BUSINESS INNOVATION PARTNERSHIP
GRIDCO, GHANA

Empowering the local workforce to protect critical assets, improve operations, and integrate innovative technology

In 2006, GRIDCo was created to develop and promote competition in Ghana's wholesale power market. Operating in the Greater Accra region, GRIDCo's primary functions are to economically dispatch electricity, manage the wholesale power market, and provide metering and billing services to bulk customers.

GRIDCo has been licensed by the Energy Commission of Ghana (ECG) to exclusively operate and maintain the National Interconnected Transmission System (NITS) since 2008. In 2013, the Government of Ghana mandated that GRIDCo provide commercial telecommunication and related services nationwide using the excess capacity on its dark fiber optic network. The Company currently transmits electricity to thirty-one bulk customers and distribution utilities from ten wholesale suppliers, including the Volta River Authority

COUNTRY BACKGROUND

After Ghana achieved independence in 1957, electricity was prioritized as a state-run endeavor to support the country's massive industrialization goals. By 1994, power sector reforms opened the market for competition and began to regulate power generation, transmission, and distribution. To attract independent power producers, a competitive wholesale electricity market was established in 2008.

Ghana has more than 5,200 megawatts (MW) of installed generation capacity, with 69 percent from thermal power (crude oil, natural gas, and diesel), 30 percent from hydroelectric, and 1 percent from solar. Current generation capacity is 3,515 MW due to inadequate gas supply and depleted liquid fuel stocks at some thermal plants.

PHOTO: Michael Turner, 2012

On the distribution system, Ghana is faced with high technical and commercial losses, reducing the amount of revenue collected. Despite this, Ghana is able to collect around 83 percent of potential total revenue, one of the highest collection rates in sub-Saharan Africa.

CYBERSECURITY HISTORY AND TRENDS

Thousands of connected devices are required for reliable and safe operations on a typical electric grid. Historically, these were manually operated, but today they are being replaced with "smart" devices that can be operated remotely and provide real-time system operating data, monitored and managed by operational technology systems. Worldwide, 2.5 billion new industrial devices are expected to connect to energy infrastructure in the next two years—from gas turbines and microgrids, to electric vehicle charging stations. As technology evolves to become "smart," it is imperative for utilities and governments to develop strategies to manage the avalanche of data coming. The flow of data across the internet and other communication systems presents new data privacy and integrity challenges. In 2022, the average worldwide data breach cost soared to more than $4.4 million and human factors were involved in more than 85 percent of data breaches.

The digital economy in Africa is expected to grow to more than $300 billion by 2025. The Council of Europe recognized Ghana as a hub for cybercrime capacity building in the English-speaking Economic Community of West African States region.

Ghana recorded 11,600 cybercrime cases in 2020. In 2021, Ghana's Parliament passed the Cybersecurity Act. As a result, the Cyber Security Authority was formed to regulate cybersecurity activities, which include preventing, managing, and responding to cybersecurity threats, raising awareness about cybersecurity matters, and fostering international cybersecurity collaboration. Ghana is the only African country nominated to serve on the Independent Advisory Committee of the Global Internet Forum to Counter Terrorism.

BUSINESS INNOVATION PARTNERSHIP IMPACT

The Business Innovation Partnership (BIP) provided experienced facilitators, coaches, and utility mentors to two GRIDCo teams; one on streamlining business processes and one to strengthen GRIDCo's organizational change management capacity. The BIP supported GRIDCo in identifying potential cybersecurity incidents, establishing global best practice incident management processes, and building new skills to enhance cybersecurity preparedness to comply with Ghana's National Cybersecurity Policy.

Using the Lean Six Sigma methodology, a process designed to eliminate problems, remove waste and inefficiency, and improve operations, BIP participants established and implemented the National Institute of Standards and Technology (NIST) and International Organization for Standardization (ISO) cybersecurity management framework to improve responsiveness and minimize the impacts of a cybersecurity breach. GRIDCo estimates that a cybersecurity breach could result in a revenue loss of $200,000 per hour, which it can now potentially avoid. In addition, a prolonged grid disruption would have sub-regional security implications, due to the reliance of Togo, Benin, and Burkina Faso on Ghana for electricity. By establishing an effective incident management process, GRIDCo is now equipped to respond to such attacks in less than 48 hours, minimizing system impacts.

The BIP project also helped to establish a cybersecurity response culture to shift values, attitudes, and beliefs. GRIDCo is taking steps to nurture a culture of cybersecurity awareness that tasks every member of the organization with embracing attitudes and beliefs that drive secure behaviours.

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