Frequently Asked Questions (FAQs)

Questions about Cenpower's Kpone Independent Power Project ('KIPP')

Q: When will construction start and how long will it take to build?

A Notice To Proceed (NTP) on construction work was granted on 23rd December 2014 with a target completion date before the end of 2017.

Q: What is a CCGT? What are the benefits of this type of technology? Is this the first of its kind in Ghana?

A Combined Cycle Gas Turbine ('CCGT') is a form of highly efficient energy generation technology that combines a gas-fired turbine with a steam turbine. The design uses a gas turbine to create electricity and then captures the resulting waste heat to create steam, which in turn drives a steam turbine, significantly increasing the system's power output without any increase in fuel consumption.

A CCGT power plant combines the benefits of proven technology, lower emissions and being relatively predictable in terms of build and cost. Additionally, high reliability and the ability to operate with a range of fossil fuels, means that CCGTs represent a very attractive solution to meet Ghana's urgent need for additional generating capacity.

Although not the only CCGT plant under construction in Ghana currently, it is the largest in terms of installed capacity.

Q: You say Cenpower's KIPP will run on light crude, distillates and natural gas? The natural gas will come via the West African Gas pipeline but where will you source the light crude/distillates? Will they come from the Tema oil refinery or are you dependent on imports?

The Cenpower KIPP is designed with a tri-fuel configuration, using light crude, distillates and natural gas to minimise fuel supply risks. Given the current challenges faced in procuring natural gas, the plant will initially run on light crude. A Fuel Supply Agreement ('FSA') has been finalised with Vitol, a Swiss-based multinational energy and commodity trading company, for the supply of liquid fuel. Vitol will also construct fuel storage tanks at their own cost. Vitol will import the fuel feedstocks largely from Nigeria for onward supply to Cenpower.

Q: How do you view the security of supply issues with respect to the West African Gas pipeline ('WAGP')?

Currently, the contractual volume of gas supply to Ghana through WAGP is about 120 million standard cubic feet per day (mmcf/d). However, WAGP gas supply fell to about 30 mmcf/d earlier this year, meaning Ghana had to rely on costly fuel oil-powered electricity generation.

As a result, Ghana is looking to fast-track the development of its own gas reserves and to invest in LNG processing and infrastructure, which should be on stream by the time Cenpower's KIPP is operational. Clearly given all these uncertainties, it is essential for the KIPP to be flexible in terms of its fuel supplies.

Q: Will gas from the Jubilee field be available by the time Cenpower's KIPP comes on stream?

Natural gas from the Jubilee oil field, offshore Ghana, is now expected to be available before the end of this year. Initial gas supplies from the Jubilee field, are however expected to be allocated to the Volta River Authority, which has operational thermal power plants in the Western Region close to the Jubilee Field.

Gas supplies for Cenpower's KIPP are more likely to come from the offshore Sankofa field, currently being developed by Eni, the Italian oil major, and Vitol, where first gas deliveries are scheduled for 2017.

Q: Has Cenpower agreed on a Power Purchase Agreement ('PPA') and what are the details of the agreement?

Cenpower executed a 20-year take-or-pay PPA with its off-taker, the Electricity Company of Ghana ('ECG') in June 2012 for 325MW of contractual capacity. The PPA provides for the tariff to be set at financial close to provide an agreed equity internal rate of return ('IRR') to investors. The tariff for the project will be the sum of fixed (a capacity charge, fixed operational & maintenance charges, etc.) and variable charges (fuel charges, variable operational & maintenance charges, etc.). Fuel and energy costs are variable in nature and payable on a per-kWh dispatched basis.

Q: There are about 5-8 Independent Power Plants planned for the Kpone Power Enclave; what competitive edge is Cenpower's project bringing along as compared to the competing IPPs?

As a CCGT plant, the Cenpower KIPP has the advantages of a high thermal efficiency, flexible fuel operations, ease of maintenance and low CO2 and NOx emissions relative to conventional power plants.

Q: This project was announced some years ago. What caused the delay and what makes this new signing any different from what was announced then?

The project is the first Greenfield IPP in Ghana developed on a project finance basis, with limited recourse financing. As a result, some of the many agreement negotiations were lengthy, given that often there was no precedence. In addition, the project has been structured to provide the maximum level of fuel flexibility to ensure reliable electricity supplies. Although some of the structural complexities may have caused delays during the development phase, they ultimately resulted in a better-defined project.

Q: Can you tell us about the engineering and procurement ('EPC') contractor? Do they have a track record of building similar power plants in West Africa?

Headquartered in Johannesburg, South Africa, Group Five is an integrated construction services, materials and infrastructure investment group, operating in over 20 countries with more than 12,000 employees. Its power division is a design-and-build consortium partner, with experience of constructing base load IPPs, co-generation and captive power plants. Group Five can swiftly redeploy resources between its countries of operation to meet client requirements. In the past 5 years, Group Five has worked on two gas-fired power plants in Nigeria, an IPP in Botswana and a CCGT project in South Africa.

Q: Why did you choose a South African contractor?

The contractor was selected through a rigorous international procurement process in which the following key criteria were assessed:

- Track record of successful delivery of power plants
- Financial stability and strength

Q: Will Group Five use Ghanaian subcontractors on the project? Is there a skills transfer programme in place?

- There is the intent to develop local capacity in the construction of the plant.
- Indigenous subcontractors will be used as part of the agreement with the Government of Ghana. Both skills and capacity transfer programmes are planned.

Q: Can you explain Sumitomo's role in the project beyond that of an investor?

Sumitomo Corporation of Japan has been selected as a Strategic Technical Partner for Cenpower and will lead the Operation and Maintenance of the plant. In addition, Sumitomo will be a major shareholder in Cenpower, acquiring a 28% equity stake at financial close.

Q: Are there any project risks that could lead to delays in Cenpower's KIPP coming on stream as planned?

There are always risks in any project or commercial undertaking. Three key risks have been identified, with measures having been put in place to mitigate them. These are:

Construction Risk: This is the risk that the project will not be completed on time, to the correct specifications and within budget.

- Mitigating Strategy: The EPC contract has been awarded to Group Five, a reputable international engineering firm. It is based on FIDIC guidelines (an international standard for construction), with a fixed price, turnkey and date-certain EPC contract, with performance guarantees and liquidated damages in place as incentives for the contractor.

Political Risk: The risk of political events adversely affecting project implementation and operations.

- Mitigating Strategy: Cenpower and the Government of Ghana have entered into a Government Consent and Support Agreement ('GCSA'). This provides the appropriate Government protection and guarantee against political events adversely affecting the project. In addition, the Export Credit Insurance Corporation ('ECIC'), of South Africa, provides political risk insurance cover for the commercial financing provided by the South African commercial banks involved in the transaction.

Fuel Supply Risk: The unavailability of adequate and reliable fuel supply to enable the project to meet its contractual obligations.

- Mitigating Strategy: The project ensures fuel flexibility by adopting a tri-fuel configuration that can utilise light crude, distillates and natural gas. Various discussions are ongoing to explore gas supply opportunities to further increase the flexibility of fuel supply and reduce the risk of fuel shortages.

Q: Can you reassure stakeholders that the environmental impact of Cenpower's KIPP will be negligible?

A number of Environmental and Social Impact Assessment ('ESIA') studies have been carried out in accordance with Ghanaian and international standards. On completion of the relevant studies, an Environmental Permit for the Cenpower KIPP was obtained from the Environmental Protection Agency of Ghana. Key environmental and procedures in place include: the development of an Environmental Management Plan ('EMP') to address all the identified environmental impacts, a key Stakeholder Engagement Plan ('SEP'), as well as Air Quality analyses, Flood Risk Assessments and Soil and Water quality surveys.

Questions about the Financing

Q: IPP projects in Africa have had varying degrees of success. What are the key considerations for any IPP (or lender) intending to develop a project in Ghana?

- Headline considerations for any IPP:
- Investors must ensure that the political and business climates are conducive for investment. Given the structure of power projects developed on a project finance basis, interaction with Government bodies is critical.
- Structure of electricity market. Investors should understand the structure of the wholesale and retail electricity market, the competitive environment and their implications for investment.
- Regulation, which can result in costs or benefits to the business.

Q: What does it take for a major infrastructure project like this to be bankable?

The three key parameters in assessing a project's bankability are:

- Geography
  - Favourable regulatory environment
  - Ease of doing business
  - Maturity of the electricity market
  - Political stability
- Sponsor / Developer / Strategic Partner
  - Credible sponsor with deep pockets
  - Considerable experience
  - Sound industry knowledge
  - Compatibility and alignment of interests
- Financial Profile
  - Project Cost
  - Financial Returns

Q: Why did you choose the Tema site? Were there any commercial incentives beyond its proximity to energy supplies?

In addition to its unique location, with easy access to existing energy and transport infrastructure, as an industrial zone, Tema benefits from some government incentives in the form of tax and duty exemptions.

Questions about Ghana's Electricity Industry

Q: How is Ghana's power market structured? Is the market regulated or de-regulated? Who are the principal market participants?

The Electricity Supply Industry ('ESI') in Ghana has an unbundled structure with the functions of power generation, transmission and distribution being performed by separate entities.

The electricity market in Ghana consists of two segments: a Regulated and a Deregulated segment. An Electricity Market Oversight Panel ('MOP'), a stakeholders' body, has been established under the Electricity Regulations to oversee and monitor the operation of the market and continually review procedures governing the market operations.

The Regulated Market

This regulated segment is made up of 2 main distribution utilities - ECG (65%) and NEDCo (5%) - both of which are state-owned. Historical data indicates that this segment of the Ghanaian electricity market, which is regulated by the Public Utilities Regulatory Commission ('PURC'), accounts for about 70% of the total energy demand with the deregulated market accounting for the remaining 30%. PURC approves the tariffs for consumers in the regulated market.

The Deregulated Market

Only recognised and licensed bulk customers may operate in the deregulated segment and directly negotiate contracts or procure power supply from wholesale suppliers. The deregulated segment of the electricity market currently accounts for about 30% of the total energy demand. The Volta Aluminium Company ('VALCO'), when in operation, is the largest electricity consumer in the deregulated market. It has, however, only been in production sporadically for the past decade because its power offtake is governed by special arrangements that had hitherto been linked to hydro production from the Akosombo plant. Presently, VALCO is operating one potline with a demand of about 72 MW.

The prominent actors in the deregulated segment over the past decade have been the mining companies which together account for about 14% of the total energy consumed in the country. Export customers account for about 9% of the demand. All the other bulk customers who have the option of entering into direct electricity purchase agreements together account for only 1% of the total demand.

There are currently eleven generation facilities in Ghana with a collective installed capacity of about 2,828 MW. The generation facilities include hydroelectric power plants, thermal plants and renewable resources. VRA owns over 80% of the total installed capacity, including a total installed hydroelectric generating capacity of 1,180 MW, located on the Volta River, and a 2 MW installed Solar Power Plant.

Q: How is the industry regulated?

The major regulatory bodies are:

- Ministry of Energy and Petroleum ('MOEP') is the body ultimately responsible for development of energy policy for Ghana and supervision of all entities in the sector.
- Public Utilities Regulatory Commission ('PURC') is the independent agency that oversees provision of electricity and water services. PURC's functions include review and approval of charges for supply, transmission and distribution of electricity rates. PURC performs major reviews of regulated retail tariffs every four years.
- The Energy Commission ('EC') licenses private and public entities operating in the electricity sector. In consultation with PURC, EC enforces standards of performance for utilities engaged in the transmission, wholesale supply, distribution and sale of electricity and natural gas, as well as the supply, marketing and sale of petroleum products.
- The Environmental Protection Agency Act mandates the EPA "to ensure compliance with any laid down environmental impact assessment procedures in the planning and execution of development projects, including compliance in respect to existing projects".

Q: Is there an electricity pool in the country/region and how does it work?

Ghana and its neighbours, Côte d'Ivoire, Togo and Benin, have been operating an informal power pool for over 30 years, following the commissioning of the Ghana - Côte d'Ivoire 225kV Interconnection in 1983. Prior to that, the power systems of Ghana, Togo and Benin were connected in the early seventies. As part of the informal wheeling arrangements, the parties exchange electrical energy across their borders, including the wheeling of electricity from Côte d'Ivoire to Togo and Benin, using the transmission network of Ghana for a fee.

In order to foster increased regional trade in power and related matters, the Economic Community of West African States ('ECOWAS') has established two institutions to achieve this objective, the West African Power Pool ('WAPP') and the ECOWAS Regional Electricity Regulatory Authority ('ERERA').

The WAPP is tasked with the responsibility of addressing issues of power deficiency within the West African sub-region by integrating the power systems of the member states to create a unified electricity market. The ECOWAS Regional Electricity Regulatory Authority ('ERERA') is primarily responsible for regulating cross-border electricity interconnections in West Africa. The mandate of these two institutions is to ensure reliable power supply in the West African sub-region.

Q: How are electricity tariffs regulated?

Created in 1997, the PURC is the independent agency that oversees operations of the institutions responsible for the provision of electricity and water services. PURC's functions include the review and approval of charges for supply, transmission and distribution of electricity in the regulated market.

Tariffs in the de-regulated market are agreed amongst the relevant parties. However, because the cost of generation is an input in retail tariffs, the PURC sets benchmarks on the levels of costs that can be passed through to the regulated retail market. PURC performs major reviews of regulated retail tariffs every four years.

Between these major reviews, an Automatic Adjustment Formula has been introduced that permits quarterly tariff revisions to reflect fluctuations in crude oil prices, foreign exchange rates, the generation mix and inflation. PURC can direct a public utility to adopt new technologies to improve services or reduce costs to the consumer. The public utility is liable to a fine if it fails to comply with standards of performance in the provision of services or overcharges a regulated customer.

Q: Ghana's energy deficit is increasing, with annual electricity demand now approaching the 2,000 MW mark. With a capacity of 350MW, isn't the Cenpower KIPP just a 'drop in the ocean' in terms of tackling the country's growing energy needs?

In 2013, the Ghana Grid Company ('Gridco') unveiled a 15-year power generation master plan, with an aim of curbing annual outage to less than 100 hours annually by 2016. Cenpower's KIPP accounts for a significant portion, about 21%, of the additional 1,552 MW of generation capacity planned as a result. The Cenpower KIPP will help to reduce the power deficit in Ghana, with consequent benefits to the economy overall. Once operational in 2017, Cenpower's KIPP is expected to represent approximately 10% of Ghana's total installed generation capacity, which is a significant figure.

Other General Qs

Q: What impact will the Cenpower KIPP have on Ghana's overall economic development?

The power plant forms part of Ghana's least-cost power generation expansion plan, which, on completion, will help to meet the country's electricity requirements and enhance the security of electricity supplies for social/economic development.

Q: What benefits will Cenpower's KIPP bring to the local and wider community?

The Cenpower KIPP will generate significant development benefits for Ghana and the local community including:

- Reducing the power deficit in Ghana, combating load shedding and reducing the cost of electricity and expensive self-generation for both commercial and retail customers.
- Direct and indirect job creation. It is conservatively estimated that over 600 jobs (at peak of construction) and 200 permanent jobs will be created, many of them low and semi-skilled in nature.
- Improving the standard of living of Ghanaians through the provision of reliable power supply, thereby helping to reduce poverty.
- Promoting industrial development, both of large businesses and SMEs.
- Ensuring local content and technology/skills transfer during the construction, operational and maintenance phases, thereby improving the capacity of the local and regional workforces.