessment; and
- to maximise the use of the nation's hydrocarbon resources in the production and distribution of energy.

Storage

Does the regulatory framework support electricity storage including research and development of storage solutions?

Ghana's Renewable Energy Act provides a regulatory framework which supports electricity storage, research and development. The regulatory framework mandates anyone who seeks to engage in any storage or other commercial activity in the renewable energy industry to obtain a licence to be granted by the Energy Commission. The licence may require the installation of a suitable facility for the storage of the renewable energy, which suitability shall be determined by the Energy Commission.

The establishment of the Renewable Energy Fund and Energy Fund is to promote research and development of storage solutions. The objects of these funds is basically to provide financial resources for the promotion, development,

sustainable management and utilisation of electricity and renewable energy sources.

The funds are primarily applied to the provision of financial incentives, feed-in tariffs, capital subsidies, equity participation, etc, for projects related to the development and utilisation of energy resources including storage solutions.

Government policy

Does government policy encourage or discourage development of new nuclear power plants?
How?

Policy framework

In 1964, Ghana decided to undertake the Ghana Nuclear Reactor Project. The project was intended to introduce nuclear science and technology into the country and to exploit the peaceful applications of nuclear energy for national development.

At present, the government's policy is to diversify the energy mix by exploring options to develop nuclear energy. The goal is to develop nuclear power as an option for electricity generation in the long term.

Ghana has participated and is still participating in coordinated research projects with the International Atomic Energy Agency (IAEA) which helps to increase the nuclear knowledge base of the country. Ghana Atomic Energy Commission (GAEC) is in close contact with other International Nuclear Agencies such as Global Nuclear Energy Partnership.

Nuclear Power Planning Committee (NPPC) involving stakeholder institutions was established in 2008 for the formulation of the nuclear power policy and development of the basic elements of nuclear infrastructure. Based on the NPPC's recommendations, the government took a cabinet decision in 2008 to introduce nuclear energy into Ghana's energy mix.

In line with this objective, the Ghana Nuclear Regulatory Authority was established with a mandate to develop regulations for the licensing of, and guidance during the construction and operation of, a nuclear facility.

Human resource capacity building currently in place is in two forms (ie, degree and non-degree awarding programmes).

In the degree awarding category, the GAEC has established a Graduate School of Nuclear and Allied Sciences in collaboration with the University of Ghana with assistance from the IAEA to award masters and PhD degrees in nuclear science.

The non-degree training programmes involve the use of the 30kW research reactor in teaching and training of scientists and technicians in the field of reactor operation, physics, safety, engineering, maintenance etc.

IAEA has also formulated technical cooperation projects such as GHA0008; planning for sustainable energy development, GHA0009; human resource development and nuclear technology support, GHA0011, etc to up the country's nuclear knowledge base.

Ghana participates in IAEA training courses and workshops on national, regional and international levels.

Legal and regulatory framework

The Atomic Energy Commission Act 2000 (Act 588) provides the legislative framework for nuclear power in Ghana. The Act deals with national energy policy including economic and commercial considerations, with a clear designation of responsible institutions or bodies, including their relationships with nuclear power.

The Atomic Energy Commission is the independent regulatory authority responsible for the safety, security and safeguards of nuclear power. This includes a system of licensing, inspection and enforcement covering all subject areas of nuclear law.

At the international level, there are some basic international legal instruments that Ghana has to ratify and implement to show commitment to peaceful use and application of nuclear technology.

ACQUISITION AND MERGER CONTROL – COMPETITION

Responsible bodies

Which bodies have the authority to approve or block mergers or other changes in control over businesses in the sector or acquisition of utility assets?

The Energy Commission has the power to approve or block mergers or other changes in control over businesses in the sector. The commission requires that all operators are licensed. Licences granted by the commission are not transferable except with the prior written approval of the Energy Commission. Whenever a merger occurs, a new licence has to be applied for.

However, no licence is required where the entities were named, and the fact of the merger was mentioned, in the regulations of the licensed operator or in the application for the licence.

To avoid double licensing in the event of a merger, the merging entities are required to prepare a single corporate module or structure that reflects the merger.

Review of transfers of control

What criteria and procedures apply with respect to the review of mergers, acquisitions and other transfers of control? How long does it typically take to obtain a decision approving or blocking the transaction?

An operator must apply to the Commission for permit where:

- there is any change in its directors or corporate structure;
- there is transfer of a part of the utility; or
- there is modification of the plant or capacity.

A licensed operator that intends to undergo a merger must state that in its application for a licence specifying the new corporate identity. The non-licensed company merging with a licensed operator must demonstrate to the Commission that it has all the technical and financial capacities to operate as an independent power operator.

Prevention and prosecution of anti-competitive practices

Which authorities have the power to prevent or prosecute anticompetitive or manipulative practices in the electricity sector?

The current legal regime does not make any express provisions for the regulation of anticompetitive practices in the electricity market. However, the PURC is mandated to promote fair competition among public utilities. The PURC is responsible for competition regulation and quality.

Anti-competitive practices occur only in the wholesale market. The independent system operator has the authority to prevent these practices in the electricity sector. The Energy Commission has the power to withdraw the licences of operators or refer operators to the attorney-general for prosecution.

The Energy Commission is empowered to promote and ensure uniform rules of practice for the transmission,

wholesale supply, distribution and sale of electricity.

Determination of anti-competitive conduct

What substantive standards are applied to determine whether conduct is anticompetitive or manipulative?

The market rules that exist in the wholesale market are the standards that are applied in determining anticompetitive or manipulative conduct. Currently, GridCo has a draft version of the market rules.

In determining anticompetitive or manipulative conduct, the Energy Commission and the PURC apply their own benchmarks. They also apply the various legislative instruments and licensing conditions as well as international best practices.

Preclusion and remedy of anti-competitive practices

What authority does the regulator (or regulators) have to preclude or remedy anticompetitive or manipulative practices?

The PURC has the statutory power to handle competition in the electricity market. The system operator handles the wholesale market.