Vol. 11 Issue 5

Alternative Energy Africa

ISSN 1756-4417

10th ANNIVERSARY

www.AE-Africa.com

Filling the Energy Information Gap in Africa

September/October 2018

Revolutionary Wind Technology

Trump Policy Boosts Industrial Offtakers

Financing African Renewables

Africa Spotlight

GHANA * EMERGING NATIONS

FUTURE ENERGY NIGERIA

CONFERENCE & EXPO

13 – 14 NOVEMBER 2018

Eko Hotel & Suites
Lagos, Nigeria

CONNECTING YOU TO THE HUB OF THE NIGERIAN POWER SECTOR

GAS

FINANCE

SOLAR

T&D

POWER
SOLAR EXPO
NIGERIA FUTURE
METERING
ENERGY
GENCO
AFRICA
FINANCE
DISCO
T&D

JOIN NIGERIA'S POWER REVOLUTION IN 2018

Don't miss this fantastic opportunity to **MEET WITH 1,800 POWER & ENERGY STAKEHOLDERS**

BOOK YOUR SPACE TODAY

Contact **Ade Yesufu**
+27 21 700 3574
ade.yesufu@spintelligent.com

www.future-energy-nigeria.com

CONTENTS

FEATURES

DEPARTMENTS

Source: Siemens

Siemens to Operate and Maintain World's Largest Combined-Cycle Plants in Egypt

All rights to editorial matter are reserved by Alternative Energy Africa, a Petroleum Africa Magazine, Inc. publication.
No article may be reproduced or transmitted by any means without the prior written permission of the publisher.

Publisher
Dianne Sutherland

Contributing Editor
Jennifer Nickle

Advertising Inquiries
info@AE-Africa.com

Subscriptions
subscribe@AE-Africa.com

Africa Headquarters
10G Ahmed Abd El- Aziz St.,
New Maadi, Cairo, Egypt
Tel/Fax: +2 02 2517 7454
Email: info@AE-Africa.com

Advertising Representatives
Austria, Germany, Switzerland
Eisenacher Medien
Erhardt Eisenacher
Tel: +49 0228 2499 860
info@eisenacher-medien.de

Ghana
Research Development &
Financial Consultants Ltd.
Tel: +233 302 767 919
kacquah@rdfcafrica.com

Italy
Ediconsult Internazionale
Anna De Bortoli
Tel: +39 02 477 100 36
energia@ediconsult.com

South Africa
Antonette Benting
Tel: +27 82 414 8191
advertise@AE-Africa.com

Publisher's Note

MESSAGE
FROM THE PUBLISHER

Yes, it's that time again – Africa Cup Qualifying! As I write this message, Madagascar has just qualified for its first-ever trip to the Africa Cup competition. Njiva Rakotoharimalala's goal gave Madagascar a 1-0 win over Equatorial Guinea in front of its home crowd in Antananarivo. Overall, Madagascar won three of its four matches and pulled a 2-2 draw with Senegal, earning it a spot in the 2019 contest that has been expanded to 24 teams next year rather than the standard 16. Also securing spots at the time of writing are Egypt, Senegal and Tunisia. Nigeria is expected to make it and Libya just may have a chance depending on their performance in its November match against Seychelles.

Most all African nations are passionate about their football/soccer but many fans in developing countries have not traditionally had access to television to watch these matches; solar energy is changing that. Going back to the 2010 World Cup, a village in Ghana was afforded the opportunity to watch the matches utilizing solar power. Fast forward to the 2018 version of the World Cup, and solar power allowed fans in many nations to view live match coverage. For example, in the Kenyan village of Sidonge, a remote rural and off-grid community, locals crowded into their community video hall to watch the matches. For most of the villagers, the video hall was the only way to view the matches. This was made possible because of a solar mini-grid. The same will be true for the Africa Cup next year, with many villages setting up viewing halls powered by solar to watch the matches.

Residents of Sidonge village in Busia watching a World Cup match on a mini-grid powered television

And it is not only these viewing halls giving rural Africans access, it is also the vast number of solar kits being deployed across the continent giving individual homes solar power, with many of these kits including TVs and radios. While solar power is playing a critical role in everyday life, like providing safe lighting and keeping vaccines cool in solar fridges, it is also allowing for some joy and community spirit!

Featured in this issue is Ghana with all the latest updates, along with a look at three emerging RE players – Burkina Faso, Namibia and Togo. Another not-to-miss read is on African Finance and the types of funding that are being utilized to drive projects forward. As always, your comments and suggestions are welcome and can be sent to *info@AE-Africa.com*.

Dianne Sutherland
Publisher

SA's Medupi Unit 2 Comes Online

GE Power and Eskom announced that Medupi unit 2, the fifth out of the six units at the power station, has now been successfully synchronized to the national grid. With five units already synchronized, Medupi's plant capacity increases to deliver 4,000 MW, enough to power nearly three million households, reaffirming its position as the largest power station in South Africa and fourth in the world. The scope of work for GE's Steam Power business at Medupi includes six turbine islands, air cooled condensers and overall project and construction management.

Source: GE Power

Abram Masango, Eskom's Group Executive for Group Capital, said: "The achievement of Unit 2 first synchronization, eight months ahead of the June 2019 schedule, marks a key milestone towards full commercial operation of the unit. Lessons learnt on previous units were implemented on Unit 2, leading to the swiftness in delivering first power. This is an amazing achievement, taking us closer to completing the entire Medupi project, as we will be left with one unit."

Also commenting on this milestone, Lee Dawes, Regional Leader for GE's Steam Power in sub-Saharan Africa, said achieving this milestone ahead of schedule is no small feat. "We continue to work with Eskom to deliver the much-needed capacity to stabilize the national grid as well as partner in various skills development projects to build much needed technical skills to meet the ever-growing demand for trained artisans."

As policies on the reduction of carbon emissions become more stringent, GE continues to ensure that it deploys the latest technologies to deliver the lowest levels of emissions from industrial operations. Medupi and Kusile are using supercritical technology to achieve much higher efficiencies than the South African fleet average. Both plants also implement dry instead of wet cooling. This results in significantly less water consumption.

Upon completion, the power station will produce a total of 4,764 MW to meet the electricity needs of 3.5 million households in the country. In additional, since 2007, GE in partnership with Eskom has invested over R1 billion to empower local businesses and trained over 300 students on technical, artisans and engineering skills. Forty percent of the workforce trained as pipe fitters, welders and electricians were sourced from the province, and 60 percent were youth.

BBOXX and GE Launch Partnership in DRC

BBOXX and GE have launched a partnership to provide energy access for small businesses, schools and other organizations in Goma, Democratic Republic of Congo (DRC). BBOXX has deployed the first of GE's Hybrid Distributed Power (HDP) systems in the city of Goma, close to the Rwandan border, to connect up to 10 customers.

GE's HDP technology provides sustainable energy in off-grid settings, combining solar energy, battery storage and diesel generation to ensure a reliable electricity supply.The systems will be linked between GE's Predix digital remote monitoring and diagnostics platform to BBOXX's cloud-based Pulse platform in the near future. This pioneering technology proactively troubleshoots issues with any system before they become a problem for customers. Pulse uses big data and predictive analytics to help improve customer service and provide a deep understanding of customer behavior.

The partnership forms part of BBOXX's strategy to improve access to vital utilities for customers with a range of needs, from small solar home systems of 50 W in rural communities, to businesses in urban areas with higher energy demands of 0.5 kW – 5.0 kW, and beyond. GE's HDP system in Goma is capable of delivering up to 30 kW.

Kinyerezi II Online in October

Tanzania's Kinyerezi II power plant is set to come online in October. The plant will add 240 MW to the East African nation's grid. "We are currently working on the latest technical concerns before finalizing the project. The work plans show that we should finish by next month," Shoji Watababe, the project director said.

The plant, which began construction in 2016, will be the largest combined cycle gas plant in the country. Its implementation cost $432 million, to which the Tanzanian government contributed 15%. The balance was provided by the Japan International Cooperation Bank and Japan's Sumitomo Mitsui Corporation, which secured the construction of the infrastructure. Once completed, the infrastructure will require 36 Mmcf/d to operate.

Angola Betting on Renewables

The Angolan government is looking to renewable energy technologies to lower the cost of power production and to help speed up the process of electrifying its rural areas. The news was released by Joao Baptista Borges, the country's Minister of Energy.

By using off-grid electrical installations and mini-grids, the country could more easily reach remote rural areas whose connection to the national electricity grid would be long and costly. The country intends to rely on this type of energy to increase its power from the current 3,334 MW to 7,500 MW by 2025.

Zambia Launches Phase 2 of Mini-Hydropower Program

Zambia has launched the second phase of its construction program for mini-hydropower projects by independent power producers. The 100 MW of new capacity will be put in place thanks to these mini-hydropower plants with a maximum capacity of 20 MW each.

The pre-qualification procedure for the companies concerned will take place in Q4. It will be followed by three waves of requests for technical and financial proposals in order to award all the contracts to allow the installation of 100 MW. Between the two procedures, the prequalified companies will be able to obtain the authorizations to carry out feasibility studies of the power stations.

This project received a financial contribution of $50 million, granted by the AfDB to support the country in its effort to diversify the energy mix.

South Africa RE Generation to More Than Triple by 2030

South Africa's share of non-hydro renewables for power generation will more than triple by 2030, according to a new report put out by GlobalData. The latest report says that the country's non-hydro renewables power generation will increase from 8.1% in 2017 to 30.3%

in 2030. This is attributed to the government's decision to restructure its energy output.

GlobalData's new report, "South Africa Power Market Outlook to 2030, Update 2018 – Market Trends, Regulations, and Competitive Landscape" provides forecast numbers for the country's power capacity, generation, and consumption up to 2030, and reveals that most of its current electricity supply is generated from coal-based capacity, accounting for 74.7% of the country's total installed capacity.

Chiradeep Chatterjee, Power Industry Analyst at GlobalData, commented, ''South Africa's new Integrated Resource Plan 2018 (IRP 2018), has called for increasing the share of renewables and gas-based thermal power capacity in order to move away from coal and nuclear, but this will not be easy to achieve.'' While the move away from coal will not be easy, it will be necessary as South Africa's state-run utility Eskom has said that 75% of the country's coal-based power plants will near their life expectancy by 2040. The government plans to retire and replace the coal plants with new gas-fired plants.

The government has also scrapped an earlier proposal to increase installed nuclear capacity, and is now calling for increasing the capacity share of wind and solar power instead. Chatterjee continued, ''Non-hydro renewables including biopower, are therefore expected to contribute approximately 30% of the country's installed capacity and around 20% of its annual power generation by 2030."

Turkana Transmission Line Sees Power Flowing

Ketraco, Kenya's state-run transmission company, announced that the Lake Turkana wind farm had finally delivered its first kilowatt hours to the grid. The infrastructure completed in March 2017 had not been able to generate energy due to a delay in the construction of the transmission line by a bankrupt Spanish contractor. After almost two years of delay, a change in the company constructing the line and a $56 million fine paid by the Kenyan state, allowed for the line to finally be inaugurated.

With a capacity of 400 kV, it covers 428 km and brings together the localities of Loiyangalani and Suswa. It provides enough energy to power 330,000 households.

Egypt to Sudan Transmission Lines on the Way

Egypt will begin testing operations on the interconnection line linking it to Sudan in November, according to the Egyptian Ministry of Energy. At this time the concrete bases for the electric towers have been laid. According to the Ministry the company in charge of the project, Larson and Turbo, will start construction on the transmission lines on the Egyptian side of the border soon.

Under the terms of the bilateral agreement Egypt and Sudan will fund the cost of the transmission lines on their respective sides of the border. According to the Egyptian Ministry of Energy the cost for its side is roughly $25 million.

The transmission lines will extend from Toshka 2 processing stations in Egypt to Arqin transformers in Sudan. They will have, at first, a voltage of 200 kV which will be increased to 500 kV. These lines will carry up to 300 MW of electricity.

Akon Lighting Sierra Leone

Akon, Senegalese rapper and founder of Akon Lighting Africa, has pledged to equip Sierra Leone with 5,000 solar street lights and 2,500 traffic lights to accompany the national electrification agenda.

"The commitment of the philanthropic organization of Akon will be of great help for the electrification of our country. It proves the impressive leadership of President Julius Maada Bio who was able to mobilize, in six months, the international good will to improve the daily lives of Sierra Leoneans," said Yusuf Keketoma, spokesman for the presidency.

Akon Lighting Africa aims to support the process of electrification of Africa. It is already involved in several projects on the continent.

Djibouti Betting on Geothermal

Djibouti is investing in energy autonomy in an effort to end its dependence on energy imports from Ethiopia. To achieve this, it aims to produce by 2020, 100% of its energy from renewable energy based on not only solar and wind, but also on geothermal energy.

The country's location, at the junction point of three major rifts, puts it in a prime spot to take advantage of geothermal energy. This energy trapped in the subsoil, particularly around the Abbe and Assal lakes, is a renewable source of energy that is under utilized.

Currently drilling is underway in the Lake Assal region to evaluate the geothermal potential of the site. Following this study, Djibouti Electricity and its partners intend to launch a call for tenders for the installation of 50 to 100 MW of geothermal power plants.

Gambia Looks for EOIs to Build Utility Scale Solar Plant

The National Water and Electricity Company (NAWEC), Gambia's state-utility, is preparing to build the country's first large-scale solar PV plant. The World Bank, which supports this process, has just launched a call for expressions of interest for the recruitment of a consulting firm to accompany NAWEC. Interested companies have until October 4 to come forward and the contract is expected to last 36 months.

The photovoltaic power plant will be located in the Greater Banjul area. It will have a capacity of between 10 and 20 MW and will potentially include an energy storage system. The project also includes the construction of a 132-kV power transmission line and substations. It could also be articulated around a single power plant, or from three to five mini-power plants of equal global capacity.

The implementation of this project will improve the service to greater Banjul, which had an available capacity of 27 MW in 2017 against a demand of 70 MW.

The project is part of the $41-million Gambian Power Sector Restoration and Modernization Project.

ABB Selected to Help Upgrade Egypt's Grid in Port Said

ABB was selected by Egypt's state-run utility, the Egyptian Electricity Transmission Company (EETC), to help upgrade and digitalize the electrical grid in the Port Said region.

Source: ABB

The scope of supply includes an ABB Ability™ Network Manager SCADA (Supervisory Control and Data Acquisition)/Energy Management System (EMS), more than 120 Remote Terminal Units (RTUs) and a fiber-optic communications network to monitor and control the grid more efficiently. ABB Ability™ is the company's cross-industry digital offering.

The comprehensive initiative is part of the country's efforts to upgrade and modernize its power grid. A reliable supply of electricity plays a critical role in operating the Suez Canal, a major artery for global commerce, through which about 17,000 ships pass annually carrying up to 800 million tons of cargo. Demand for electricity is growing fast in the area as a result of rapid urbanization and economic growth.

In addition, the country has set ambitious targets for the roll-out and expansion of renewable electricity generation as well as transmission infrastructure over the next few years. Commenting on the occasion of contract signing, Egypt's Minister of Electricity and Renewable Energy, Dr. Mohamed Shaker, highlighted the need to strengthen the power grid and address the growing demand for electricity.

The ABB Ability™ Network Manager SCADA/EMS helps monitor and control the network to ensure high system reliability and optimize efficiency. The mission-critical communication network provides a back-bone where real-time data from equipment in the field can be quickly and reliably leveraged in the "control room," maximizing efficient operations. The order is part of a larger project to upgrade the grid in Egypt and will be handled by a consortium composed of ABB and El Sewedy Electric.

Nigeria Launches Electrification Program in Jigawa

Nigeria launched its rural electrification program in Jigawa state with a call for expressions of interest from the Sustainable Energy Fund for Africa (SEFA). The expression of interest is for the carrying out of the feasibility studies, as well as the implementation of the program.

The program, which consists of installing solar power plants with an overall capacity of 1 GW, is being undertaken by independent power producers.

SEFA is a fund administered by the AfDB that supports small scale renewable energy projects and promotes energy efficiency and supports the program in this context. The fund will provide a $1.5 million grant to help start feasibility studies.

All the plants to be built under the program will inject their production into the national grid, through a 330 kV or 132 kV transmission line, to be built by Nigeria Bulk Electricity Trading (NBET).

WorleyParsons to Construct Kenya's Latest Wind Farm

WorleyParsons was awarded the construction contract for Kenya's Kipeto wind farm. This will be the second largest in the country after Turkana that WorleyParsons also built.

"Our success in the Turkana wind farm and the experience we gained there has played a key role in getting the Kipeto project built," said Tim Gaskell, one of the company's executives.

The wind farm is developed by Kipeto Energy Limited. OPIC, the US government's development finance institution, recently committed $233 million to aid in financing the development of the wind farm.

The plant will have a capacity of 100 MW and will consist of 60 turbines supplied by GE. The construction phase is expected to last 22 months, in accordance with the contract signed between the two parties.

President Nyusi Inaugurates New Power Plant

Mozambican president, Filipe Nyusi, inaugurated a 106-MW combined-cycle gas power plant in Maputo. The plant consists of two 40 MW gas turbines and a 26 MW steam turbine.

The construction of the gas plant cost $180 million, with $167 million being financed by the Japan International Cooperation Agency (JICA). Its production will supply the populations in the south of the country, in the Maputo province, where it should satisfy about 25% of the demand.

"There is no doubt that our ability to achieve sustainable growth depends on people's access to energy. We must therefore solve this problem of energy deficit facing the country," said Nyusi at the inauguration ceremony. Currently, 70% of the population does not have access to electricity.

METEC Removed from Grand Renaissance Project

Ethiopia has removed state-run Metals and Engineering Corporation (METEC) from its Grand Renaissance Dam project. According to the country's Prime Minister, Abiy Ahmed, the company was removed due to numerous delays in the $4 billion dam project. METEC is run by Ethiopia's military.

The Grand Renaissance Dam, which is being constructed on the Nile River, is the centerpiece of Ethiopia's bid to become Africa's biggest power exporter. The Grand Renaissance Dam is 60% finished, according to the government.

The government intends to bring in another firm to take METEC's place. The Ethiopian firm was the contractor for the electromechanical and hydraulic steel structure divisions of the project.

"It is a project that was supposed to be completed within five years, but seven or eight years later not a single turbine is operational," Abiy said during a news conference. Commenting on the delays Abiy said that they intend to offer the contract to companies with experience, "otherwise it will take even longer."

Lourenco Inaugurates Belém Thermal Plant

In Angola, President João Lourenço inaugurated a 50 MW thermal power plant in Huambo province. The Belém plant, consisting of two

turbines of 25 MW capacity each, has a cost of $325 million, according to Angola Press.

The production of this plant will supply electricity to the 100,000 inhabitants of the cities of Huambo and Caála. It reinforces the power capacity of the province of Huambo that until then had two sources of energy. These are the Ngove hydropower plant and the Benfica thermal power station, which have respective production outputs of 20 MW and 30 MW each.

The entry into service of the Belém plant will enable the province to meet 90% of the needs of the city of Huambo, according to media reports out of the country.

Algeria to Manufacture RE Parts

The first turbines manufactured in Algeria will be available by July 2019, according to the CEO of the country's state-run utility Sonelgaz. Mohamed Arkab said the goal is being achieved through a partnership with GE.

The country has indeed signed an agreement to create a JV co-founded by both entities under the 51/49 rule. Called GEAT, the JV company will manufacture the equipment of a power plant, such as alternators and control systems.

In addition, a JV between Hyundai and Daewoo and Vijai Electricals will see high-power transformers manufactured in the country. Algeria also aims to manufacture boilers and heat exchangers through a partnership with BHI.

The construction of infrastructure with a total capacity of 180 MW was agreed at the economic conference organized in 2015 by the country and which had resulted in the programming of 2,000 MW of new energy capacity.

Germany to Invest €120M in Senegalese Solar

Senegal, which had a rural electrification rate of 40% in 2017, plans to electrify 300 villages with the support of Germany. This decision was announced by Senegalese President Macky Sall during the visit of German Chancellor Angela Merkel. Access to village electrification will be by solar energy led by German companies.

"This is a strong signal to go beyond the donor-recipient relationship to create mutually beneficial partnership relationships through exchange and investment," said President Sall, adding that his country is open to outside investment.

To aid in bringing these plans to fruition Germany will make €120 million in support. A MoU was also signed with the German company Pfister Kontakt system for the installation of a 10 MW hybrid solar power plant to supply companies in the Sandiara industrial zone.

"We will work with Senegalese companies to install the system. For maintenance, we will train local nationals in Germany. We also want to intervene at Sandiara Technical High School," said Jessyca Tshisuaka, Pfister Africa Manager.

Egypt Tags Siemens to Operate & Maintain World's Largest Combined-Cycle Plants

Egypt selected Siemens to operate and maintain (O&M) its combined-cycle power plants. Siemens was selected by the Egyptian Electricity Holding Company (EEHC) to provide comprehensive operation and maintenance services (O&M) for the Beni Suef, New Capital and Burullus power plants, for the next eight years.

The agreement, which is the largest ever for the Siemens Power Generation Services in terms of power generated, includes the implementation of the company's Omnivise digital service solutions. Each of the three 4.8 GW power plants is considered to be the largest gas-fired combined-cycle plant ever built and operated. Together the plants represent approximately 40% of Egypt's power capacity, at the time of signing contracts, generating 14.4 GW – enough to supply 40 million Egyptians with electricity.

The multi-year agreement covers all on-site equipment including 24 gas turbines, 12 steam turbines, 36 generators, 24 heat recovery steam generators and three 500 kV gas-insulated switchgear systems.

Source: Siemens

Siemens will also implement its services portfolio to improve asset visibility, reliability and availability of the three power plants. Data from the plant operation will be collected, analyzed and transformed into actionable insights such as accurate diagnostics, troubleshooting and condition forecasting, improving plant reliability and reducing downtime. Additionally, the data processed can help to balance maintenance costs, optimize inspection intervals and provide valuable insights into operational risks.

First VP of South Sudan Addresses UN Assembly

Taban Deng Gai, the First Vice-President of South Sudan, addressed world leaders at the United Nations General Assembly, highlighting his country's efforts to pursue peace. "As brothers and sisters, we have hurt each other," said Gai. His country, gripped by conflict for nearly five years, is seeking "national healing" he said, through an inclusive, nationwide dialogue process.

Source: Jill Craig, VOA

Taban Deng Gai

A multi-layered approach has been launched in South Sudan to repair its "social fabric," he added, and its "grassroots component" is working with local communities to identify causes of division while also searching for solutions on how to heal them.

"The process allowed for those who didn't have an opportunity to have their voices heard to begin putting across their various viewpoints," said Gai, noting that such information will be vital as the country moves forward in its peace process.

The South Sudan leader also highlighted the recent agreement between President Salva Kiir and his former Vice-President Riek Machar on ending violence that has claimed tens of thousands of lives and displaced millions across the world's youngest nation.

He added that the Government of South Sudan welcomes the guarantors of the agreement to monitor its implementation and that it encourages the Intergovernmental Authority on Development (IGAD, an eight country trade block in Africa) and the African Union to work with the UN Security Council on the support that can be provided by the UN-mandated Regional Protection Force in South Sudan to ensure that peace holds in his country.

Egypt Sentences 75 to Death by Hanging

On September 8, 75 Egyptians were sentenced to death by hanging by Judge Hassan Farid for their part in a 2013 organized sit-in which turned violent at Rabaa square. Hundreds of protestors were killed by security forces, over 800 according to Amnesty International, while authorities claim over 40 security personnel were killed in the same incident.

The sit-in occurred a few weeks after Abdel El Sisi, the current president, took power in a military coup from Muslim Brotherhood president Mohammed Morsi.

Among those sentenced to death are a few senior Muslim Brotherhood leaders including Essam al-Erian, Mohamed Beltagi, and Islamist preacher Safwat Higazi.

Since El Sisi officially took power in 2014, hundreds of alleged dissenters and political opponents have been sentenced to death for crimes ranging from belonging to an illegal organization to planning terrorist attacks, in Egypt's effort to crack down on extremism.

The crackdown has recently extended beyond Islamist figures. In August, Masoum Marzouk, a former diplomat and war veteran, was arrested and held for 15 days pending an investigation into his call for a referendum on Sisi's government.

In early September, the president ratified a law regulating social media accounts, officially to crack down on misinformation, and providing for the punishment of journalists who spread false information.

The law places social media accounts with more than 5,000 followers under the supervision of the top media authority, which can block them. Critics say the law intends to silence the news media and opposition groups.

EU and the ACP Group of States Negotiate New Partnership Pact

The EU and 79 countries in Africa, the Caribbean and the Pacific (ACP) group will begin negotiations on the future of their cooperation after 2020. The ambition is to transform today's partnership into a modern political framework geared to deliver on the established Sustainable Development Goals.

The countries in the EU and the ACP represent more than half of all UN member countries and unite over 1.5 billion people. The current partnership, governed by the Cotonou agreement, is one of the longest-standing and most comprehensive frameworks for cooperation between the EU and developing countries. The current agreement expires in 2020.

The partnership seeks closer political cooperation on the world stage to tackle major global challenges, aiming to be a shining example of multilateralism as the cornerstone of a rule-based world order. In concrete terms, this will notably mean working jointly towards the Sustainable Development Goals. It will also guide the partnership countries' joint efforts to address pressing challenges such as climate change, migration and peace and security. To have the intended impact, the future partnership will adapt to the new realities in the European Union, Africa, the Caribbean and the Pacific, taking into account geographical specificities. The future partnership will aim at facilitating strong alliance-building in global forums and address key issues from which current and future generations alike can benefit.

Political Influence and Patronage in the 'New Angola'

The new government in Angola has made transparency and economic reform its much vaunted manifesto, which is buying it good will among international investors and is boosting its popularity at home. However, central tenets of control over the country's political economy remain firmly entrenched with the same elite that has dominated Angola for generations, according to a new report by EXX Africa.

At the center of the new political patronage structure stands former vice president Manuel Vicente, who has returned to the heart of political power in Angola and who through his family and close associates maintains an extraordinary position of influence over the economy.

Source: Official White House Photo by Amanda Lucidon

Manuel Vicente

Vicente was once part of the all-powerful 'Triumvirate' that dominated Angola's business sphere. Through a network of investments and commercial holdings, Vicente is still one of the wealthiest and most influential powerbrokers in the country. Even though he was politically sidelined towards the end of the previous administration, he retains commercial interests across key sectors such as banking, telecoms, energy, and logistics.

Over the past year, Vicente has regained much control over the state oil company Sonangol, as well as the central bank and finance ministry, where his political allies have been appointed into leadership positions. His family is also creating new commercial ties with the family of the new president, João Lourenço, while his closest business associates are benefitting from recent contract allocations. By bringing

Vicente back into a position of political influence and shielding him from various international corruption investigations, President João Lourenço has found a powerful ally in his campaign to consolidate his own authority and to prosecute members of the former president's family.

However, the restoration of Manuel Vicente carries significant political, reputational, and transparency risks that are likely to undermine the government's popular manifesto of probity and economic liberalization. This report identifies a number of recent deals and local source intelligence that highlight the prevalence of such risks. This report attempts to uncover the opaque network of overlapping commercial interests that once again threatens to capture Angola's economy and to concentrate the country's substantial wealth within the hands of a small political and business elite.

Gambia Ratifies UN Convention Investor-State Arbitration Treaty

On September 28 Gambia ratified the United Nations Convention on Transparency in Treaty-based Investor-State Arbitration (Mauritius Convention on Transparency). Gambia is the fifth State after Canada, Cameroon, Mauritius and Switzerland to ratify the Convention. The Convention entered into force on October 18, 2017. In Gambia, the Convention will enter into force on March 28, 2019.

Since the signing ceremony at Port Louis, Mauritius in March 2015, the following States also signed the Convention: Australia, Belgium, Benin, Bolivia, Congo, Finland, France, Gabon, Germany, Iraq, Italy, Luxembourg, Madagascar, the Netherlands, Sweden, Syria, the UK and the USA.

The Mauritius Convention on Transparency aims to provide States and regional economic integration organizations with an efficient mechanism that extends the scope of the UNCITRAL Rules on Transparency in Treaty-based Investor-State Arbitration (Rules on Transparency). The Rules on Transparency provide procedural rules that ensure transparency and public accessibility to treaty-based investor-State arbitration, the proceedings of which have traditionally been conducted behind closed doors.

THE POWER & ELECTRICITY WORLD Africa 2019
26 – 27 MARCH 2019
SANDTON CONVENTION CENTRE, JOHANNESBURG
SOUTH AFRICA
CO-LOCATED WITH:
THE WATER SHOW
THE SOLAR SHOW Africa 2019
THE ENERGY EFFICIENCY SHOW
UTILITY HOST:
Eskom
www.terrapinn.com/powerafrica
AFRICA'S LARGEST POWER & ELECTRICITY SHOW
8000+ ATTENDEES, 800+ VIPS, 350+ EXHIBITORS, 300+ SPEAKERS, 40+ AFRICAN COUNTRIES
BOOK YOUR PASS TODAY
ENDORSERS

Al Husainiyah Power Generation Licensed to Generate 50 MW Solar

The Jordan Energy and Minerals Regulatory Commission (EMRC) issued a license to Al Husainiyah Power Generation company to build a 50-MW power station using solar panels in Ma'an governorate.

The Chairman of the Board of Commissioners Eng. Farouk Al Hiyari said in a press statement that the total number of licenses issued by EMRC to generate electricity from solar energy amounted to five licenses within the project's direct offers/the second round, all of which adopted solar energy with a total capacity of 250 MW. Electricity Generation Projects within the direct bids for the first stage based on solar energy reached to 13 projects with a total capacity of about 220 MW.

Concerning the details of the license, he said that the 20-year period was granted to Al Husainiyah for generating electricity from renewable energy sources by solar cells. The company was chosen to develop the project under the direct bidding system through the Ministry of Energy and Mineral Resources and the National Electricity Company.

Eng. Al-Hiyari said that the license authorizes the company to work in the field of generating electricity from solar energy and selling electricity generated to the National Electricity Company under the Power Purchase Agreement signed between the two parties.

He also stressed the importance of renewable energy projects, which are developed through the system of direct offers to enhance the contribution of renewable energy in the total energy mix to achieve the objectives of the comprehensive strategy for the energy sector and achieve security of energy supply based on local sources.

Eng. Al-Hayari pointed to the role of EMRC in encouraging investment in the sector while ensuring compliance with environmental protection standards and public safety conditions applied in the Kingdom and regulating the sector on the basis of justice and balance between the interests of consumers and licensees and investors.

Building Energy Inaugurates Annapolis Solar Park

Building Energy S.p.A., a multinational company operating as a globally integrated Independent Power Producer in the renewable energy industry, and Building Energy Holding US, through its renewable energy subsidiary Annapolis Solar Park, announced the inauguration of its largest solar PV project built in North America. Built by EDF Renewables, the project is located on a closed landfill in the City of Annapolis, Anne Arundel County, Maryland.

With a capacity of 18 MW, the milestone was celebrated with an opening ceremony attended by local and international dignitaries including the Mayor of Annapolis Gavin Buckley, the County Executive Steve Schuh, Building Energy Managing Director North America Andrea Braccialarghe, EDF Renewables Distributed Solutions CEO, Jamie Resor, a delegation of the Embassy of Italy represented by Maurizio Greganti, Deputy Chief of Mission, as well as different public authorities at the federal, state and municipal levels.

The PV plant, which is expected to produce about 24 GWh of electricity annually, is supported by Power Purchas Agreements for the sale of the entire energy generation for 20 years with the City of Annapolis, Anne Arundel County and the Anne Arundel County Board of Education. The plant will also be supported by the sale of Renewable Energy Credits (RECs). The investment for the construction of Annapolis Solar Park, which achieved full production at the end of June 2018, amounted to approximately 36 million US dollars.

Thanks to the solar plant, the landfill, owned by the city of Annapolis, is now becoming a reliable source of revenue for the first time since it was closed in 1989. The project will also bring financial and environmental benefits to the city, ensuring long-term, fixed and predictable energy cost and CO_2 emissions savings.

Five New North Sea Offshore Wind Contracts for Ampelmann

Ampelmann, a global leader in offshore access solutions, won five new offshore wind contracts over the course of September. These projects will see two A-type and three E-type systems installed on vessels operating in the North Sea. Four of the five contracts have been secured by Ampelmann's recently opened office in Hamburg, Germany.

This is an important achievement for the company as the offshore wind market continues to strengthen and Walk to Work (W2W) operations become increasingly important. To date, Ampelmann has enabled the safe transfer of 400,000 people and seven million kilograms of cargo in the offshore wind sector worldwide.

Among the new contracts is a five-month commissioning campaign with vessel owner Eidesvik. "After a successful collaboration last year, we are excited to work with Eidesvik again in the coming winter season," said Tim Börner, Business Development Manager Offshore Wind at Ampelmann. An Ampelmann E-type system has been installed on the *Viking Neptune* vessel to enable supporting works at the Merkur wind farm in the German North

Ampelmann E1000 gangway

Sea. The E-type provides safe offshore access in rough sea waters and can compensate wave motions up to 4.5m Hs.

Energy Efficient Central Cooling Plant Online at Dubai South's VIP Terminal

The first central cooling plant serving the VIP Terminal, has officially begun its operations to provide the cooling needs of the VIP Terminal located in the city's Aviation District, following the inauguration ceremony led by Tahnoon Saif, CEO of Aviation District and Ismail Al Marzooqi, CEO of South Energy. The plant's opening also witnessed the presence of senior executives from Johnson Controls, Claude Allain, VP & General Manager Middle East and Africa and Dr. Marcus Schumacher, VP & General Manager Gulf Countries.

The plant provides highly efficient air-cooled variable speed drive York chillers which meet Dubai South's goals of tapping advanced energy-efficient cooling solutions that optimizes its energy footprint.

The installed York® district cooling plant serving the new VIP Terminal is using highly energy efficient variable speed drive technology for the air-cooled chilled water system which Johnson Controls has pioneered to introduce across its entire commercial cooling portfolio more than 13 years ago. By using scalable design concepts for this cooling plant, right-sized cooling needs meet today's demand while allowing for capacity expansion in the future and eliminating potential oversizing of cooling needs, thereby cutting energy wastage and overall operating cost.

SGRE Awards Taiwanese Local Supply Contracts for Offshore Wind

Siemens Gamesa Renewable Energy (SGRE) awarded the first two local supply agreements for offshore wind projects in Taiwan. Firstly, Swancor will supply resin used in the blades slated for the Formosa 1 Phase 2 offshore wind power plant. Secondly, the newly-formed partnership between CS Wind and Chin Fong will supply 100%-localized towers to meet the localization requirement on the Yunlin offshore wind power project in 2021.

The choice of Swancor resin in Formosa 1 Phase 2 blades, due for installation in 2019, comes as the result of months of cooperation between SGRE and Swancor, along with a trusted long-term partnership between the two parties. The 120 MW Formosa 1 Phase 2 project will consist of 20 SWT-6.0-154 Direct Drive wind turbines.

SGRE also signed a supply contract for local towers from CS Wind and its partner Chin Fong. In the initial step, the partnership will manufacture and supply towers for upcoming Taiwanese projects under local content requirements. CS Wind, a global supplier of wind turbine towers for both offshore and onshore who will also supply towers to Formosa 1 phase 2 project, and Chin Fong Machine Industrial, Taiwan's largest maker of mechanical power presses and world's leading provider of metal forming technologies, have joined forces.

The two companies will utilize Chin Fong's existing facilities at Taichung Harbor to deliver localized towers beginning 2021 to the Yunlin offshore wind power plant. SGRE was awarded preferred supplier status for the project in May 2018. The project is expected to feature 80 SG 8.0-167 DD wind turbines to be installed in two phases.

US Cities Commit to 100% Renewable Energy

Despite US President Donald Trump pulling out of the global climate accords last year, the North American country continues to contribute to reducing its greenhouse gas emissions and helping to mitigate climate change. Many of its 50 states maintain strong, clean energy legislation and goals, and their cities are also embracing their own unique programs.

The Ohio city of Cleveland, also known as "the heart of rock 'n' roll" announced its latest plan to deal with climate change during the 10th Sustainability Summit. As part of the city's goal to reduce greenhouse gases, Cleveland's Chief of Sustainability Matt Gray announced the city's goal to reach 100 percent clean renewable energy by 2050.

"When we say that, that's everything," Gray said. "That's what residents are using, that's what businesses are using – industry, government, the whole city." Gray said to reach the goal, the city would turn to solar and wind energy plus encourage energy efficiency in businesses and homes.

The city's climate action plan notes progress made in sustainability efforts since the first action plan in 2013, including a two percent decrease in greenhouse gas emissions in 2016 from 2010 levels.

Cleveland is not alone; 82 other US cities have already made a similar pledge. It was recently announced that the country's capital city, Washington D.C., would make the move toward 100 percent renewable energy. Washington, D.C.'s city councilors are likely to pass the most aggressive renewable energy mandate in the country, calling for 100 percent renewables in just 14 years.

The "Clean Energy DC Act of 2018," legislation sponsored by five D.C. city counselors and co-sponsored by another three, calls for the nation's capital to have 100 percent of its grid to be powered by wind, solar and other renewable energy by 2032. The city's current standard is only 50 percent renewables by 2032. If passed, the bill would be the most ardent clean energy mandate in the country, according to a report by the Daily Caller.

US cities that have already achieved 100% renewable energy-powered status include Aspen, Colorado; Burlington, Vermont; Greensburg, Kansas; Rock Port, Missouri; Kodiak Island, Alaska; and perhaps surprisingly, Georgetown, in oil state Texas.

Dozens more US cities and counties have made the commitment and are working to achieve 100 percent renewable energy status according to their individual self-imposed mandates. Visit *www.sierraclub.org* for more information.

Toyota to Supply Hydrogen Technology for Transportation

Toyota announced that it will provide its hydrogen fuel cell technology to Caetanobus SA in Portugal. In line with its vision of a decarbonized society as stated in its 2050 environmental challenge, Toyota is promoting the application of its hydrogen fuel cell technology beyond passenger cars, including heavy duty trucks, small delivery trucks, forklifts and buses.

In Europe, Toyota will supply its fuel cell systems, including fuel cell stacks, hydrogen tanks and other key components to Caetanobus SA, the renowned Portuguese bus engineering and production company, to build hydrogen fuel cell city buses.

The first zero emission fuel cell city buses will roll off the lines of Caetanobus SA, in a little over a year, and are to be operated as demonstration buses by Caetanobus SA.

Siemens Gamesa Boosts Installation Work with Spanish Contracts

Siemens Gamesa recently sealed deals with WPD, Brial and a major energy company for the supply of 233 MW. All of these projects fall under the scope of the renewable capacity allocated in recent auctions.

In total, the company will install 70 of its wind turbines at eight wind farms being developed in the Spanish provinces of Zaragoza and Valladolid during the first half of next year. It will also operate and maintain all of these new facilities.

Most of the orders are for the SG 3.4-132, one of the company's most cutting-edge and efficient turbines. The company will also install the SG 2.1-114 and the SG 2.6-126 at some of these facilities.

The majority of the blades for these turbines will be made at the Aoiz factory in Navarre, the As Samozas factory in Galicia, and the Moroccan facility in Tangier. The nacelles, meanwhile, will be manufactured at the Ágreda factory in Soria, a facility which has seen its production increase by 20% in the last year.

More specifically, the company has been mandated to supply 39 of its SG 3.4-132 turbines (135 MW) to independent power provider WPD at the El Poleo, Las Panaderas and Navillas wind farms, all of which are located in Valladolid. It will also service these facilities for five years.

In addition, Siemens Gamesa has been contracted to supply Brial with another 20 turbines for the Tinajeros, Agón, La Nava and Los Cierzos wind farm developments in Zaragoza. The turbines to be installed at these complexes, a mix of the company's SG 3.4-132, SG 2.1-114 and SG 2.6-126 models, represent capacity totaling 62 MW.

Source: Siemens Gamesa

SGRE wind farm Spain

In this instance, the company will maintain and operate the wind farms for a period of 10 years.

Lastly, Siemens Gamesa has executed an agreement with an important energy company for the delivery of 36 MW (11 turbines) at a development in Zaragoza.

Including these new orders, the company has announced contracts totaling 874 MW of capacity in Spain in recent months.

EMERGING NATIONS

Since 2007 we have witnessed a renewable energy revolution across the continent with many of the more developed countries taking the lead. Now almost every nation in Africa is pursuing the development of some form of renewable energy.

Egypt, Ethiopia, Kenya, Morocco and South Africa have long been the pioneers in bringing renewable energy technologies to the continent, while others such as Ghana and Nigeria followed suit. Here we take a look at just a few of the most recent players to come on strong to the RE scene –Burkina Faso, Namibia and Togo.

Burkina Faso

Back in 2011 Burkina Faso said it was going to evaluate its solar resource potential in collaboration with Ghana's Kwame Nkrumah University of Science and Technology (KNUST) and the International Institute for Water Environmental Engineering (2iE). Two weather stations were installed to collect primary data for a solar energy resource assessment. Fast forward seven years and the country has made significant progress in establishing a solar industry and is one of Africa's most active newcomers.

The first major project to come out of Burkina Faso was made known in August 2012 when the EU announced that it would provide €25 million for a solar PV project in the country. The 33 MW plant was inaugurated in November 2017 and was the largest plant in the region in installed capacity at that time.

Burkina Faso signed its first public-private partnership (PPP) for the construction of a 22.6 MW solar power plant in June 2017, some three years after Canadian company Windiga Energy announced it intended to undertake the project. Windiga will promote the project while Zina Solaire SA will be the local developer. Separatly, a grant for a feasibility study for two solar PV plants was agreed to by the USTDA. The plants, to be located near the villages of Pá and Kodéni, will generate 34 MW of power for the African country combined.

In October 2017 Roch Christian Kaboré, Burkina Faso's president, launched the Special Rural Electrification Program (PSER). Under the initiative 22,000 households will gain access to energy. The overall objective of the PSER is to electrify, eventually, 822 localities distributed in the 13 regions of the country. Its implementation cost has been estimated at 25 billion CFA francs ($43 million), which will be financed by the World Bank and the Power Sector Support Project. The implementation of the program is part of the National Plan for Economic and Social Development. Localities will be electrified by connection to the interconnected national grid, with solar and diesel hybrid systems and solar home systems.

Burkina Faso plans eight more solar facilities with a total capacity of 100 MW, according to Minister of Energy Alpha Oumar Dissa in January. Two of these plants, with capacities of 10 MW and 20 MW, will be located in the Central region. The Sahel will host an infrastructure of 15 MW and the Eastern region a 10 MW plant. The Boucle du Mouhoun, meanwhile, will house a 15 MW power plant, while the plant located in the Hauts-Bassins will produce 10 MW. The Northern and Cascades regions will each house a 10 MW photovoltaic power plant.

The government launched its rural electrification project in March that will affect 45 localities in the provinces of Ziro and Gourma. Called ERD-ZIGO, the initiative will have an estimated cost of more than $13 million to be co-financed by the EU up to 72%.

The country is also home to the world's largest solar hybrid power plant, online since March. Wärtsilä was selected by the global renewable energy independent power producer Total Eren SA and African Energy Management Platform (AEMP) to build a 15 MWp solar PV plant to generate and deliver energy to Iamgold Essakane at its gold mine in northeastern Burkina Faso. By hybridizing an existing 57-MW diesel power plant with the new solar PV plant and related hybrid plant controls, the plant's performance has been significantly enhanced. The new solar hybrid plant configuration maximizes the utilization of renewable energy at the Essakane mine.

Source: Wartsila

World's largest hybrid plant

Most recently, Burkina Faso's National Trade Union of Traders (SYNACOM-B) announced it will develop two solar power plants with a combined capacity of 150 MW. A 100-MW plant will be located in the locality of Nobéré and another plant of 50 MW will be established in a location to be determined.

While the projects covered are not exhaustive, they do provide an indication of just how busy the sector has been and the government's commitment to powering its underserved populace. Burkina Faso is already coordinating with other countries in the region to further develop its renewable sector and supporting infrastructure.

Namibia

Like Burkina Faso, Namibia's solar industry has evolved at a rapid pace, and wind power is gaining speed as well. With hydropower already a long-established staple in the country's energy sector, the government decided to take a serious look at diversifying as far back as 2008. That year it was announced a feasibility study would be undertaken. In 2010 Namibia's national energy utility NamPower said it was investigating projects to implement more renewable energy into the energy mix. The utility signed a MoU with Polytechnic of Namibia for a joint study in wind generation in the south and along the coast. Namibia later established it Renewable Energy Feed in Tariff (REFIT) program in late 2015.

Source: Zbynek Burival

Namibia is keen to further develop its solar potential

By the end of 2012 Namibia was on its way to expanding its rooftop solar energy when Solar Age Namibia and SolarWorld Africa installed a 237-kWh PV installation atop a supermarket and a 21.360 kWh installation at the adjacent pharmacy. One year later Namibia announced its largest roof-mounted solar PV project and at that time the largest of its kind in Africa. Namibia Breweries Ltd. (NBL) in conjunction with O&L Energy, both part of Ohlthaver&List (O&L) Group, announced the official approval of a 1-MW on-grid solar PV facility. Following this, additional projects were announced and thus rooftop solar expanded.

Sertum Energy Namibia saw the start of construction on its first phase of the Trekkopje Solar Project in 2016. The project is a 27-MW solar energy farm near Arandis. Construction was completed in August. and in its first phase will generate 5.78 MW of power generation capacity. Output from the plant feeds into the NamPower grid. In addition, Enertronica Group has committed to building three smaller solar facilities to serve schools in local communities.

Under the REFIT program, nine of 14 projects have been commissioned and reached commercial operations, generating 5 MW each, eight solar and one wind. The sole wind farm came online in April of this year. Mines and Energy Minister Tom Alweendo officially opened the Ombepo Wind Farm outside Lüderitz. Innosun Energy Holdings led the project in partnership with the Lüderitz Town Council. Ombepo Wind Farm is the country's first grid-connected wind farm and will supply 5 MWs of electricity to the national power grid.

Namibian REFIT Projects Online

SOLAR
Osona PV (5MW)
Ejuva-1 PV (5MW)
Ejuva-2 PV (5MW)
HopSol PV (5MW)
Aloe PV (5MW)
Alten PV (5MW)
Momentous Energy PV (5MW)
Metdecci PV (5MW)

WIND
Ombepo Wind (5MW)

Another wind farm was announced by WSP Africa in June 2017, the Diaz Wind Farm. To be developed by Diaz Wind Power, and a joint venture between the United Africa Group and Quantum Power if the project moves forward, it will produce 44 MW and be located in Lüderitz.

SunEQ Namibia reached financial close with the Development Bank of Namibia (DBN) for a 5-MWAC solar project for Ohorongo Cement in June. The Ohorongo Cement factory is the largest in the country. The captive power plant is to be located next to the Ohorongo Cement factory in the Otjozondjupa region. The plant will be equipped with approximately 20,000 crystalline silicon modules mounted on a tracking system with an installed capacity of 6.5 MWDC for an output of 5 MWAC. Once it starts commercial operation, an estimated 14 GWh per year of clean electricity will be fed into the electricity grid of Ohorongo Cement.

Also this summer, two solar power plants were officially opened, the Ejuva One and Ejuva Two. The plants are located in Gobabis, the regional capital of the Omaheke region of Namibia. The plants are located side by side and were constructed and managed as one project. The plant will feed an estimated 25.8 GWh per annum into the national grid. It is among the 14 renewable energy projects commissioned under the interim REFIT program. The REFIT program was initiated by the Ministry of Mines and Energy and the Electricity Control Board to establish independent power producers in Namibia. The Ejuva projects are backed by 25-year power purchase agreements with Nampower.

Togo

Togo is another country looking to cut its fuel import costs and diversify its energy mix by incorporating renewable energy from various sources. Togo is not as advanced as the other two countries in our survey but has taken some steps to change the *status quo* to improve the lives of its citizens, most of which do not have access to power with one of the lowest electrification rates in the world.

The country was invested in the jatropha-for-biofuels craze in the early 2000s and then looked toward some initial solar experiments in 2010 with rooftop panel installations. In 2012 Proinso, a PV supplier, launched a Solar Energy Solidarity program in the country,

Source: BBOXX

BBOXX meets with Togolese president and ministers From L to R: Joe Segal (BBOXX); Mansoor Hamayun (CEO, BBOXX); H.E. President Faure Gnassingbé; Thomas Chevilotte (BBOXX advisor); H.E. Cina Lawson, ICT Minister; and H.E. Marc Bidamon, Minister of Energy

donating an installation of 1.320 kWh arrays to provide power to six classrooms and school offices, along with a solar PV array to pump water. A few other small projects also cropped up, but it wasn't until 2016 that its solar industry really gained some steam. Since then numerous initiatives and projects have emerged.

In October 2016 the West African Development Bank (BOAD) granted a loan of CFA 6 billion ($10.38 million) to Togo for electrification of 62 villages. The loan and electrification of the villages is part of the implementation of the valuation of solar energy program (PROVES). At an overall cost of 80 billion CFA ($138.4 million), the program connected low voltage subscribers, ensured public lighting with solar, and electrified some of the areas covered by solar off-grid systems.

In June 2017 the government of Togo announced that through its CI-ZO initiative it aims to increase the electrification rate from 7% to 40%, electrifying more than two million of its citizens by 2022. This program will include the extension of the grid and development of up to 60 mini solar plants Another aspect of the CI-ZO initiative are being implemented with BBOXX through the distribution of individual solar kits to rural populations. Each system allows recipients to charge up to five lamps, a television, a radio, and torches on a 12V battery and make payment through a mobile application. In addition, it is equipped with various intelligent technologies to ensure efficient use of electrical energy. The initiative gained momentum this past February when a pioneering debt finance deal with local bank *Union Togolaise de Banque* was reached, allowing for the acceleration of the program to help meet its target deadline.

French firm Total announced in July that it is partnering with Solergie to provide the Togolese people another new power solution, SolergieBox. This is a 220V system whose capacities can be increased depending on customers' needs. At the end of this year, Solergie expects to install 240 SolergieBoxes and 3,000 by end-2023, impacting 24,000 households which is more than 200,000 people. AEA

Nana Addo Dankwa

President: Nana Addo Dankwa Akufo-Addo (since January 2017)
Independence: March 1957 (from UK)
Population: 27,499,924 (July 2017 est.)
GDP (purchasing power parity): $130.2 billion (2017 est.)
Real GDP Growth Rate: 5.9% (2017 est.)
Per Capita GDP: $4,600 (2017 est.)
Ministry of Energy and Petroleum: John Peter Amewu
Installed Generation Capacity: 4,200 MW

Source: Various, including the World Bank, Power Africa, and CIA World Factbook

GHANA

Brief History

Portugal was the first to land on the shores of the Gold Coast, what is now Ghana, in the 1400s where its position remained secure for over a century. During that time the Portuguese used force to prevent English, French, and Flemish efforts to trade on the coast; although by 1598 the Dutch had begun trading, building forts at Komenda and Kormantsi by 1612. In 1637 the Dutch captured Elmina Castle from the Portuguese and Axim in 1642 (Fort St Anthony). Other European traders joined in by the mid-17th century, largely the English who declared Ghana a protectorate in the 1800s, securing their colonization of Ghana. The British ruled Ghana until its independence in 1957. The country was the first in sub-Saharan Africa to shake off colonial rule, inspiring liberation struggles around the continent.

Upon independence Kwame Nkrumah was named prime minister and in 1960 was elected to become the country's first president. The country went through a troubled period following independence with Nkrumah being ousted in a military coup in 1966. While power was restored to the civilian authority three years later, a continuous round of coups and counter-coups kept the country and its people on tenterhooks for a period of time. Although Ghana's start as an independent nation was rocky, it did not last long with the African country leading the way for democracy in Africa, holding several peaceful transfers of power through transparent and peaceful elections. The latest elections which were held in December 2016 resulted in the citizens of the country naming Nana Akufo-Addo the winner over incumbent John Mahama.

Economy

On the economic end, Ghana saw its real Gross Domestic Product (GDP) growth slow five consecutive years due to tightened monetary and fiscal policies, among other factors, until last year. The year 2017 brought a small turnaround and 2018 GDP is projected to continue the recovery if the non-oil economy improves. The IMF recently revised downwards its previous 6.8% projection for the Ghanaian economy in 2018 to 6.3%. However, the latest World Economic Outlook Report puts Ghana's economic growth higher at 7.6% GDP in 2019 but will gradually dip to about 5.1% GDP by 2023. The report pegged inflation at about 8% for both 2018 and 2019.

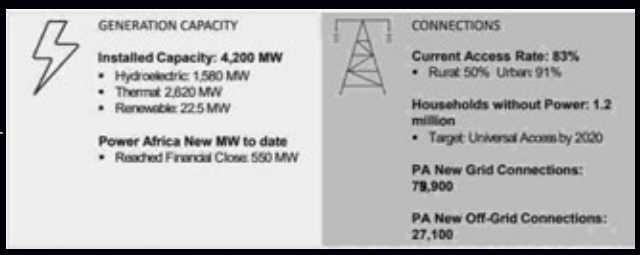
Industry is the second largest contributor to the country's GDP, and its performance could be strengthened if industrial support policies and programs were better targeted. This would include prioritizing measures to improve access to finance, and tackling constraints related to skills and infrastructure. Toward that end, in August President Akufo-Aldo launched a new National Public Sector Reform Strategy (NPSRS) 2018–2023, aimed at enhancing public service delivery to citizens and the private sector.

The new reform strategy became necessary due to the inability of past reform initiatives to fully achieve their intended objectives for a number of reasons, including the supply-driven nature of reforms that were not informed by any comprehensive national public sector reform strategy. He said the major goal of the reform was to strengthen the human resource capacity, adding that government

would offer public sector training to resource and help develop the requisite skills and knowledge needed for the effective delivery of modern services.

The Alternatives Sector

While small-scale projects are taking off, the government is now keen on promoting large scale solar and wind. It is also looking to become a regional exporter. In March of last year President Akufo-Addo said new incentives to attract investment would be available for utility scale solar and wind energy projects. Incentives to accelerate the development of mini-grid solutions in off-grid and island communities would also be offered and government would introduce competitive bidding for power capacity procurement and review current laws and regulations for the sector.



Source: Power Africa

Projects

Solar

Ghana is quite keen on expanding its solar generation capacity and has come on strong over the past year. It has targeted setting up 200,000 solar power systems of various types to serve households, businesses and public infrastructure, according to President Akufo-Addo. "Ghana is located south of Equator and many parts of the country enjoy excellent sunshine. It is unfortunate that despite the abundance of its solar resources, the country has an energy mix composed of 59% fossil and 40% hydroelectric but only 1% of solar," the president said.

These new solar power units will be located in both on and off grid communities.The country also aims to establish 55 mini-power plants with an average capacity of 100 KW that will work through photovoltaic technology. He intends for future contracts to be awarded through a competitive bidding process unlike the projects his administration inherited.

In September President Akufo-Addo inaugurated the country's second solar power plant. With a capacity of 20 MW, the plant was set up by the local independent energy producer, Menergy Ghana. It is located in Gomoa Onyaadze, in the center of the country and was built at an estimated cost of $20 million. The energy it produces will be transferred to the national grid.

Source: Tommy King

Solar in Ghana

Also in September, the government inaugurated 26 solar-powered microgrids for remote off-grid health facilities in the Northern, Brong Ahafo, and Western Regions. The project is part of the Ministry of Energy's off-grid solar energy interventions to improve primary health care delivery in remote areas, with a special focus on women and children. The UN Foundation through UK Aid provided a grant facility worth $2.5 million to the government to implement the project. Each facility has the capacity to generate between three to five kilowatts of power.

Red Sea Housing Services (RSHS) selected REDAVIA in June to implement its first showcase solar farm in Accra. REDAVIA is imminently expected to fully commission a 336-kWp solar farm at RSHS's biggest manufacturing facility in Tema, strategically located in close proximity to Ghana's main port. This will allow RSHS to introduce a cost-effective and reliable solution into their energy mix of solar to the national grid.

In the future, RSHS aims to not only expand the solar farm but also to deepen the partnership with REDAVIA. This evolved partnership will leverage existing synergies between both companies whereby RSHS intends to sell a packaged solution of their modular housing coupled with solar power from its partner.

REDAVIA also recently announced that it is further expanding its portfolio of companies active in the distributed energy sector. The company and the responsAbility-managed climate fund signed a financing agreement for REDAVIA's Ghanaian subsidiary. The $4 million financing will allow REDAVIA to supply Ghana's industrial and commercial sector with affordable, reliable and clean power generated through modular solar farms.

The retail fuel sector is also going green. French oil company Total's subsidiary in Ghana has commissioned its first solar service station in the port of Tema, with a capacity of 35 kW. In total, 225 square meters of solar panels were installed to meet the energy needs of the distribution center. This service station is part of the company's modernization plan in Ghana, one of the major components of which is to solarize at least 50% of its distribution network within five years.

As part of the same plan, Total Ghana decided to provide various solar solutions from lamps, kiosks and logistical support for Ghanaian start-ups. Solar kiosks were deployed at three gas stations to provide customers with access to phone charging stations and Wi-Fi.

Wind

Most recently, Finland announced it will invest €114 million in clean energy projects which includes wind farms in developing countries, nine of which are in Africa, with Ghana among them. The Ghanaian facility will have a 3 MW capacity.

Activities for the 225-MW Ayitepa wind farm in the Ningo-Prampram district ramped up in December. Mainstream Renewable

Power and Actis, the Lekela Power joint venture, are developing the project, estimated to cost $525 million. Ayitepa is not only the first wind project in Ghana, but will also be one of the biggest in Africa if timelines are adhered to. The energy will be fed into the National Interconnected Transmission System.

Once construction begins, it is expected to take 16 months to complete. Designed to operate for 25 years, the wind project will reduce the electricity supply deficit in Ghana. It will produce enough electricity for approximately 60,000 local households a year in the country. The project will use the local workforce and boost the local economy.

In *Alternative Energy Africa's* 2017 in-depth look at Ghana's wind ambitions, we reported that the Volta River Authority (VRA) had plans to build its first wind farms. The planned wind farms will have a capacity of 150 MW of power. The first phase of the project will allow the development of 75 MW of power from plants in the communities of Anloga, Anyanui and Srogbe in the Volta Region. The remaining 75 MW will be built in the localities of Wokumaglje and Goi, in the region of Greater Accra, during the second phase of the project.

By the end of 2017 the Environmental & Social Impact Assessment (ESIA) for the proposed development of Wind Energy Facility in Wokumaglje and Goi had been completed and results announced, and the ESIA results for the Anloga, Srogbe and Anyanui projects followed in April 2018.

The 48-MW Winneba wind project was one of the winners of the 2017 $7-million Access Co-Development Facility (ACF); a finance package to be shared between three renewable energy projects in Africa. ACF partners Access Power and Eren Renewable Energy will take a stake in the project. Since the time of the award, few developments have occurred on the project.

Nuclear

Ghana has made clear its intention to turn to nuclear energy for some time, recently announcing that plans are underway. The country already has a nuclear station mainly used for research, development and the creation of isotopes for medical purposes.

According to Robert Sogbadzi, the deputy director of the Nuclear Energy Directorate, Ghana aims to start construction of its first nuclear power plant in 2023 and put it into service by 2029. He added that the directorate will be publishing a white paper on its nuclear program soon.

Rosatom, as part of its promotion of nuclear energy in Africa, is supporting Ghana. In September, Ryan Collyer, Communication Director, Rosatom Central and Southern Africa, outlined the significance of nuclear power for the economic development of Ghana, especially in light of Ghana's quest to redevelop its aluminum production capability. He pointed out that "Aluminum production requires more electricity than any other industry known to man and nuclear has the highest capacity factor of all the current generating sources, meaning it can power Ghana's industrialization non-stop 24 hours a day 365 days a year. A diverse energy mix with the inclusion of renewables and nuclear power will contribute immensely to the national economy and will make local business more competitive and attractive on the global market."

Ocean Energy

Indian firm Shapoorji Pallonji and the Israeli renewable energy firm Yam Pro Energy are planning to build a 150-MW wave power plant in Ghana. The two parties signed a MoU in December on the project that should see completion within the next three years. The two firms will undertake the project with an unnamed local partner. With an estimated cost of $180 million, the plant will be delivered in phases. The first will have a capacity of 10 MW.

In March Ghanaian renewable energy company, TC Energy, announced that Seabased, which specializes in converting sea waves into electricity, had been awarded the supply of a key wave power plant. The plant, which will have a capacity of 100 MW, will be constructed near Ada on the estuary of the Volta River.

Source: Seabased

Under the terms of the agreement, Seabased will design, manufacture and install the wave energy park with an option for local final assembly of non-core technology as the project progresses. TC Energy, which has a 1,000 MW power purchase agreement with Electric Company of Ghana Ltd. (ECG), will own and operate this plant.

"Both companies have been diligently preparing for years. It will be a very exciting experience for Seabased. The studies, permits and all the necessary paperwork are in place and we feel well prepared to enter this last phase of manufacture and delivery of the wave plant," commented Seabased CEO, Øivind Magnussen. A pilot phase has already been successfully conducted.

Waste to Energy

GE Power and Marinus Energy announced a pilot project to capture Isopentane gas and use it as a fuel source for generating electricity. The Atuabo Waste to Power Independent Power Project will be the first TM2500 power plant in sub-Saharan Africa to use Isopentane gas as a fuel source and will run on GE's latest TM2500 gas turbines. This Isopentane gas would otherwise have been flared.

In the first phase, Atuabo will convert the Isopentane fuel into up to 25 MWs of power, generating enough electricity to supply power for more than 100,000 Ghanaian households. As additional gas is brought onshore, the plant is expected to add on additional gas generating units up to a capacity of 100 MW. Additional Isopentane fuel will eventually be stripped off an offshore gas supply and processed at Atuabo by the Ghana National Gas Company. The gas turbine will start on lean gas and transfer to the Isopentane mix over time, and the power plant is intended to operate at base load throughout its life.

Armech Africa Ltd., a designer and manufacturer of modern industrial processes, will build a waste-to-energy power plant in Tema. The plant will generate 60 MW of energy, through the incineration of the 3,000 metric tons of waste generated daily in the country.

With an announced value of $300 million, the plant will be financed by the Armech Group via the Industrial and Commercial Bank of China, without any sovereign guarantee from the Ghanaian government. In addition, Energy China, one of the world's largest suppliers of electrical solutions, will be in charge of its construction. Armech Africa Ltd., a subsidiary of the Indian group Armech, has entered into a public-private partnership with Ghana's state electricity utility for the power generated from the project.

Export Power

The country's ambitions to export power were realized recently with the completion of the 225 kV Bolgatanga (Ghana) to Ouagadougou (Burkina Faso) Interconnection transmission line. The trans-boundary electric power transmission line extends over 210 km of which 37 km is in Ghana. Ghana is now sending 100 MW per day of a lower cost energy resource to its neighbor.

The project was funded by World Bank, French Development Agency, European Investment Bank, Burkina Faso's National Electricity Company (Sonabel) and GRIDCo at an amount of about $93.3 million.

Minister for Energy, John Peter Amewu said, "Implementation of regional projects, like the 225kv Bolgatanga-Ouagadougou Interconnection line, would allow for the export of power from Ghana to Burkina Faso to serve the purpose of the creation of the West African Power Pool." He added, "Ghana currently has adequate capacity for cross border transmission to neighboring countries. Let us, therefore, continue to engage one another to make the necessary investments in order to put up the infrastructure that would enable us utilize the resources within the region to push the industrial agenda of our countries."

As additional projects come online and new projects are added, Ghana will look to move its exports beyond Burkina Faso to provide clean, lower cost energy to its neighbors and help reduce the region's dependence on costly fossil fuel imports. AEA

WorleyParsons Provides Design Support for Revolutionary Wind Power Technology

As an organization that focuses on finding solutions to the world's changing resources and energy challenges, WorleyParsons continuously seeks to develop and encourage innovative ideas, refine those ideas and take them to market. With the drive towards renewable energy gaining pace, the project delivery company is harnessing its deep insights of energy markets and understanding of new energy technologies, and collaborating with innovators in this sector. One such innovator is Brayfoil Technologies which has developed a groundbreaking morphing wing that represents a first in aerodynamics.

The Brayfoil is an auto-setting morphing wing that has the potential to make a significant impact on the reduction of fossil fuel usage and the consequent reduction of atmospheric pollution and global warming. The revolutionary wing can reverse lift from one surface to the other, and can become any section required by the aeronautic designer by a simple actuation method. While primarily a solution that expands the operating envelope on aircraft with vastly reduced cost and complexity from current technology, Brayfoil is focusing on the renewable energy field as its first area of development.

WorleyParsons is supplying design support in the form of engineering drawings and engineering analysis for the Brayfoil turbine prototype which uses a flexible wing in a vertical axis configuration to create optimal lift at low rotational speeds, enabling the use of large, dynamically adjustable wing surface areas. Its strength lies in its simplicity as the seamless wing works without hinges, joints, panel sections or flaps.

The world-wide patented Brayfoil is the invention of Robert Bray, an architect and entrepreneur incubated at the Climate Innovation Center South Africa. Although still in the early stages of prototype development, the Brayfoil wind turbine has already been subjected to comprehensive scrutiny and has passed feasibility trials at the Faculty of Engineering at Stellenbosch, and wind tunnel testing at South Africa's Council for Scientific and Industrial Research (CSIR).

The morphing wings in a flexed position generating lift

The wing undergoing testing inside the wind tunnel at the CSIR

WorleyParsons has been working closely with Brayfoil on optimizing the design of the moving wing mechanism, as well as the external skin of the wing that requires flexion and morphing abilities.

"WorleyParsons management has been incredibly supportive since the moment I showed them the groundbreaking technology, and has given significant engineering input on the application to wind power at end user. This move away from large utility wind farms to embedded solutions is now clearly going to become a reality in the near future," says Bray. Of particular interest he says is the use

of the new turbine on city buildings in good wind resource areas, where it is a disruptive technology to solar PV, being cheaper power in far greater quantity than is available from the sun, on the limited roof areas of city buildings.

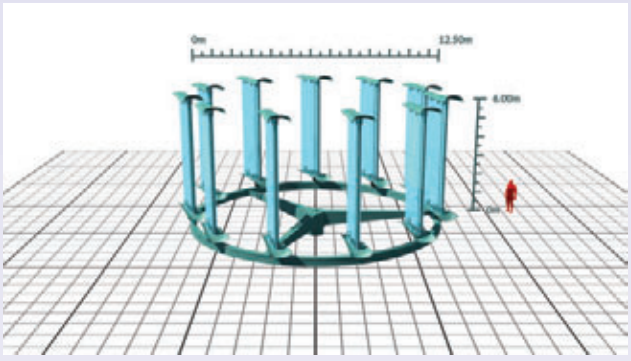
Robert's son Matthew Bray, director of Strategy & Operations at Brayfoil Technologies, explains that conventional wind turbines have a horizontal axis with propeller blades that require a large amount of space and stable, smooth wind in order to generate power. By contrast, Brayfoil wings have reflex sections which allow them to set their own angle of attack to the wind by using a flexing shell that can change shape and create variable lift.

"The benefit of this is significantly higher energy yields compared to conventional turbines, as well as none of the noise or animal mortality associated with large, high-speed turbines and existing small wind turbines in urban areas," says Bray. "What is really interesting is that the turbine blades (or wings) are being made from transparent materials that renders them far less visible than current turbines."

Compared to solar PV, the Brayfoil turbine can generate two to 15 times more kWh per square meter of surface area. Being a vertical axis unit, the Brayfoil turbine is not necessarily mounted on a tall tower and is designed to collect energy by the better use of laminar wind flow acceleration and turbulent wind apparent on the edges of buildings or at the cusps of hills, ridges or forest belts, thereby further improving energy yields.

Consequently, the Brayfoil turbine has the potential to make renewable wind energy easily accessible to end-users, as it can operate in urban areas with wind speeds that are significantly lower than current benchmarks for conventional wind turbines. They are also suitable for use in the shipping industry as they can be placed on the decks of ships to supplement energy and reduce air pollution. With new legislation forcing ship owners to comply with emissions levels, the Brayfoil turbine is well placed to solve this problem on a global scale.

The Brayfoil turbine has been manufactured by Diesel Electric Services, who specialize in the design, manufacture, delivery, installation, commissioning and maintenance of generator sets, distribution boards, UPS and associated products. "This project would not have been possible without Diesel Electric Services who has provided considerable assistance to the development of the turbine," says Bray.



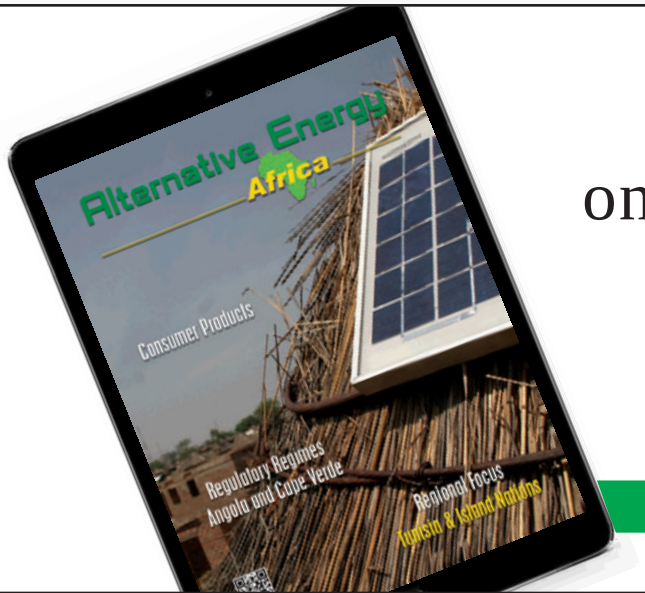
3D visualisation of the Brayfoil turbine in the proposed configuration

Besides wind turbines, the Brayfoil can be applied anywhere where wing sections are used, opening up greener energy solutions that were previously impossible. These include hydropower generation, maritime power, safer, faster automobiles, automatic sailing and fuel savings in aviation. Bray comments that engineering drawings and tooling have already been completed for an automatic wing sail production model, while aviation wing design is in the conceptual stage.

About WorleyParsons

WorleyParsons is a world leader in the renewables energy field and has comprehensive expertise in the renewable energy sector. The organization engages with power supply customers all over the world, including utilities, governments and energy companies to create sustainable energy solutions and forge creative partnerships. WorleyParsons has delivered projects in solar, wind, hydro, biomass and geothermal power, and supports customers in developing and realizing their emissions reduction strategies.

WorleyParsons says that their focus is on staying relevant to customer needs in a rapidly changing energy sector, with a growing future portfolio of renewables working alongside traditional energy sources. This aligns with Brayfoil's belief that renewable energy is no longer a choice, nor does it constitute a compromise in affordability or the call for universal energy access, with decentralized embedded energy forming a large portion of an increasingly greener future energy mix. AEA



Let us know YOUR views on the renewable energy industry

Follow us on

www.AE-Africa.com

Donald Trump's Arbitrary Foreign Policy Results in a Renewables Peak for Industrial Offtakers in Africa

By THEnergy

In recent months, oil prices have been rather unstable. To some extent this has been related to Donald Trump's foreign policy – mainly in respect to Iran. Oil and as a consequence also global diesel market prices have become very volatile with a tendency to increase long-term.

In Africa, many remote sites are powered by diesel or heavy-fuel oil (HFO). This not only applies for mines and factories but even for large metropolitan regions. For industrial off-takers and utilities, recent diesel price developments are critical. Fuel represents one of their main operational costs. Price increases have direct adverse effects on their business. Even higher volatility represents a major concern by affecting plannability.

Solar power does not display a high level of volatility. Today's investments determine the electricity costs over the next 20-25 years. Industrial consumers often do not have to invest their own capital. It is sufficient to sign power purchase agreements (PPAs) with third party investors that finance the solar power plants and sell electricity.

THEnergy sees in its daily consulting practice that renewables are becoming more and more established in African power markets. Even traditional fossil fuel companies like diesel suppliers, diesel genset providers and rental companies have been changing their business models by integrating renewable energy solutions.

Today, in Africa many offtakers specifically ask for combinations of diesel and solar before signing or prolonging their diesel supply contracts. In solar-diesel hybrid solutions, solar energy is used to reduce diesel consumption. Most of the large-scale projects still do without energy storage systems and rely on solar only during daytime. Falling battery prices will gradually add more and more energy storage in solar-diesel hybrid solutions and increase the renewable energy share in the system until finally all the energy will come from renewable energy sources: "solar-diesel hybrid" would turn into pure "solar-plus-storage."

On paper, replacing diesel by solar in remote locations has made sense for years," adds Dr. Thomas Hillig, managing director at THEnergy. "However, temporarily low oil and related diesel prices were a major issue. These unintentional effects of US foreign policy are tipping the scales at the moment. No one expects stable framework conditions in the near future. We see a high consulting demand from downstream stakeholders, mainly from remote offtakers such as mines and also from fossil fuel companies."

WEC and COMESA Sign Historic Energy Agreement

The World Energy Council signed a historic agreement with the Common Market for Eastern and Southern African (COMESA) to drive regional energy integration and enhance sustainable energy access in the 21 COMESA states. The Council is among the few global energy platforms that has a strong presence in Africa.

The Memorandum of Understanding cements cooperation between the Council and COMESA and will spearhead the regional energy agenda in Africa, with the aim of promoting economic growth, intra-regional trade and infrastructure development.

Key challenges identified by the Council's members in Africa include low level of access to modern energy, weak development of energy infrastructure, lack of financing and investment and low-level trade and energy.

Guided by the Council's Energy Trilemma, Scenarios and World Energy Issues Monitor insights, the joint declaration includes a framework which seeks to address these issues by promoting energy trade and identify innovative business models, in addition to policy and regulatory solutions relevant to the energy transition.

Dr Christoph Frei, Secretary General, World Energy Council, said:"We are delighted to be working with COMESA on this important project to develop regional energy integration, supported by the Council's Energy Trilemma and Issues Monitor work. Energy equity, security, environmental sustainability, resilience, and innovation are all essential mechanisms in advancing the regional energy integration agenda within Africa."

Source: WEC

Dr Christoph Frei

Source: Comesa

Chileshe Mpundu Kapwepwe

This will be achieved through engagement and debate between COMESA and the Council's national member committees, development of joint energy scenarios within the region, workshops, staff exchange programs and the roll out of priority projects.

Chileshe Mpundu Kapwepwe, Secretary General, COMESA, commented: "We do recognize that energy is key in advancing regional competitiveness for COMESA member countries and as such Energy availability, security, sustainability, affordability and accessibility is a top priority for COMESA Member States. We need to double our efforts to ensure that our aspirations in this respect are attained. We are optimistic that the partnership between COMESA and the World Energy Council will help us shape the energy policy of COMESA and ultimately help spur investment in the sector."

South Africa RE Generation to More Than Triple by 2030

South Africa's share of non-hydro renewables for power generation will more than triple by 2030, according to a new report put out by GlobalData.

The latest report says that the country's non-hydro renewables power generation will increase from 8.1% in 2017 to 30.3% in 2030. This is attributed to the government's decision to restructure its energy output. GlobalData's latest report, 'South Africa Power Market Outlook to 2030, Update 2018 – Market Trends, Regulations, and Competitive Landscape' provides forecast numbers for the country's power capacity, generation, and consumption up to 2030, and reveals that most of its current electricity supply is generated from coal-based capacity, accounting for 74.7% of the country's total installed capacity.

Chiradeep Chatterjee, Power Industry Analyst at GlobalData, commented, "South Africa's new Integrated Resource Plan 2018 (IRP 2018), has called for increasing the share of renewables and gas-based thermal power capacity in order to move away from coal and nuclear, but this will not be easy to achieve."

While the move away from coal will not be easy, it will be necessary as South Africa's state-run utility Eskom as said that 75% of the country's coal-based power plants will near their life by 2040. The government plans to retire and replace the coal plants with new gas-fired plants.

The government has also scrapped an earlier proposal to increase installed nuclear capacity, and is now calling for increasing the capacity share of wind and solar power instead. Chatterjee continued, "Non-hydro renewables including biopower, are therefore expected to contribute approximately 30% of the country's installed capacity and around 20% of its annual power generation by 2030." AEA

Financing African Renewables

When it comes to financing renewable energy in developing countries, there are a multitude of options and Africa is seeing its fair share.

Raising capital is a multi-faceted process and across the continent you will find schemes ranging from traditional bank guarantees from both bilateral and multilateral donors to crowdfunding and private capital injection. Over the past year the continent has seen billions in pledged investment.

Multilateral Finance

One of the continent's largest and most consistent renewable energy financial backers is the African Development Bank (AfDB), having its footprint almost everywhere in the renewables sector. Ghana will be the recipient of a grant from the AfDB for $1.5 million to aid the country in removing barriers to investment in the renewable energy efficiency. Akinwumi Ayodeji Adesina, the President of the bank said Ghana was showing the way towards universal access to energy, having one of the highest access to energy rates due to its utilization of off-grid solutions.

The AfDB also recently approved a $218 million loan to Eskom, South Africa's state-run utility firm. The funding supports the Eskom Transmission Improvement Project (ETIP), which will see the construction of 555 km of 400kV transmission lines in KwaZulu-Natal and Mpumalanga province and the upgrading of substation equipment and improvement of various substation earth mats in Mpumalanga. The loan includes an additional co-financing of $25 million from the Africa Growing Together Fund. The bank's contribution, covered by a South African government guarantee, will finance up to77% of the critical project. Eskom will provide 15%. These investments will enhance regional energy trade, end-user energy access for industrial development, and address the potential addition of 130 million on-grid connections by 2025.

The AfDB also established a $58 million fund to finance the electrification of Africa. Called Off-Grid Energy Access Fund (OGEF), the initiative will support projects initiated by the Nordic Development Fund, the Global Environment Facility and Calvert Impact Capital. This fund is part of the bank-sponsored Energy Inclusion Facility (EIF), which aims to raise $500 million (through its financing platform) to support innovative energy access strategies.

Under the Sustainable Energy Fund for Africa (SEFA), managed by the AfDB, Angola will see a $1 million-grant to Independent Power Producers (IPP) to encourage private investment in renewable energy. As part of its long-term development strategy, the government of Angola aims to expand electricity access to 60% of the population by 2025, with an expected 70% to be derived from renewable sources.

The SEFA grant will be used to establish a one-stop shop unit known as the Energy Project Implementation Support Unit (EPISU). The SEFA technical assistance team will work as an enabling environment for IPP/Public-Private Partnership (PPP) projects to improve bankability of projects. Additionally, it will address capacity-building issues by providing technical assistance on project procurement, contract design implementation and monitoring.

These are just a few examples of the multitude of renewable energy funding projects the AfDB is involved in. The lending institution sees the sector as promising for the sustainable development of Africa and also as a good investment, leading others to follow suit.

Some of this year's large investments have come from Europe. The European Investment Bank (EIB) recently approved a €1 billion financing the package for the renewable energy sector at its last general assembly. This €1 billion package is part of a €6.6-billion package dedicated to sustainable transport, urban development and the promotion of private investment in Europe and Africa. This financial package will go to several African projects, including two 500-MW solar power plant projects in Morocco, a 420-MW hydroelectric power plant in Cameroon, an electricity interconnection project between Mali and Guinea, among others.

Meanwhile, the Finnish government announced its intentions to invest €114 million in loans to support wind energy projects in developing countries, nine of which are in Africa. The funds will be managed through the International Finance Corp (IFC). The funding will be spread over a four-year period, being injected into several projects led by private companies and refundable over a period of 25 years. A first project is already targeted; the Lake Turkana Wind Farm in the northern Rift Valley of Kenya. The Lake Turkana Wind Farm is being developed by a consortium composed of Vestas, Aldwych International Limited, KP&P BV Africa. The total cost of the project is more than $850 million, and is expected to produce 310 MW, which will be sold to Kenya Power (KPLC) over a 20-year period. The project has already received funding from a number of other lending institutions.

Bilateral Finance

Cote d'Ivoire's first solar power plant will receive financial support from Germany and the EU. The country's KfW public investment bank granted the project a €27 million equity financing and will mobilize €9.7 million from the European Union. The plant will have a capacity of 37.5 MW and will be located in the locality of Boundiali in the north of the country. It will supply around 30 000 households and will prevent the emission of 27,000 tons of CO_2 per year.

Following a visit to Senegal by German Chancellor Angela Merkel, it was announced German firms would invest €120 million in support. Senegal plans to electrify 300 villages with the support of Germany. A MoU was also signed with the German company Pfister Kontakt system for the installation of a 10-MW hybrid solar power plant to supply companies in the Sandiara industrial zone.

The Japanese government, through Japan International Cooperation Agency (JICA), will mobilize $23.5 million in funding to Rwanda to improve the stability of its electricity grid. Specifically, the funds will go toward the third phase of the country's substation and distribution network improvement project. This phase of the project will be implemented by Energy Development Co Limited and will involve, among other things, the construction of 110 kV transmission lines in the Kigali region, as well as the construction of a new substation in Gasogi.

Overseas Private Investment Corp. (OPIC) granted $25 million in financing to the Solar Energy Transformation Fund LLC (SET Fund). The funds provided by the US agency include both senior debt and a subordinated loan that will leverage other investors to raise $85 million for the initiative. The SET Fund is managed by SunFunder, a financial institution that supports companies involved in the solar off-grid in mobilizing financial resources. It will provide loans to companies developing off-grid solar solutions and products in sub-Saharan Africa and Asia. Around 50 companies should be supported as part of the fund's activities.

Crowdfunding

Another financing mechanism that is being utilized in Africa's renewable energy sector is Crowdfunding. Although just being tapped into on a small scale so far, it is gaining momentum as entrepreneurs realize the potential it holds in bringing smaller-scale projects to fruition.

In February, Energy 4 Impact launched its third paper in a series of reports from its Crowd Power program on energy access related crowdfunding in sub-Saharan Africa and Asia. Entitled Crowd Power, Success & Failure – The Key to a Winning Campaign, the report identifies trends common to a successful energy access related crowdfunding campaign (measured as reaching the campaign target) across donation, reward, debt and equity crowdfunding.

Energy 4 Impact's report adeptly describes the process: "Crowdfunding success is not down to luck – success involves thoughtful preparation and significant resources. Entrepreneurs must carefully consider the type of crowdfunding that best suits their financing needs, and consider if their choice is realistic given their network and where they're at in the business lifecycle. Successful donation and reward campaigns are usually by start-ups raising seed funding from their network so setting

AfDB Launches first Africa-to-Africa (A2A) Investment Report

Opportunities for investment in Africa outweigh the obstacles, according to a report by leading African companies covered in the African Development Bank's new *Africa-to-Africa (A2A) Investment Report*, the first ever report on inter-African trade published by the Bank. The report unearths the realities African companies face when investing in the continent, the emerging trends in A2A investment and the steps African policymakers can take to accelerate intra-African investment.

Africa-to-Africa Investment Report: A first look, finds that more African companies are investing in Africa. These companies have confidence in the continent's long-term growth potential; they are at the cutting edge of their industriesand are capitalizing on their knowledge of local markets to generate higher returns and impact.

In line with the Bank's "High 5s" for transforming Africa and the African Union's Agenda 2063, the A2A Report aims to take the conversation on investing in the continent a step further. It shows what African multinationals are doing to drive investments in Africa, how they are expanding their African footprint, and gives insights into how to scale-up investments more widely.

"As global foreign direct investment to Africa falls, intra-African investments are picking up pace," said Akinwumi A. Adesina, President of the African Development Bank Group. "Africa's big companies are increasingly on the move and expanding their African footprint. It is through more investments that the continent can build inclusive, sustainable growth and development. We have made this our collective commitment in the High 5s".

The A2A Report features eight publicly-listed and privately-owned African companies operating in consumer services, finance, industry, media and diversified portfolios and investment, with home bases in North Africa (Morocco), West Africa (Nigeria, Togo), East and Central Africa (Ethiopia, Kenya) and Southern Africa (Mauritius, South Africa).

Highlights from the A2Areport's intra-African investment stories include the importance of having a clear long-term vision, getting up-to-date investment facts, building local partnerships to deliver on the ground and tapping into talent in the local labor force.

The business case for A2A investment is strongly connected to the continent's integration, growth and prosperity. Although challenges remain, the A2A Report is the start of a broader discussion to fast-track investments, move beyond the wish list and make deals happen. The continent's policymakers can inspire a greater level of confidence and promote A2A investments by highlighting their role as dependable business partners for African investors.

The report is part of the AfDB Group's continued championing of investment across Africa, along with the first Africa Investment Forum scheduled to take place in Johannesburg, South Africa from November 7-9, 2018.

Source: SEC

a realistic target, that aligns with their network's capacity to contribute, is crucial – as is the outreach strategy and quality of the campaign pitch. Debt crowdfunding has a high success rate, but the due diligence process can be lengthy and start-ups must demonstrate that they can service debt. A little over half of equity crowdfunding pitches are successful, so setting a realistic target and valuation, and having quality campaign materials – such as an engaging video – all increase chances of success.

"The report also finds that debt campaigns have the highest 'success rates' (in terms of percentage of campaigns that meet the campaign target) of any other platform type, and that 100% of energy-access SME loans have been funded by the crowd to date. For perspective, the leading equity crowdfunding platform Crowdcube had a 52% success rate."

Energy 4 Impact's own Crowd Power program has supported over 100 crowdfunding campaigns with around $600,000 in funding via match funding, lump-sum contributions, gift vouchers and partial loan guarantees. 250,000 people have gained access to clean energy as a result of the campaigns supported by this program. Crowd Power is funded by UK Aid.

There are a number of crowd-funding platforms financing renewables projects in Africa. Early this year, the world's largest crowd-investment platform for off-grid solar energy raised €1 million in less than a month. The crowdfunding initiative is a collaboration between TRINE, a platform for sustainable investments to accelerate energy access, and BBOXX, a next generation utility deploying off-grid solar systems in the developing world.

TRINE and BBOXX launched the first of six crowdfunding rounds on February 10 and by March 9 had hit the €1 million target, making it the fastest fundraise of debt finance ever in the industry. The loan was later disbursed to enable BBOXX to scale up its operations in Kenya.

In 2017 ecoligo launched a new project on its crowd-funding platform. Shortly thereafter, installation began on the startup's first two crowd-financed solar system projects. The financing volume was €144,000.The project financed two systems for Bondet Farm, a flower farm in Nanyuki, Kenya, providing a total capacity of 118.9 kWp of solar electricity to the farm. Investors into the project were to receive 5.0% interest over five years for investing a minimum of €500. In a similar format to that of ecoligo's first project, Ariya Leasing will receive the investment in the form of a loan and will manage the project.

By October of this year, ecoligo announced it has raised over €1 million on its platform. The seven-digit-figure has been reached by 327 private investors. In total, 12 projects have been financed on the ecoligo. investments platform, which will save over 19,000 tonnes of CO_2 emissions throughout the project lifetimes. Projects with a combined capacity of almost 900 kWp have been financed in Ghana, Kenya, the Philippines and Chile, countries that see high energy prices and have optimal climatic conditions for solar energy. The first projects were funded on the platform in April 2017.

The Impact Hub Accra was the first Ghanaian company to benefit from ecoligo's solar-as-a-service solution. The system was financed in just 11 hours on ecoligo.investments this March.

Private Funding

In addition to the aforementioned funding mechanisms, the private sector is stepping up and making some big investments into the sustainability of the renewables sector in several nations. Algeria announced it would begin manufacturing renewable energy equipment in partnership with GE. The first turbines manufactured in Algeria will be available by July 2019, according to the CEO of the country's state-run utility Sonelgaz, Mohamed Arkab. The country signed an agreement to create a JV co-founded by both entities under the 51/49 rule. Called GEAT, the JV company will manufacture the equipment of a power plant, such as alternators and control systems.

In addition, a JV between Hyundai, Daewoo and Vijai Electricals will see high-power transformers manufactured in the country. Algeria also aims to manufacture boilers and heat exchangers through a partnership with BHI.

Siemens invested in a wind turbine blade manufacturing plant in Morocco which produced its first products last year. The €100 million plant can supply Morocco's 200-MW wind farm in Boujdour, although 85% of its production is slated for the international market. A new technology called "Integral blade" was used to make the blades in one piece; which increases their rigidity and lifespan. A training center has also been set up by Siemens to train workers to run the infrastructure.

South Africa has several PV assembly facilities and is also home to the first solar PV manufacturing facility. ARTsolar was established in

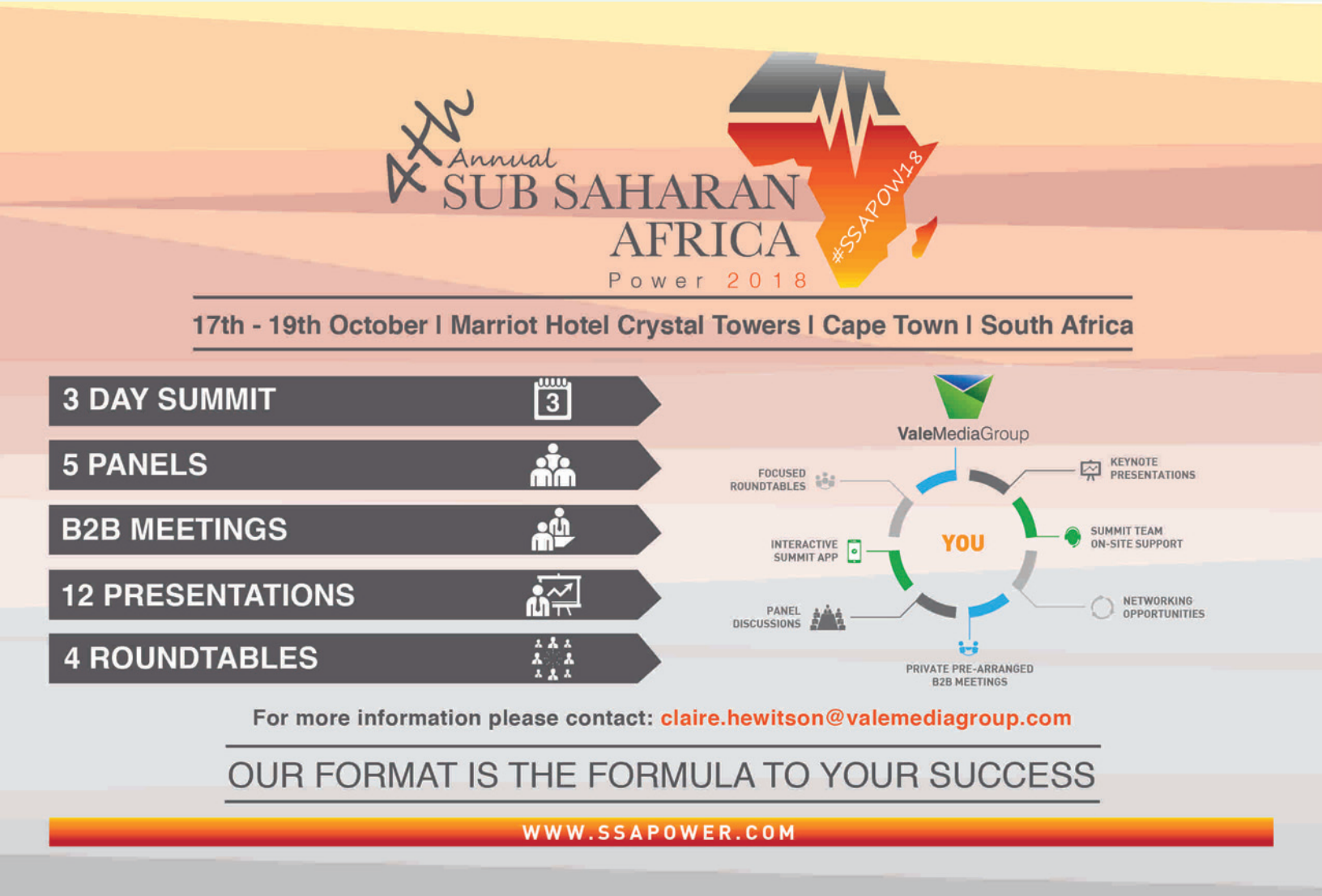
Source: ARTsolar

2010 and remains one of the pioneers of the South African Photovoltaic solar panel manufacturing industry. ARTsolar's main products are 60 and 72 cell Polycrystalline solar panels of up to 335 watts for industrial, commercial and domestic use. The company is 100% locally owned and is currently the only South African PV manufacturer that specializes in high volume production for the Northern Cape PV farms. Its production facility is fully capable of laminating and framing PV modules, with a capacity up to 250 MW annually.

ARTsolar's state of the ART Swiss built production facility in Durban (which was completely funded by its shareholders) became South Africa's first company to produce significant quantities of solar panels for the Renewable Energy Independent Power Producer Program (REIPPP). This program sells power to local utilities through 20-year power purchase agreements.

Spanish firm GRI-Renewable Industries invested in a wind turbine tower production factory in the Atlantis region of Cape Town. The facility, which began production in November 2014, is located in the Green Technology Industrial Park in Atlantis, stretching over 12,000 square meters. The company states the €20 million plant supplies over 150 towers per year, employing around 200 people.

In Egypt a $2 billion integrated solar panel factory was on the drawing board for the country's armed forces, but talks stalled in July due to disagreements with China's Golden Concord Group. The disagreements revolved over what to do with the factory's output. According to media reports, the Chinese firm wanted Egypt to sign an offtake agreement to purchase the factory's full output, claiming that the agreement is a prerequisite to securing funding for the JV from Chinese banks. Military officials however cited insufficient domestic demand for panels with a combined generation capacity of 5 GW per year and soft export prospects. With Egypt's growing energy demand and its advanced infrastructure, it is likely that future projects will be implemented in order to support the industry and job creation for its burgeoning population entering the workforce. AEA



Two New Microgrids for Kenya

Renewvia Energy announced that its first two microgrid facilities, outfitted with the company's innovative new mobile payment platform, are successfully up and running on the Islands of Ndeda and Ringiti in Kenya's Lake Victoria region. These microgrids are the first safe source of energy available to the nearly 10,000 residents and businesses, whose only sources of power before were burning kerosene or petrol or the use of disposable batteries.

Across sub-Saharan Africa, two out of three people do not have access to electricity, but in Lake Victoria, entire island communities lack the ability to safely turn on the lights. To help solve this problem, the U.S. Trade and Development Agency (USTDA) partnered with Renewvia in 2017 to perform a national solar microgrid feasibility study for eight new microgrid plants totaling 1.5 megawatts (MW) of peak installed capacity in remote regions across Kenya through the Power Africa initiative. In June 2018, Renewvia co-founders Eric Domescik and Trey Jarrard commissioned the 10 kilowatt (kW) solar and battery-powered plant on Ndeda Island, accessible only via a 45-minute boat ride from the small lakeside town of Uyawi.

"I visited Ndeda not long after they commissioned the new solar facility. There was music coming from the shops on the shore and there were kids on the docks enjoying popsicles," said David Riposo, USTDA's Finance and Implementation Manager for the Sub-Saharan Africa Region. "We are proud to work with our colleagues at the U.S. Embassy and American companies like Renewvia Energy to expand access to energy for underserved and isolated communities across Kenya."

The Renewvia team then doubled down on their impact with the new 20 kW facility on Ringiti Island, two and a half hours away by boat from the lakeside regional hub of Mbita, near Kenya's southwest border. Prioritizing community engagement upfront and throughout the process, each facility includes a continued revenue stream from individual community inhabitants and local businesses through Renewvia's mobile payment platform, using M-PESA and Commercial Bank of Africa to facilitate the transactions.

"Within the first few weeks of turning on the power, we had several members from the community and business subscribers signing-up and pre-paying to be connected," said Pam Onyanyo, director and head of Renewvia's Kenya operations. "We expect to see exponential growth over the next 12 months, and with several other microgrid facilities in the works, this is just the beginning."

This work has impact at home and abroad. Since partnering with USTDA, Renewvia has more than tripled its Atlanta workforce with plans to grow this year, opened offices in Nigeria, Uganda and Kenya, and is exploring over 100 solar microgrid development sites in Kenya, Nigeria, Ghana, Mozambique, Tanzania and Uganda.

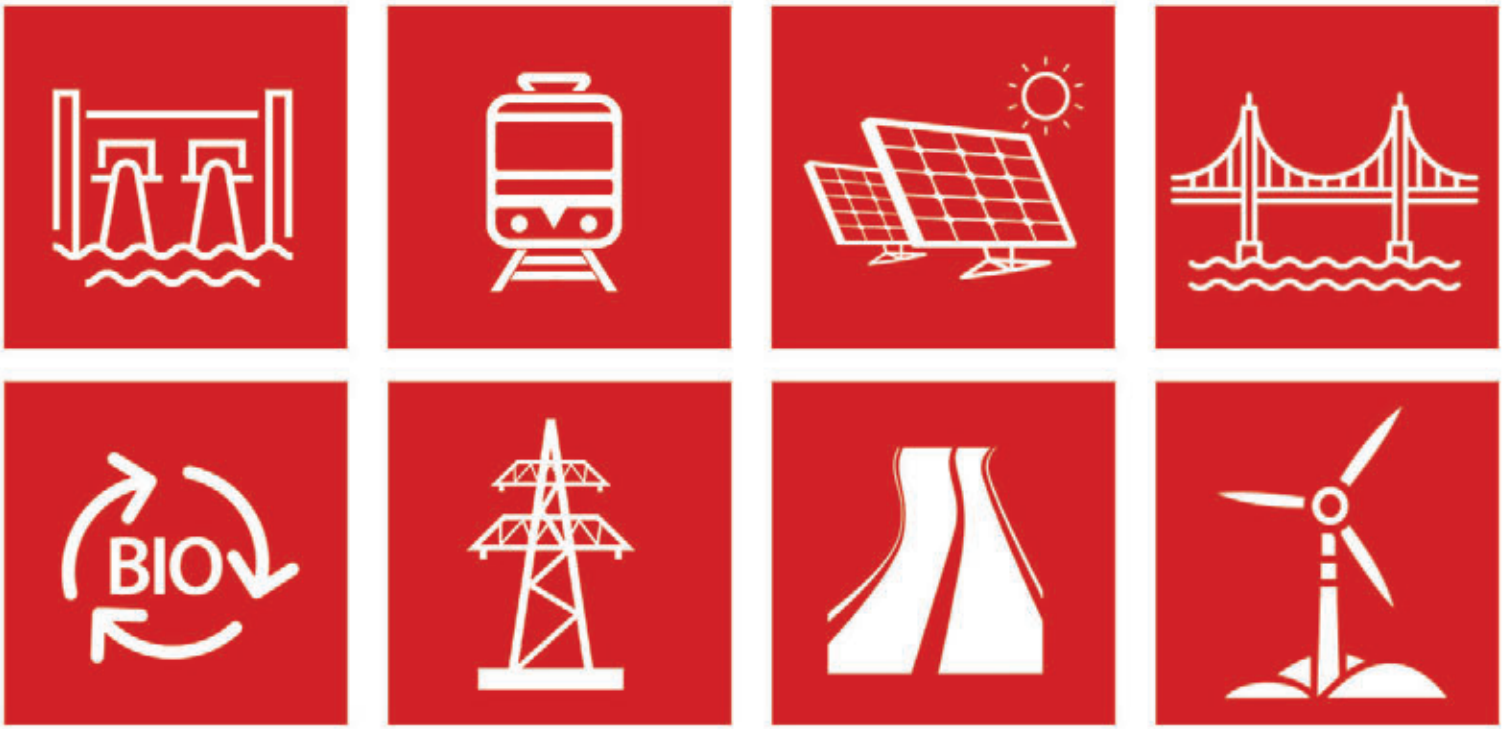
Organized by Euroconvention Global

10-11 October 2018
Harare, Zimbabwe

ZIMBABWE

INFRASTRUCTURE, POWER & NEW ENERGY INVESTORS CONFERENCE

The proposed program will address further developments and investments into Zimbabwe's infrastructure, power and alternative energy fields. The audience will consist of representatives from the Government, Multi-laterals and donors, international and local project developers, EPC contractors, independent power producers, construction and engineering services, technology providers, legal and advisory, banking, and private equity companies.



FOR MORE INFORMATION, PLEASE CONTACT:

Michel Masquelier, Event Manager, Euroconvention Global
Email: administration@euroconventionglobal.com
Phone: +32 2 662 16 12

Subscribers of Alternative Energy Africa will receive a 15% discount on registration and corporate packages with code: AEA15

Fenix Names Uganda for New HQ

Fenix International, part of global energy group ENGIE, has named Uganda as the site of its new global headquarters. The company will move its engineering and technology development center from San Francisco to Uganda. Fenix will be one of the first international companies headquartered in the East African country.

The new HQ will cement the company's role as a major employer in the region and will support ambitious Pan-African expansion plans. Fenix currently employs over 350 people in the country, providing off-grid energy to more than one million people.

By 2020, Fenix plans to employ 2,000 people, over 500 of whom will be based in Uganda. The Uganda HQ will support operations in 12 countries around the world, in Eastern, Western and Southern Africa, as well as China and the United States.

As well as moving senior leadership roles to Uganda, Fenix will invest in expanding specialist technology teams with both hardware and software skills. Alongside these roles in technology, finance and business strategy, the move will also create entry-level roles and jobs for younger people. Uganda has the world's youngest population, with 78% of the population aged under 30, providing a huge pool of talent to empower Fenix's growth plans.

As one of the first global employers to locate its HQ in the country, Fenix is further investing into the growing ecosystem of talent, entrepreneurs and industry bodies in the region. Fenix's lease-to-own solar energy offering is used by many customers who are living off-grid to power businesses.

Fenix is committed to making a long-term impact in the country, and has developed a unique inclusive employee ownership program, Fenix Flames, to ensure all team members benefit from the company's success. Employees in Uganda recently received a pay-out of up to two-five times their annual salary as a result of the Flames scheme.

Valorem Acquires Stake in DLM EnR

Valorem has taken a 25% stake in DLM EnR, the subsidiary of Delattre Levivier Morocco (DLM), which specializes in self-consumption equipment for renewable energies. It intends to have access to the Moroccan and African renewable energy market again.

This acquisition of participation is a reintroduction of Valorem on the Moroccan market. The company withdrew from the country last year due to the slowness of MASEN in implementation of the liberalization laws in the renewable sector.

Mitsubishi to Invest in NEoTOffgrid Africa

Mitsubishi Corp. has decided to invest in NEoTOffgrid Africa (NOA), a platform dedicated to the development of renewable energy electrification projects in Africa. By investing in NOA, Mitsubishi wants to expand its presence in the off-grid sub-sector in sub-Saharan Africa, starting with Côte d'Ivoire.

NOA is a JV launched in 2017 by EDF and the management company Meridiam to invest, by 2022, hundreds of millions of euros in renewable energy projects in Africa. It invests in projects that it develops in partnership with other stakeholders. The JV brings the technical expertise of EDF, in terms of energy, and the network and the investment capacity of Meridiam to these projects.

Among other renewable energy electrification solutions in Africa other proposed projects are solar home installations, storage batteries, as well as domestic equipment such as radios, television sets, etc.

ExxonMobil to Join Oil and Gas Climate Initiative

ExxonMobil announced it will join the Oil and Gas Climate Initiative (OGCI), a voluntary initiative representing 13 of the world's largest oil and gas producers working collaboratively toward solutions to mitigate the risks of climate change.

The CEO-led organization focuses on developing practical solutions in areas including carbon capture and storage, methane emissions reductions and energy and transportation efficiency. As part of the initiative, ExxonMobil will expand its investment in research and development of long-term solutions to reduce greenhouse gas emissions as well as partnerships and multi-stakeholder initiatives that will pursue lower-emission technologies.

ExxonMobil has invested billions of dollars in researching and developing lower-emission solutions, including carbon capture and storage technology, next-generation biofuels, cogeneration and more efficient manufacturing processes. Earlier this year, ExxonMobil announced initiatives to lower greenhouse gas emissions associated with its operations by 2020, including reducing methane emissions 15% and flaring by 25%. Since 2000, ExxonMobil has spent more than $9 billion to develop and deploy higher-efficiency and lower-emission energy solutions across its operations.

OGCI was established following the 2014 World Economic Forum and formally launched at the United Nations Climate Summit the same year. Oil and gas members include BP, Chevron, CNPC, ENI, Equinor, ExxonMobil, Occidental Petroleum, Pemex, Petrobras, Repsol, Royal Dutch Shell, Saudi Aramco and Total.

Tractebel Acquires Overdick

Tractebel announced the acquisition of Overdick, through its subsidiary Lahmeyer International. Overdick is a company specialized in offshore engineering, based in Hamburg, Germany. This acquisition is a perfect strategic fit for Tractebel, one of the world's largest engineering and consultancy companies and part of ENGIE, to grow in the field of offshore wind and to reinforce its position as a leading consulting and engineering company in the energy transition.

Founded in 2000, Overdick offers a wide range of services within the areas of offshore wind, offshore oil and gas, naval architecture, marine operations, platform removals and salvage. Tractebel will benefit from Overdick's deep know-how in detailed design, construction, transportation and installation of wind turbine and offshore high voltage substation foundations.

Rolls-Royce Expands Microgrid Position with Investment in Qinous

Rolls-Royce is investing in Berlin-based start-up company Qinous GmbH, a global provider of innovative energy storage and control systems and adding turnkey microgrids to the portfolio. Financial details of the individual investment being made by Rolls-Royce was not disclosed.

"As a strategic investor, the aim is to set up a partnership with Qinous for the development of innovative energy storage solutions and together offer cleaner solutions designed to meet tomorrow's needs," explained Marcus A. Wassenberg, CFO and Labor Director at Rolls-Royce Power Systems.

The increased use of renewable energies has exacerbated the challenge of how to maintain

a reliable energy supply, when weather conditions are unfavorable, to meet demand. Autonomous electricity networks, or microgrids, combine cogeneration plants, diesel- and gas-powered gensets and renewable sources with batteries and a control system that links up all the elements in an intelligent energy management system that optimizes the energy usage technically and economically.

"With the use of energy storage and renewable sources, operators of hotels, hospitals or schools are able to make significant fuel cost savings and at the same time protect the environment," said Qinous CEO Steffen Heinrich.

Total Expands EV Charging Solutions with New Acquisition

Total has finalized the acquisition of G2mobility, a French supplier of electric vehicle charging solutions. With this acquisition, Total now owns the entire company, as it also bought the shares of Bpifrance and Nexans, the other shareholders of the company.

"Total continues to expand in the use of new energies for mobility. After the acquisition of PitPoint in Europe in 2017, and a 25% stake in Clean Energy in the US, we accelerated this year in the use of natural gas as a fuel for vehicles. With a 25% market share with local governments and a 50% revenue growth over the past year, G2mobility brings us a new skill to provide a more efficient charging system to our B2B and B2C customers," said Momar Nguer, a member of Total's Executive Committee and marketing officer.

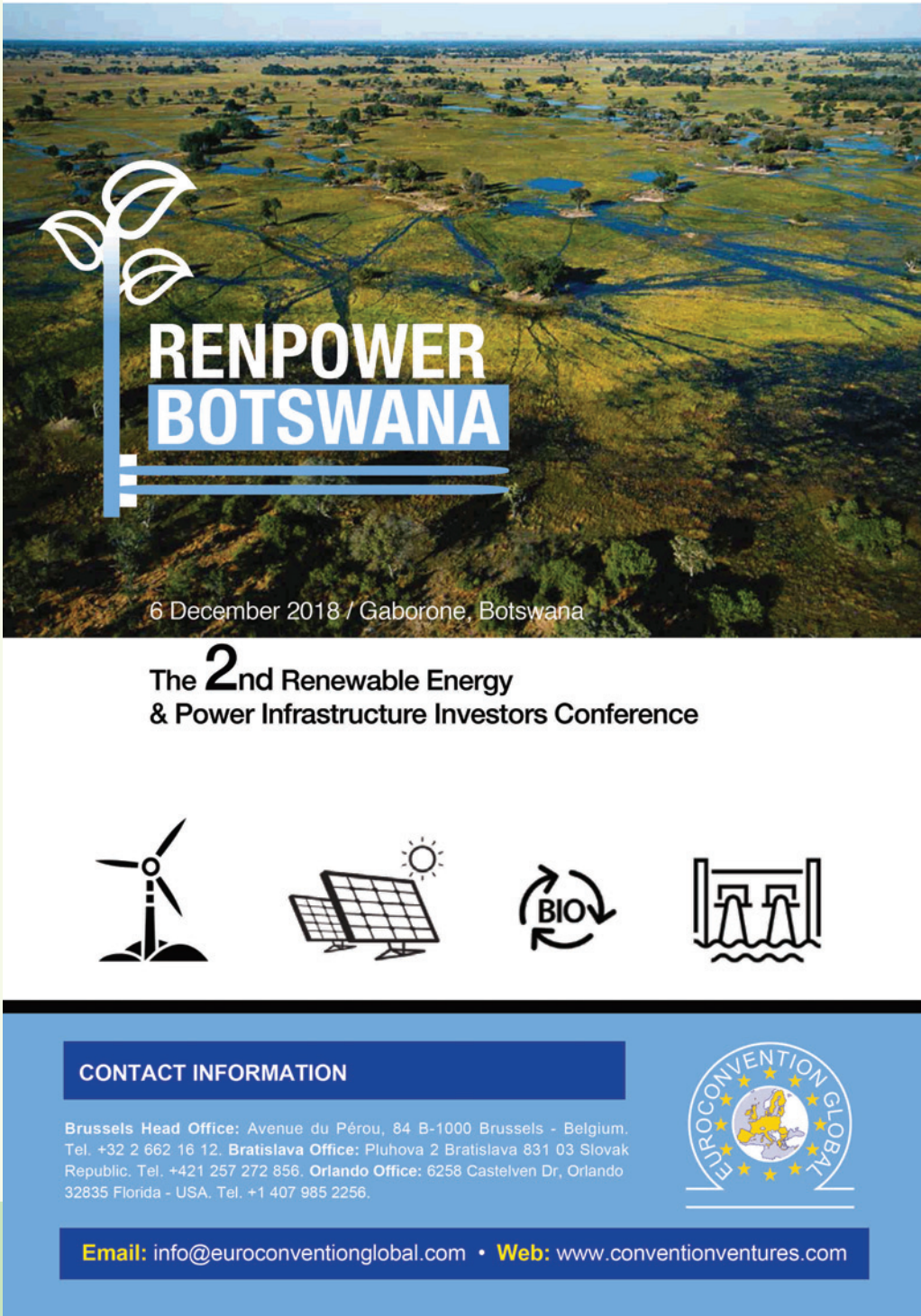
Created in 2009, G2mobility is one of the pioneers of charging for electric vehicles. It has nearly 10,000 remote charging points administered by a website.

ABB Named Global Leader Across Power Value Chain

ABB has been named the global market leader in Enterprise Asset Management (EAM) software for power generation, transmission and distribution by ARC Advisory Group, a leading technology research and advisory firm for industry, infrastructure and cities. The findings are part of ARC's comprehensive market and technology study titled "Enterprise Asset Management Global Market Analysis 2017-2022."

Apart from being a global leader in EAM for the mining industry, according to the report, ABB is also the No.1 supplier of both EAM and Field Service Management software in Asia. Additionally, the report named ABB as the world's leading EAM provider for linear assets such as power lines, substations and towers.

"We're pleased to be recognized as the global leader in enterprise asset management for the power sector," said Massimo Danieli, head of ABB's Grid Automation business within the company's Power Grids division. "Our ABB Ability™ asset and workforce management solutions are uniquely suited to the needs of the electric power industry and our continued EAM market leadership reinforces ABB's position as a partner of choice for enabling a stronger, smarter and greener grid." "ABB's Power Grids business is at the forefront of digital solutions in energy," said Ralph Rio, Vice President, ARC Advisory Group. "ABB moved to the top of ARC Advisory's EAM leaderboard this year in electric power generation, transmission and distribution due to its deep domain expertise and track record with utilities around the world. Our research revealed the global EAM market grew an impressive 11 percent in 2017. ARC Advisory expects this high growth to continue, which bodes especially well for ABB since power is the world's largest EAM market."



Greensmith Energy Unveils Standardized Energy Storage Solution

Technology group Wärtsilä has released a new solution, GridSolv, the company's first standardized energy storage solution.

GridSolv is an advanced energy storage solution that is designed to offer maximum flexibility and speed of deployment. This innovative and standardized architecture supports both standalone energy storage deployments as well as integrated hybrids with thermal or renewable generation assets. Coming in three sizes, the GridSolv solution is typically housed in an ISO 40-foot container and contains: batteries, power distribution, safety, fire suppression, and air conditioning systems.

"Much like how a smartphone delivers more value than simply a processor, a camera, and a touch screen, our new GridSolv solution goes well beyond batteries, inverters and container," said Akshay Ladwa, Vice President of Engineering at Greensmith Energy. "We designed GridSolv to complement our industry-leading GEMS software platform so that utility partners and customers can have the most robust optimization of their grid assets and protect their energy storage investment for years to come."

Greensmith's GridSolv solution is already delivering results for Sinergy Kft, subsidiary of ALTEO Group, in Budapest, Hungary. ALTEO's existing power plant, which was running on three Wärtsilä 34SG engines, is now optimized with the addition of GridSolv and GEMS, enabling the energy company to participate in the electricity market by providing frequency and secondary regulation to the national grid operating in virtual power plant mode.

Wärtsilä energy storage solutions enable power companies and developers to integrate and optimize a diverse mix of grid resources and deliver flexibility, reliability and resilience for customers seeking best-in-class system performance.

Source: Greensmith

In addition to energy storage applications, GEMS is able to manage any complex composition of energy assets, including wind, solar, thermal and storage. GEMS was also recently RIG certified by CAISO, the transmission operator for California, the seventh largest economy in the world.

Yotta Solar Solves Panel Level Energy Storage

Yotta Solar, a developer of innovative energy storage systems, is introducing a revolution in solar PV plus energy storage technology – the SolarLEAF™. The patented SolarLEAF™ utilizes the world's first and only 100% passive thermal regulation system for panel-level energy storage. This passive temperature regulation enables the system to operate in extreme temperatures while protecting the battery life and without degrading performance. The plug-and-play design simplifies the integration of energy storage with solar PV and eliminates the need for heavy, difficult to install enclosures, complicated HVAC systems that require parasitic loads, and expensive fire suppression systems.

"For solar power to truly reach its full potential, energy storage has to be an integral part of the equation. We designed the SolarLEAF to make adding energy storage simple for solar developers and utilities by eliminating the design and site-specific complexities that come with centralized storage," said Omeed Badkoobeh, co-founder & CEO of Yotta Solar.

"In a nutshell, the SolarLEAF panel-level energy storage system reduces project and operational costs by eliminating the need for HVAC or fire suppression systems, plus it doesn't use extra real estate occupied by centralized battery systems in shipping containers. Our patented passive thermal regulation technology shields the battery from both hot and sub-freezing temperatures and results in a long and bankable service life, industry leading combined solar plus storage efficiency, and higher overall solar generation."

The SolarLEAF™ system is a battery pack with integrated multi-way power flow electronics that easily attaches behind standard 60 to 96 cell solar modules either at the time of panel installation or as a retrofit. The system's modular design and panel level installation makes it simple and cost-effective to scale energy storage with solar.

Yotta's innovative passive thermal regulation is a revolutionary technology that uses very little to zero external power to keep the system's batteries between 50° F and 95° F (10° - 35° C) in climates including extreme summer heat and freezing winters. Because the batteries are not aggregated in one central location, SolarLEAF™ systems have no risk of cascading thermal events and can be installed in locations where centralized large-scale lithium-ion battery storage is not permissible. The DC-coupled SolarLEAF™ also doesn't require a separate battery inverter setup, improving the solar plus storage system's cost, efficiency, and reliability, while simplifying the interconnection process.

Chet Morrison Contactors and iSIMS introduce new iJacket™

Chet Morrison Contractors (Morrison), an energy service company for the oil, gas and renewables industries, has formed a strategic partnership with iSIMS to launch the iJacket™, a new optimized method in jacket and foundation design. The patented iJacket is more structurally optimized than the conventional true X-braced jacket design, supporting the same deck load, conductor/riser count, drilling deck, wind turbine or other payload as its conventional counterpart. The iJacket is engineered to provide significant cost savings and reduce material and labor requirements over traditional foundations and jackets by up to 30%. Modern 3-D engineering design and analytical tools allow engineers to design and arrange bracing in a configuration that offers further structural optimization, while still meeting or exceeding the industry design requirements for strength and fatigue performance.

Perovskite/CIGS Tandem Cell Offers Added BIPV Value

At the EU PVSEC conference, imec, a leading research and innovation hub in nanoelectronics, energy and digital technologies, presented a thin-film tandem solar cell consisting of a top perovskite cell developed by imec within the partnerships of EnergyVille and Solliance, and a bottom CIGS cell from the Center for Solar Energy and Hydrogen Research (ZSW). The tandem cell resulting from this collaboration achieves a record efficiency of 24.6%.

Source: Themendesk Energy

The perovskite top cell in the tandem uses light in the visible part of the solar spectrum, while the light in the near-IR spectrum that passes through the perovskite cell is harvested by the underlying CIGS cell. In this way, the tandem cell significantly outperforms the stand-alone perovskite and CIGS cells. Moreover, both perovskite and CIGS cells are thin-film solar cells, paving the way to high efficiency flexible solar cells and building integrated photovoltaic (BIPV) solutions.

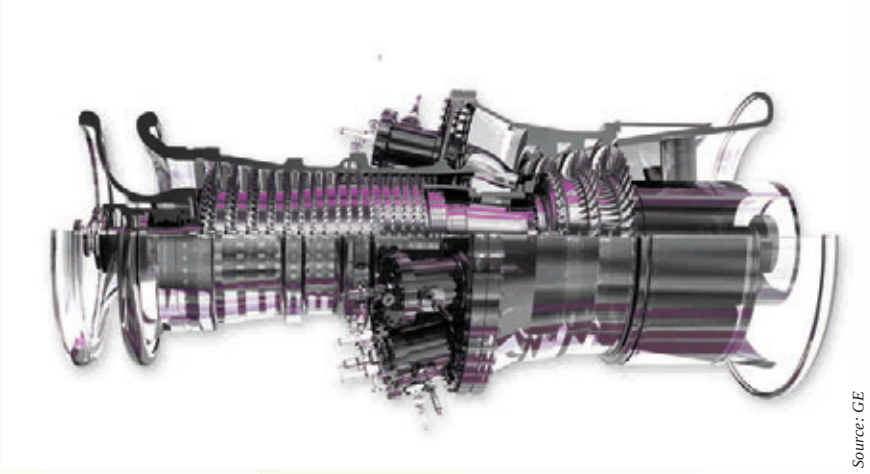
The four-terminal tandem consists of a perovskite solar cell stacked on top of a CIGS cell, based on a fully scalable device concept to enable industrial adoption of the process.

The new record efficiency of 24.6% was achieved with several innovations. First, the transmittance of the perovskite cell for near-IR light was improved by adding optical coupling layers to the tandem stack and by optimizing the transparent electrodes. Second, the perovskite itself was optimized in terms of a wide bandgap of 1.72eV for higher tandem efficiency.

The CIGS cell of 0.5cm² size has been made at the high-efficiency line at ZSW, employing all optimized processes necessary for the preparation of record devices. It thus was the ideal sample for combination with the perovskite cell. Further improvements of the technology will ultimately pave the way to thin-film tandem solar cells with efficiencies of more than 30%.

GE Launches World's First 6B Repowering Gas Turbine Solution

GE's Power Services business is celebrating the 40th anniversary of its 6B gas turbine fleet by launching the world's first 6B repowering solution. GE also announced it has signed its first agreement for the solution with a global chemical company to repower three 6B gas turbines and save significant amounts of fuel each year at its site in Asia. These announcements mark another example of GE's continued commitment to investing in its mature fleets to keep them competitive.



Source: GE

In Africa, GE has an installed base of 60 6B gas turbines at various locations with the most recent installation in Cabinda, Angola. The fleet is mainly used for power generation for grid supply as well as for large industrial uses like refineries.

"We're excited to mark our 40th anniversary of the 6B fleet and unveil our new repowering solution," said Scott Strazik, president & CEO of GE's Power Services business. "This fleet is known for its dependability – a reputation earned with global fleet reliability of 98.4 percent, which is about 2 percent higher than the industry average and translates to approximately 17 more days of availability per year. At the same time, the 6B fleet has aged, and there's growing demand to improve performance. He went on to say that this announcement and GE's recent expansion of its Advanced Gas Path technology to the 6B fleet highlight the company's continuing investment in itsmature fleets to help power producers and industrial operators remain competitive in today's very dynamic marketplace.

"As a company, we believe that more efficient power plants means more power available on the grid to respond to the growing energy needs of the African continent. As a result, we are always focused on solving our customers' most complex problems with customized and innovative solutions that help optimize operational performance," said Elisee Sezan, general manager, GE's Power Services business for sub-Saharan Africa.

Part of GE's Fleet360 platform of total plant services solution, the new 6B Repowering Solution incorporates advanced F and H class technology to elevate the machine's performance to leading levels for its class. The repowering consists of a full "flange-to-flange" upgrade of all major components, including the combustion system, hot gas path and compressor, and it transforms the 6B unit into a GE 6F.01 gas turbine, which is also available as a new unit.

SGRE's High-Performance Energy Storage Facility Enters Final Construction Phase

Siemens Gamesa Renewable Energy (SGRE) will celebrate the topping-out ceremony of its electric thermal energy storage (ETES) facility in Hamburg-Altenwerder. With this innovative storage system, Siemens Gamesa is providing an answer to one of the central challenges facing the energy transition: how to make the supply and demand for electricity from renewable energy sources more flexible. The facility can store up to 30 MWh of energy and boasts maximum scalability at a low investment cost. The pilot facility is currently in the final construction phase, and all of the storage facility's buildings and main components have already been completed.

The storage facility, able to hold the daily energy requirements of 1,500 German households, is set to be commissioned in 2019. Scientists from the Institute of Thermo-fluid Dynamics at the Technical University of Hamburg and the energy supplier Hamburg Energie have been involved in the development. Hamburg Energie will sell the stored power on the energy markets.

Hamburg's municipal energy supplier developed an IT platform to which the storage unit is connected. The platform guarantees that maximum possible proceeds are achieved by an optimized storage usage. The Federal Ministry of Economics and Energy is promoting storage development as part of the Future Energy Solutions project.

Renewable energies are available in large quantities when there is plenty of wind and sun – often more than the electricity grids can transport today. Storage facilities are used to buffer periods of low production, for example when there is a lull or it is dark. A lot of storage facilities have limited capacities or the storage technologies are too expensive, however. With ETES, Siemens Gamesa has developed a storage facility that reduces the construction and operating costs of larger storage capacities to a fraction of the usual level for battery storage. In commercial use, the technology can store energy at a cost of well below 10 euro cents per kilowatt hour.

The simple thermal principle of the storage facility is based on known components which are used in a new combination. For example, fans and heating elements from series production are used to convert the electrical energy into a hot air flow. The same applies to reconversion: a highly dynamic Siemens steam boiler is used as standard in a steam turbine to produce electricity at the end of the storage chain. Siemens Gamesa invested the largest amount of research in the insulating container filled with a rockfill, the core of the innovation. In this research project, the Siemens

Source: SGRE

Gamesa team investigated the thermo-fluid-dynamic principles of bulk material storage technology. Their findings enable scaling to the current scale.

"We are proud to be able to offer this important technology as a fully functional solution for our customers after just a few years of development work," says Hasan Özdem, Head of Technology Management and Projects at Siemens Gamesa. "A very interesting option of our technology is to convert decommissioned thermal power plants into high-performance storage facilities for renewable energies at a low cost." With this second-live option, the majority of components such as grid connection, turbines and generators can continue to be used.

After extensive tests, the new storage facility is to be incorporated into regular operations in partnership with Hamburg Energie GmbH.

Rolls-Royce Launches New Range of Powerful Medium Speed V-Engines

Rolls-Royce has today launched a V-line version of the new B33:45 liquid fuel and B36:45 gas engine series. This completes the new engine family, following the launch of the first variants three years ago.

"This is an important milestone for us. The new V-Engine series is truly an outstanding product and we believe that the new platform confirms Rolls-Royce's position as a global provider of some of the world's most efficient power plants," said Peter Headland, Head of Customer Business at Bergen Engines AS, which is part of Rolls-Royce Power Systems.

The V-line will consist of 12, 16 and 20 cylinder, while the inline platform is available in 6, 8 and 9 cylinder. At 600 KW per cylinder the new engines offer a 20 percent increase in power per cylinder compared to their predecessors. In addition, the engines set a new standard in power and efficiency with exceptionally low fuel consumption and emissions of NOx, CO2, SOx and particulates.

With a modular design, the B33:45 liquid fuel and B36:45 gas engines will share the same core components. This allows for fuel conversion between gas and liquid fuels with minimal downtime and will create a very flexible platform for customers. This is especially beneficial in countries with transitioning fuel options.

The new engine is applicable for different operational modes. This includes baseload, grid balancing, load following and peaking. Waste heat and CO2 can also be efficiently used for industrial processes, district heating, air conditioning, or to drive a combined cycle.

The B36:45V20 will be the first variant available in the new V-series. The very first two engines are planned to be installed as an extension to an existing Rolls-Royce 37 MWe combined heat and power plant in Czech Republic. With the extension, the power plant will, from the end of 2019, deliver 60 MWe electricity and heat for companies and homes in the nearby town.

Conferences

View news items in their entirety at www.AE-Africa.com

September 2018			
5-7	Africa Oil & Power 2018	Cape Town, South Africa	www.africaoilandpower.com
12-13	Future Energy East Africa	Nairobi, Kenya	www.future-energy-eastafrica.com
18-20	Sugar & Ethanol Africa 2018	Nairobi, Kenya	www.energy.knect365.com
24-27	Solar Power International	Anaheim, California	www.solarpowerinternational.com
26-28	Regional Energy Co-operation Summit	Accra, Ghana	www.regional-energy-cooperation-summit.com
October 2018			
1-3	Future Energy Africa Exhibition and Conference	Cape Town, South Africa	www.futureenergyafrica.com
2-3	2nd Biomass Trade & BioEnergy Africa	Johannesburg, South Africa	www.cmtevents.com
10-11	Biofuels International Conference & Expo and International Biogas Congress & Expo	Berlin, Germany	www.biofuels-news.com
10-11	Zimbabwe Infrastructure, Power & New Energy Investors Conference	Harare, Zimbabwe	www.conventionventures.com
11-13	Solar Energy Expo 2018 Tanzania	Dar es Salaam, Tanzania	www.expogr.com
17-19	4th Sub-Saharan Africa Power 2018	Cape Town, South Africa	www.ssapower.com
23-24	Offshore Energy Exhibition & Conference	Amsterdam, The Netherlands	www.offshore-energy.biz
30-31	DLO Africa Power Roundtable	London, UK	www.africapowerroundtable.co.za
November 2018			
6-8	5th Senegal International Mining Conference & Exhibition (SIM SENEGAL 2018)	Dakar, Senegal	www.ametrade.org
13-14	Future Energy Nigeria	Lagos, Nigeria	www.future-energy-nigeria.com
14-15	Africa Renewable Energy Forum	Casablanca, Morocco	www.africa-renewable-energy-forum.com
21-22	MENA Power & Water 2018	United Arab Emirates	www.proventusglobal.com
25-26	Saudi Renewable Energy Summit 2018	Riyadh, Saudi Arabia	www.renewableenergyksa.com
December 2018			
6-8	Solar Energy Expo 2018 Rwanda	Kigali, Rwanda	www.expogr.com
11-12	Southern Africa Renewable Energy Summit	Cape Town, South Africa	www.sares-sa.com
11-12	Black Industrialists Energy Summit	Cape Town, South Africa	www.bies-sa.com
11-13	5th Edition of Mauritanides 2018	Nouakchott, Mauritania	www.mauritanidesmr.com
February 2019			
27-28	12th CO_2 Utilization Summit	Houston, TX	www.wplgroup.com
March 2019			
26-27	Power & Electricity World 2019	Johannesburg, South Africa	www.terrapinn.com
June 2019			
11-14	Africa Energy Forum	Lisbon, Portugal	www.africa-energy-forum.com

Please check with organizers directly to confirm information as dates and venues are subject to change.

Access the African Energy Opportunity

Join over 1,000 African Energy Captains of Industry at the 11th Africa Energy Indaba to explore and find new business ventures in the energy market in Africa, through targeted Business Matchmaking!

AFRICA ENERGY INDABA

2019

19 - 20 February 2019

With over 600,000 people across the continent who don't have access to energy, Africa presents an enormous investment and growth opportunity for companies in the energy sector.

The Africa Energy Indaba will unlock opportunities within:

- African Utilities
- Country High Priority Energy Project development opportunities
- African Gas – infrastructure, gas and projects
- Independent Power Producers
- Off-grid and mini-grid opportunities

We invite you to join the leading African Energy Decision-maker event of the year!

info@energyindaba.co.za
www.africaenergyindaba.com

AFRICA ENERGY INDABA
SOLUTIONS FOR AFRICA
CONFERENCE AND EXHIBITION

Side Events

AFRICA GAS FORUM | WOMEN IN ENERGY | IPP & PPA CONFERENCE | AFRICA ENERGY INDABA LEADERS' DIALOGUES | WORLD ENERGY COUNCIL AFRICA REGIONAL MEETING

Strategic Partners

SANEA | NEPAD | WORLD ENERGY COUNCIL

Government Host

energy Department Energy REPUBLIC OF SOUTH AFRICA

Trade Industry Association Partner