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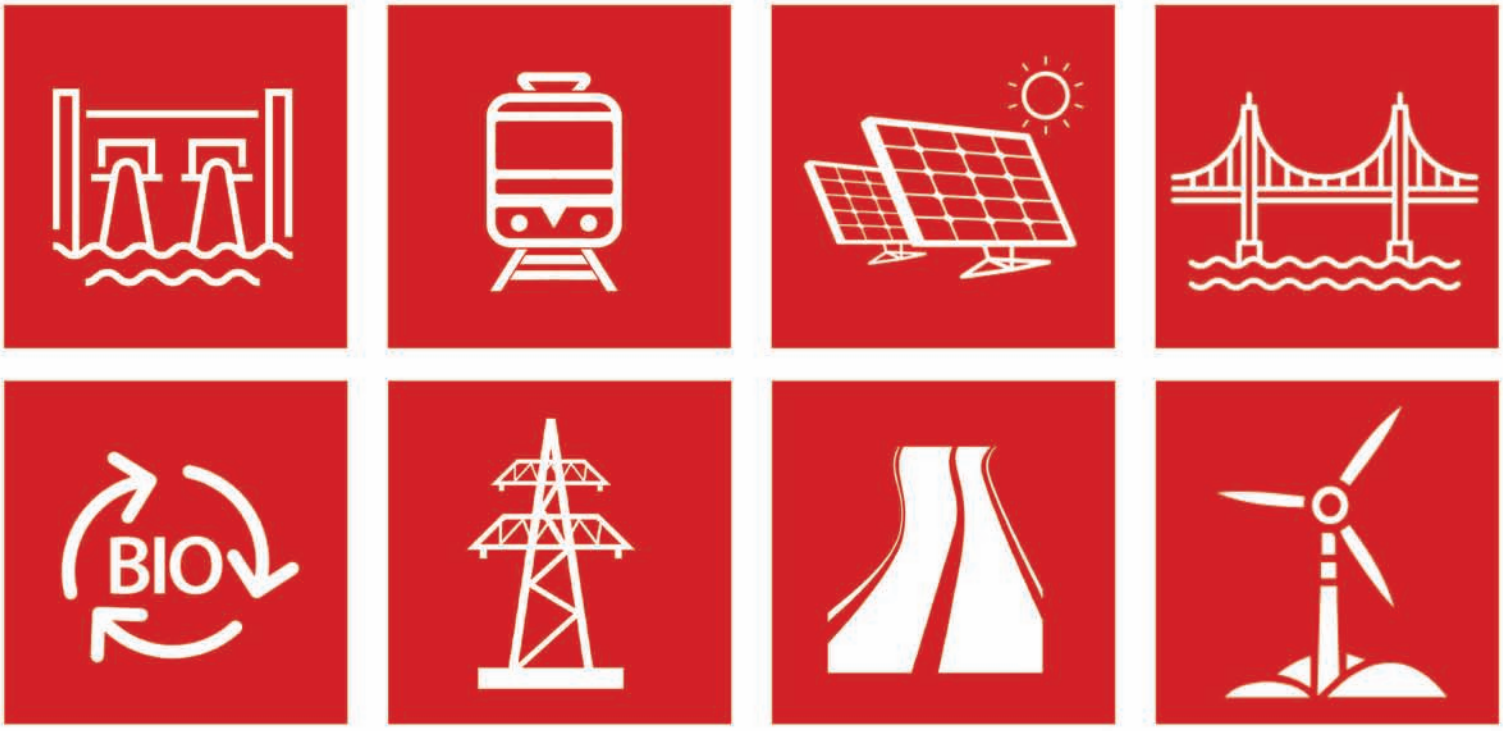

FOR MORE INFORMATION, PLEASE CONTACT:

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

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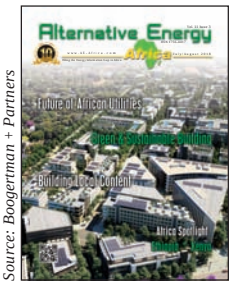

Source: Boogertman + Partners

Sustainable building takes off in sub-Saharan Africa

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Publisher's Note

MESSAGE FROM 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
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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

The world lost a very special man over the period – Kofi Annan. While Annan was a former UN secretary-general and a Nobel laureate, he was much more than that. He was a proud Ghanaian son, a household name, a great champion for human rights the world over, and an envoy for advancing the African agenda.

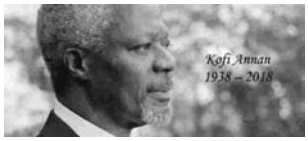
Annan worked tirelessly over the years to make this world a better place. His efforts were noted in the hundreds of messages pouring in over the days following his passing. Ghanaian President Nana Akufo-Addo ordered his country's flags to fly at half-mast for a week in respect to the man who held a special place in his heart for his home country, and continent.

There are so many messages from around the world in tribute and in mourning, it is hard to choose only a few to share. I have included below a handful I feel reflect global sentiment about the man in the best possible way.

Jens Stoltenberg, NATO Secretary General: "Saddened to hear that Kofi Annan has passed away. His warmth should never be mistaken for weakness. Annan showed that one can be a great humanitarian and a strong leader at the same time. The UN and the world have lost one of their giants."

Zeid Raad Al Hussein, UN High Commissioner for Human Rights: "I am grief-stricken over the death of Kofi Annan. Kofi was the epitome of human decency and grace. In a world now filled with leaders who are anything but that, the world's loss becomes even more painful. He was a friend to thousands and a leader of millions."

Musalia Mudavadi, former vice president and former prime minister of Kenya: "It is to Kofi that Kenya owes its current democratic environment born out of his mediation that halted the 2007/2008 political violence … What struck me, and was attractive, was that the sensation of a peacemaker stuck on him like his skin."



These tributes, and hundreds of others like them, reflect how truly respected Mr. Annan was. Joining the UN in the 1960s, Annan spent the better part of his life with the organization in one capacity or another. His tenure culminated with the UN appointing him secretary-general in 1997, becoming the first sub-Saharan African to lead the world body. Annan served in the position until 2006, having been elected for a second term. His efforts to achieve world peace were recognized in 2001 when he was jointly awarded the Nobel Peace Prize along with the UN.

In 2007 he founded the Kofi Annan Foundation, which seeks to mobilize political will to overcome threats to peace, development and human rights. He also served as chairman of The Elders, an international organization of distinguished peace and human rights activists founded by Nelson Mandela in 2007, whom Annan had worked closely with over the years. In 2012 the UN appointed him Arab League Joint Special Representative for Syria, though he soon resigned. In 2016 the UN once again called upon Annan, appointing him to lead a UN commission to investigate the Rohingya refugee crisis in Myanmar.

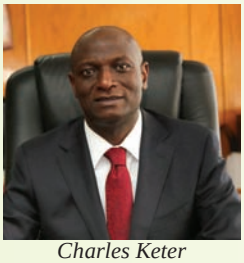
Summing up Annan's quite distinguished career in just a few paragraphs does not do him justice. As former US president Barack Obama stated: "Kofi Annan was a diplomat and humanitarian who embodied the mission of the United Nations like few others. His integrity, persistence, optimism, and sense of our common humanity always informed his outreach to the community of nations."

You may now rest in peace dear Kofi, your legacy will live eternal through the foundation you established, and more importantly, through the lives that you touched. The world will miss you.

Dianne Sutherland
Publisher

Keter Says Garissa Solar to Commission Early

Kenya's Energy Minister, Charles Keter, revealed that Kenya will see the commissioning of the Garissa solar power plant in September. The commissioning will take place three months ahead of schedule.



Charles Keter

"We are ahead of schedule and by September the plant can supply power to the grid. In addition, the purchase price of its production was reduced to 5.4 cents per kilowatt hour," said Keter.

The 55 MW power plant will provide enough electricity to power 625,000 households. Its construction is carried out by China Jiangxi International Kenya Ltd., with the financial support of the Exim Bank of China.

Cocoa Pods to Power Cote d'Ivoire

The world's number one cocoa producer in the world, Côte d'Ivoire, is set to use its top crop to boost power generation. The country produces around 2 million tons of cocoa each year, and in turn, thousands of tons of pods that are burned after harvest. The country is planning to build a power plant that uses those pods as biomass to produce energy. The project will have a capacity of between 60 MW and 70 MW and will be the first project in an initiative to add 424 MW of additional capacity through biomass.

This first plant will be located in the Divo region in the south-east of the country. Its implementation is accompanied by the US Agency for Trade and Development (USTDA) which granted nearly $1 million for feasibility studies.

Wind-Powered Blockchain Infrastructure for Morocco

Soluna is building wind-powered blockchain computing infrastructure in Morocco. According to the company this is a clean and sustainable alternative to the current cryptocurrency mining approach.

The firm plans to develop its own 900 MW wind farm power plant in Morocco and combine it with the company's private computing facilities to help power the blockchain in a more eco-friendly and sustainable way.

The increase in popularity and widespread usage of blockchain has come at a cost: according to *Digiconomist*, Bitcoin mining used approximately 71 TWh per year, equivalent to almost 10% of China's annual energy usage, representing an unsustainable growth in demand on the world's energy resources.

In response to this ever-growing problem, Soluna aims to be the world's first utility-scale blockchain infrastructure company powered by its own private renewable energy sources. Soluna plans for the energy systems and computing facilities to be self-contained, distributed, scalable, and flexible.

The firm explained in a statement that the project site covers 37,000 acres in southern Morocco with over 900 MW of wind power potential. It is a Class I wind site, where wind speeds reach over 22 miles per hour, making it one of the highest quality wind sites in the world. The wind farm will be an off-grid design with the plan to integrate it with the grid at a later date. High voltage transmission lines are expected to reach the site by mid-2019. If it is not connected to the grid, Soluna's site will be one of the largest off-grid operations.

Hanergy Launches Lighting Africa in Tanzania

Hanergy Thin-Film Power Group launched the "Lighting Africa" project at its first stop in Tanzania on July 18. The project was launched in partnership with China Foundation for Peace and Development and Tanzania-China Friendship Association.

Source: Hanergy Group

Hanergy has promised to donate the first 100 Humbrellas this October.

"Lighting Africa" is a philanthropic project initiated by Hanergy and joined by China Foundation for Peace and Development this April in Beijing, aiming to provide environmental-friendly lighting devices to African children to improve their reading time and help [the] electricity deprived population in Africa.

The launch event that had a Humbrella demonstrated in fully lit condition was witnessed by dignitaries such as: Minister of International Department of Communist Party of China, Song Tao; President of Tanzania China Friendship Association, Hon. Dr. Salim.A.Salim; Hanergy Kenya Sales Directors Li Chuan and Zhang Xu; and over 700 local residents from Kagera Region along with teachers and pupils from the Oysterbay Primary School in Dar es Salaam, Tanzania.

Minister Song Tao said, "We hope more NGOs, enterprises, and individuals can join the cause of building a prosperous Tanzania, making the people's lives better."

"We hope 'Lighting Africa' Project could be a successful program at its first stop in Tanzania," added Minister Song.

Donating the Humbrella, a path-breaking product from Hanergy, Li Chuan, Hanergy Kenya, Country Sales Director, said "At Hanergy, we're steadfast to ensure the all-round development of Africa. We're confident that the Humbrella will surely light up the lives of African children and facilitate the fast-paced development of Africa. Today's step to donate Humbrella to Tanzania is the testimony of our commitment to helping the underdeveloped regions of Africa facing a power shortage."

"This is just the beginning of Hanergy's philanthropy in Africa. We're poised to bring more Humbrella to African continent," he added.

Humbrella is a new thin-film solar product developed by Hanergy. Weighing only 8.8 kilograms with a diameter of 2.7 meters, Humbrella is covered with thin-film solar panels, which is available for power generation in both sunny and cloudy days.

Equipped with integrated functions of off-grid power supply, electricity storage, night lighting and terminal charging, the newly unveiled product is expected to store as much as 40000 mAh electricity, ensuring a 10-hour high-quality reading time for children, or charging more than 10, 3000 mAh smartphones.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ENGIE to Build 8 Hybrid Solar Power Plants in Gabon

ENGIE has signed an agreement with CDC, the Gabonese financial institution *Caisse des Dépôts et Consignations*, to deploy eight hybrid solar power plants in Gabon, representing a combined capacity of 2.2 MW.

The implemented solution was developed by ENGIE's subsidiary, Ausar Energy in collaboration with CDC, the Gabonese Ministry of Energy, and the Gabonese energy and water company *Société d'Énergie et d'Eau du Gabon* (SEEG) and means that solar energy can be used in eight locations that are currently supplied by oil-fired thermal power stations.

With construction set to begin in a few weeks, this project will contribute to the Gabonese Republic's proactive policy of using renewable energy – solar and hydropower – to increase the country's energy capacities. The project will save the country one million liters of fuel oil per year, or 2,600 tons of CO_2, and reduce generation costs by 30%.

Ausar Energy offers the African continent a hybrid solar power plant solution, with or without storage facilities, with capacities ranging from 50 kW to 2.5 MW. This solution is in line with ENGIE Group's strategy of promoting decentralized generation and distribution of electricity from renewable sources. This strategic priority is designed to ensure continuous access to energy in isolated areas that are not and cannot be connected to grids, as well as to limit the consumption of fuel oil, manage costs and reduce pollution

Total Partners with Solergie in Togo

In Togo, French firm Total has partnered with Solergie to provide the Togolese people a new power solution based on solar energy, SolergieBox. This is a 220V system whose capacities can be increased depending on customers' needs.

Solergie's Managing Director, Marie Dominique Lodens commenting on the development said: "SolergieBox is a solar-based power system that generates 220V for up to eight people. Each of these has access to his or her own box and own meter."

Source: Solergie

"By paying CFA15,000, each customer gets access to an installation enabling connection to two rooms with one lamp, a socket and a switch respectively, and CFA5000 of power credit. Solergie will take care of the connection part and guarantees maintenance and repair on the box," added Bert Bernolet, CEO Solergie.

According to Adrien Bechomet, managing director Total Togo, venturing into renewables was driven by "pertinence of investments in clean energy and its socioeconomic impact, in rural areas particularly."

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.

Ghana to Pursue Nuclear Ambitions

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

"We are looking for clean energy, so we can meet energy demand in the future. We have looked at renewables, but also thermal and nuclear because industrial development is about providing reliable and affordable energy," said Sogbadzi.

Ghana already has a nuclear station mainly used for research, development and creation of isotopes for health purposes.

Botswana Power Signs First Contract with GE

GE Power's Grid Solution business signed its first contract with Botswana's state-run utility, Botswana Power Corporation (BPC). The contract includes the design, supply, installation, testing and commissioning of a SCADA/Energy Management system at the principal grid control centers at BPC headquarters in Gaborone and the back-up control center in Francistown.

At the contract signing ceremony, Dr. Stefan Schwarzfischer, CEO for Botswana Power Corporation said, "The functionalities of this platform will improve customer services by leveraging our existing customer call system, reduce down-time, improve revenue collection as well as overall customer satisfaction. Once the project is completed, BPC will benefit from a single platform for both Gaborone and Francistown."

With about 70% of the country's population having access to electricity, Botswana is currently focused on the digital transformation of its grid network to enhance reliable access for its people. "GE technology will bring reliable, efficient and sustainable electricity, using cutting edge digital solutions while powering the country forward," said Lazarus Angbazo, CEO, GE Grid Solutions, Sub-Saharan Africa. "This project marks the beginning of a rewarding partnership with BPC, reinforces GE's commitment to support the government of Botswana in its digital transformation process and will further expand GE's leadership on the Energy Management Systems market in Southern Africa where more than 50% of the transmission utilities are relying on GE's Advanced Energy Management System (EMS) Solution Platform to operate their networks."

With the extended IT/OT integration, more interconnected networks and further regional integration, there is a need for the renewal of many existing Energy Management Systems to achieve better monitoring and asset management across the various power pools in Africa. Steven Martin, Chief Digital Officer, GE Power, added, "GE Power's Digital Energy software portfolio – including Advanced EMS – enables us to support new customers like BPC in parts of the world where portions of the population still need access to electricity. We are inspired by the digital strategies that BPC has created to ensure its communities grow and thrive in a time of intensive change and opportunity within the energy sector."

GE Power's Grid Solutions business provides complete, engineered solutions for high voltage (HV) substations to power generation

companies, utilities, and industries, bringing together the right mix of high-voltage products through expert engineering and full project management. GE has designed and implemented over 1,700 substation projects in the last 10 years.

New Wind Power Plant for Mauritania

Elecnor, out of Spain, was awarded the contract to develop the second wind power plant in Mauritania. With a capacity of 100 MW, the Boulenouar wind power plant will be located in Dakhlet Nouadhibou. Its implementation cost was estimated at €122 million and is funded by the Arab Fund for Economic and Social Development (AFESD).

Source: Elecnor

The wind farm will be built by a consortium of Siemens and Gamesa Renewable Energy, which will supply, among other things, wind turbines. Elecnor will take care of the engineering, construction and commissioning of the plant. An operating and maintenance contract, lasting 11 years, is scheduled to be signed later. Construction is scheduled to be completed by Q4 2019.

The country's first wind power plant was inaugurated in 2015. With a capacity of 30 MW, it is located in the city of Nouakchott.

AfDB Approves Financing for Zambian Small-Scale RE Projects

The Board of Directors of the AfDB has approved $50 million framework financing for small-scale renewable energy projects in Zambia. The financing is to help diversify Zambia's energy generation currently heavily reliant on hydro-electricity.

Facing a serious electricity supply deficit due to recent droughts, Zambia's government launched the Renewable Energy Feed-in-Tariff (REFiT) policy in 2017 to crowd-in private investments for small-scale (up to 20 MW) renewable projects. The "Global Energy Transfer Feed-in Tariffs" (GETFiT) Zambia Program has been designed to facilitate the implementation of the REFiT Policy.

The framework aims to finance 100 MW of renewable energy projects, primarily solar PV, to be selected under the GETFiT Zambia Program. This is the first program that will be co-financed by the Green Climate Fund (GCF) and the AfDB following the signing of the Accreditation Master Agreement on November 8, 2017 between the two institutions, making the bank a credited implementer of GCF-approved projects. The Board of the GCF approved $52.5 million for the framework during its 19th Board Meeting in February 2018.

"This is an innovative financing framework that enables the transition to sustainable energy in Zambia, and an important milestone in our partnership with the GCF," said AFDB's Vice-President for Power, Energy, Climate and Green Growth, Amadou Hott.

NETWORK WITH AFRICAN MILLERS, ETHANOL PRODUCERS AND BUYERS

6th Annual F.O. Lichts Sugar & Ethanol Africa

The 6th Annual F.O. Licht's Sugar and Ethanol Africa. will take place in Nairobi from 18 - 20 September 2018. Connect with sugar millers, ethanol producers, traders, buyers, technology companies, shipping and logistics companies, and users of fuel, industrial and beverage ethanol from across Africa and the rest of the world.

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California Schools Set to Install Solar PV

ForeFront Power announced that three additional school districts across California have selected the developer to install 3.7 megawatts (MW) of solar photovoltaic capacity across 13 locations. Stockton Unified School District, South Monterey County Joint Union High School District, and Shasta Union High School District all engaged ForeFront Power to go solar with no capital outlay.

The solar parking canopy projects, which will be completed in 2019, are expected to generate over 5 million kilowatt-hours (kWh) of electricity annually, representing 4,793 tons of carbon dioxide equivalent avoided from the grid. ForeFront Power will manage all aspects of project development, including financing via a Power Purchase Agreement that requires no upfront cost or bonds on the part of the districts.

"As one of the largest school Districts in California, it's important that we demonstrate our commitment to sustainability while conserving District resources," said Steve L. Breakfield, Director of Facilities & Planning. "ForeFront Power's solutions enable Stockton USD to implement solar at schools across our District without the use of bond funds and bring solar learning directly into the class room."

Stockton USD has prior experience installing solar at several high schools and middle schools. For this second round of sites, the District chose ForeFront Power as their solar provider. ForeFront Power makes the decision to go solar easy by offering a full suite of services – on-site and off-site renewable energy solutions, battery storage, electric vehicle charging, and solar energy curricula – through a streamlined procurement process via School Project for Utility Rate Reduction (SPURR). ForeFront Power's backing by Mitsui, the 'A'-rated global energy investment leader, ensures expedient project development and a stable counter-party for the long-term life of the solar projects.

All districts utilized an innovative purchasing framework through SPURR that allows public agencies in California to "piggy-back" a competitive Request for Proposal process for solar energy. SPURR's program mitigates many challenges of public procurement, like consultant fees and long contract negotiations. Since 2015, the SPURR Renewable Energy Aggregated Procurement (REAP) program

Source: Forefront Power

and the ForeFront Power team have helped over 20 school districts and municipalities procure more than 50 MW of clean solar power across more than 100 sites.

The schools will also receive free energy lesson plans from Schools Power, a leading national education organization that provides school districts with standards-based renewable energy curriculum packages. ForeFront Power and Schools Power announced their partnership in July of last year.

"Our curriculum will make on-site solar adoption even more real for students," said CEO of Schools Power, Elliott Josi. "Students will be able to practice their skills in STEM and English language arts. Also included are activities to build student interest and awareness of careers in the solar energy industry."

Vestas to Provide Custom Power Solution in Tasmania

Australian-based Palisade Investment Partners Limited (Palisade) has placed a 112 MW turnkey order with Vestas for the Granville Harbour Wind Farm in Tasmania, Australia.

Vestas has developed a solution with Palisade that is customized to Tasmania's excellent wind conditions, and that will provide low-cost renewable energy that can power more than 46,000 local homes. The project supports both Tasmania's ambitious target to be self-sufficient with renewable energy and Tasmania's role within the National Electricity Market as a key source of renewable energy to mainland Australia.

Leveraging Vestas' extensive experience from more than 100 turnkey projects globally, the order includes civil and electrical works, supply and commissioning of 31 V126-3.6 MW turbines as well as a 25-year Active Output Management 5000 (AOM 5000) service agreement. With its 137-meter-tall towers, the project will host the tallest turbines in Tasmania, which will maximize annual energy production, reduce the cost of energy and deliver the best business case for Palisade.

Pöyry Awarded Large Wind Farm Project in Vietnam

Super Energy Corporation Public Company Limited (Super) have awarded Pöyry with an owner's engineering services assignment for a 340 MW wind farm project. The project is made up of six sub-projects located in Ca Mau, Bac Lieu, and Soc Trang provinces, in Vietnam.

Super is a Thailand-based renewable energy developer with a plan to spend about $600 million in the next three to four years in expanding its renewable energy portfolio to meet the rising demand in Southeast Asia.

Pöyry's assignment includes a feasibility study, wind turbine generator supplier selection, technical review of EPC contracts, and project management and engineering design review for the wind farms.

Among the six sub-projects, the 40 MW wind farm facility located in Ca Mau is set to be completed first in the second quarter of the year 2020, followed by the 30 MW wind farm in Soc Trang Phase 1, which is set to be completed by mid-2020 and the 142 MW wind farm in Bac Lieu, which is set to be completed by the end of 2020.

"We are proud to have been chosen by Super Energy Corporation as one of their partners for boosting renewable energy generation in Southeast Asia. This project further strengthens Pöyry's role in supporting the renewables boom in the South East Asian region, where we have so far been involved in more than 4,000 MW of solar and 3,000 MW of wind power projects,"" said Petteri Härkki, regional director of Pöyry.

The value of the order is not disclosed. The order has been recognized within the Energy Business Group order stock in H1 2018.

Global Wind Turbine Foundations Market to Reach $7.2 Billion by 2022

The global wind turbine foundations market registered a market value of $5.7 billion in 2017 and is expected to reach $7.2 billion in 2022, largely driven by renewable energy auctions, supportive government policies, decreasing operations and maintenance costs, and feed-in tariffs, according to GlobalData, a leading data and analytics company.

The company's latest report: "Wind Turbine Foundations, Update 2018" states that the global onshore foundation market value is estimated to reach $3.05 billion in 2022. Likewise, the annual offshore foundations market value is expected to reach $4.16 billion in 2022.

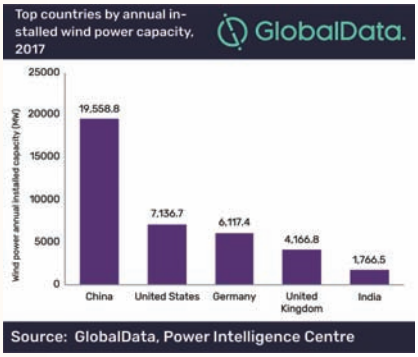
Subha Krishnan, Senior Power Analyst at GlobalData says: "Most offshore wind installations globally to date have used monopole foundations, which are cylindrical structures driven into the seafloor and attached to the bottom of the wind turbine tower.

"However, offshore wind turbines are getting larger, complicating the use of monopile foundations. As offshore wind projects move further from shore, jacket structures, which typically consist of four legs connected by braces, are becoming more common as they use a lattice structure to support the weight while using less steel."

During the forecast period, 98,750 foundation units are estimated to be installed in the onshore wind foundation market and 5,449 units in the offshore wind foundation market, which represents installations with respect to capacity that are currently at the construction and permitting stages.

China is the largest manufacturing hub for wind turbines and its components. Between 2018 and 2022, it is estimated that its onshore foundations equipment market will reach $865.2 million. Likewise, the offshore foundations equipment market is estimated to reach $504 millionqw during the same period.

Currently in China, high-rise pile caps and monopiles are the most popular foundation choice, but a variety of foundations, including jackets, multi-piles, gravity bases, and suction bucket foundations have also been installed, with most foundations having been deployed in intertidal zones. While the intertidal zone has provided a useful testing ground for different foundation types, there is a clear need to test more foundations offshore in order to identify which are most appropriate for Chinese waters.



The US is the only country in the Americas region that had offshore wind power installed, as of 2017. More than 58% of US offshore wind is located in areas with deep water where conventional structures such as transition piece or monopile foundations are not being used. Hence, in order to account for this condition, US companies are developing innovative floating offshore wind platforms for use in deep waters which will help in providing a market for innovative offshore wind projects in the US.

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Dubai: Expansion of Residential and Building Solar Rooftop Panels Installations

Following the success of the flagship Safaqat project in Hatta, whereby 640 villas were retrofitted with solar rooftop panels, Dubai is now extending this innovative approach across additional buildings and villas. The Safaqat program will support the implementation of solar rooftop panels on buildings across the UAE, with demand coming from Hatta and residential villas in Dubai.

Safaqat is the solar revolution enabler for the UAE and falls under the Shams Dubai initiative which aligns with Dubai's integrated energy strategy (DIES) 2030, the UAE National Energy Strategy 2050 and UAE Vision 2021. Under Safaqat, eligibility is only possible when the savings are more than the cost of the hardware over its usable life. Each Safaqat deal will cost less for the end user by comparison to their pre-purchase scenario.

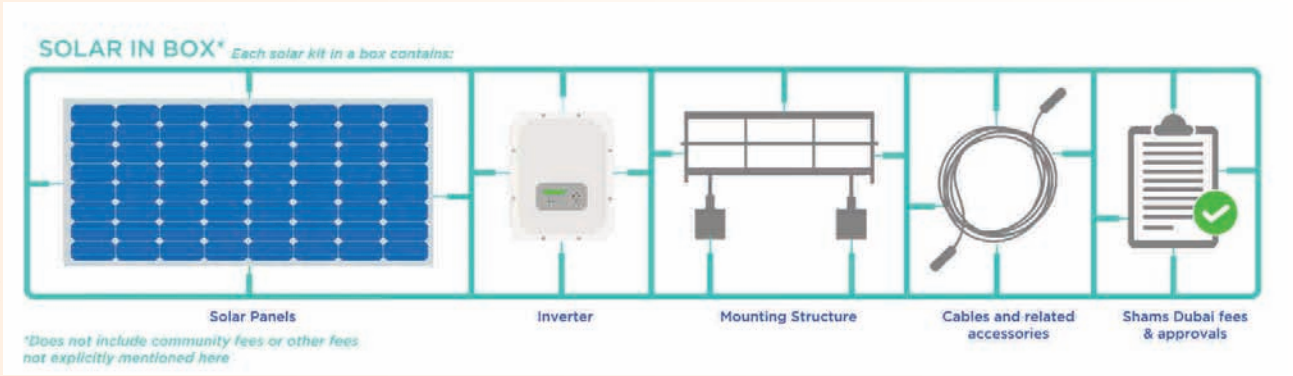
"Historically, sustainability has had associated cost considerations. Through crowdsourcing, we have sourced products which offer long term savings as well as being energy efficient, made available on the Safaqat platform," said Ivano Iannelli, Dubai Carbon chief executive officer.

The solar rooftop panels are photovoltaic (PV) panels, which generate electrical power by using solar cells to convert energy from the sun into a flow of electrons. Solar cells produce direct current electricity from sunlight which can be used to power equipment or to recharge a battery.

When installed on the villas, the PV panels will result in the reduction of 50 tons of carbon emissions, equivalent to the planting of 500 trees, while installation on the buildings results in the reduction of 130 tons of carbon emissions, equivalent to planting 1,300 trees.

The solar in a box kit can easily be dismantled and refitted when moving house or country, and enables residents and business owners to access solar energy, realize savings towards their electricity bills and effectively pay with their savings for the kit. Zero percent financing is available for the kit, which includes 14 solar panels, a mounting structure, inverter and sun shade, cables and Shams Dubai fees and approvals.

With the ambition of creating a more sustainable future, Safaqat enables Dubai Carbon to accelerate the transition of the UAE to a green and sustainable economy.



Source: Safaqat

Non-Hydro Renewable Forecast to Comprise Almost 50% of Spain's Power Capacity

Spain's total installed power capacity increased from 55.5 Gigawatt (GW) in 2000 to 104.4 GW in 2017 at a compound annual growth rate (CAGR) of 3.8% between 2000 and 2017, according to GlobalData, a leading data and analytics company. Growth is expected to continue, though at a lower CAGR of 1.8%, between 2018 and 2030, reaching 131.1 GW in 2030.

The company's latest report: "Spain Power Market Outlook to 2030, Update 2018" states that the share of non-hydro renewables in Spain's capacity mix was just under 5% in 2000 and this increased six-fold to 30.3% in 2017.

Spain still needs to expand its renewable energy sector to reduce its dependence on thermal power sources. It derives most of its electricity from thermal power sources but does not have large reserves of fossil fuels, forcing it to depend on gas imports from Algeria, Nigeria, Qatar, and Egypt and oil imports from the Middle East. Domestic coal reserves are of poor quality, necessitating imports from South Africa, Colombia, the US, and Russia.

Chiradeep Chatterjee, power analyst at GlobalData, says: "Spain's new socialist government that came to power in June 2018 adopted a more aggressive posture regarding renewable energy and supported a move in the EU, of which it is a member, to increase the target for renewable energy sources from the present 27% to 35% by 2030. The EU finally increased its target to 32% by 2030, which is binding for all its members.

"As a result of this policy shift, our analysis shows that solar PV capacity in Spain will grow at a CAGR of 13.1%, while onshore wind capacity will grow at a CAGR of 3.3% between 2018 and 2030. Non-hydro renewable energy sources are expected to contribute to 48.6% of the total capacity mix in 2030."

Babcock
Building Local Content Pool

Babcock's new resource screening center maximizes efficiency on site.

Launched less than a year ago, Babcock's new resource screening center is already proving its value in matching skilled labor resources to specific on-site job requirements in the power sector. Over the past 11 months, the center has significantly contributed to improving efficiencies on site by testing and placing the most suitably qualified and experienced candidates in critical power projects where an effective and efficient work force is a necessity.

The first of its kind in South Africa, Babcock's resource screening center is located in Vanderbijl park, in close proximity to the site office where Babcock retains a core crew proficient in managing scheduled shutdowns, as well as any unscheduled maintenance issues that may arise at a power station.

General Manager – Business Development, Services and Resources, Dipak Madhav, says the objectives of Babcock's resource screening center are to assess whether candidates meet the minimum requirements in performing required job-specific tasks, to ensure that competent resources are placed on site, quality of work is maintained, and that efficiency and productivity is maximized.

Within a 12-month cycle Babcock's core power station teams are typically supplemented by between 2,500 and 3,500 temporary employees to complete the company's scope of work within tightly scheduled timelines. Such projects are often high risk and on critical path from day one, putting the project teams under immense pressure to complete the project safely and within acceptable repair targets.

"The resource screening center was established in 2017, when Babcock was contracted to overhaul three 600 MW boilers during a half-station shutdown. We required the services of approximately 2,000 temporary employees for the contract and had to ensure that we placed the appropriately skilled resources for the job, particularly A-class welders. By establishing the screening center, we could improve our skills screening process and simultaneously employ people who would increase effectiveness and efficiency on site," says Madhav.

While Babcock has always screened temporary employees, past assessments have largely focused on welders. The new center ensures that all resources and competency skills are tested, evaluated and independently accessed, from welding, fitting and rigging skills through to quality control and supervisor abilities.

The in-depth screening process is both comprehensive and on-going, not only assessing suitable employee qualifications, but also ascertaining whether qualified candidates can practically perform the job on-site.

Images courtesy of Babcock

Madhav says all suitably qualified applicants begin with numeracy, literacy, skill capabilities and practical tests. This is followed by a Babcock-managed medical test. Applicants who pass both these stages then begin statutory training which includes instruction on working at heights and confined spaces, as well as highlighting an employee's legal liability. Training concludes with an exam with individuals requiring 80% in order to pass.

This highly efficient screening process is completed within three to seven days, depending on skills requirements and training, after which the applicant is considered ready to work.

A second stage of screening takes place on site, where an employee's practical performance is evaluated.

Madhav says that over the past 11 months Babcock has screened approximately 5,000 candidates. "The new screening center helps to better match skills to the project on hand, putting the right person in the job. At the same time, it helps us to better understand the scope of work and identify possible skills gaps," he stated.

Candidates that pass the evaluation process are 'green carded' and placed within a growing pool of qualified, trained and evaluated workers who can be drawn on for Babcock projects requiring additional skilled labor. This pool of skilled resources includes welders, riggers, pipe fitters, mechanical fitters, supervisors, safety officers and quality control personnel.

The 'green card' endorsement from Babcock is only valid for one year after which time candidates are required to redo the screening process. Screening tests will also be modified and updated annually in order to maintain quality standards, with adjustments made according to any skills gaps identified during the on-site evaluation process. Madhav says in this way the screening process will continually improve based on past experience.

Babcock's screening center has the capacity to assess up to 100 candidates a day. The assessors are all experienced specialists in their field, while the screening criteria conforms to local and global standards. AEA

Power-to-X

Technologies and Renewables

Generating Hydrogen, Saving on Electricity

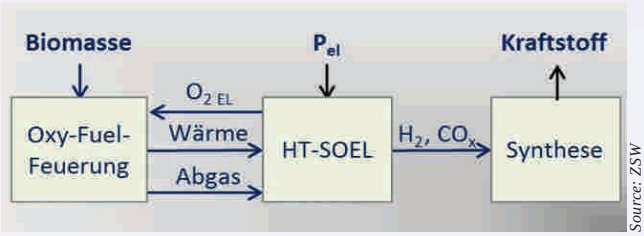
ZSW is looking into biomass combustion combined with high-temperature electrolysis.

Storage solutions will be very much in demand as renewables account for a growing share of electricity in the grid. One option – converting fluctuating green electricity into chemical energy carriers or raw materials – looks particularly promising. Scientists at the Center for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW) want to put power-to-X processes into action with a two-pronged strategy. They plan to combine high-temperature biomass combustion with high-temperature electrolysis to reduce the amount of electricity it takes to produce renewable hydrogen, the feedstock for all chemical power-to-X storage media. The ZSW researchers expect that this could slash overall electricity consumption by half. The first preliminary tests met with success and the response to the project has been positive.

The Working Group on Energy Balances says the share of renewable energies in Germany's electrical power yield averaged around 36 percent in 2017. The Federal Network Agency's SMARD information platform noted that its share soared to 100 percent for a few hours each on January 1 and May 1, 2018. The German government is shooting for an average of 65 percent of green electricity to flow into the grid by 2030. This means that the supply of renewable electrical power will increasingly outstrip demand. From time to time, alternative sources will produce double – and then some – the amount of electricity needed in the grid. All this excess power will have to be converted, so smart conversion solutions will have to be found.

The feedstock for all power-to-X processes – hydrogen

"Power-to-X" is a synonym for promising long-term storage solutions. This blanket term covers all processes that convert green electricity into chemical energy carriers – that is, into electricity-based fuels for vehicles or raw materials for the chemical industry. Power-to-X processes provide a cleaner, climate-friendlier way of producing hydrogen for fuel-cell vehicles, methane for natural gas cars, kerosene for aircraft, liquefied natural gas (LNG) for ships, and basic chemicals for the chemical industry.



Source: ZSW

Hydrogen is produced from water by electrolysis using green electricity. It serves as the feedstock for all power-to-X technologies. The ZSW is now setting out to combine high-temperature electrolysis and oxy-fuel combustion to produce renewable hydrogen in a way that consumes far less electricity.

Heat for electrolysis, oxygen for combustion

Alkaline and PEM electrolysis require a lot of electrical power. This is not the case with high-temperature electrolysis, especially when heat replaces much of the electricity needed as the input energy. The oxy-fuel process that provides this heat burns oxygen far more efficiently than purely air-based combustion processes. The researchers use wood or biomass residue for fuel.

Electrolysis, in turn, produces the oxygen required for high-temperature combustion, which normally consumes a great deal of energy. "We aim to generate one cubic meter of hydrogen from

Source: ZSW

2.5 kilowatt hours of electricity with this technology," says Dr. Michael Specht, head of ZSW's Renewable Energy Sources and Processes department. Today's electrolyzers generally require around twice as much electrical energy.

But these scientists aim to take this a step further by applying the electrolyzed hydrogen to convert the "green" carbon dioxide produced by oxy-fuel combustion into a carbon-based energy carrier such as methane or into basic chemicals such as methanol. The method uses carbon very efficiently and does not produce more carbon dioxide. And it saves energy because carbon dioxide does not have to be separated from a flue gas.

Looking into two concepts for reactors

The research team is investigating and comparing two types of reactors that are to help achieve these goals, one being a fluidized bed reactor and the other a FLOX burner for flameless oxidation. The idea is to generate an oxygen-poor exhaust gas stream that provides key components – the high-temperature heat needed for electrolysis and the carbon dioxide required for subsequent synthesis. Initial trials that used natural gas-fired oxy-fuel combustion in the FLOX burner provided a hot exhaust gas that is well-suited for subsequent fuel synthesis.

Scientists are also simulating this new power-to-x path to assess it. An initial analysis conducted by the Karlsruhe Institute of Technology's Institute of Technology Assessment and Systems Analysis (ITAS) confirmed that the ZSW's concept has the potential to significantly reduce the carbon footprint with a relatively low amount of overall energy expenditure.
The ZSW scientists are now building a test bed to investigate the combination of these two technologies. "We also want to win over industrial partners that develop high-temperature electrolysis methods for our project," says Specht.

Funding from the Federal Ministry of Education and Research

This research project is initially scheduled to run for three years with the Federal Ministry of Education and Research (BMBF) pitching in over €900,000. It is based on the work that the ZSW is doing for the BMBF's Copernicus project, a power-to-X initiative that is to run for 10 years. AEA

Solid Green Spreads Green Building Across SSA

This year, Solid Green Consulting celebrates the achievement of more than 50 certifications, demonstrating the company's ongoing leadership in the African Green Building sector. To date, the company has consulted on 57 successful green building certifications, covering 750,000 square meters of built area.

Over the last eight years, Solid Green has committed to creating a better living environment for all, not only through its extensive consultancy and certification services, but also through the research and development of online tools to better service its clients' needs – Solid XA and Solid Insight. And, with all 12 team members qualified as Green Star SA Accredited Professionals (GSSAAP), and key team members also holding LEED AP (Leadership in Energy and Environmental Design), EDGE AP (Excellence in Design for Greater Efficiencies) and WELL AP accreditations, Solid Green is actively harnessing its expertise to serve this sector through advocacy and mentorship.

Two important 'first' Green Star certifications in the last year include the Mon Trésor Business Gateway, the first Green Star certified project in Mauritius which achieved a 4-Star Green Star SA Office Design v1.1 certification in July 2018; and 78 Corlett Drive, which received a 6-Star Green Star SA Office Design Rating as well as a Net Zero Carbon Pilot Rating from the GBCSA at the end of November 2017.

Moving beyond buildings into the public realm, Solid Green is currently consulting on four of the first 13 projects that are piloting the GBCSA's new Green Star Sustainable Precincts tool, including Sandton Gate and Oxford Parks. The company was also the EDGE Auditor on Belhar Gardens Rental Estate in the Western Cape, the first affordable housing project in South Africa to achieve an EDGE certification from the GBCSA.

A strong believer in leading by example, Solid Green's own office in Rosebank, Johannesburg, is the first project in Africa to make it onto the Biophilic Map. The map, which is hosted by the International Living Future Institute's Biophilic Design Initiative, recognizes exemplary projects in articulating and applying Biophilic Design principles to the built environment. The office was awarded a prestigious LEED Platinum certification for Commercial interiors and the first 6-Star Green Star SA Interiors v1 certification in 2016; and won the Highest Rated Building category at the Green Star SA Leadership Awards in July of the same year.

The company is also actively involved in policy development throughout Africa and on August 29, 2017 Nigeria's first Building Energy Efficiency Code (BEEC) was officially launched in Abuja by the Federal Minister for Power, Works and Housing, Babatunde Raji Fashola (SAN). Solid Green was commissioned as technical consultant on the project, and Director, Chilufya Lombe, spoke at the launch event. "With the energy scarcity that is common in Africa, energy efficiency becomes very important in allowing and maintaining development," Lombe says. "In Nigeria, we have found that it is easier to build a building to consume 30% to 40% less energy than to pay to add renewable technology onto an inefficient building. In other words, we are talking about buildings that perform well from a first principles point of view."

Advocacy is a crucial part of the company's mandate. In 2016, Marloes Reinink, founding Director, signed up to become South Africa's first ambassador for the Living Building Challenge. Possibly the most rigorous green building certification program and sustainable design framework in the world, the Living Building Challenge is developed by the International Living Future Institute (ILFI) with the mandate of leading transformation toward a civilization that is socially just, culturally rich, and ecologically restorative. Solid Green is currently working with US-based architectural firm, A-I-R Inc, on two residential projects in Cape Town that are registered to be Full Living Buildings under the Challenge. Reinink says, "This work keeps me motivated and realistic that there is still a long way to go in terms of greening the built environment."

In addition to advocacy, training and mentorship form part of the Solid Green mandate. Three staff members sit on the GBCSA faculty, providing training to enhance the understanding of Green Star tools and certifications in the building industry. A contingent of five also sits on the GBCSA assessment panel, carrying out submission assessments;

Source: Intaprop

Mon Trésor Business Gateway is the first Green Star certified project in Mauritius.

Source: Boogertman + Partners

Sandton Gate and Oxford Parks are two of the first 13 projects that are piloting the GBCSA's new Green Star Sustainable Precincts tool

while two more representatives serve on the GBCSA Assessment Committee, whose responsibility it is to ensure that the certification assessments and assessment processes remain of the highest quality.

In addition, Lombe is currently mentoring start-up organization Khora Group – headed up by Katlego Mothapo – which was accepted into the Innovation Hub's Climate and Innovation Center (CIC). This incubation program provides advisory and support services, networking opportunities and access to finance for start-up companies in the green or sustainable sector.

And, in its quest to change mindsets and stay at the forefront of thought leadership, Solid Green is proud to be a partner in the newly-launched GreenED, an online resource offering best-in-class online and contextual learning on sustainable design in the built environment and green rating certifications. The company has been acknowledged on numerous occasions for its dedication and hard work. Since 2011, directors, staff members and projects have received fourteen Green Star SA Leadership Awards in total, with the Established Green Star awarded to Marloes Reinink in 2013, and Chilufya Lombe in 2014. Last year, the company was Runner Up for the '10 Year Award for the Consulting Company with the Highest Number of Certifications' in South Africa.

Says Reinink, "We are proud of our achievements and meaningful contributions to the green building sector. Our vision for the future is to maintain our current services in the South African industry and grow our activities and impact into Africa, where real change is needed in terms of how buildings are delivered in order to keep up with the current pace of development on the continent." AEA

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Solar Mini-Grids Perpetuate World Cup Fever

In the village of Sidonge, a remote rural and off-grid community in western Kenya, the main street would come alive at night with locals crowding into their community video hall to watch the World Cup games on a large screen.

For most of the villagers, the video hall was the only way to catch the action and it was made possible because of a solar mini-grid, which generates affordable electricity. The power is supplied on a pay-as-you-go (PAYG) basis to the community by RVE.Sol (Rural Village Energy Solutions Lda.) who developed, owns and operates the Sidonge mini-grid. RVE.Sol is a social enterprise, which leverages renewable energy technologies and innovative micro-financing models to benefit some of the world's poorest communities.

Cleaner and affordable energy from the mini-grid is kick-starting social and environmental change in Sidonge, improving local living standards and enabling new services for the community including access to clean water, mobile phone charging, hair cutting and food processing.

Energy 4 impact has been helping both RVE.Sol and several micro enterprises in the village to realize the full economic potential of the new source of power.

The advisory team worked with RVE.Sol to assess and identify ways to increase demand, as a way of improving the economic viability of the mini-grid.

"We helped micro entrepreneurs grow and diversify their businesses by leveraging their newly-acquired access to affordable energy. We offered advice on the most suitable electric appliances and facilitated financing through a Rockefeller-funded working capital facility that enables customers to buy machinery on credit," explained Diana Kollanyi, Energy 4 Impact advisory program manager.

One of these entrepreneurs, Esther Wanyama, sells fried chips and plantains and shares both shop and electricity with a neighbor who

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

blends and sells fruit juices. "Before the grid, I was cooking my chips on a wood-fired stove," says Esther. "Now, I just plug in and fry and the chips are better quality. My business mentor at Energy 4 Impact helped me find ways to diversify my product range and increase my profitability and now my business is growing – all thanks to electricity."

"Mini-grids have the power to bring remote villages to life," says Stephen Nakholi, regional projects manager, RVE.Sol.

"They can kick start economic growth by creating jobs and boosting livelihoods for people like Esther and they bring valuable social benefits too. The video hall in Sidonge is a new hub for the community and creates a real buzz, whether it's live sport or a blockbuster film. And at half time, hungry viewers can pop along the street and fill up with Esther's fresh chips, washed down with a juice from her partner."

Energy 4 Impact has been advising RVE.Sol on ways to scale up their business model and make it more attractive to investors. Recently, the company secured investment from the Green Mini-Grid Fund Kenya (funded by the UK's Department for International Development) to roll out more mini-grids in Kenya. They now plan to install 10 additional mini-grids in Kenya by end of 2018. AEA

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Ethiopia "GRAND" PLANS

Abiy Ahmed

Prime Minister: Abiy Ahmed (April 2018)
President: H.E. MulatuTeshome Wirtu (October 2013)
Independence: Oldest independent country in Africa (at least 2,000 years)
Population: 105,350,020 million (2017 est.)
GDP (purchasing power parity): $200.2 billion (2017 est.)
Real GDP Growth Rate: 10.9% (2017 est.)
Per Capita GDP: $2,200 (2017 est.)
Debt – external: $29.09 billion (December 2017 est.)
Industrial Production Growth Rate: 10.5% (2017 est.)
Minister of Water, Electricity and Irrigation: Dr. Seleshi Bekele
Electrification rate: 88% urban and 10% rural, combined 24%
Electricity – installed generation capacity: 4.4 GW (2017 est.)

Source: CIA Factbook July 2018, Climatescope

Politics and Economy

Politics

Ethiopia is the oldest independent country in Africa and one of the oldest in the world. The country did play host to Christian missionaries in the fourth century. Islam reached Ethiopia's shores in the seventh century, isolating the country from European Christianity. While a number of colonial powers tried their hand at colonizing Ethiopia, the Italians came closest with a five-year occupation by Mussolini's Italy; however, they were eventually routed by the Ethiopians, marking the first time an African nation won a victory over a colonial power.

Ethiopia has been ruled by various emperors in centuries past, the first being Emperor Tewodros who was known for unifying the country. More than a few emperors later came Emperor Ras Tafari Makonnen, better known as Haile Selassie. Selassie's regime in Ethiopia lasted over four decades, from 1930 to 1974, when a provisional council of soldiers seized power and installed a military government led by Major Mengistu Haile Mariam. Mariam's regime lasted for 17 years and was marked by brutality. The regime collapsed as droughts and famine led to insurrections across the country. In 1989, the Tigrayan People's Liberation Front (TPLF) merged with the Amhara and Oromo liberation fronts (EPDM & OPDO) to form the Ethiopian Peoples' Revolutionary Democratic Front (EPRDF).

Ethiopia adopted its constitution in 1994 and in 1995 hosted its first multi-party elections. The government of the Federal Democratic Republic of Ethiopia was installed in August 1995 with Ngasso Gidada as the first president, although the Ethiopian presidency is largely a symbolic office and the prime minister holds most of the power. Gidada's prime minister was Meles Zenawi. The Zenawi-led government promoted a policy of ethnic federalism, passing on significant powers to regional, ethnically-based authorities. Under the elected government Ethiopians enjoyed much greater political participation and freer debate than ever before in their history, although some fundamental freedoms, including freedom of the press have not yet advanced. Zenawi's government was re-elected in the next two elections with Girma Wolde-Giorgis as president. During this last term Zenawi became ill and died in August 2012. Hailemariam Desalegn took over as acting prime minister upon Zenawi's death, and officially took over the position on September 21, 2012. In October 2013 Mulatu Teshome Wirtu took over as president. The last elections held in Ethiopia in June 2015 had Prime Minister Desalgn and the EPDRF scoring a landslide victory, stripping the opposition of the one seat it had held in the outgoing chamber.

Fast forward to February 2018 and the country saw the surprise resignation of Prime Minister Desalegn following deadly political protests that preceded his resignation. In April, the parliament elected a new leader, 41-year old Abiy Ahmed Ali, a former lieutenant-colonel in the army and head of Ethiopia's Ministry of Science and Technology. His first major task was to bring calm to the regions in turmoil who were calling for a greater political voice in addition to solving a lands rights issue which initially stirred the unrest.

Regionally, the country recently made a step forward toward better relationships with its neighbors when on July 9 a meeting in Asmara between Ethiopian Prime Minister Ahmed Ali and Eritrean President Isaias Afewerki, took place. This was the first such meeting between any leaders of the two East African nations in nearly 20 years and resulted in the pair making a joint announcement that they would restore diplomatic ties. This could lead to greater cross-sectoral cooperation, particularly in energy, and improve the regional security situation paving the way for more investment into both countries. Additionally, while the dispute with Egypt over water from the Nile river being rerouted to accommodate Ethiopia's Grand Renaissance Dam, Prime Minister Ahmed and Egyptian President Abdel Fattah al-Sissi in June pledged to settle their dispute over the dam currently under construction.

Economy

The country's national development plans currently are focused on export-led industrialization, boosted by light manufacturing. In addition, it is moving forward on energy and infrastructure projects at a good clip, including the previously mentioned Grand Renaissance Dam, and a light rail system, the first of its kind in the region.

Ethiopia's economy has rebounded in recent years while in the past it had been dependent on donors and aid from international institutions to meet its needs. The IMF World Economic Forum in June predicted 8.5% growth in 2018 (the World Bank goes further and predicts 9.6%), far outstripping that of advanced economies, and making it Africa's fastest growing economy. Its growth is attributed to an increase in investment in industrial activity. According to the IMF, foreign direct investment growth was 27.6% in 2016/17.

The latest economic update from the World Bank, "The Inescapable Manufacturing Services Nexus: Exploring the Potential of Distribution Services," identifies key challenges in Ethiopia's economy and proposes some recommendations. The report says that tapping into the potential of the service sector, such as telecom, utilities and finance, could help Ethiopia to reach its industrial goals. It does warn however that "the sustainability of the Ethiopian economic growth model poses some important risks in light of continued foreign exchange shortages and limited room for external borrowing." It went on to state "While measures were taken to address persistent Birr overvaluation, the report highlights continued challenges, such as large external imbalances, rising debt and weak competitiveness may constrain the development of manufacturing and the creation of jobs." It recommends a "shift toward a more export-led model … where the private sector can play a greater role in economic growth, export diversification and employment."

Grand Plans & Ambitions

Ethiopia has grand plans for its renewable energy sector, with a goal of bringing its total power generation capacity up to 37 GW by 2037 and increasing its share of the regional power market. In line with this goal, the country's 2015-2020 Growth and Transformation Plan 2, or GTP 2, is expected to add projects generating 12,000 MW. Its ambitions come with a steep price tag however, up to $25 billion. This could be offset a bit by its ability to export electricity to neighboring countries, and if progress continues with Eritrea on the political front, it can add one more potential customer. Already an exporter, Ethiopia supplies small amounts of power to neighboring Sudan, Kenya and Djibouti; there are also deals in the works to export power to South Sudan, Tanzania, and Rwanda, as well as an underwater power link with Yemen.

Probably the most well-known of any of Ethiopia's RE projects is the Grand Renaissance Electric Dam (GERD) project. GERD will be the largest dam in Africa if project timelines are kept. The project is unique in that its $5 billion cost is being entirely funded by Ethiopia – 20% of the project is financed from bond offerings to Ethiopians, and the remaining 80% from tax remittances.

Situated along the Blue Nile, the dam will be 1,800 meters long, 155 meters high, with a total volume of 74,000 million M^3. GERD is being built by Italian EPC contractor salini impregilo. The project involves the construction of a main dam in Roller Compacted Concrete, with two power stations installed at the foot of the dam. The power stations are positioned on the right and left banks of the river and comprise 16 Francis turbines with a total installed power of 6,000 MW and estimated production of 15,000 GWh per year. The project is completed by a 15,000 m3/s capacity concrete spillway and a rockfill saddle dam 5 km long and 50 meters high, both located on the left bank.

Although the project is self-funded, Ethiopia is feeling the financial pinch.The government is said to be contemplating increasing the country's electricity tariff. Its current rate of $0.018 per kilowatt hour (kWh) is one of the lowest on the continent. Authorities are considering increasing the tariff to between $0.05 and $0.25 per kWh. This increase would be the first in the last 15 years.

While GERD is a very significant development, so too are many other Ethiopian projects. Reykjavik Geothermal has invested in what it says "are the world's two largest geothermal projects" to be located in Ethiopia. In December 2017, the company signed 25-year power purchase agreements (PPAs) with the government of Ethiopia. The two projects are the Corbetti and Tulu Moye, both expected to cost about $2 billion. They will have capacities of 520 MW each and will be located 250 km south of Addis Ababa.
Energy Resource Potential of Ethiopia

Hydropower and geothermal are not the only resources the country is ambitiously pursuing, solar and wind are playing prominent roles

Energy Resource Potential of Ethiopia

Resource	Unit	Exploitable Reserve	Exploited Percent
Hydropower	MW	45,000	<5%
Solar/day	kWh/m2	4 – 6	<1%
Wind: Power Speed	GW m/s	100 >7	<1%
Geothermal	MW	<10,000	<1%
Wood	Million tons	1120	50%
Agricultural waste	Million tons	15-20	30%
Natural Gas	Billion m3	113	0%
Coal	Million tons	300	0%
Oil shale	Million tons	253	0%

Source: Ethiopian Electrical Power (December 2016)

Source: Vergnet

Ethiopia has big plans for its wind industry (pictured, Ashegoda wind farm)

in the country's renewable sector as well. Ethiopia's Ministry of Water, Irrigation and Electricity (MoWIE) has plans for the addition of 1.2 GW of wind power capacity and has already launched a tender for 550 MW.

The Ministry in June 2016 floated a tender for the construction of three wind parks – the 300-MW Aysha project in Somali region, 100-MW Debere Birhan in Amhara region and the 150-MW Iteya in Oromia region. In addition, the Ministry is conducting a feasibility study for two other projects, the Debre Markos and Asella wind farms.

The most recent updates from this slate of projects has the Danish International Development Agency providing $201 million in funding for the development of the Asella wind farm. Construction is set to begin this year with completion slated for 2025.

The Debere Birhan wind farm may have hit a snag since the government has changed its policy on developing new power projects in the country, but with RE capacity goals clearly set, at some point it should be back on the table.

Solar too is set to take off. Ethiopian Electric Power (EEP) in April prequalified bidders for its 250 MW solar tender, launched last October. EEP plans to construct two PV power plants with a capacity of 125 MW each. Both projects are part of a 500 MW of solar plan, which will be developed via the Scaling Solar program.

The company pre-selected 12 of the 28 developers that submitted bids. Four of the selected bidders are single companies: Saudi energy giant Acwa Power; Enel Green Power, the renewable energy arm of the Italian power utility Enel; Norwegian solar developer, Scatec Solar; and Japanese industrial conglomerate Mitsui. All of the developers will receive a formal invite to access the project's data room. The tender's second stage will involve a Request for Proposal from the pre-qualified bidders.

Source: Reppie

Reppie waste-to-energy facility

The country also boasts an Africa first, with its $120 million Reppie waste-to-energy plant. The facility came online this August and will harvest energy from 1.4 million kilograms of waste each day. This will produce enough electricity to power an estimated 30% of Addis Ababa's households, according to the company responsible for the project, Cambridge Industries.

Small Scale Boosts

Two years into its Growth and Transformation Plan II, Ethiopia has provided electricity to 993 villages and improved power supply in 146 cities. The positive news on GTP II was announced by the MoWIE in April. Of these achievements, 254 villages have been electrified and 35 cities saw their electricity supply improved through February. The initial target for this period was 330 villages and 42 cities.

The project is part of the National Electrification Program, officially announced on November 27 last year, which aims to raise the national electrification rate to 90%. This will involve the electrification of 10,205 towns and villages. The current electrification rate in Ethiopia is 54.25%.

At the close of 2017, Mobisol and local firm SunTransfer Tech partnered up to provide large high-tech solar home systems. The partnership will see pay-as-you-go (PAYG) solar products integrated with Mobisol's SolarHub Software Suite, introduced into the Ethiopian market. The software suite additionally allows for efficient deployment of maintenance servicing and customer relationship management. Providing productive use solar solutions that go beyond lighting, Mobisol focuses on the development and supply of large solar systems that power a range of energy efficient appliances for household and small businesses.

Ethiopian customers have both the opportunity to electrify their homes and to run energy-based microenterprises, such as solar-powered cinemas, phone charging stations, and efficiently illuminate larger workshops. SunTransfer Tech, an established solar distributor in Ethiopia, brings into the partnership an existing and continuously expanding network of Solar-Centers, each staffed by professionally trained solar technicians.

Mobisol and SunTransfer Tech aspire to decisively support the implementation of the aforementioned National Electrification Program. The program aims to provide equitable and affordable electricity to all Ethiopians by 2025 and foresees the electrification of 35% of the population with off-grid energy – of which 5.4 million households will be provided with Solar Home Systems.

In April this year, the European Investment Bank (EIB) announced it would provide $25 million in financing to d.light design to strengthen access to energy in Africa via solar kits that do not require a grid, are easy to use and inexpensive for users on a pre-

payment system. Particular emphasis will be placed on rural and suburban populations and micro-entrepreneurs.

This EU financing will enable d.light design to develop the installation of solar kits – including not only panels and lamps but also low-energy equipment (radios, TVs, etc.) – in sub-Saharan Africa, with the ambitious goal of reaching 10 million solar installations within five years. The installation of these off-grid solar systems with d.light will initially take place in Ethiopia, Kenya, Nigeria, Tanzania and Uganda.

GE commissioned a scalable micro grid system powered by a Hybrid Distributed Power unit for Digo Village in the Oromia region of Ethiopia this July. The system, which was implemented in partnership with Ethiopia's Ministry of Water, Irrigation and Electricity, the Oromia Region Energy Bureau as well as Ethiopian Electric Utility (EEU), will provide reliable, cost effective power to 1,500 inhabitants of Digo providing critical power to a health clinic, school, administrative offices and homes.

Source: GE

GE commissions hybrid distributed power unit for Digo Village

The Digo Village hybrid power system is GEs third installation in Ethiopia. In 2017, GE funded two similar units at health centers in Guba and Ashoka in Southern Nations, Nationalities, and Peoples' Region (SNNPR).

Elite Future

A decade ago it would have been difficult to imagine that Ethiopia would become a renewable energy powerhouse in the continent, but times have most certainly changed. If the country achieves its RE goals, that is exactly what it looks set to do.

With the mega Grand Renaissance and other hydropower projects on the drawing board, combined with its geothermal and wind energy plans, there is no doubt that the renewable energy sector is going to contribute handsomely to the economic growth of the country as it increases its capacity to export energy. Dreams can come true, the only wild card is whether or not the regulatory framework will support the process in a transparent manner allowing all Ethiopians to benefit. Early indicators are positive, considering the steps the government has taken to roll out small scale solar to rural areas, and the heavy support its citizenry has shown toward forwarding the national renewable energy agenda. AEA

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KENYA

President: Uhuru Kenyatta (since April 2013)
Independence: December 1963 (from UK)
Population: 47,615,739 (July 2017 est.)
GDP (purchasing power parity): $163.5 billion (2017 est.)
GDP - real growth rate: 5.1% (2017 est.)
GDP - per capita (PPP): $3,500 (2017 est.)
Energy Minister: Charles Keter
Oil - production: N/A
Oil - consumption: N/A
Oil - proved reserves: 750 million barrels (2017)
Natural gas - production: N/A
Natural gas –consumption: N/A
Natural gas - proved reserves: 2.01 billion cubic meters

Uhuru Kenyatta

Source: CIA FactBook

As East Africa's most developed country, Kenya is uniquely positioned in the region, situated on the equator on Africa's east coast. Kenya has been described as "the cradle of humanity," being the home to some of the earliest evidence of humanity. Today the country has a vibrant culture, full of ethnic diversity.

Arabs began settling coastal areas, over the centuries developing trading stations which facilitated contact with the Arab world, Persia and India. The Portuguese tried to establish a foothold along the Kenyan coast in the 16th century but were driven off by Swahili states and Omani Arabs by the late 17th century. In the late-1890s Kenya fell under the British East African Protectorate and British settlers began moving inland, building a railway from the coast to Lake Victoria.

In 1920 the East African Protectorate became a crown colony of Kenya, administered by a British governor. A little more than 20 years later the calls for independence from the British began, with the Kenyan African Union (KAU) forming to campaign for African independence with Jomo Kenyatta as the KAU leader. After two decades of a violent campaign against whites in Kenya, the British initiated plans to prepare Kenya for majority African rule.

In 1963 Kenya gained independence and Kenyatta was named prime minister, one year later the Republic of Kenya was formed with Kenyatta being named president. Kenyatta died while in office in 1978 and was succeeded by Vice-President Daniel arap Moi. Kenya's next president faced coup attempts and a host of opposition that he had suppressed through political arrests; but he still managed to stay in office until 2002 when Mwai Kibaki won the 2002 elections in a landslide victory.

Kibaki ruled Kenya until 2013 when Uhuru Kenyatta, the son of Kenya's first president, won the presidential elections with just over 50% of the vote. A challenge to the results by his main rival, Prime Minister Raila Odinga, was rejected by the Supreme Court. The next elections in 2017 had Kenyatta being declared the winner, however the election was declared null and void and was re-run in October; Kenyatta once again came out on top.

The country has the most developed economy in East Africa with a growing entrepreneurial middle class and has enjoyed steady growth, However, according to economists its economic and development trajectory is hindered by weak governance, ineffective rule of law, and corruption. The government has successfully attracted foreign direct investment into infrastructure development and is promoting regional trade liberalization.

Kenya's economy accelerated for the second consecutive quarter, expanding at the swiftest pace since Q4 2016. Stronger growth, within-target inflation and an improving external position have held up the shilling and enabled further easing in monetary conditions, laying the foundations for robust economic activity. The economy closed 2017 with a GDP of just over 5%.

Agriculture remains the backbone of the Kenyan economy, contributing one-third of GDP and employing nearly 75% of the population. In spite of political turmoil throughout H2 2017, tourism was up 20%, showcasing the strength of this sector. Some high visibility terrorist attacks during 2013-2015 (e.g., at Nairobi's Westgate Mall and Garissa University) affected the tourism industry severely, but the sector rebounded strongly over 2016-2017 and appears poised to continue growing.

Kenya Reworking Energy Mix

Kenya's renewable energy industry has shown significant growth over the past five years and is poised to become a top RE player in the nearer term. Having opened its power market to independent power producers in the 1990s has helped it along to achieving its goal to have universal access to modern electricity by the year 2020. Traditionally operating under the Feed-in-Tariff model, Catherine Gachenge, project analyst at Kenya Investment Authority, told *Alternative Energy Africa* that "Kenya is currently in transition from Feed-in-Tariff Policy to Auction Policy." She said this change is likely to be operational this September, and will result in many changes within the energy sector.

Generation Capacity

- Installed Capacity: 2,336 MW
- Hydroelectric: 36%
- Thermal: 31%
- Geothermal: 28%
- Other Renewables: 5%

Source: Power Africa, March 2018

Another change is imminent according to recent statements by Minister of Energy Charles Keter who said an initiative to meet a greater share of the national energy demand from renewable energy resources is being established. Keter announced that in an effort to reduce energy costs in the country, Kenya would gradually remove thermal energy from its electricity mix. The criteria for closing down thermal power plants would be, among other things, the cost of setting up and the period of validity of contracts to ensure that investors have a return on their investments. Kenya's thermal power plants currently supply 21% of its energy. Geothermal and hydropower are the other main sources, with respective shares of 44% and 33%.

At present the country has over 2,350 MW generation capacity. A number of new projects are under development which will ease the power shortage in the country when they come online. Besides hydroelectric and geothermal, other renewable energy sources include solar and wind, with some waste-to-energy.

Geothermal

When it comes to geothermal energy, Kenya is king in the continent, and is ranked eighth in the world. Since 2014, Kenya has added about 400 MW of geothermal power generating capacity, bringing it to a total of c. 630 MW, with additional capacity expected from the resource. State-run Kenya Electricity Generating Co. (KenGen) in February announced it wants to add 1,745 MW of geothermal generation by 2025. KenGen currently has an installed capacity of 1,631 MW, with 533 MW from geothermal. The government is working to keep its capacity ahead of demand which is growing at roughly 7% to 9% per year.

The Olkaria 1 – IV facilities are already supplying the national grid with a significant share of Kenya's geothermal power generation capacity. In March, it was reported that JICA and the Kenyan government signed a $94-million loan agreement for investment in the Olkaria I geothermal power plant rehabilitation project. The investment will be used to add a production capacity of 51 MW to the production units 1 through 3 of the Olkaria I plant, 17 MW each. Up next and expected to add another 168 MW of clean energy is Olkaria V. In June KenGen MD Rebecca Miano reported that the project has realized around 40% completion. It is expected to be commissioned in July 2019.

Kenya's geothermal energy output is set to soar

The European Investment Bank (EIB) announced in January that it had granted a €155 million financing package to Akiira Geothermal for the construction of a geothermal power plant. The company, owned in part by Centum Investments, will build a 70 MW power plant in the Akiira Valley, located in the Naivasha region.

The total cost of implementing the power plant project was estimated at €310 million. It will be 70% funded by debt and 30% funded by the Centum consortium. A power purchase agreement setting the sale price of the electricity grid at 9.23 cents was signed in 2015.

> When it comes to geothermal energy, Kenya is king in the continent.

Late in 2017 two additional geothermal projects were announced. The African Union Commission issued a grant of 101.5 million Kenyan shillings for the Turkana geothermal power plant. The funding went to Olsuswa Energy, the company in charge of the development, and will be used to conduct technical studies as well as upgrading the infrastructure erected at the level of the volcanic barrier in Turkana County. The implementation of the project will be in two phases that will allow the installation of 140 MW capacity. The first, which will take between five and eight years, will allow the plant to inject 70 MW into the national grid.

The other project saw China's Zhejiang Kaishan Compressor Co. obtain a permit for exploration and geothermal development in Kenya. The permit covers the areas of Suswa south, Magadi and Shompole. It is valid for three years after which Zhejiang Kaishan can begin the construction and operation of the geothermal plant.

Hydropower

Hydroelectric is currently the number one renewable contributor to the grid, at about 820 MW when non-drought conditions allow facilities to run at full capacity. Because of droughts, hydro is not a totally reliable source of power, which has resulted in the government looking to diversify its energy mix as previously stated.

Plans to erect mini-hydro stations in the country were touted in 2017, but momentum has slowed due to potential drought conditions

Source: Voith

Wanjii hydropower

with some projects. However, modernization projects for both commercial and small-scale hydro are underway or in planning, and there are still some new facilities on the drawing board.

Despite the droughts, KenGen is looking to raise the wall of the 40-MW Masinga hydroelectric plant on the Tana River by two meters. This will increase the facility's total storage capacity and also, to a degree, provide some flood protection for some areas along the river. German company Voith is now extensively modernizing the 7.4 MW Wanjii small hydropower plant. The company is replacing the turbines, generators, control technology as well as the electromechanical equipment. This will result in an increase in power plant output by around 20%. The extensive modernization works is scheduled for completion in mid-2019.

Construction of two new dams along Kerio Valley, the Arror and Kimwarer mega-dam projects, are expected to begin construction in September and be completed within the next four years. Construction of the Arror Dam will cost around $347.1 million while the Kimwarer hydro project will cost $278 million. The joint venture project of KVDA, CMC di Ravena and Itenera of Italy will add 60 MW of electricity to the national grid.

Solar

Solar energy capacity in Kenya has historically been low, but new projects are taking off with a vengeance. Many of the projects are small scale, off-grid, supported by projects under Power Africa, SEFA, and other international development programs. However, larger scale projects have also emerged and are set to make a significant contribution to Kenya's renewable energy power output.

The Kenyan Ministry of Energy and Petroleum with the support from the World Bank launched a $150 million solar project in September 2017 that will enable a majority of the residents in the arid and semi-arid regions in the country to have access to electricity. The five-year Kenya Off-Grid Solar Access Project (KOSAP) is designed to scale-up electrification in households, market centers, schools, community facilities and enterprises in the furthest corners of Kenya which lack grid networks. The project will benefit 14 counties which include Turkana, Marsabit, Samburu, Isiolo, Mandera, Wajir, Garissa, Tana River, Lamu, Kilifi, Kwale, TaitaTaveta and Narok.

The commissioning of the 55 MW Garissa solar power plant is expected in September, three months ahead of schedule, according to Minister Keter. "We are ahead of schedule and by September the plant can supply power to the grid. In addition, the purchase price of its production was reduced to 5.4 cents per kilowatt hour," said Keter. The plant will provide enough electricity to power

Solar PV projects are well suited to absorb Kenyan sunshine

625,000 households. Its construction is being carried out by China Jiangxi International Kenya Ltd., with the financial support of the Exim Bank of China.

Southeast Kenya has a new power plant in its future, based in Malindi. CDC, the UK's development finance institution, alongside its partner Globeleq, announced a $66 million debt investment in Malindi Solar Group, to build a 52 MWp solar photovoltaic power plant. The long-term, 16-year financing will provide much needed power in the Malindi area, which currently struggles with regular power shortages and relies largely on expensive thermal plants.

Globeleq is working with its partners, Africa Energy Development Corporation (AEDC), the originator of the project, and IDEA Power, to move the project into construction in the coming months. Malindi is on track to be the first of four utility-scale solar power plants in Kenya to begin construction. Globeleq will be the 90% shareholder of the Malindi project, with its partner AEDC holding the remaining 10%.

The European Investment Bank (EIB) will provide a credit line of $74 million for the construction of two solar power plants in the

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Eldoret region – the Eldosol Solar PV project and the Radiant Solar PV project. The solar plants will have a combined capacity of 80 MW and will be developed by Radiant Energy and Eldosol Energy. The two power stations will be built near each other. Their overall cost is $173 billion. Once connected to the national grid, the plants will sell energy at a cost of $ 0.12 per kilowatt hour.

Another project was announced in June, the Kopere Solar Farm. Voltalia signed a 20-year PPA for the 50 MW solar project with state-run utility Kenya Power and Lighting Company (KPLC).Voltalia will act as EPC and O&M provider of the plant.

Wind

What will be the crown jewel in Kenya's wind power portfolio and the largest wind facility in Africa, the Lake Turkana Wind Project (LTWP), may come online in September. The project, facing delays due to various issues including final connection difficulties by Spanish contractors, will add 310 MW to the national grid.

Source: KEL

Kipeto 2

The project was initially scheduled to produce its first 50 MW in October 2016 and be at full capacity by July 2017. The government has handed over responsibility to Chinese firms to install the remaining section of high voltage transmission wires. The 365 turbines were erected by WorleyParsons and will power one million households when completely online.

Just this July, WorleyParsons signed a 22-month owner's engineer contract for the Kipeto Wind Power Project in Kenya, the second largest in the country after the Lake Turkana Wind Power Project. The Kipeto wind facility will comprise 60 wind turbines generating a combined capacity of 100 MW of clean, renewable electrical energy that will be fed into the Kenyan national grid.

As owner's engineer, WorleyParsons will provide wind power project expertise to Kipeto Energy Limited (KEL), who are responsible for financing, construction and operation of the project; and oversee EPC contractor China Machinery Engineering Corp (CMEC). The 60 turbines will be manufactured by General Electric Co. While KEL awaits financial close and final notice to proceed, WorleyParsons has established a project team on site to begin upfront work. Currently the team is overseeing the building of 85 houses for the local Masai community who own the land.

Winds of Change

Lake Turkana Wind Project (LTWP) scores high marks for its contribution to local communities. Winds of Change (WoC) is LWTPs foundation established to in June 2015 with the aim of investing in community development projects. The projects look to generate employment opportunities, improve health and water services, and other miscellaneous projects aimed to better the living conditions for citizens in the region.

The Illaut dam was a concern for residents as it was unsecured and as a result, two young girls drown. The WoC erected fencing around the perimeter to prevent this type of tragedy from happening again. Further, with financial support from the German Investment Corporation (DEG), WoC installed two 10,000-liter water storage tanks, constructed a livestock trough and laid a pipeline that connects these two items with the dam, so that neither humans nor livestock need to enter the area to secure water.

WoC also undertook the Ntil borehole project when it drilled and equipped a solar-pumped borehole and connected this borehole to livestock troughs and water storage tanks. Financial support for this project came from Terre des Hommes Netherlands. The purpose of this project was to create closer access to clean water for the community of Ntil, who before this intervention used to wake up early to travel a total of 14km to collect dirtier water from the next nearest water source.

Source: WorleyParson

Lake Turkana Wind Project (LTWP)

Waste to Energy

Waste to energy (W2E) in Kenya has yet to near its potential. It is said that the country could reach 500 MW capacity in two decades if political backing is in place to attract investors.

In December 2017, Sustainable Energy Fund for Africa SEFA (SEFA), managed by the African Development Bank, approved a grant of nearly $1 million to Asticom Kenya Ltd., for the construction of a 10-MW grid-connected municipal W2E plant. The grant was to fund the cost of conducting a full environmental and social impact assessment, detailed engineering designs, and

provide project-related legal advisory services, as well as financial/ transaction advisory services.

According to Asticom, the pilot phase of this project (Phase 1) will be located in Kibera, Nairobi city. This is a single line facility with a capacity of 260 tons per day, and a total of 75,000 tpa. For this pilot phase, the output will be biomethane and electricity. The main facility has capacity of 250,000 tpa and the outputs will be biomethane, ethanol and electricity. The development impact will include improvement in SW collection and disposal practices in Kenya, reduced GHG emissions, reduced unfavorable environmental and Health & Safety impacts resulting from improper disposal of waste.

Sample of planned power supply projects

Power plant name	Type	Net capacity [MW]	Year for system integration	Remark
Menengai 1 Phase I – Stage1	GEO	102.5	2019	Construction of steam gathering system on-going
Small hydro FIT	Hydro	17 7 11	2017 2018 2019	Accumulated expected commissioning of FIT list plants
HVDC Ethiopia-Kenya interconnector	Import	400	2019	Construction on-going
Cummins	Biomass	10	2017160	Under construction, stepwise commissioning possible
Aelous Kinangop	Wind	60	2019	Project cancelled for location but assets assumed to be utilized in Kenya
Meru Phase I	Wind	50	2020	Financing committed
Kipeto – Phase II	Wind	50	2019	Financial close reached
Lake Turkana – Phase I, Stage 2	Wind	100	2018	Same as Stage 1 but stepwise system integration assumed
Lake Turkana – Phase I, Stage 3	Wind	100	2019	See above
Olkaria 1 Unit 6	Geo	70	2019	Financial close reached
Olkaria 5	Geo	140	2019	Financial close reached
Ngong Phase III	Wind	10	2019	Financial close reached
PV grid	PV	50	2019	Financial close reached
Olkaria 1 Unit 1,2,3 Rehabilitation	Geo	3x2	2019, 2020	Financing committed; each 15 MW unit to be replaced by 17 MW unit
Olkaria 6	Geo	140	2021	Drilling in progress (financing for drilling secured)

Source: Kenya Investment Authority

Recently, VR Holding AB, signed a MoU with the government of Kakamega county. The MoU revolves around VR Holding constructing a 2.5 MW waste-to-power plant on 10 acres of land donated for lease by the country. The project is set to cost $34.7 million and create 200 jobs for locals. The plant will be a joint venture between VR Holding AB and Woima, a Finnish W2E technology company. According to the president of the Swedish firm, Victoria Rikede, the project will prioritize municipality waste from 14 counties, including Bungoma, Homa Bay, Kisii, Busia, and Kakamega. Negotiations for the plant have been ongoing since 2015, with construction for the site expected to begin in six months. The plant is anticipated to be operational by September 2019.

The Dandora garbage dump project has been floated about and seen some delays. The dump was slotted for relocation, but because of a lack of a suitable space in the greater Nairobi area, officials insist on creating the W2E facility where the dump stands. The most recent reports have Nairobi city government environment executive Larry Wambua saying, “We don’t have land in Nairobi. The only land we have is Dandora and there is technology that can fit within Dandora.” The plant, if erected, is expected to generate 40 MW of clean energy from waste. Both local and international firms have expressed interest in the project and a request for proposals is being prepared. AEA

New Study Questions African Utilities' Future

A brand-new study into the future of African power utilities and the challenges they face has highlighted four possible scenarios of what the continent's energy sector will look like by the year 2030.

A brand new study into the future of African power utilities and the challenges they face has highlighted four possible scenarios of what the continent's energy sector will look like by the year 2030. In the whitepaper, titled: "The Future of Energy and Power Utilities in Africa," utilities are envisioned to either become "The Lions of Africa," "Hungry Hyenas," "An Elephant Herd" or "White Elephants," with each scenario having different consequences for both the African energy industry at large as well as the consumer.

The research project was conducted by the Gordon Institute of Business Science (GIBS) at the University of Pretoria, in collaboration with Clarion Energy, organizers of flagship energy events such as African Utility Week, Future Energy East Africa, Future Energy Nigeria and the Utility CEO Forum series – meetings and events that share ideas, encourage networking and facilitate business partnerships across the continent.

Can utilities remain relevant?

"The future of power and energy in Africa is at a significant junction," says Natalie Bacon, program director at African Utility Week, "and African states and the power stakeholders operating within this sector realize that the impact of providing universal access to affordable energy will not only lead to accelerated economic development but significant social improvements. Yet, to achieve universal access executives have many strategic decisions ahead of them."

She explains: "hitherto business as usual for utilities has meant bulk energy production and distribution through coal-fired power plans, centralized grids and public sector monopolies. However, this is quickly coming under threat from new models of energy production and distribution. The four scenarios outlined by the study will help utilities and the wider industry visualize what African utilities could look like in 2030 and try to answer the important question of how utilities can remain relevant, effective and lead the African energy revolution."

Honest reflection of sector in flux

Natalie Bacon adds: "We are very pleased with the completed GIBS Scenario Whitepaper which, even for a lay person, is easy to read and contains a treasure trove of background information, telling figures and statistics and country profiles. It provides an honest reflection of a sector in flux, detailing its current challenges and opportunities. "The Future of Energy and Power Utilities in Africa" will no doubt contribute to the on-going dialogue, knowledge sharing, challenging of the status quo and peer-to-peer interaction in the energy sector that we are continually striving to facilitate at our events."

Four scenarios of future of utilities

Short summaries of each of the four scenarios identified in the study are:

Scenario 1: The Lions of Africa

In 2030 African utilities have become a pride of agile lions, hunting for new opportunities in collaboration with business and community partners.

Scenario 2: Hungry Hyenas

In 2030 African utilities have become a pack of hungry hyenas, scavenging for short-term returns and manipulating the interests of their business and community stakeholders.

Scenario 3: Elephant Herd

In 2030 African utilities have become a herd of African elephants, dominating the energy landscape in Africa with bold investments funded from abroad. Businesses and communities have little choice but to pay a premium to cover the rising cost of sovereign debt that accompanied the rapid expansion of bulk energy infrastructure between 2020 and 2040.

Scenario 4: White Elephants

In 2030 African utilities have become a herd of white elephants, struggling for survival and relevance on a vibrant African continent.

Major uncertainties in sector

The research revealed that there are four major uncertainties that form the backdrop for the alternative future scenarios for African utilities and will determine their trajectory in a changing energy landscape:

Fiscal stability and viability of alternative models

Will the precarious fiscal position of utilities be resolved in ways that produce long term sustainability and will viable alternative funding models be created in this process?

Governance and regulatory readiness

Will the low quality of governance in the sector be improved and will this coincide with an appropriate regulatory response that is enabling and facilitating of new opportunities in the sector?

Partnership and collaboration across social partners

Will the private sector and social actors such as communities consider

partnership with utilities as an attractive prospect or will they seek to take advantage of new avenues for energy provision in isolation?

Climate change
A wildcard / shock scenario: Will climate change and the effects thereof, such as extreme weather, persist, desist or accelerate, and what will be the effects?

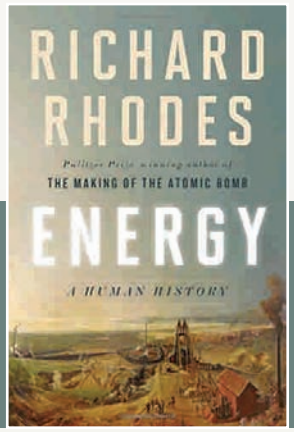
Some of the major current trends in the sector that were identified include:
- *Production and infrastructure:*
  The private sector leads, as affordable renewable alternatives go mainstream due to power-purchase agreements.
- *End users:*
  New producers, led by smart urban developments, provide power directly to consumers and by that threaten state-monopoly in the sector.
- *Key technological advances:*
  Big Data and the resultant AIR (Artificial Intelligence Research) capabilities for smart and responsible management and policy.
- *Macro environment:*
  The shift from dictatorship and pseudo-democratic one-party states to technocratic authoritarianism.
- *Labor relations:*
  Major labor movement backlash as renewable energy and alternatives, both in terms of production as well as management and distribution, to state-ownership, undermine job security in the mining sector in particular.
- *Financing and revenue:*
  Non-payment by government users, municipalities and state-owned companies severely undermine state producers, placing pressure on the fiscus and leading to a public outcry.

17 utility CEOs contributed
As part of the research done for the Scenario Whitepaper, the authors directly engaged with 17 CEOs of African utilities during the recent African Utility Week and CEO Forum in Cape Town in May, including:
- Botswana Power Corporation
- Burkina Faso, Société Nationaled'Electricité du Burkina Faso (SONABEL)
- Ghana, GridCo
- Malawi Electricity Generation Company
- Namibia, Erongo RED
- Nigeria, Abuja Electricity Distribution Company
- Nigeria, EKO - Electricity Distribution Company
- South Africa and Uganda, Eskom Enterprises
- South Sudan Electricity Corporation
- Uganda Electricity Transmission Company Limited
- Zimbabwe Electricity Transmission and Distribution Company

The Scenarios Whitepaper: *"The Future of Energy and Power Utilities in Africa"* is free to download from the African Utility Week website: http://info.spintelligent.com/scenarioreport. AEA

Reviewed by Mark Pabst, Senior Correspondent

The Past, Present, and Future of Energy



Energy: A Human History
By Richard Rhodes
Simon & Schuster
2018

"The stone age did not end because the world ran out of stones, and the oil age will not end because we ran out of oil."

The above quote has been ascribed to everyone from legendary Saudi oil minister Ahmed Zaki Yamani, the erstwhile head of Royal Dutch Shell's hydrogen energy division Don Huberts, and former CEO of Kuwait Petroleum Corp. Nader Sultan. Although the words were supposed to have originated with one of these consummate energy insiders, that hasn't kept the critics at bay.

In fact, energy consultant and blogger D. Ray Long called it "the dumbest analogy ever used by smart energy people" and wrote that "if you're using the stone age analogy, I'd suggest that you don't properly understand energy." Long's point is twofold. First, stone was a source material for tools, not energy, so the analogy is comparing apples and oranges. Second, supply scarcity and ensuing price increases may not have had anything to do with the end of the stone age, but they are certainly potential factors in the end of the oil age.

Why one energy age ends and why another begins is also the topic explored by Pulitzer Prize-winning writer Richard Rhodes in his new book *Energy: A Human History*, and thankfully Rhodes doesn't deal in misleading or overly simplistic analogies. The book's length (over 400 pages) means the author has plenty of space, so he can dispense with pithy, but misleading, quotations.

The book is an exhaustive look at how the world's predominant sources of energy have changed over the last four centuries of human history, but while it may eschew clever soundbites, it does owe quite a bit to a wonky, 40-year old graph fittingly entitled "a simple and predictive model for the energy markets." Originally presented by Cesare Marchetti for the International Institute for Supplied Systems Analysis, the graph shows just how long it takes the world to adopt a new energy source.

In general, it's almost 50 years before a new energy source captures 10% of the market, and a full century to reach a 50% market share. Popular new energy sources don't become widely adopted overnight. Even if they are cheaper or more efficient than what they replace, they need to have something extra. They must capture people's imagination.

And imagination is also what distinguished Rhodes' book from Marchetti's graph. While both essentially make many of the same points about how one source of energy eventually replaces another, Rhodes' narrative makes for a series of fascinating stories rather than a set of dry facts. This is mostly because the author chooses to give the history of energy a human face, telling the stories of the businessmen, eccentrics, scientists, and rogues that were central to creating our modern energy infrastructure.

He sketches out the biographies of a relatively obscure figure like Richard Trevithick Jr., nicknamed the Cornish Giant, who served as both a carnival strongman and pioneer in steam energy. Trevithick, a showman to the core, invented early horseless carriages and railroad engines, making and losing a series of fortunes. Like many men who were ahead of their time, he died penniless, but near the end of his lifetime the coal powered steam trains that he helped launch were beginning to transform the global economy.

Rhodes also writes about better-known figures, but includes enough previously obscure facts to keep things interesting. For example, he adds several curious details to the American polymath Benjamin Franklin's famous obsession with electricity. While Franklin's experiments involving kites, keys, and thunderstorms are well known, Rhodes writes about less noteworthy incidents, like the time Franklin disastrously tried to use electricity to kill and cook a turkey at a picnic.

> "Rhodes is clear that the collective result of the great changes in energy sources over the last 400 years of human history is climate change …"

The biographical anecdotes are amusing, but they serve a larger agenda. Trevithick was one of many bit players who helped create a new

world in the 19th century that ran on steam produced by burning coal. Franklin's work with electricity paved the way for later inventors to tame the energy source and pave the way for widespread electrification of the world in the 20th century.

Yet Rhodes is clear that the collective result of the great changes in energy sources over the last 400 years of human history is climate change, which he writes in the foreword "looms over civilization with much the same gloom of doomsday menace as did fear of nuclear annihilation in the long years of the Cold War." He even states that one of the reasons he undertook to write *Energy* is "to cast light on the choices we're confronting today because of the challenge of global climate change."

> In general, it's almost 50 years before a new energy source captures 10% of the market, and a full century to reach a 50% market share. Popular new energy sources don't become widely adopted overnight.

His choice of the nuclear holocaust metaphor is not surprising to anyone familiar with Rhodes' previous work. He won his Pulitzer for his book *The Making of the Atomic Bomb*, an equally exhaustive exploration of the history behind the creation of the modern world's greatest weapon. Somewhat ironically, near the end of *Energy* he betrays a fondness for nuclear power as the best solution to the climate change conundrum, claiming that its popular reputation as volatile and dangerous in unwarranted.

He also seems to be slightly regretful about oil becoming the 20th century's primary fuel source. He points out that widespread taxes on alcohol, a popular source of energy for illumination in the 19th century, made it expensive compared to kerosene, and he notes that early automobiles ran on many different forms of energy before a combination of luck and public policy led petroleum to dominate the transportation sector.

Throughout his book the environmental consequences of our energy choices are never far from Rhodes' mind, and several times he points out how environmental degradation was often looked on as the price of progress. However, he is clear that in a time of global climate change the human species can no longer trade insults to our environment for a more comfortable existence. Based on his extensive investigation of the history of energy, Rhodes doesn't just believe that the oil age will not end because we run out of oil. For environmental reasons, he believes it must end well before we run out of oil. AEA

AU Development Agency to Emerge

At the recent 31st Ordinary Session of the Assembly of African Union Heads of State and Government in Nouakchott, Mauritania, African Heads of State and Government received several reports, including the status of the implementation of the African Union Institutional Reforms presented by President Paul Kagame of Rwanda. President Kagame is the current chair of the African Union and the champion for the AU Institutional Reforms process.

During the Summit in Nouakchott, a decision was officially taken on the transformation of the NEPAD Planning and Coordination Agency into the African Union Development Agency. The Assembly approved the establishment of African Union Development Agency as the technical body of the African Union with its own legal identity, defined by its own statute. The statute will be developed and presented for adoption at the next AU Summit in January 2019.

The Assembly commended the leadership of Senegalese President, H.E Macky Sall, current Chairperson of the NEPAD Heads of State and Government Orientation Committee, for reinforcing the credibility of NEPAD that has been acknowledged in the international community, including by the G20 and the G7. The current reforms at the AU are an affirmation by member states of their commitment to the NEPAD Agency as the Union's own instrument established to champion catalytic support to countries and regional bodies in advancing the implementation of the continent's development vision – as articulated in the seven aspirations and 20 goals of Agenda 2063.

Globeleq to Acquire South African Renewable Assets from Brookfield

Globeleq, a power sector leader in Africa, and an affiliate of Brookfield Asset Management (Brookfield) have reached a definitive agreement whereby Globeleq acquires Brookfield's interests in its South African renewable energy portfolio. The agreement is subject to various closing conditions and once fulfilled, will give Globeleq a majority shareholding in six renewable projects totaling 178 MWs, as well as ownership in Brookfield's South African asset management company.

Globeleq is a long-term strategic investor in Africa. The addition of the Brookfield assets fully complements its existing power plants in South Africa where it owns, operates and manages 238 MW of solar and wind projects and sets the stage for Globeleq to continue to expand its renewable energy portfolio throughout the continent.

Paul Hanrahan, Globeleq's CEO stated: "Our team is working hard to complete this very exciting transaction. The expertise of our South African team will be able to enhance these assets by driving operational improvements and improve the existing social and economic development programs."

The assets include five solar assets: Aries (11 MW), Boshoff (66 MW); Konkoonsies (11 MW); Soutpan (31 MW), Witkop (33 MW); and and the Klipheuwel wind farm (27 MW). The six projects were part of rounds 1 and 2 of the South African government's renewable energy program and reached commercial operations in 2014. All plants have a 20-year power purchase agreement with Eskom.

IFC and Gaia Partner on RE

IFC forged a new partnership with Gaia Energy to create a joint platform for the development of wind power and other renewable energy projects in Africa. Gaia Energy is a Moroccan renewable energy developer active in 10 countries across Africa.

The new joint platform will start with a pipeline of 22 projects in nine countries in North, West and East Africa, representing a pipeline under development of more than 3 GW. Originally developed by Gaia Energy, this pipeline will be progressively enlarged to reach new countries across the continent.

The joint platform will be implemented under IFC InfraVentures, a $150 million global infrastructure project development fund created as part of the World Bank Group's efforts to increase the pipeline of bankable projects in developing countries. It will also be supported by the €114-million Finland-IFC Blended Finance for Climate Program, which helps spur private sector financing for climate change solutions, especially innovative and early-stage projects in emerging markets.

"Wind energy and renewable energy in general are priority areas identified in the World Bank Group's strategy to advance climate solutions led by the private sector. IFC is pleased to partner with Gaia Energy and leverage a quality project pipeline in countries with strong wind potential," said David Donaldson, IFC Head of Infraventures for sub Saharan Africa. "IFC's support will help Gaia in its strategic choice of countries where efforts should be intensified, and in taking projects to financial close."

Azuri Appoints New Team Members for Africa

Azuri Technologies Ltd, a leading commercial provider of pay-as-you-go solar home solutions to rural off-grid communities, made two leadership appointments: Collins Oneko and Steve Haigh.

Collins Oneko

Steve Haigh

Oneko joins the company as operations director, East Africa. Based in Nairobi, he joins the company's senior management team and will apply his in-depth knowledge of sales and distribution to support Azuri's expansion plans in East Africa. He will head the team defining the tools and systems that support customer acquisition and management processes in the region.

Collins has had an extensive and successful sales management career, having held senior roles at a number of multi-nationals including Total, Tetra Pak, Airtel and drinks company Diageo. Further, he brings to Azuri in-depth experience of working in sub-Saharan Africa developing distribution networks, fostering partner relationships and managing sales teams to deliver greater productivity.

Steve Haigh was appointed to the new role of VP Software and Services. Steve will be responsible for managing the evolution of the company's cloud-based service platform that provides the tools and capabilities Azuri requires as the company continues to grow its customer base, territories, and products.

Steve has an extensive career history in software project delivery and leadership, with a particular interest in user experience, software product design, and digital service delivery and operation. Steve brings over 20 years of development, delivery, and leadership experience in mobile and satellite telecommunications systems and user-centric cloud-based IoT service platforms.

UN and Repsol to Collaborate on Sustainable Development

The United Nations Development Program (UNDP) and Spanish oil and gas company Repsol have signed a global agreement that facilitates advancement of sustainable development in close to 20 countries where

both entities operate. This is the first global agreement between the UNDP and a company from the oil and gas sector.

The agreement will foster collaboration in support of community development and the protection of human rights, through initiatives that promote local economic and social progress as well as respect for the environment. As such, the partnership will support local communities in their efforts to achieve the Sustainable Development Goals (SDGs).

"We are committed to support countries engaged in the sustainable use of natural resources to transform their wealth into sustainable development," said Marcos Neto, Director for the global UNDP Istanbul International Center on Private Sector in Development. He continued, "this involves working closely with companies in these industries to align their investments with the Sustainable Development Goals. This global partnership with Repsol is an exciting opportunity to do this at scale."

"Repsol considers sustainable development to be one of the company's global goals, and the agreement with the UNDP demonstrates our high standards," said Director of Sustainability at Repsol, Fernando Ruiz. "With this important partnership with the United Nations, we go one step further in our commitment to the local communities and environments in the countries where we are present," he added.

The collaboration between Repsol and the UNDP has an initial duration of two years and identifies four activity areas: exchange of information and analysis to identify potential collaborative projects; engage community stakeholders in participatory dialogue to define local development priorities; support for concrete projects that ensure sustainable development; and sharing of knowledge and experiences of how the extractive industries can support achievement of the SDGs.

With the signing of this agreement, the basis of their cooperation will become global. Currently, the international operations of Repsol and UNDP have the following countries in common: Algeria, Aruba, Bolivia, Brazil, Colombia, Ecuador, Gabon, Guyana, Indonesia, Iraq, Libya, Malaysia, Mexico, Morocco, Peru, Trinidad and Tobago, Venezuela and Vietnam.

Siemens Gamesa Sees Record Backlog

Siemens Gamesa Renewable Energy released its results for the first nine months (October-June) and the third quarter (April-June) of fiscal year 2018. The company's financial performance in the third quarter and the first nine months of FY2018 was in line with the fiscal year 2018 guidance (revenues of €9,000-9,600 million and EBIT margin of 7-8%).

Revenue amounted to €2,135 million (-21% YoY) in Q3, and €6,504 million (-25% YoY) in the first nine months of the year, impacted by lower turbine sale volumes and pricing.

EBIT pre-PPA, restructuring and integration costs amounted to €156 million in the quarter and the EBIT margin was 7.3%. Between October and June, EBIT pre-PPA, restructuring and integration costs reached €478 million and the EBIT margin was 7.4%.

The company reported €45 million in net profit in the first nine months, including the impact of restructuring and integration costs, continuing the recovery. Net debt was €154 million at the end of the quarter.

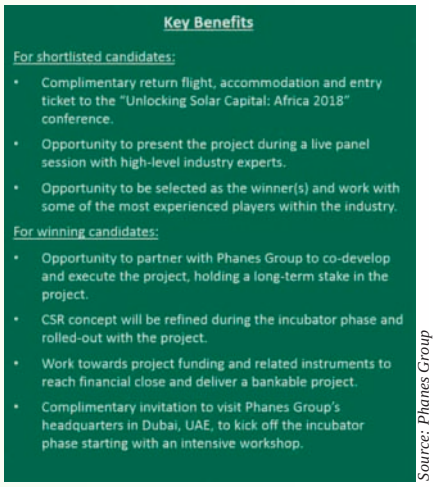
Commercial activity remained strong in the third quarter of fiscal year 2018. During the period, the order backlog reached a new peak at €23,226 million (+14%), increasing visibility of future growth. The backlog was boosted by €3,292 million in firm orders, reaching the mid-point of 2018 revenue guidance (€9.000-9.600 million).

Onshore wind order intake during the third quarter was 1,660 MW, driven by diversified order entry (Brazil, Spain, South Africa, Ireland and USA). Offshore order intake marked a peak with 1,368 MW in firm orders, due to the agreement to supply 165 turbines to Hornsea II, the world's largest offshore wind farm to date, and 120 MW to the first offshore wind power plant in Taiwan. Those achievements are in line with the strong outlook for global offshore industry due to significant traction in new markets.

Phanes Launches 2nd Edition of Solar Incubator Program

Phanes Group has announced the 2nd edition of its Solar Incubator program, aimed at identifying PV projects of potential in sub-Saharan Africa by providing support to funding, and commercial and technical knowledge.

The initiative held under the theme, "Your Project, Our Expertise, For a Sustainable Future," will be held in collaboration with Hogan Lovells, responsAbility Renewable Energy Holding, RINA and Solar plaza, and invites PV developers to submit proposals for projects based in sub-Sahara Africa that have a clear Corporate Social Responsibility (CSR) component.



Source: Phanes Group

Candidates are asked to submit their proposals by September 27 via the process established on Phanes Group's website. Those who are shortlisted will be invited to present their projects to an expert panel comprised of the Solar Incubator partners at the "Unlocking Solar Capital: Africa 2018" conference in Kigali, Rwanda in early November, where the industry's key players will hold extensive discussions on solutions for Africa's solar energy requirements and bridging the bankability gap.

It comes as part of Phanes Group's core strategy to collaborate with Africa-focused counterparties, such as local project owners, governments, and developers on projects that seek to create a sustainable future for urban and rural communities across the sub-Saharan African region.

"The majority of our business focus lies in electrifying new markets in sub-Saharan Africa. With CSR at the heart of our business model, we launched this initiative with the goal of bringing bankability to projects that stand to provide clean energy to economies that need it most. The Phanes Group Solar Incubator is an example of this," said Martin Haupts, CEO, Phanes Group."Entering the Phanes Group Solar Incubator means creating the opportunity to not only win, but the possibility to gain further exposure to key industry players through the evaluation panel…" he added.

Similar to last year, the developer(s) of the winning project(s) will be invited to join Phanes Group for an intensive workshop at its headquarters in Dubai, UAE. This will help lay the foundations for delivering a bankable and sustainable project.

New ROV to Carry-Out Offshore Unexploded Ordnance Identification

Aberdeenshire-based ROV (remote operating vehicle) and tooling engineering firm, Aleron Subsea, has announced its first contract win for its new hybrid TRACKROV technology which will see it supporting unexploded clearance work on a major renewables project in The Netherlands.

Following a six-figure sum investment in research and development, the TRACKROV has been mobilized to carry out unexploded ordnance identification (UXO) surveys on a wind farm route clearance project in the region.

The TRACKROV vehicle has been built to operate on the seabed for extended periods and in currents of up to three knots. By designing it as a heavy flotation free system, it can stay in the water longer than work-class ROVs typically utilized for these seabed survey campaigns. This allows companies operating in regions with challenging subsea conditions to complete tasks more efficiently

The vehicle can be deployed from a small ROV A-Frame or vessel crane and is fitted with the Pangeo Subsea Sub Bottom Imaging (SBI) system, a high flow dredge pump and a series of survey sensors to locate and identify potential UXO targets.

Aleron Subsea technical director, Mike Bisset, said: "TRACKROV was designed to support multiple tasks for clients who require seabed operations completed around the world in regions known for their challenging tide and current conditions… We now have a unique system for the market which can be used for target identification, subsea excavation, clearance, survey and tooling tasks. Coupled with the Pangeo Subsea SBI system which provides a real-time view of the seabed in 3D, this latest addition to our rental fleet is proving to be a very cost efficient, adaptable and versatile system."

TRACKROV being launched into sea

Source: Aleron Subsea

TRACKROV is the latest remotely operated technology to be designed and built by the firm. The company also has work class ROVs in its portfolio as well as its AUXROV vehicle which is designed to support boulder clearance projects in the wind farm market. Aleron Subsea also provides ROV tooling through its sister division, ROVQUIP.

ENEA and ENI Begin Joint Scientific Research and Technology Partnership

The Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) and Italian oil firm ENI, signed a partnership to start research in strategic scientific and technological areas which have considerable potential impact for the country, including the circular economy, alternative energy and environmental protection. The Memorandum of Understanding was signed by the Chairman of ENEA, Federico Testa, and the CEO of ENI, Claudio Descalzi.

Based on this agreement, ENI and ENEA will combine their experience and competences of excellence to develop a joint action program to promote innovative technological solutions. More specifically, the parties will assess topics linked to the circular economy and new sustainable economic models; to the production of low and no greenhouse gas emission energy (including solar concentration, photovoltaic and biomasses); energy storage technologies; energy efficiency; digitalization; environmental monitoring and protection, with reference specific focus climate change.

"I am delighted to announce the launch of this partnership with ENEA," said Claudio Descalzi. "ENI and ENEA have several goals in common when it comes to research and innovation. This collaboration will enable us place a greater emphasis on environmental and digital technologies, with a potentially significant impact for the country. This agreement is evidence of our strategic commitment to decarbonization, reducing emissions and developing renewable energies."

"Today's agreement will enable us to develop strong synergy between the specific areas of ENEA, like our technical-scientific competences and the technological transfer to companies' role, and the commitment ENI has towards energy and the environment, strategic subjects for us. I am convinced that formalizing this collaboration will have positive effects for the Country in terms of de-carbonizing the economy, environmental sustainability and new employment," declared the chairman of ENEA, Federico Testa.

New Heat Pump Hot Water Heaters for South Africa Market

In the first half of this year, PHNIX shipments to South Africa increased by more than 100% year-on-year. Taking advantage of the strong product sales, PHNIX will release several new heavyweight Heat Pump Water Heaters in South Africa, according to Mr. Peter Wang, deputy general manager of PHNIX global overseas business.

The new PHNIX heat pump hot water products for the South African market are mainly the HeatPlus series and the HeatPower series designed to meet the needs for water at 60~80 degrees Celsius in commercial industrial areas. The HeatPlus series are very cost-effective and PHNIX's two existing series' for hot water and house heating solutions have been very successful in South Africa, according to Mr. Troy Wang, PHNIX global sales manager.

The price of PHNIX HeatPlus and HeatPower heat pump series is cost effective – 15~20% lower than similar products on the market and are the perfect solution for hot water and house heating. They are also eco-friendly and have a high COP of 4.68 during operation, have acquired the first-class energy label and provide sufficient and stable hot water for commercial and industrial use. Users can also use them with a solar panel to save even more energy.

Source: PHNIX

PHNIX hot water heat pump installatio

The products also feature a smart colorful touch display. PHNIX HeatPlus heat pump series' 5-inch wire-controlled LCD display has many powerful functions, such as water temperature curve display, easy timing, one-key mute, and mute timer. It has several control modes and is easy to operate.

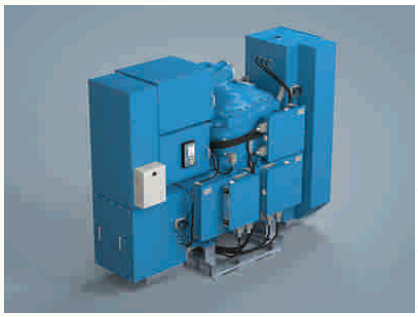
UK Wind Farm to see Siemen's Switchgear Innovation

Siemens will supply 102 SF6-free, gas-insulated 8VM1 high-voltage switchgear (GIS) to Siemens Gamesa by the middle of next year. The switchgear will protect each wind turbine individually against overloads and short-circuits and make it possible to supply electricity reliably and without interruption. Developed for wind farms, the 8VM1 from the blue GIS portfolio operates with vacuum circuit-breaker technology and with clean air instead of sulfur hexafluoride (SF6) as the insulating medium.

The switchgear are destined for the British East Anglia One offshore wind farm, which will supply up to 600,000 British homes with electricity starting in 2020. Siemens Gamesa is building the wind farm for Scottish Power Renewables in approximately 300 sq km of space, and is using a new connection and wind farm grid concept with a voltage of 66 Kilovolts (kV). Compared to the usual 33 kV connection, it increases the transmission capacity of each cable and simultaneously reduces transmission losses, thus cutting costs. For this purpose, Siemens Gamesa has adapted the substation transformers and converters to the wind turbines. Siemens will ship all 102 switchpanels by mid-2019.

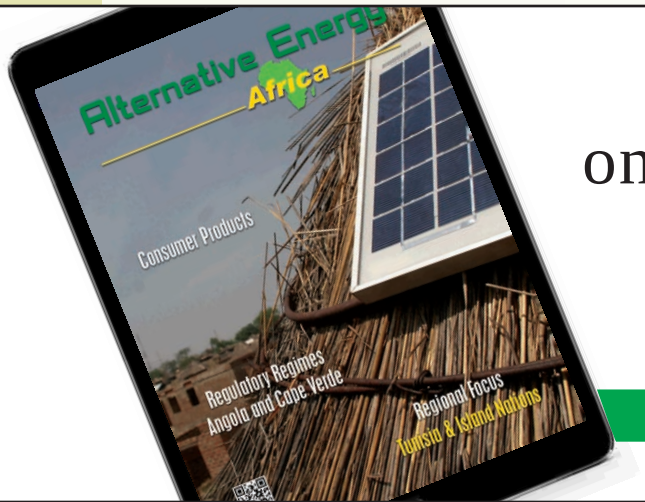
The 8VM1 blue GIS is a further development of the switchgear technology that operates with SF6 as the insulating, switching, and extinguishing gas. In its blue portfolio, Siemens combines many years of experience manufacturing switchgear with unmatched environmental compatibility, completely eliminating the use of SF6. As a result, not only the generation of power but also its transmission and distribution are climate-neutral. Moreover, the use of vacuum switchgear technology with clean air as the insulating gas makes it possible to minimize expenditures for operating and maintaining the switchgear.

Siemens sees the 66 kV wind farm grid as the future standard for offshore wind farms. "We



Source: Siemens Gamesa

are very pleased to see the market quickly accepting the clean air technology and, combined with the 66 kV voltage level, it will offer our customers real savings potential," says Karlheiz Kronen, CEO of the High Voltage Products Business Unit within the Siemens Energy Management Division. "Customers can benefit from both economic feasibility and an excellent degree of environmental compatibility. We worked together with the customer at a very early stage in the project and found the optimum solution for installing the switchgear in the base of the turbine."



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NarrativeWave Launches Analytic Starter Kits

NarrativeWave, an Internet of Things software company, has announced the release of Analytic Starter Kits for renewable energy operators. These kits answer the needs of operators who are looking for cost-effective digital solutions that can impact their business operations from Day 1.

"The Analytic Starter Kit is a breakthrough for wind operators," said Johnny Dobbins, director of Client Engineering for NarrativeWave. "For years operators have relied on manually checking towers, and it can be hours or days before they discover a problem. Our Tower Performance Analytic Kit pinpoints underperforming turbines, investigates why they are underperforming, and generates automated reports instructing operators what to do next," said Dobbins. "Until now, there has been no way to automate the process of both detecting and determining the root causes of underperforming turbines," Dobbins added.

NarrativeWave's Tower Performance Analytic identifies every tower in the fleet that is underperforming and analyzes the most probable causes. This saves significant diagnosis time, results in higher energy output, and lets operators fix the problem themselves quickly or inform the OEM to address the problem.

The value provided by the Tower Performance Analytic includes: increasing the energy output by identifying and resolving underperformance issues faster with better accuracy; improving the efficiency of operators by automating the identification of underperforming towers; and optimizing OEM service contracts by proactively informing OEMs the need to take action on underperforming turbines. The benefits are immediate for operators as NarrativeWave's analytic packages can be turned on quickly to help customers reap the benefits of newly identified operational savings.

The Analytic Starter Kits are a seamless part of NarrativeWave's software solutions. As a result, engineers can configure, change, and build any other type of analytics inside NarrativeWave for maximizing productivity and assessing performance.

This is the beginning of a set of Analytic Starter Kits that will benefit all renewable energy customers. NarrativeWave plans to be releasing additional Analytic Starter Kits on a monthly basis.

Call for Papers - Submit your abstract until 9 March 2018

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Eritrea and Ethiopia Agree to Restore Diplomatic Ties

A July 9 meeting in Asmara between Ethiopian Prime Minister Abiy Ahmed and Eritrean President Isaias Afewerki, the first such meeting between any leaders of the two East African nations in nearly 20 years, saw the pair make a joint announcement that they would restore diplomatic ties.

Following the announcement, leaders around the world praised the move toward greater peace and stability in the region. The United States said it welcomed the pair's commitment to peace and security, effectively ending 20 years of conflict.

A statement released by the US Department of State, in part, said: "The United States stands ready to support this process, and encourages all parties to continue working with transparency and confidence in the coming days. Peace between Ethiopia and Eritrea will further the cause of stability, security, and development in the Horn of Africa and Red Sea."

Meanwhile from Germany, a Federal Foreign Office spokesperson said in a statement:

"The German Government would like to encourage both sides to continue on this path and thus to create new opportunities for their countries" adding, "The German Government will support both countries on their further path to détente and explore ways to foster the peace process."

UN Supports Women of the Sahel Region

Ambassador Nikki Haley, U.S. Permanent Representative to the United Nations, delivered remarks at a UN Security Council briefing on Women, Peace, and Security in the Sahel region.

Source: UNFPA/Ollivier Girard

UN Deputy Secretary-General Amina Mohammed (2nd from right) stands with (to her right) Margot Wallström, Minister for Foreign Affairs of Sweden; and Bineta Diop, AU Special Envoy for Women, Peace & Security, at the National Fistula Center in Niamey, Niger.

"Here at the United Nations, we have combined this passion for amplifying women's voices with a belief that human rights issues – including the rights of women and girls – are a critical element for peace and security. When women's voices are silenced – either through violence, lack of political rights, or lack of education – entire communities suffer, and that suffering leads to conflict.

"The United States is strongly committed to empowering women in developing communities from the ground up. We work to ensure that our assistance goes directly to the kinds of women I meet with on my trips abroad: the mothers struggling to feed their families, educate their kids, and create a future for their families and their communities. The women pushing through barriers to have equal political representation. The entrepreneurs, pioneers, goal setters, and other extraordinary women changing the face of society. Across Africa, the U.S. is helping to build the capacity of regional organizations and the African Union to support women's political participation.

"The thread that runs through all of these efforts is that when we bring together women with power and resources, we create deeper, more sustainable prosperity. And that stability and prosperity protects human rights and promotes security."

Zimbabwe Elections Contested

Zimbabweans went to the polls on July 30 to elect a new president of the nation who for the first time in decades, was hoping to be free from Robert Mugabe rule. Leading the race for the ZANU-PF, Mugabe's party, was Emmerson Mnangagwa, who worked closely with the former president for many years. He was tagging himself as a Beacon of Change, but at 75 years old, the people were doubtful he could change his ways.

The main political opposition party, Movement for Democratic Change (MDC), put forth Nelson Chasima as its candidate and demanded reforms ahead of the elections, worried the Zimbabwe Election committee would not deliver a free and fair process. Some would say they were correct in their assumption. The elections were marred by protest and violence and the results declaring Mnangagwa the winner were rejected by the MDC. Chasima said Mnangagwa's election victory was a "coup against the people's will."

US Department of State spokesperson Heather Nauert put out a statement following the election that stated in part:

"Zimbabwe's July 30 elections presented the country with a historic chance to move beyond the political and economic crises of the past and toward profound democratic change. The Zimbabwean people turned out massively to cast their votes, underscoring their aspirations for a better future, despite challenges during the pre-election period.

"Unfortunately, Zimbabwe's success in delivering an election day that was peaceful, and open to international observers, was subsequently marred by violence and a disproportionate use of deadly force against protestors by the security forces. We extend our condolences to the families and friends of those killed and injured and appeal to the leaders of all parties to urge their supporters to act peacefully.

"The United States welcomes the commitment by the Zimbabwe Electoral Commission (ZEC) to release comprehensive election results in a form that provides full transparency. The United States will continue to review the data collected by its own observation teams, by international observation missions, and by local observers to make a complete assessment of the overall election. We encourage all stakeholders and citizens to pursue any grievances peacefully and through established legal channels, and we encourage all political leaders to show magnanimity in victory and graciousness in defeat."

Keita Camp Declares Him a Winner

Malian President Ibrahim Boubacar Keita won a second-round election runoff "comfortably," with 67% of the vote, and will have a second term to try and stem the surge of ethnic and Islamist militant violence.

The opposition claimed fraud and cheating by the Keita campaign. However, while EU observers said that there were some irregularities, they did not note any fraud.

The ballot pitted Keita against opposition leader Soumaila Cisse after an inconclusive first round of voting in July when Keita won about 41% of the ballot.

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

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
15-16	Africa Renewable Energy Forum	Casablanca, Morocco	www.africa-renewable-energy-forum.com

December 2018

6-8	Solar Energy Expo 2018 Rwanda	Kigali, Rwanda	www.expogr.com
11-13	5th Edition of Mauritanides 2018	Nouakchott, Mauritania	www.mauritanidesmr.com

March 2019

26-27	Power & Electricity World 2019	Johannesburg, South Africa	www.terrapinn.com

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