KEEPING THE GREEN TRANSITION ON TRACK

African Energy

FEATURES
- Covid19 – how it’ll impact the future of energy
- CEO Survey – where they’re investing next
- Regional energy landscape
- Transmissions – cracking the deadlock

INTERVIEWS
- Joseph Cudjoe – Deputy Minister of Energy, Ghana
- Dr Kevin Kariuki – African Development Bank

HIGHLIGHTS FROM THE AFRICA ENERGY YEARBOOK 20/21

In partnership with

Powered by

Africa Energy Forum
Your reliability shines

MAN Energy Solutions
Future in the making

Energy & Storage solutions expertise

Securing energy supplies
Ensuring a reliable power supply is one of the key factors for progress and prosperity around the world. Building on decades of MAN innovation, we can help secure clean and efficient energy supplies for your customers. Our expertise covers solutions for hybrid power, LNG to power, energy storage, power-to-X, thermal power plants, and CHP.

www.man-es.com
CONTENTS

5  Welcome from the Editors
   Introduction by James Gavin
     and Ian Lewis

6  Data section
   AFRICAN ENERGY IN FIGURES
   A look at Africa’s energy sector with the aid of charts and graphs

10 Survey
   SURVEY RESULTS
   Results of the African Business energy sector survey

14 Overview
   ENERGY TRANSITION
   What are the prospects for the energy sector in the face of Covid-19?

19 Opinion
   MARKET REFORM
   Market reform is essential for mobilising private capital

22 Interview
   JOSEPH CODJO
   Deputy Minister of Energy, Ghana

24 Communiqué
   LEKELA ENERGY
   Chris Antonopoulos, CEO Lekela Energy

28 Finance and investment
   FINANCING THE ENERGY TRANSITION
   Africa needs to do more to attract finance and investment

30 Communiqué
   SIEMENS GAMESA
   Siemens Gamesa’s Onshore CEO Alfonso Faubel

34 Interview
   AFDI
   Dr Kevin Karirki, Vice-President, Power, Energy, Climate and Green Growth, African Development Bank

38 Communiqué
   RENSOURCE
   Ademola Adesina, Founder and Chief Executive of Rensource Energy

40 Communiqué
   CATERPILLAR
   An update on the company’s advanced microgrid technologies

42 Communiqué
   BADEA
   BADEA Director General Dr Sidi Ould Tah

44 Communiqué
   ELSEWEDY
   Elsewedy Electric Regional Director Ibrahim Qamar

46 Grid-scale renewables
   THE RISE OF GRID-SCALE RENEWABLES
   Grid-scale renewables are becoming a more attractive option

46 Interview
   AFREC
   Rashid Ali Abdallah, Executive Director of the African Energy Commission (AFREC)

56 Key power projects
   THERMAL POWER
   We examine the progress of projects in the different regions

58 Communiqué
   ENGIE
   Engie CEO Yoven Moorooven

62 Smallscale renewables
   OFF-GRID POWER TAKES OFF
   Why Africa’s leaders are learning to love off-grid renewable electricity

64 Smallscale renewables
   PAY-AS-YOU-GO SOLAR
   The benefits of pay-as-you-go solar energy

66 Smallscale renewables
   MINI-GRIDS
   Mini grids bring affordable electricity to millions of African households

68 Energy transition
   ROLE OF INDUSTRY
   A look at the advantages for industry of tapping into non-fossil fuel sources

74 Future Africa
   CLEAN COOKING
   The poorest Africans urgently need access to cleaner cooking
Powering the Continent’s Energy Transition

What better symbol of Africa’s transition to renewable energy than a solar park so large it can be seen from space? Africa50 is part of it, catalyzing private and public financing.

Joining Norfund and Scatec Solar, Africa50 took a 25% equity stake in six of the 32 solar plants in Egypt’s 1.5 GW Benban Solar Park, which will be the largest in the world upon completion. Africa50 provided project development funding and long term equity to finance the construction of the project. The six plants, which became operational in 2019, are providing 390 MW of clean energy for over 400,000 households, avoiding 350,000 tons of CO2 emissions. The project is also pioneering the use of bifacial solar modules, capturing the sun from both sides of the panel to increase power generation.

Africa50 is a pan-African infrastructure investment platform that contributes to Africa’s growth by developing and investing in bankable projects, catalyzing public sector capital, and mobilizing private sector funding.
Welcome to African Business magazine’s Africa Energy Supplement, containing highlights from this year’s Africa Energy Yearbook 2020/21. Many thanks are due to the authors and interviewees who have made time to provide fascinating insights and predictions during such a difficult period.

The Covid-19 pandemic has, of course, affected every corner of the energy industry in Africa. Some of us have lost friends and colleagues to the virus, or suffered from its effects ourselves. Even if we have been lucky enough to maintain our health, long-cherished projects have been delayed or cancelled, and remote working has become a way of life. Uncertainty pervades our plans.

One strong message from contributors to this year’s publication is that the resilience, innovation and cooperative spirit evident in the fight against Covid-19 can be harnessed to further the energy transition already under way across the continent.

As we report, the energy transition and improved electricity access are also seen as a vital part of the solution to future health crises. That transformation will provide reliable power to hospitals and health centres and also help make people healthier in general.

Cleaner air, due to a reduction in polluting power generation and the greater uptake in clean cooking techniques, leads to a host of health benefits, not least of which is a reduction in the respiratory illnesses and other conditions that have proved to exacerbate the symptoms of Covid-19.

GETTING BACK ON TRACK
For energy sector professionals, the short-term future is likely to be spent getting projects back on track, reconvening postponed discussions and coaxing investors back out of their shells. But beyond that, the goal of ensuring all Africans have access to electricity, produced sustainably, remains firmly in place.

The pandemic has sapped the financial resources of governments and investors alike, but contributors say this is no time to abandon the drive towards greater use of renewable energy. The effects of the pandemic may occupy us now, but climate change may prove to be the bigger long-term threat.

The global climate change process has been disrupted by the postponement of the November 2020 UN-backed meeting in Glasgow and more limited engagement by the US government. But 2021 should see momentum gathering again in a process in which African leaders are closely involved.

SECURING INVESTMENT
Putting the investment in place to scale up clean energy is going to be a Herculean task. The International Renewable Energy Agency estimates that building capacity to enable Africa to meet around a quarter of its energy needs from indigenous and clean renewable energy by 2030 would require an average annual investment of $70bn.

As we report, developers have been finding it easier to secure investment for smaller-scale projects, rather than mega-projects. But the growth of the independent power provider (IPP) sector in South Africa, Nigeria and elsewhere shows the potential for private sector involvement across the continent, if financing channels can be kept open and fears over the uncertain operating environment in some countries can be overcome.

Maintaining the momentum behind Africa’s energy transition in a world recovering from the Covid-19 pandemic will be a challenging task. But, as these highlights from the Africa Energy Yearbook 2020/21 show, there is no shortage of commitment to the cause from Africans, their governments and their partners, and no shortage of ideas on how to make it happen.
AFRICAN ENERGY IN FIGURES

Africa is taking to renewables to improve energy access, but gas is set to play a major role in providing baseload supply

POWER DEMAND

WIDE DISPARITIES IN CONSUMPTION

The rise in North Africa’s power consumption has been led by Egypt, which has been countering increased demand from a fast-expanding population with heavy investment in gas-fired and renewable power. In other regions, where the reach of the grid is limited, consumption remains relatively low. The main exception is South Africa, which accounts for most of the Southern African figure. Nigeria and Kenya, the largest economies in West and East Africa respectively, both have inadequate power supply to meet potential demand, but are planning rapid expansion.

FINAL CONSUMPTION BY SECTOR IN SUB-SAHARAN AFRICA EXCL. SOUTH AFRICA
(Source: IEA)

The pattern of Sub-Saharan Africa’s overall energy consumption is set to change shape over the next 20 years, though the extent of that change will depend on the policies adopted by governments. The IEA believes that, where economic growth and urbanisation speed up and countries adopt measures to provide energy access for all (the Africa Case), industry and transport will account for almost half of energy consumption by 2040. While overall power demand will rise, the residential sector’s share will fall, in part due to efficiency gains due to reduced use of bioenergy for cooking, lighting and heat. In this scenario, bioenergy demand will halve, as the number of people relying on traditional biomass drops to near zero. If the region develops more slowly, following policies already outlined by governments (the Stated Policy Scenario), a much slower-placed transition is forecast.
Whatever policies are followed by SSA governments, power demand is forecast to soar in the next 20 years. Solar photovoltaic could meet close to a quarter of power demand, compared to just 1% in 2018. But the IEA also sees gas and hydropower continuing to play major roles in baseload power provision. The sharp rise in overall supply means a huge capacity expansion for gas-fired power is likely to be required even if its share of supply is little changed. Even for hydro, a 26% share of supply would imply a fourfold increase in output in the most ambitious Africa Case, but still a near-tripling even if only stated energy policies were implemented.
RISING TO THE CHALLENGE

Progress towards the UN goal of ensuring access to affordable, reliable, sustainable and modern energy for all remains slow. While electricity access has risen sharply in the last decade, only one third of Sub-Saharan Africa's rural population had access to electricity by 2018. A new wave of grid-scale gas and renewables generating capacity, together with the increasing availability of low-cost off-grid solar products should help. Keeping up with Africa's growing population will be a challenge, though much of the increased demand is likely to be in urban areas, where it will be easier and cheaper to connect people than in rural locations.
AFRICA’S FOSSIL FUEL RESERVES

Remaining Recoverable Fossil Fuels in Africa 2018
(Source: Tracking SDG7/World Bank Group)

Africa’s indigenous fossil fuel reserves – 450bn barrels of oil, 100 trillion cubic metres of natural gas and 300bn tonnes of coal – are set to play an important role both in meeting energy requirements at home, and as a valuable source of export revenues. South Africa is likely to cut its dependence on coal through a combination of renewables and natural gas, with the latter potentially coming from Mozambique’s huge offshore gas reserves and reserves recently discovered off South Africa itself.

Senegal and Mauritania are also set to become major gas producers within the next few years, while Nigeria is preparing to increase its LNG export capacity and plans to make better use of its gas reserves domestically. The oil and gas-rich North African states will continue to meet both international and domestic demand. However, exporters may face challenges in attracting new exploration and production investment, given the demand slump during the Covid-19 pandemic, which has left the world over-supplied with hydrocarbons.

AFRICA’S OIL RESERVES

450 BN BARRELS
COVID-19 IMPACTS INVESTORS’ ENERGY STRATEGIES

A survey by African Business magazine has found that African energy investors are worried about the fallout from Covid-19 but remain generally confident about the continent’s prospects.

Over 50% of African energy market participants polled by African Business Magazine say that Covid-19 will have an impact on their investment strategy in 2020/2021 (see Fig 1), but participants remain bullish about the prospects for renewable energy and continue to see the continent as an attractive opportunity.

African Business magazine sought the views of 176 professionals in the energy sector including project developers, investors, policymakers, technologists and legal and regulatory staff.

52% of respondents said that Covid-19 will impact their investment strategy, compared to 32% who said it might and 17% who said that it would not. 40% believe that Covid-19 will lead to investments in the energy sector decreasing, compared to 37% who predict they will remain stable and 23% who say they will increase (see Fig 2).

52% predicted that the pandemic will negatively affect customers’ ability or preparedness to pay for electricity, compared to just 10% who disagreed and 40% who found it debatable (see Fig 3). 35% believe that factor will restrict overall investment in the short term, with 46% finding it debatable.

The price of oil and other commodities have plunged across the world in recent months as the combined effects of government-enforced Covid-19 lockdowns and a Saudi-Russia oil war triggered a devastating slump in demand and glut in supply. There is significant uncertainty over the future of major oil and gas projects around the world given the challenging global growth outlook, subdued economic activity in China, and fears of a looming worldwide recession.

THE LURE OF RENEWABLES

As a result, just 35% of those polled say that they are most likely to invest in oil and gas and just 22% in liquefied natural gas (LNG), two areas that remain critical to Africa’s energy mix today (see Fig 4).

Yet despite the decline in fossil fuels, participants remain attracted by the lure of renewable energy given the continent’s huge generation needs, with almost 90% saying
Fig 1: Will COVID-19 have an impact on your investment strategy in 2020/21?

Fig 2: What impact do you expect COVID-19 to have on African energy investment in the next 3 years?

Fig 3: The effects of the Covid-19 pandemic will negatively affect customers’ ability or preparedness to pay for electricity

Fig 4: Which market segments are you most likely to invest in?

Fig 5: Africa’s off-grid and mini-grid solar power sector is in danger of collapse due to the socio-economic impact of the pandemic on rural communities

Fig 6: Do you agree with policy from the international organisations from Europe and the US limiting investments and finance of fossil fuel powered energy?
Survey

they are most likely to invest in solar. 66% say they are most likely to invest in smart and off-grid energy solutions as investors increasingly bypass traditional state-owned power generation and distribution, while 48% are likely to invest in micro-grid solutions which can offer often inaccessible rural communities ready and reliable access to energy.

Investors expect Covid-19’s impact on the renewable sector to be muted, with 30% disagreeing that off-grid and mini-solar markets are in danger of collapse from the pandemic and 53% finding the proposition debatable (see Fig 5). With African energy investment turning gradually towards renewables, 56% say that is right that European and US organisations limit fossil fuels investments and financing (see Fig 6). Nevertheless, 43% predict that Africa will only develop with an energy mix that involves fossil fuels.

Given the outlook for renewables, investors say that Africa’s value proposition remains relatively strong, with 43% saying that it is better than other regions, 34% saying it is about the same and 24% saying it is better elsewhere (see Fig 8). 42% rank the continent’s landscape as very good and another 42% as good. They expect that the continent’s future as an attractive energy investment destination will be impacted by a complex mix of climate change, population growth, the aftermath of Covid-19 and political and security considerations.

RISK

While those factors could give rise to significant opportunities, investors’ risk perceptions towards the continent remain high, underpinned by a restrictive business environment, regulatory and policymaking constraints and difficulties in accessing finance. Overall, more than 70% of market participants cite policy and regulatory constraints as the main obstacle to investment in the sector in the next three years, with 57% citing access to finance (see Fig 7). 61% say that it is debatable that energy projects in Africa are less risky than in other emerging markets, while 51% disagree that energy financings in Africa are generally easier to arrange than in other markets.

Several specific concerns remain high on the agenda of those polled. 68% said that Africa’s tariffs and regulation need reviewing, while 71% say that a lack of capacity in public bodies impacts the pace and ability to close deals (see Fig 9).

52% say there is an increasing political risk of intervention in projects, while 44% say that a clear determination around the role of renewables is lacking. 43% call for new financial policies to encourage foreign direct investment, while 30% are prospecting but finding it hard to discover projects, suggesting that much more needs to be done to link developers and financiers.

LOOKING FORWARD

Despite the historic challenges and the immediate difficulties thrown up by Covid-19, investors remain generally positive about the continent’s prospects. On a scale of 1-5, with 5 the most attractive, 42% ranked the continent as 4 when asked how they would rate the energy and power sector as an investment opportunity in 2021 and 2022. 30% ranked the continent as a ‘5’ while just 3% granted it the lowest score. 37% say they are very likely to increase their investments on the continent in the next three years, with a further 29% choosing the next highest category. 41% believe revenues from Africa in the next three years will grow, 31% believe they will be flat and 27% see a decrease.
Fig 8. How does Africa compare, as a value proposition, with other emerging markets?

Fig 9: What are the major policy hurdles?

- Financial policies for FDI are need amendments
- Tariffs and regulation need reviewing
- Clear determination about the role of renewables is lacking
- There’s increasing political risk by intervention to projects
- Lack of capacity in public bodies impacts pace and ability to close deals

Policy and regulatory environment
Security
Infrastructure
Lack of bankable projects
Skills and human capital
Access to finance
Skills and human capital
Distribution and transmission network
Bankability of utility companies
Bankability of utility companies
Access to finance
Other

Fig 7. What would you cite as the main obstacles to more investment in the Energy & Power sector in the next 3 years?
ENERGY TRANSITION SET TO REGAIN MOMENTUM AFTER PANDEMIC
Greater electricity access is seen as crucial if future health emergencies are to be tackled successfully. Ian Lewis examines the prospects for the energy sector across Africa in the wake of the Covid-19 pandemic.

The Covid-19 epidemic has delayed power projects and thrown future spending plans into doubt across Africa. But those working in the sector say continuing to pursue electricity access goals and the transition to cleaner energy are not just essential to reach climate change goals, they will also make the continent more resilient to similar shocks in the future.

The health impact of the Covid-19 pandemic has been uneven across Africa. The virus has generally spread faster in industrialised, densely populated centres than rural areas, while some countries were better able to contain its spread than others. The relative youth of Africans may also have helped curtail the force of a pandemic which has tended to hit older people harder.

But the economic impact will be severe across the continent and will continue to be felt for years. The severe impact of Covid-19 on developed countries means the supply chains feeding material and staff to African projects have been severely interrupted. Meanwhile, financial resources that had been destined for major infrastructure developments may now be redirected towards healthcare or shoring up black holes in government budgets.

Cash-strapped foreign investors may become more risk averse and the cost of borrowing at the state level may go up. Credit ratings agencies have already downgraded the debt of some of the countries most affected by the pandemic, such as South Africa.

The view from those involved in the energy sector is that the goal of providing electricity access to all Africans as fast as possible should not be sacrificed in the aftermath of the pandemic. Indeed, they argue, greater electricity access should be regarded not as a cost, but as a major part of the solution, by making African communities more resilient, more financially secure and better able to take advantage of modern healthcare services in the future. Rural healthcare centres may be able to obtain ventilators to save lives during the pandemic, but they are worthless without a reliable electricity supply, for example.

**ENERGY ACCESS SAVES LIVES**

Damilola Ogunbiyi, the recently appointed chief executive of SEforAll and chair of the 2020 Africa Energy Forum is better placed than most to assess the outlook. The organisation works with governments, the private sector and civil society to drive action toward achieving the UN’s Sustainable Development Goal 7 (SDG7), which calls for universal access to sustainable energy by 2030, as well as the objectives if the Paris Agreement climate change agreement. Ogunbiyi is also the UN Secretary-General’s Special Representative for Sustainable Energy for All.

“We’re seeing how a pandemic puts a strain on every part of society as Covid-19 cases grow. However, to power a response to the pandemic, access to sufficient, uninterrupted, reliable electricity is critical to protect the most vulnerable. Energy access quite literally saves lives and why we need to deploy solutions to the most at risk quickly,” she tells us.

Ogunbiyi believes decentralised, off-grid renewable energy answers this challenge for many countries and should be at the heart of Covid-19 response plans for those countries with large access gaps.

“By investing into clean and affordable energy sources, they can help prepare for a more sustainable, resilient economic recovery. This will allow countries to recover better and create a whole-economy approach to ensure universal sustainable energy access – in turn helping place the global economy on a trajectory in line with the Paris Climate Agreement and Sustainable Development Goals,” she says.

That investment will be badly needed, especially in the nascent off-grid.
AFTER PANDEMIC TO REGAIN MOMENTUM

ENERGY TRANSITION SET TO REGAIN MOMENTUM AFTER PANDEMIC

Solar sector, where the effects of the pandemic are jeopardising the ability of people in fragile rural economies to pay for services and equipment. That, in turn, is threatening the survival of companies – often small and with limited financial clout – that have sprung up to provide these services.

Ghana has been among the countries to put in place temporary electricity subsidies to help the poorest through the crisis, but paying power bills is likely to remain a struggle for many Africans for some time.

Another potential negative effect of the pandemic for rural Africans whose livelihoods have been hit could be a move back to using open fires or inefficient stoves for cooking, if they cannot afford to buy cooking fuel. This not only carries health risks in itself, but the weakening of the respiratory system caused by smoke inhalation could potentially also weaken resistance to the effects of Covid-19.

DEVELOPERS SEE MARKET RESILIENCE

Grid-scale power projects have also felt the effects of the pandemic, with many essentially being mothballed if they were dependent on imported materials and skilled workers to make headway. However, those investing in the energy sector are optimistic that the power sector is resilient enough to bounce back, even if project delays and reduced order books are likely to remain challenges over the next few months.

Chris Antonopoulos, Chief Executive of Lekela Power, the Africa-focused grid-scale wind farm builder, is cautiously optimistic over the speed of recovery.

“There is one school of thought that says projects could be delayed because priorities have changed, so money will go elsewhere, leading to a shortage of capital. However, in Africa, there has always been money available for good renewable projects. It was the quality of the projects that delayed them or made them unfinanceable, not the capital available,” he says.

Lekela has all but completed construction of the 158.7 MW Pare Eolien Taiba N’Diaye in Senegal, but getting the final capacity online has had to wait for the effects of the pandemic and the resulting travel restrictions to ease. Wind power is new to Senegal, so expertise has to be imported at this stage.

Antonopoulos, talking in May, said he expected the Senegalese project and two South African wind projects – held up by construction site lockdowns in South Africa – to be fully operational by the end of 2020, with only a small delay.

Vangelis Kamaris, Chief Executive of power project developer METKA West Africa, also sounded a positive note.

“There will inevitably be some disruption, but not long-term disruption. We see African economies rebounding in 2021. I think most of the interest in the region – and there is a lot of interest – will be back in place, and prospects remain positive in the long run,” he said.

METKA is developing a wide range of projects in West Africa, from large-scale gas-fired plants in Ghana to small-scale solar projects in Nigeria.

Nick O’Donohoe, Chief Executive of CDC, the UK development finance institution that invests in power projects, warned of potential payment problems for generating companies reliant on income from government-owned grid operators that in turn are experiencing a drop in revenues from consumers.

“Some countries already had an issue with this ‘circular’ debt, and that is only going to get worse with Covid-19, partly because power consumers will find it more difficult to pay and partly because governments will have other priorities in terms of health and so on,” he said.

UK-based temporary power specialist Aggreko has somewhat different challenges. Much of its work providing power for events such as sports events and conferences dried up with the pandemic lockdown. The company was due to have provided power for the postponed Tokyo 2020 Olympics. The events business in Africa has suffered as it has elsewhere. However, Aggreko has also been picking up business among mining firms in Africa to provide hybrid power solutions for facilities often located well off grid and which are keen to reduce dependency on thermal generating power.

“The big question for Aggreko is events because it’s difficult to know when public events are going to start to be allowed again. But people still need power, and the mining sector is generally still operating. We are signing a few significant deals, just not as many as we normally would. But we’ll survive,” John Lewis, Aggreko’s Managing Director, Africa, said.

RENEWABLES RATIONALE

It remains to be seen whether optimism over what follows the pandemic is justified, but there seems little reason for African nations to back down on efforts to improve their energy independence, while seeking to switch to clean energy at the same time.

This is highlighted by one knock-on effect of the pandemic: global oil price volatility. Psychic powers would be an asset in predicting what the oil price will be in a year’s time, so the perennial challenges faced by African countries in financing fuel imports, or in calculating their likely impact on spending are not going to get any easier.

Oil products, nearly all imported, account for 15% of Sub-Saharan electricity generation, either in oil-fired power generation or in diesel back up generators. In particular, the region’s reliance on diesel generators to keep the lights on remains an acute problem.

Around 40 TWh of the region’s power, or 8% of total generation, came from 40 GW of back-up generators in 2018, according to the International Energy Agency (IEA). Nigeria
accounted for 18 TWh of that from some 9 GW of generator capacity. This underscores the rationale for African governments to fully invest in an energy transition towards a power mix based on renewable energy, backed up, where necessary by natural gas, the cleanest of the fossil fuels.

Renewable energy provides a clean and increasingly cheap way to cut down on fossil fuel imports – or for African oil and gas producers to garner extra revenue by allowing them to export hydrocarbons at global prices, rather burning them at home.

As the IEA said in its special report on Africa, published last November: “Africa stands on the cusp of a unique opportunity: the possibility of becoming the first continent to develop its economy primarily by using energy efficiency, renewables and natural gas – all of which offer huge untapped potential and economic benefits.”

**UNTAPPED POTENTIAL**
That “untapped potential” is why investors still believe the African power sector can thrive. The IEA estimates that if the continent adopts “policies needed to develop the continent’s energy sector in a way that allows economies to grow strongly, sustainably and inclusively” – its so-called Africa Case scenario – electricity demand could rise more than threefold by 2040.

Much of that demand increase is likely to come from less mature energy markets beyond the North Africa region and South Africa, which between them accounted for more than 70% of an estimated 700 TWh of demand in 2019. Even if governments proceed on the basis of what they have already said they will do, demand is set to more than double in the next two decades.

Solar energy is Africa’s ubiquitous power source and is already playing a key part in the transition. Africa’s installed solar photovoltaic capacity grew to 6.37 GW in 2019, more than double the figure for 2016, according to International Renewable Energy Agency data. But that still only amounts to less than 2% of global capacity, so with costs falling, the sector is ripe for expansion. The IEA reckons an average 15 GW a year of new solar PV capacity could come online between now and 2040. Wind capacity is also likely to increase in regions where there are enough wind resources – there is room for substantial growth in South Africa, as well as the East and West Africa regions.

**FOOT ON THE GAS**
Africa is also well positioned to provide its own gas feedstock for the thermal power stations likely to be needed to provide baseload power until large-scale energy storage to complement renewables becomes more widely affordable. North Africa is already doing that, with more than half of its energy needs coming from natural gas, according to the IEA.

By contrast, gas accounts for only 5% of the Sub-Saharan African energy mix. However, the region is in a position to boost that share from its own resources. Africa as a whole played host to more than 40% of global gas discoveries in 2011-18 – mainly in Mozambique, Tanzania, Egypt, Senegal, Mauritania and South Africa.

However, the extent to which those gas reserves can be converted into production and then domestic power generation remains to be seen and will depend as much on global market forces as the will of African governments.

Mozambique, Senegal and Mauritania have already made significant headway in exploiting their offshore gas reserves, some of which will go to their local markets. However, they will be exporting most of the gas to lucrative international markets when production starts within the next couple of years, because that’s the only way the developers of these multi-billion-dollar projects can recoup their upfront expenditure in a short enough time to keep their investors happy.

The impact of the Covid-19 pandemic on project timetables and world hydrocarbons prices – which sank in early 2020 due to global over-supply due the drop in demand – means there is now a question mark over investment in future gas development in Africa (and the rest of the world), which could put a cap on home-produced African supply.
Integrated Energy Solutions

Elsewedy Electric is a conglomerate that specializes in infrastructure, products and solutions. We are segmented to 5 divisions: Wire & Cable, Electrical Products, Engineering & Construction, Smart Infrastructure and Infrastructure Investments. We started the journey back in 1938 and we have been growing ever since to be what we are now, the biggest energy & infrastructure solutions provider in the Middle East and Africa.
MARKET REFORM ESSENTIAL TO ATTRACT PRIVATE CAPITAL

Mobilisation of a greater proportion of private capital into transitional energy projects in Africa must be a key influencer for policy decisions, argues Rory Connor

Many African countries have set out ambitious proposals for transitioning to a lower-carbon energy system, particularly through expansion of renewable energy. But bold ambitious commitments alone are just sentiment unless supplemented by more direct and integrative policies. There has been a dearth of transformative renewable energy policy measures since the emergence of independent power projects (IPPs) many years ago. But now, some countries are proposing to reform the rigid market structures, which are perceived as over-dependent on state entities and a limited number of funding sources, which could mark the beginning of major change.

Two international treaties set the policy context for the energy transition in Africa: the UN Sustainable Development Goals (SDGs) and the UN Framework Convention on Climate Change (also known as the Paris Agreement). The SDGs re-frame the sustainable development agenda with the idea of justice at its core recognising things such as access to energy and water as, in effect, human rights. SDG 7 – to ensure access to affordable, reliable, sustainable and modern energy for all – is particularly relevant to the energy transition. For Africa, it means providing as many as 600m people with access to sustainable electricity by 2030.

Meanwhile, the signatories to the Paris Agreement pledged to reduce carbon emissions with the intent of keeping global warming well below 2°C as against pre-industrial levels while pursuing the more ambitious target of limiting temperature increases to 1.5°C. With the exceptions of Angola, Eritrea, Libya and South Sudan, every country in Africa has signed and ratified the Paris Agreement.

The dual objectives of SDG 7 and the Paris Agreement create a dichotomy that is at the heart of the energy transition for Africa: on the one hand, the need for massive investment in new energy infrastructure to ensure that all Africans enjoy the access to reliable electricity that is taken for granted in other parts of the world; on the other, the need to contribute to carbon emission reduction even though electric power generation globally has been a major contributor to carbon emissions.

MORE PRIVATE CAPITAL NEEDED

In its 2019 Africa Energy Outlook report, the International Energy Agency noted that effective policy choices would guide Africa to a more inclusive and sustainable energy future. Policy around energy transition in Africa encapsulates a range of matters including renewable power generation, rural electrification, energy for cooking, the role of gas, transmission and distribution, and regional cooperation.

But with investment needs exceeding $100bn per annum until 2040, mobilisation of a greater proportion of private capital into transitional energy projects in Africa must be a key influencer for policy decisions. Whilst asset managers, commercial financial institutions and multi-national corporates have poured capital into energy and infrastructure projects in North America, Europe and Asia, Africa has been left largely untouched, with proliferation of energy and infrastructure projects on the continent remaining heavily dependent on financing from development finance institutions (DFIs) and export credit agencies (ECAs). This is largely due to the perceived risk of investing in energy and infrastructure projects in Africa given the market structures which make transacting with often poorly performing, and politically exposed, state-owned entities unavoidable.

The enduring presence of the under-funded state-owned utility companies in African electricity markets means that, regardless of whatever broad policy ambitions may have been set, physical expansion and improvement of the energy system ultimately relies on state-owned en-
Opinion

In this context, two common themes emerge: (1) Projects developed by the state-entities directly are often funded through tied-contractor financing packages whereby foreign export credit agencies (most commonly, Chinese) loan money directly to the host government which is then used to pay contractors from the same country of origin as the export credit agency. (2) Large scale IPPs that have actually achieved financial close rely on highly structured project arrangements with long-term fixed price contracts, supplemented by bespoke de-risking instruments such as loan guarantees issued by multi-lateral institutions.

Both of these models have come in for criticism, with tied bilateral financing arrangements regarded by some as a form of ‘debt diplomacy’ as well as a way to side-step public procurement rules and best international environmental practices. IPPs are regarded as expensive and reliant on unsustainable contracting practices which prop-up non-creditworthy state-owned entities.

Whilst these tried and tested techniques will continue to play an important role in financing Africa’s energy transition, policies to reform and re-structure Africa’s electricity markets may be required to attract private capital on the scale required. Privatisations that have occurred – such as in Nigeria and Uganda – have been largely limited to distribution companies and individual generation projects.

POSITIVE DEVELOPMENTS

But signs of progressive policy developments are beginning to appear. In September 2019 Ghana announced plans to launch the first wholesale electricity market in Africa by 2022. If successful this will be a first step toward breaking the dependency on long-term bilateral contracts with state-owned entities as the only means of investing in the power generation sector in Africa.

More recently, the National Electricity Regulatory Authority of Uganda indicated an intention to privatise parts of the Ugandan power transmission system – meaning as much as $2.5bn of private capital will be mobilised to fund grid upgrades required to ensure that the energy generated by large new generation projects actually reaches end-users.

This would be first example of private ownership and operation of transmission infrastructure in Africa. And then of course is the unbundling, and possible privatisation, of South Africa’s giant, and debt-laden, power utility, Eskom, which was announced in late 2019. That could be a watershed moment in African energy sector.

Rory Connor is a Partner at Addleshaw Goddard LLP, London.
SMART SUSTAINABLE SOLUTIONS FOR YOUR POWER NEEDS

Integrate renewable, efficient and cost effective power systems with smart energy storage and conventional diesel or gas fuelled power generation, for on- and off-grid applications

Learn more at https://www.cat.com/microgrids
How has the Covid-19 pandemic affected Ghana’s energy demand and what measure are being taken to alleviate any financial impact for both consumers and the power sector?

Ghana’s power demand has not been adversely affected by Covid-19. Demand has remained within forecasted levels during the period. The system peak demand to date is 2,957 MW, on March 19, 2020. Installed generating capacity is 5,018 MW. Dependable generating capacity is 4,742 MW and available generating capacity is approximated as 3,158 MW.

The Ministry of Energy met with key government agencies including the Volta River Authority, Bui Power Authority, GRIDCo and the Electricity Company of Ghana as well as the independent power producers to develop a Covid-19 preparedness plan.

With regards to measures to alleviate any financial impact on the sector, the regulator, the Energy Commission, issued ID cards to key personnel in the power sector to carry out critical works. This ensured the continuous flow of work within the sector, hence minimising any disruptions.

To ensure continuous power supply, special dispensation was given to all expatriate workers providing power supply related services and activities in the country, as well as the importation of materials and equipment for critical maintenance works.

What are Ghana’s plans for expansion of power generation and distribution?

Ghana is maintaining strict adherence to the recommendation of the power purchase agreement rescheduling report and the continuous enforcement of the moratorium for the short-term. These are part of measures to address the current excess generation capacity contributing to the growing indebtedness of the sector.

Projects allowed to continue include the Early Power Project in Tema and some renewable projects, including the Pwalugu Multi-purpose dam and irrigation project.


The national access rate to the electricity grid is estimated at 84.30% as at the end of 2019. The objective is to achieve universal access to electricity – at least 90% – by 2030. This is being realised through rural electrification projects to extend the grid and mini or off-grid projects, which are targeted at communities that are inaccessible by the grid.

The aggressive extension of the electricity distribution network impels regular maintenance, improvements
and upgrades to improve on system performance and distribution losses above industry standards. The current distribution system loss is above 23%.

**Will future domestic gas demand growth be able to absorb supply from Ghana’s offshore fields? Where is that demand going to come from?**

It is the government’s long-term policy to make natural gas the primary source of fuel for power generation. For this reason, the power sector remains the main driver for natural gas consumption in the country.

The current peak demand for power is about 2,900 MW and this is expected to grow to about 3,300 MW by 2023. Today’s gas demand is about 315m cubic feet per day (cf/d), of which the non-power sector consumes less than 5%. Total demand for gas from the power sector is expected to increase to 350m cf/d by 2023. The domestic gas fields, with the existing facilities can reliably supply about 350m cf/d.

In line with the drive to boost industrialisation, the government is aggressively pursuing non-power consumption of gas and one of the key areas identified is the petrochemical industry. The government is currently preparing the ground for the siting of petrochemical plants, such as fertiliser and methanol plants, in the Western Region that will require natural gas as feedstock. The fertiliser plant for example, will consume about 100 cf/d.

The government is undertaking an LNG regasification project in Tema [to ensure the anticipated surge in gas demand from the non-power sector is covered]. The infrastructure installation is expected to be completed before the end of 2020. In addition, the government is in talks with the neighbouring countries over gas exports to them, as the country [seeks to become] the natural gas supply hub in the sub-region.

**Ghana has struggled to absorb gas supply derived from take-or-pay contracts. Is the government changing how it does business with gas suppliers to avoid this problem in the future?**

It may be worth recognising that the gas sector in Ghana is quite nascent and perceived to be risky. Many of these agreements were signed at the time it was necessary to provide incentives for investors to develop and supply gas to the power sector, which, for a long time, was confronted with fuel supply shortages that led to erratic power supply.

The country’s gas sector is gradually maturing, and lessons learned from the previous agreements will be factored into the future ones. The government is also trying to renegotiate some of these agreements, where necessary, to reduce the impact they have on the gas price.

**What are Ghana’s plans for increasing the amount of clean energy (hydro and renewables) in the power mix? Which are the most notable projects?**

We plan to increase clean energy in our power mix to 10% by 2030. This includes a combination of renewables and alternative energy sources.

Broadly speaking we have earmarked the following: an increase in utility-scale solar generation to 250 MW by 2030; implementing grid-tied solar rooftop generation of 200 MW by 2030; installing about 55 mini-grid electrification facilities in island communities by 2030; developing about 150 MW of small hydro power by 2030; having about 2m solar systems through our Off-grid Standalone Electrification Program by 2030; and distributing some 2m improved cook-stoves by 2030.

**Are you confident that private investors and those from international financial institutions will continue to find Ghana’s power sector an attractive investment destination?**

Yes, they will. The government has worked tirelessly and continues to work hard to make Ghana attractive in terms of investment. Digitisation is in full swing and the necessary measures that ensure that we have a conducive environment for success are in place, so I am very confident that investors will find Ghana an attractive investment destination.
In the middle of December, as 2019 wound to a close, a group of engineers achieved a significant milestone in West Africa. With the press of a few buttons, electricity flowed onto Senegal’s energy grid from the region’s first ever utility-scale wind farm.

Twelve months later, by the end of this year, around 2m Senegalese will benefit from the clean, competitively priced electricity that Parc Eolien Taïba N’Diaye’s (PETN) 46 wind turbines will provide.

And this wind farm is not alone. A clean energy wave is sweeping the continent and renewable energy projects are now in motion across many of Africa’s 54 countries.

Yet to focus purely on the wind farms themselves and the electricity they provide is to miss half the story. I firmly believe that the wider lessons, and the other things that we have achieved while building PETN, should be heeded by all energy developers on the African continent.

Clean, cheap power is part but not all of what our contribution should be to the African communities where we build and operate energy plants.

The residents of West Africa, like many other parts of the continent, are growing increasingly familiar with the sight of turbine blades spinning and solar panels glinting in the sun.

The factors that caused Senegal to turn to large-scale wind power are shared by many other countries across Africa. Cost is perhaps the most important element as renewable energy projects have continued to benefit from the falling prices of component parts.

In many countries, we have reached the point where wind and solar projects are not only able to compete on price without government subsidies, but are demonstrably cheaper than burning coal, oil or gas to generate electricity.

The technologies behind wind and solar farms are a key reason for this fall. A coal-fired power plant sees little increase in efficiency the larger it becomes. A wind turbine, by contrast, enjoys the opposite effect. The larger it becomes, the more a turbine’s efficiency – and its output – grows. The wind turbines sitting 70km north of Dakar in Taïba N’Diaye today are light years ahead of their ancestors from even 10 years ago.

Solar panels have enjoyed similarly impressive leaps in technology. The most advanced panels today capture sunlight not only directly from the sky, but even from light reflected back up off the ground.

We should not discount a growing environmental awareness and appetite either.

It is for all these reasons – cost, technology, pollution and cleanliness – that renewable forms of energy are making their way across the African continent. The Taïba wind farm in Senegal for example, contributes to the country’s Plan Sénégal Émergent, which aims to increase access and lower the cost of electricity in the country. And it is a similar story in Egypt, a country that has committed to producing 20% of its electricity from renewable sources by 2022.

Money and resources are pouring into the construction of wind and solar farms right across Africa. This is unquestionably a good thing. Electricity equals progress. Clean energy can contribute to the prevention of climate change. But, it does raise questions for companies that develop, build and operate renewable energy projects like Lekela does.

CONTRIBUTING TO COMMUNITIES

What is our role? Where does our contribution to the countries and communities that we bring power to begin and end? If a wind farm is built for more than 25 years, what does that mean for our relationship and our role with the citizens of the local town or village where the project is situated? Are we mere interlopers, are we long-term renters, or should we be true members of the community like anyone else who stays in one area for that length of time?

We enter communities to stay. And as members of a community, we should invest in its development and its well-being like any other citizen would.

Chris Antonopoulos
CEO, Lekela Power

We need to combine the energy impact of our work with positive economic impacts for the communities where we build our plants, says Lekela CEO Chris Antonopoulos.
Our view has always been unequivocal. We enter communities to stay. And as members of a community, we should invest in its development and its wellbeing like any other citizen would. Some might call this “corporate social responsibility”. To my mind it is simply good community as well as corporate citizenship.

This belief is why we devote resources to community initiatives wherever we build a wind farm. Research – and plenty of discussion with our communities – has shown that environmental, educational and enterprise programmes are what our communities want our help and assistance with most.

We have helped to create new marketplaces and centres of commerce for the residents of Taiba N’Diaye in Senegal. Hundreds of children in rural parts of South Africa now enjoy better education and exercise facilities through programmes we have sponsored and developed. And in Egypt, migrating birds on their seasonal routes through the Gulf of Suez will be better monitored and protected through training and development policies we are putting in place.

These are small, considered programmes. But they are properly designed and rigorously monitored. Most importantly, like our wind farms they are built to last.

Our experiences in Senegal over the past three years also reveal why even simple or small actions can have a large, positive impact as members of a community. Every wind farm needs access roads for construction and maintenance workers to reach the turbines. PETN was no different as we set about creating connections between the 46 wind turbines.

What we didn’t expect was the reception to those roads among the Taiba community. Rich, ripe crops that for years had rotted before reaching markets for sale were suddenly being whisked along these new service roads. It turns out that roads, rather than fertilisers or irrigation, have led to a dramatic increase in agricultural success and local economic prosperity for the people of Taiba. Unsurprisingly, this kind of initiative is likely to feature even more prominently in our plans the next time we build a wind farm in a rural community!

A TRUE MEASURE OF SUCCESS

If all goes well, then forecasts suggest renewable energy could make up well over 20% of Africa’s energy consumption by 2030. That would represent a fourfold increase from 2013 and position the continent firmly on the map as a renewable energy hub.

The role of companies like Lekela will be crucial in meeting this goal. Make no mistake – this is an industry and a set of technologies that have the potential to thrive right across Africa. Few places have the combination of constant, strong winds and long periods of sunshine that this continent does.

Harnessing this abundant, free, renewable set of resources while helping to build knowledge levels, expertise and Africa’s own renewable energy supply chain will be one of the great infrastructure projects of the next decade.

But we can only consider this a true success if we combine the energy impact of our work with economic impacts that are valued by the communities that welcome us into their lives to build renewable projects.

We should aim for nothing less.
FINANCING THE ENERGY TRANSITION

If renewable energy is to drive future growth, Africa will need to do more to attract finance and investment. James Gavin reports on progress

If Africa is going to ramp up its renewable generation capacity to the level of its true potential, it will have to confront the need to dig deep to finance it. Increasing sustainable generation capacity by 2030 will require between €39-€62bn ($44-69bn) of annual financing, mostly for renewable generation, notes the African Development Bank (AfDB). According to the International Renewable Energy Agency (IRENA) Scaling Up Renewable Energy Development in Africa report issued in 2019, to transform Africa’s energy so that it could meet nearly a quarter of its energy needs from indigenous and clean renewable energy by 2030 will require an average annual investment of $70bn, resulting in carbon-dioxide emissions reductions of up to 310 megatonnes per annum.

While declining technology costs have resulted in solar PV plants showing a 20% year-on-year reduction annually in the cost of solar module prices over the past five years – rendering renewable energy a more cost-effective prospect for most – the continent’s governments and private sector developers still face a seismic challenge in capturing the funding needed to get anywhere near the targets outlined by the likes of IRENA. Meanwhile many utilities are still saddled with sizeable debts and reliant on the sovereign to bail them out – putting them beyond most commercial lenders’ comfort zones.

The result is that in Africa, investment in utility-scale generation and transmission infrastructure remain lower than for any other global region. Lenders are still focused on large, centralised power stations backed by purchase agreements resting on sovereign payment guarantees. This has reinforced the sense that governments across the continent need to redouble their efforts to create a more attractive investment climate for renewable energy.

“One of the biggest challenges for project developers focusing on renewables in Sub-Saharan Africa is that the regulations in some countries have never been clear or consistent,” says Obbie Banda, Underwriter at the African Trade Insurance Agency (ATI). “African countries have needed a lot of investment by DFIs to help build capacity at the regulator and utilities level and are now better placed to help attract additional private investors.”

According to Obbie, there have been improvements recently. Most countries now have specific policies to attract renewables through transparent auction systems or feed in tariffs, he says.

But significant obstacles remain. One of the biggest hurdles is that investors, multilateral institutions and sovereigns are still largely focused on backing large-scale mega projects, when it is often the smaller-scale schemes such as on-grid renewables and distributed power that can make the most difference in advancing the energy transition agenda.

Space has been left for donors and other institutions to create new structures that help direct capital to where it is most needed. The World Bank’s Scaling Solar programme aims to build markets for solar schemes and its early fruits have seen two 30 MW solar plants constructed in Senegal. Meanwhile the Global Energy Transfer Feed-in Tariff (GET FiT) Programme is assisting some African states pursuing a low-carbon development path. Roll-out of the programme started in Uganda with a portfolio of 17 small-scale renewable energy generation projects promoted by private developers, with a total installed capacity of about 160 MW.

The underling aim is to have African governments create the foundations for a more attractive framework for investment in renewable energy. Having witnessed the success of South Africa’s renewable energy programme, Uganda, Zambia and Ethiopia have committed to adopting standardised and competitive programmes that tackle some private investors’ concerns over offtake issues for renewables. The result has been lower tariffs and the most com-
petitive form of energy. In Uganda, GET FiT has now mobilised $450m in investments directed at increasing national energy production by around 20%, guaranteeing energy supply for roughly 200,000 households.

Despite the promising advances in Uganda and Zambia, most of the current project activity in the renewable energy space remains in South Africa, the regional pioneer in prompting renewable energy.

Bhavtk Vallabhjee, head of Power, Utilities and Infrastructure at South Africa’s ABSA Group, says the country had been the “low hanging fruit for financial institutions over the last few years due to the large volume of transactions over a short period of time”.

South African banks have taken care of most funding for renewables projects. These are funded in rand, with a local currency tariff and Power Purchase Agreement (PPA).

“For a number of reasons, when you look across the region, many markets have not had the sort of scale that South Africa has come up with in the last eight or nine years,” says Vallabhjee. “You have had other programmes on the continent such as in Morocco and Egypt, and you have had the Ugandan GET FiT programme now replicated in Zambia. And then we have had the Scaling Solar programme by the IFC in four countries, Senegal, Ethiopia, Madagascar and Zambia. However, it’s really South Africa that has had its REIPPPP programme that has taken off with the government’s roadmap charting the energy future up until 2030.”

Given the difficulty of securing financial backing for renewable megaprojects, many financiers and investors are now looking towards smaller-scale schemes.

“We have found that the various renewable utility-scale auctions are becoming increasingly competitive on an absolute return basis primarily as a result of an increasing number of sector-specific players in the space and the relative ease of access to these procurement processes,” says Olu sola Lawson, Investment Director at Africa Infrastructure Investment Managers (AIIM). “So we have decided to explore a different track in terms of supporting the energy transition – looking at distributed solar businesses.”

In terms of AIIM’s distributed solar strategy, it has partnered with BBOXX to develop a next generation distributed utility, serving customers in the solar home systems space across Kenya, Rwanda and the DRC.

“In West Africa, we have also partnered with Helios Investment Partners to build out a platform called Starsight, which is today building the largest distributed solar, storage and cooling businesses in the Nigerian and Ghanaian markets. It has roughly 40 MW in installed rooftop solar, storage and hybrid diesel gensets providing stable power to corporate and industrial customers,” says Lawson.

In South Africa AIIM has partnered with Orionis to build out a portfolio of commercial and industrial offtakers with PPAs agreed for 15 MW of generation across a number of breweries and other industrial facilities in South Africa. “This is a different approach to tackling the energy transition and is a more nimble construct than large utility scale projects with all the associated difficulties in terms of development timelines, utility creditworthiness, and grid stability,” says Lawson.

Cheaper costs have attracted other investors, such as Actis, a major international group with a sizeable energy portfolio in Africa – including 1 GW of wind power across Egypt, Senegal and South Africa.

Price remains king – and here things are moving in a positive di-
The need for local-currency tranches is growing ever stronger, given the currency depreciation many African economies have suffered.

And yet the circumstances that motivated the energy transition remain in place. Climate change is becoming critical for all African economies. Says Pinsley: “About five to 10 years ago, most Africans would have said, ‘renewables are so expensive and coal is native, therefore we’re simply going to use coal. The Western world is still emitting huge amounts of carbon more than us, so don’t come and preach to us about climate change’. But now that the world has let climate change come to a boiling point, it has become everybody’s problem. There’s no going back.”

Finance and investment

FINANCING THE ENERGY TRANSITION

The first thing to consider is the cost,” says Lisa Pinsley, Director of Energy at Actis. “The cost of renewables has dropped so much that it doesn’t require subsidies anymore. It’s very cheap, cheaper than thermal power and that just makes sense for African economies.”

Financial innovation is also making a mark on the sector. For example, the AfDB is now offering credit guarantees to local banks to provide local-currency lending to off-grid energy providers, enabling them to reach more households more quickly. A loan facility extended in 2019 provided $27m to an off-grid energy scheme in Côte d’Ivoire that will reach 100,000 households with pay-as-you-go solar home systems. In a further sign of the increasing sophistication of financing mechanisms, the AfDB can now package the cashflows from pay-as-you-go customers into securitised products to sell to local and international investors.

Renewable schemes are also likely to benefit from wider international initiatives such as the Climate Investment Platform (CIP) which is designed to scale up climate action and catalyse the flow of capital to clean energy initiatives. The platform, set up by IRENA, the UN Development Programme and Sustainable Energy for All, in cooperation with the Green Climate Fund, aims to add significant value to Africa’s efforts to increase the share of renewables in its energy sector, as it serves to facilitate the matchmaking of bankable projects with potential investors, as well as to enable frameworks for investment by promoting multi-stakeholder dialogues to address policy and regulatory challenges.

Over time, African projects sponsors and financiers are getting greater experience with renewable energy. This should give uplift to the sector, as will tighter regulations that make it more difficult to back the more carbon emitting energy technologies. Coal is becoming more challenging for investors to expose themselves to.

“We can see a trend,” says Actis’ Pinsley. “For our first two funds, we could invest in all technologies, but by the time we launched the third fund, we and our investors didn’t want to invest in coal anymore. By the fourth fund, we didn’t want to invest in heavy fuel oil anymore, unless there is a gas conversion story. For the future, we’re now focused on solar, wind and gas, and possibly operating hydro and geothermal.”

Looking ahead, the coronavirus outbreak will continue to make lenders more selective about which energy projects they will back. Banks are expected to shy away from some, and getting approvals might take longer than previously envisaged.

Above: Lisa Pinsley, Director of Energy at Actis.
ARAB BANK FOR ECONOMIC DEVELOPMENT IN AFRICA (BADEA)

Renewable Energy

- Hydroelectric Dam
- Solar Energy
- Wind Energy Helices
- Hydroelectric Network
Beyond the immediate impact on health, the current crisis has major implications for global economies, energy use and CO₂ emissions globally. Highly dependent on coal, oil and gas which have been hit severely, the pandemic only adds to existing challenges Africa lives by such as food insecurity, unemployment, electricity outages, floods and locust invasions. Reliable, affordable clean energy and a growing energy jobs sector are what the continent needs and deserves. Siemens Gamesa understands and is fully committed to supporting Africa in its energy transition today more than ever before.

How do you view Africa’s renewable energy potential? Where are the opportunities and challenges?

There is the potential for significant further growth, since the African continent is abundant in the resources needed to produce renewable energy, mainly solar and wind.

In addition, fast growing economies and high population growth are increasing energy demand in Africa. Indeed, with a population exceeding one billion people and an estimated combined economy of $1.5 trillion, the continent presents huge opportunities for investors, developers and operators across the renewable energy sector. As a result, with projected GDP growth of 50% until 2024, many African countries have put in place development programmes to access renewable energies. From North to South, East to West, there are strong ambitions and programmes in place to reach 20%-50% of renewable energy share in the energy mix within the next 20 to 30 years. This is happening at the same time as energy partnerships in Africa are increasingly being granted to the private sector, which can only help to boost economic growth.

Today, renewable energy is already providing millions of people in Africa access to electricity for the first time. However, across the continent, only 40% of the population has access to electricity. The challenge remains that Africa needs a more stable evolution and growth in the sector in order to optimise the investment framework. This implies that better terms and infrastructure, such as access to electricity networks, a sizeable pipeline of bankable projects and clear procurement processes, are needed. Therefore, Siemens Gamesa is actively calling for more concerted efforts between public and private sector actors to attract private investments and technological transfer at an unprecedented scale.

What place do renewable energies occupy in the energy mix of the African continent?

Africa is still heavily dependent on fossil fuels, representing 50% of the African energy mix, oil and gas as well as coal. Not only has bioenergy’s share in the overall energy mix barely changed over the last 25 years, but it continues to dominate the primary energy mix, accounting for 60% of total energy use in the region and constituting a huge challenge to the continent. As a result, the adoption of renewable energy proffers a huge opportunity for most African countries seeking energy independence, reduction of exposure to unreliable energy imports and attainment of a state of energy security.

That said, the ultimate solution to
By making the energy transition an integral part of the recovery from Covid-19, we can achieve a more resilient future for Africa.

Africa’s energy development is not necessarily from a single energy source, but rather a combination of several sources. Africa boasts a broad range of renewable energy resources, from wind and solar to geothermal and hydropower and its future prosperity requires a change from the current total reliance on conventional energy sources.

A successful renewable energy transition needs decent network development, appropriate policies to support a strong expansion of clean energy and emphasis on energy efficiency improvements. Countries like Morocco, Egypt and South Africa have demonstrated that this is possible through the launch of programmes and renewable energy targets aiming to become less dependent on imports of resources.

We think that Africa could be the first continent to achieve a significant level of industrialisation with cleaner energy sources, and specifically wind energy, playing a prominent role. And we are determined to lead this energy transition.

Can you tell us about Siemens Gamesa’s presence in Africa? Where are its existing projects and where does the company see potential new markets?

Siemens Gamesa has a strong foothold in pioneering markets while remaining very active and attentive to all African markets where opportunities emerge. In fact, more than 20 years ago, we were the first manufacturer to provide wind energy on the continent.

Today, with an installed capacity of 3.5 GW, in countries such as Morocco, Egypt, South Africa, Kenya, Mauritania, Mauritius, Tunisia and Algeria, we have more than 55% market share on the continent. In 2017, we established the first blade factory in the entire MEA (Middle East and Africa) region in Morocco, Tangier, employing 750 employees today, of which more than 95% are local work force.

Specifically, and most recently, our large presence in the continent can be outlined as follows:

- **Egypt** represents the largest and most rapidly evolving market for us today in terms of opportunities in Africa, with an installed capacity of 1,253 MW. At the end of last year, we completed the 262.5 MW Ras Ghareb wind farm and launched the 250 MW West Bakr Project in partnership with Lekela Power.
- In **South Africa**, ahead of schedule and just before the lockdown caused by Covid-19, we were able to complete two projects totalling 250 MW thanks to a major team effort.
- In **Morocco**, we are currently in our last phase of the 210 MW Midelt wind farm construction and earlier this year, signed a contract to build the 300 MW Boujdour wind farm, both projects part of the five planned in the integrated 850 MW programme.
- In **Mauritania**, our team completed the installation of 39 turbines for our 102 MW Boulenouar project.
- Last but not least, we are very proud of our recent market breakthrough: in April 2020, we signed the 59 MW project in Djibouti which will enable clean energy supply, decrease the cost of electricity and allow the 940,000 population of Djibouti and its key industries to strengthen their electrical independence and economic development.

Currently the markets with the strongest potential resources in wind power are Kenya, Tanzania, Ethiopia, Sudan and Djibouti.

Without any doubt, we are well aware of the important role wind energy can play in powering Africa’s growth, including job creation and industrial expansion, which is why, as a market leader, we are keen on marking our footprint further with the aim to help the continent accelerate its clean energy transition and stimulate economic growth in a sustainable manner.
How do you intend to continue your support to Africa’s renewable energy transition within the post Covid-19 recovery frame?

While Siemens Gamesa has been focused towards business continuity supportive to our customer and stakeholder needs, it also has been involved in its commitment to improve lives through renewable energies as part of the immediate response to the Covid-19 outbreak. For this purpose, we have joined several calls to actions to urge governments to put the renewable energy sector at the heart of any recovery plans displayed as follows:

- IRENA’s Coalition for Action Calls for Green Recovery Based on Renewables, where we are putting forward recommendations on how governments can ensure a rapid and sustained economic recovery that aligns with climate and sustainability objectives.
- The Green Recovery Alliance, where signatories are committed to support post-pandemic “stimulus transformation plans” that put the fight against climate change and biodiversity loss at the centre of Europe’s economic policy.
- The RenewAfrica initiative where we remain committed to accelerate Africa’s sustainable energy transition, which is aligned with the EU-Africa Strategy on Africa presented by the European Commission and the European External Action Service on 9 March 2020.

We strongly believe that by making the energy transition an integral part of the wider recovery, we can achieve a more resilient and inclusive future for Africa.

What impact is the pandemic having on your current and future projects in Africa?

The energy sector is severely challenged by this crisis, which has slowed transport, trade and economic activity. With border closures and health emergency states, it has surely impacted our operations worldwide, and so therefore also in Africa. Although we have faced several challenges such as delays in supply deliveries, provision of site accesses and travel limitations, all the wind farms under construction or maintenance by Siemens Gamesa are running well on the continent. Also, our blade factory in Morocco never stopped its operations. In conclusion, thanks to the impressive effort that our employees are demonstrating in these unprecedented times, not only are we ensuring business continuity safely, but continue to win contracts and achieve new milestones in complicated circumstances.

At a time when the Covid-19 crisis is affecting all regions of the world, and in particular the African region, how is Siemens Gamesa helping people in need in the regions where it operates?

Siemens Gamesa has launched a series of social impact initiatives to contribute to the fight against Covid-19 around the world, including a series of initiatives to help African nations impacted by the crisis. The company’s global campaign covered donations of €1m worth of healthcare supplies and other relief to hospitals and communities and allocated a sum of €350,000...
dedicated to African countries severely impacted by Covid-19. These donations are in addition to the company’s pledge to match staff donations up to €1m for the International Federation of Red Cross (IFRC) Covid-19 Emergency Appeal campaign.

The support that Siemens Gamesa will provide across Africa will benefit a great number of vulnerable communities in Egypt, Morocco, South Africa, Kenya, and Jordan.

For example, in Egypt, the company is taking long-term actions such as providing medical equipment to Ras Ghareb Hospital that will not only benefit Covid-19 patients, but also provide the hospital with a set of permanent resources after the pandemic.

In addition, through the company’s SGRE Impact social commitment initiative, which focuses this year on alleviating the effects of Covid-19, food parcels and sanitary products are being distributed alongside tree planting campaigns benefiting over 6,000 individuals of the most vulnerable rural households in Morocco, South Africa and Jordan. Another project targets Kenya’s Kakuma refugee camp and aims to provide equal access to medical care and sanitary products, training courses on health and nutrition as well as water and community toilets for the 45,500 refugees.

In Tangier, where our blade factory is located, the company has provided €100,000 worth of temporary shelter benefitting local authorities in the region. The team has also organised a food and sanitary donation for 1,000 families lasting a month and a blood donation campaign involving about 35% of the workforce. We feel it is our responsibility to contribute where we can and help mitigate the effects of this crisis as much as possible.

The company recently announced that it is carbon neutral. How exactly does this link Siemens Gamesa to the fight against climate change?

Climate change is a profound, systemic challenge and Africa is among the regions most exposed to its effects. While its ecosystems already suffer disproportionately from global climate change, the region’s new renewable energy technologies, innovative digital technologies and finance tools have helped to ease the growth in the number of people without access to electricity. This in turn provides further motivation to achieving the UN Sustainable Development Goal, providing access to affordable, reliable and sustainable modern energy for all by 2030.

Late 2019, our carbon reduction strategy bore its first fruits and we became carbon neutral – a major milestone towards our long-term ambition of net-zero CO2 emissions by 2050. This was achieved with a combination of actions implemented by the company such as energy reduction and efficiency measures, relying on electricity from renewable energy-based sources, a green mobility plan to reduce fleet emissions, and offsetting non-avoidable emissions through compensation projects. These efficiency measures led to an overall reduction of 24% of our energy intensity achieving 38% reduction of greenhouse gas (GHG) emissions intensity.

In Africa only, Siemens Gamesa supports the reduction of over 8m tons of CO2 emissions having installed 3.5 GW of wind, equivalent to 140m trees that would need to be grown annually to avoid the same amount of CO2 savings.

The continent’s vast natural resources mean that low-cost clean energy technologies have plenty of potential and Siemens Gamesa is determined to continue its efforts in reaching new markets and assisting more African countries in their renewable energy targets.
Will the impact of the Covid-19 pandemic slow down Africa’s energy transition?
The Covid-19 pandemic will undoubtedly pose some wide-ranging implications across all sectors, as resources are diverted towards emergency spending on health, water, social issues, and economic stimulus efforts. In the energy sector, we expect some short-term fiscal, liquidity and operational setbacks to our project portfolio, as well as to energy sector players including independent power producers, utilities, distributed energy services companies and their customers. Of utmost importance, will be anticipating these challenges, and structuring our interventions to be timely and impactful, to ensure that the momentum on energy access in the continent is not derailed. In the medium-to-long-term, we expect to consolidate the gains made on energy access, and achieve the objectives of SDG 7.

How is the Bank working to alleviate the effects on the sector?
The Bank approved a multi-sectoral Covid-19 Response Facility of up to $10bn, to be deployed across the continent. The immediate focus is to provide rapid support to regional member countries to address the health crisis, and mitigate further financial and socio-economic impacts arising from the lockdown.

In energy specifically, we are working to address the fiscal and liquidity impacts of the pandemic in 2020 and 2021. Firstly, we are reviewing our energy portfolio, and project pipeline, analysing the challenges and feedback from clients, and then designing project-specific responses ranging from liquidity facilities, budgetary support, and enhanced coordination on operations with partners to provide requisite relief in the energy sector.

Secondly, we are mobilising concessional and climate finance funds from our partners to complement the Bank’s resources in order to comprehensively address the immediate needs across energy, health, water and climate nexus. Finally, we are working towards powering health infrastructure, especially in rural areas, through close engagement with public and private sector players in the decentralised energy space.

Where has most progress been made in Africa’s power sector in recent years?
Generally, we have witnessed greater progress and access in the countries that have moved to institute sector reforms and regulatory measures that have resulted in cost-reflective tariffs, increased private sector participation and a generally attractive investment climate. Notably, through unbundling of the power sector, liberalisation of markets, and the rise of independent regulatory authorities responsible for tariff setting.

For example, sector reforms and energy laws in countries like Uganda, Egypt, Kenya, Senegal, Côte d’Ivoire, Morocco, South Africa and Nigeria have attracted significant private sector investments. Generation deficits have been reduced or eliminated, while the transition to sustainable green growth has started. The establishment of regional power markets and mutually beneficial gas and electricity trade have also been helpful.

What needs to be done to attract more investment in power projects?
An enabling policy environment is key to enhancing project bankability, and attracting financing and private sector
investments to bridge the continent’s energy financing gap.

In my opinion, achieving this requires a range of interventions including, policy, regulatory governance and institutional reforms; incentives that support innovative financing and technology uptake, and robust knowledge, data and analytics to make informed decisions. It also requires improved and sustained utility performance through technical assistance, capacity building, restructuring and operational improvements.

Energy sector unbundling and liberalisation has resulted in a lot of focus on generation, but not nearly as much on transmission and distribution. These require urgent attention to speed up universal energy access.

Where successful, these measures support transitions to cost-reflective tariffs, establishment of robust energy markets, improvements in transparency and governance, technology uptake, innovation, and appropriate risk allocation. These result in increased investment, stronger private sector participation and competition that drives down the cost of generation and optimises end-user tariffs.

**What mechanisms has the Bank put in place to mobilise this investment?**

The Bank’s ongoing work with governments and utilities, in collaboration with our partners, entails a combination of technical assistance; advisory support for policy, regulatory, and governance reforms; legal and financial structuring; policy-based budgetary support; sector result-based financing; grants for capacity-building and loss-reduction, and investments in network improvements.

Bank-hosted special funds such as SEFA, and entities such as the Africa Legal Support Facility (ALSF) have been instrumental in our support to IPP and mini-grid programmes, helping governments to negotiate balanced contractual arrangements, and supporting adaptation of IPP and mini-grid frameworks to in-country conditions.

We have also developed a Sustainable Utility Transformation (SUT) implemented in cooperation with several partners, including the Association of Power Utilities of Africa. The SUT supports utility performance through improvements in governance; integrated least-cost resource planning; human capital development; sector reforms; and partnerships.

Finally, we have initiatives such as the Africa Energy Portal, and the Energy Regulatory Index for Africa, which provide up-to-date data and statistics, and track regulatory progress to breakdown barriers to investment, and support decision making.

**How does the Bank support development of regional transmission and distribution networks?**

We view our role as pivotal one that catalyses reliable, affordable and sustainable energy to improve productivity, and support the continent’s ambitions in industrialisation, manufacturing, trade, ICT, agriculture, transport and human capital development across regional markets.

Our strategy on the New Deal on Energy in Africa (NDEA) has a very clear regional mandate to promote regional energy infrastructure and connectivity by funding and implementing generation and transmission projects benefiting multiple countries. With a strategic focus on regionally interconnected power pool projects, we also support technical assistance and capacity building for power pools, as well as regional coordination projects and programmes that enhance cross-border energy cooperation and trade.

As the executing agency for the African Union Commission’s Programme for Infrastructure Development in Africa (PIDA), the Bank is involved in several regional energy projects, including: NELSAP Projects; Ethiopia-Kenya interconnector; Gambia-Guinea-Guinea-Bissau and Senegal interconnection; the Côte d’Ivoire-Liberia-Sierra Leone-Guinea (CLSG) interconnector; the Nigeria-Niger-Burkina Faso-Benin interconnector; and the Guinea-Mali interconnector. Collectively, these projects entail the construction of high voltage interconnection lines totalling over 5,556km in length.

**What is your view on how the fossil fuels vs renewables mix should evolve in the future?**

Our overall guiding principle under the Bank’s New Deal on Energy for Africa (NDEA) strategy, is to balance our commitment to chart a low-carbon, climate resilient, green growth pathway for the continent, with the urgent need to provide energy access to the nearly 600m Africans who lack access to electricity, and to unleash the continent’s socio-economic and industrial potential through affordable, reliable electricity access.

That means that we support African nations in meeting their obligations to human wellbeing under the Sustainable Development Goals (SDG7, in particular), including eliminating the health impacts of polluting cooking solutions, as well as in meeting their climate action obligations under the Paris Agreement. We have done well in this regard, with renewable...
energy projects constituting close to 85% of the Bank’s power generation investments since 2017. We have also stopped making new investments in coal.

Africa’s proven natural gas resources were estimated in 2018 to be 509.6 trillion cubic feet, representing 7.3% of the global reserves. Development of these locally and regionally available gas resources, which represent a viable and cost-efficient alternative to overseas imports, will contribute significantly to Africa’s push towards reliable electricity supply, and sustainable and inclusive green growth. Further, with increased renewables deployment and grid expansion, gas-based power is vital in anchoring intermittent utility-scale wind and solar power generation, and enhancing system flexibility, reliability and stability.

In addition, our climate finance resources have significantly grown from $1bn (9% of our annual portfolio) in 2016 to $3.6bn (35% of the portfolio) last year. So, in the immediate term, and depending on the specific national and regional energy mix, gas continues to play a critical role in Africa’s energy sector and industry.

Looking further ahead, and especially as solar and wind energy become more competitive, our recent initiatives such as the SEFA Special Fund’s Green Baseload pillar, will help Africa make the full transition through the deployment of “greener” power alternatives to fossil-fuel generation options.

**Do off-grid and mini-grid projects have a significant role to play in the energy transition?**

Yes. To achieve the goal of universal access and inclusive growth, we need to ensure that we serve the immediate needs of the underserved populations who are removed from the grid, even as we work towards the goal of quality, on-grid access.

Under the NDEA, we finance and support mini-grid, off-grid and clean cooking solutions, that provide access to energy, economic opportunities, and contribute to the improvement of the quality of life of Africans.

We have made significant strides by leveraging on recent technological developments and proliferation of mobile money, supporting project preparation, and delivering innovations through our initiatives and instruments, such as the Distributed Energy Service Companies (DESCOs) financing programme, which provides credit enhancement for local financial intermediaries, as well as the Facility for Energy Inclusion’s Off-Grid Energy Fund (OGEF) and the Desert to Power Initiative.

Recently, under the SEFA Special Fund, the Bank has moved to scale up investment in Green Mini Grid (GMG) infrastructure, which is critical for the cost-efficient achievement of universal access. The market development programme for green mini-grids aims to address market barriers and strengthen the ecosystem for the emergence of a thriving green mini-grid sector in sub-Saharan Africa through support to private sector developers and policymakers at the forefront of technical and business model innovation.

**What is the African Development Bank’s view on the potential of large-scale hydropower?**

The sustainable development of Africa’s significant, yet largely untapped hydropower potential, is critical in the realisation of the continent’s energy access and economic development ambitions. Hydropower also provides critical baseload capacity and contributes to grid stabilisation that allows us to integrate renewables such as wind and solar in the grid.

We are aware that the complex nature of hydropower projects requires extensive planning, ongoing partnerships, cooperation and learning especially in the face of evolving, and often disruptive, climate change challenges. Internally, all Bank-supported projects are subject to rigorous Environmental and Social Impact Assessments, including stakeholder consultations.

To further ensure that investments align with the Paris Agreement, the Bank screens its projects for project-level climate risks, and ensure that all its projects are based on climate-informed considerations by mainstreaming adaptation and mitigation into their designs.

The Bank also works with member countries, utilities, and regional power pools to ensure that sustainable development of hydropower resources is underpinned by strong policy, legal and regulatory frameworks; development of viable regional power markets, and sustainable and mutually beneficial electricity trade, as well as climate-resilience measures.

The Bank is supporting the development of several large hydropower projects in member countries, including Cameroon, DRC, Rwanda, Burundi, Zambia, Angola and Namibia.

**Are you optimistic that Africa will realise the UN SDG7 goal of energy access for all?**

Yes. I am optimistic that if we continue collaborating, learning, replicating our successes, taking advantage of technological advancements, effecting the necessary policy and regulatory reforms, expanding private sector participation, moving with urgency and agility, and efficient allocation of capital, then we will make significant progress on universal energy access over the next decade. Some countries are on track to achieve universal access, well before the SDG7 2030 deadline.
Lekela is a renewable power generation company that delivers utility-scale projects which supply much-needed clean energy to communities across Africa. Today, our portfolio includes over 1,300 MW of projects in Egypt, Ghana, Senegal and South Africa.

• Our goal is to deliver sustainable, reliable and competitively-priced power through taking wind and solar projects from mid or late-stage development into long-term operation. Delivering this is critical for many countries in Africa but presents a number of significant hurdles.

• Central to our strategy is a focus on creating long-term value for the communities where we operate. We want to make a positive impact that lasts for generations in these communities. Beyond the provision of renewable power and employment, we also focus on promoting education, enterprise and environmental initiatives.

• Our vision is to build an organisation that offers best-in-class delivery of clean power in African countries.
Ademola Adesina, the Founder and Chief Executive of Rensource Energy, talks to us about the growth of this successful and scalable renewable energy startup in Nigeria

Nigeria’s problems with power provision are well known. It is a country of 200m people served by little more than 5 GW of functioning power generating capacity.

A troubled privatisation in the electricity industry in the middle of the last decade has done little to alleviate widespread power outages, or speed up efforts to bring electricity access to Nigerians without it. The result is a country still dependent on small-scale generators to compensate for unreliable grid supply, if there is supply at all. There are an estimated 16m generators in the country, mainly running on polluting and costly diesel.

To help overcome a problem that has proved so intractable, President Muhammadu Buhari’s government is now turning to the off-grid sector, based on increasingly cheap solar energy, to see if it can provide a more reliable and cost-effective alternative.

This fresh thinking has provided new opportunities for Rensource’s Ademola Adesina, who first moved into the Nigerian market in 2016, when he set up a business providing residential power for Nigeria’s urban middle classes. He had previously started up a business providing cheap solar hybrid power for mobile phone masts in India, when he was working as entrepreneur in residence for the Capricorn Investment Group in the US, the country in which he grew up.

He then looked at establishing a similar operation in East Africa, but discovered that customers there weren’t as focused on getting power cost reductions as those in India, making it a more difficult business proposition. However, Nigeria, Adesina’s birthplace, has provided more fertile ground – and a potentially huge market.

“I wanted to find the part of the value chain where you could bring the most value quickly and create a business out of it,” he says.

For Rensource, the residential power business fitted the bill, because it provided a simple and standardised solution to customers’ need to reduce the expense and hassle of burning diesel in generators.

“The model was: you pay the bill, and we’ll handle everything else. We were growing at a pretty good clip,” Adesina says.

Then, in 2017, Nigeria’s Rural Electrification Agency – the body handling the government’s off-grid drive – got in touch, asking Adesina if he could devise a new model to bring reliable power to Nigeria’s many large urban markets, where badly maintained and often dangerous small-scale generators proliferated.

“We proposed a mini grid, essentially a large solar-hybrid system, blanket ing the rooftops with solar panels, with hubs throughout the markets. We put our systems in those hubs and provide a smart meter for every shop owner,” he says.

**Urban Markets Reap Benefits**

Solar power is a good fit for markets, which do most of their business in daylight hours, though Rensource also provides back up generation and some small-scale battery storage for cloudy days and the rainy season.

“Beyond the technology, we also built a large customer service infrastructure within the market. So, we have agents, technicians and other staff. At any point during the day, we’re fixing problems, collecting payments, cleaning the panels, or whatever. We basically became a utility just for the market,” he adds.

The model was a success and has now been rolled out in eight markets around Nigeria, including the Sabon Gari Market mini-grid project in Kano, where it is providing power to over 11,000 shops.

The economies of scale, falling solar panel costs and the savings in diesel generation for customers have been enough for the finances to stack up for both Rensource and its customers. The transition was helped by government
THIRD PARTY SERVICES PUSH

Rensource is also able to take advantage of the trend in Africa towards using utility services as a gateway to customers for third party companies, who would otherwise have no easy access to them.

“We were constantly being approached by banks, fast-moving consumer goods companies, insurance companies or fintech businesses, asking if they could layer on top of the online distribution channel for our service,” he says.

“We wanted an efficient, scalable way to do that, so we’re basically building a platform – Spaces O2O (Offline to Online) – that we plan to launch in the second half of 2020, which allows merchants and small businesses in Nigeria to manage their business.”

The platform is designed to work on two fronts. Firstly, the Spaces app offers services from various providers to merchants to help manage their own business. The merchants can choose from tools, such as those for accounting and inventory management, logistics and warehousing, and deal directly with the provider through the app.

But it also offers the merchants third-party services which they can then push to their own customers. That gives those third-party providers access to customers that would be difficult and costly to reach otherwise, while allowing merchants to offer a more diverse range of services to their customers and generate more revenue for themselves along the way.

“We think this technology platform, built for SMEs, will change the market. I think you’ll be hearing a lot about that in the next few months,” says Adesina.
AFRICA IS PRIMED FOR POWER FROM HYBRID MICROGRIDS

Caterpillar’s Hybrid Energy Solutions Manager, Rob Schueffner, provides an update on the company’s advanced microgrid technologies and how they can shape the future of power generation in Africa

What makes hybrid energy solutions viable for customers in Africa?

With the increasing global demand for the affordable electricity that can be provided by hybrid energy solutions, the performance of key components in them is improving quickly while purchasing costs are decreasing rapidly. These factors have combined to improve the ROI and help to make an attractive business case for using these technologies, and African customers have rapidly adopted the concept.

The increasing sophistication of microgrids and availability of advanced modelling tools used to design them are also helping to make a better business case for using these configurations. Every enterprise is different and every power need is different too.

By using software tools such as HOMER® hybrid power system optimisation software, engineers can optimise microgrids and distributed energy resources in the design phase by simulating hundreds or even thousands of system permutations to determine the best solution. As a result, we have successfully designed, installed and commissioned diverse systems. At one site, we integrated a new solar facility with large medium-speed, base-load generator sets as well as quick-response, high-speed generator sets. Today, the system generates nearly 15m KWh of energy per year, or about half the power needed for company operations during peak sunlight hours. With 50% solar penetration, the system delivers an annual savings of 14% to 16% in the cost of power generation.

At another site, we recently introduced 10 MW of Cat® Energy Storage System grid stability modules to an existing power system that includes nine hydroelectric generators and dozens of diesel generator sets. This system is expected to save the customer up to 5m litres of diesel fuel annually. And at a third location, we designed a system from the ground up for a new facility that features our solar photovoltaic modules, Cat generator sets, and a Cat Energy Storage System grid stability module.

Caterpillar is well known for its traditional engine technologies. Why do customers trust you to supply state-of-the-art hybrid microgrid technologies?

The key to Caterpillar’s longevity has been our eagerness to dive into our customers’ businesses, understand their business needs and the power required to support their operations, and then recommend a solution that delivers on every important aspect of performance: productivity, efficiency, reliability, durability, safety, and ease of maintenance.
Our deep understanding of our customers’ enterprises provides us with a tremendous advantage over newcomers to the space. In many cases, our hybrid microgrid customers already own Cat machinery or power generation products. They understand our commitment to quality and performance.

They have experienced first-hand the commitment and knowledge of our local Cat dealers. They already know the value that Caterpillar can deliver and the lengths we and our Cat dealers will go to help them enjoy greater success.

We also have a distinct advantage through our leadership in developing field-proven technologies that support the electrification, power control and intelligence of machinery used in the harshest operating environments. For instance, the Cat Bi-Direction Power (BDP) Module offers state-of-the-art technologies through power electronics technologies originally developed for the Cat D7E track-type tractor, which was first introduced over a decade ago.

**What can customers do to get the most value from their hybrid microgrid system?**

One of the keys to an effective maintenance programme is designing the system the correct way from the beginning. Again, this means we look to fully understand how the enterprise operates and how the power need fluctuates on a daily, weekly, seasonal or yearly basis. Only then can we design a solution to address the power need effectively and economically.

For example, building redundancy into a given system may increase the initial purchase cost, but if a single component is taken offline for maintenance, it will have a smaller impact on the output of the entire system.

The ongoing operation of the system is also an area where we can leverage advanced data harvesting, analysis, dashboarding, and telematics technologies. Cat Connect Remote Access Monitoring helps our customers optimise the utilisation and maximise the performance of power systems. It provides essential insights into the location, health and efficiency of power systems by collecting data to populate a dashboard of key performance indicators in real time.

Cat Connect Remote Asset Monitoring can be configured to send alerts and reports to the dealer or customer to support preventive maintenance, performance optimisation and life cycle planning. It delivers essential insights to help customers make timely, fact-based decisions that can boost productivity while avoiding costly repairs and unplanned downtime.

This tool enables our customers, dealers, and Caterpillar engineers to monitor and assess the performance of our hybrid microgrid systems wherever they’re located in the world. In fact, one of our customers was delivering a presentation at an industry conference in Canada when he showed the audience how he was able to monitor the near real-time performance of the hybrid microgrid at his operations in southern Africa.

---

**Far left: Rob Schueffner, Hybrid Energy Solutions Manager, Caterpillar Electric Power.**

**Left: Engineers at Otjikoto gold mine in Namibia, where HFO consumption has been reduced by 3.4m litres per year.**

---

**Are hybrid microgrids better suited to particular industries?**

We’ve provided better power availability that also reduces operational costs across many industries. For example, B2Gold built a 7 MW solar facility at its Otjikoto gold mine in Namibia that has reduced its HFO consumption by 3.4m litres per year.

Early this year, we commissioned a 6 MW hybrid energy solution for an agricultural producer in the Middle East. The new agricultural facility features the largest single-site microgrid located in the UAE, which provides power for cooling equipment, water chilling, mushroom cultivation and other greenhouse processes.

Our dealer network is also using hybrid microgrids to improve their own operations and reduce their energy costs. Mantrac Ghana installed a 500 KW hybrid energy solution at its new world-class component rebuild centre in Takoradi, Ghana. The solar PV system currently provides more than 30% of the energy needed, with an opportunity to install an additional 500 KW when facility operations expand and the power requirement increases.

---

**How has the Covid-19 pandemic affected your support for customers?**

While our ways of doing business have certainly been impacted by Covid-19, we have still been able to keep projects moving forward by leveraging the expertise of the engineers who work in our global network of Cat dealers.

For instance, we successfully commissioned a hybrid microgrid this April despite the logistical challenges presented by the ongoing Covid-19 crisis. To comply with travel restrictions and social distancing measures, project managers for the Cat dealer and Caterpillar used remote collaboration tools to supervise embedded on-site technicians as they performed the final series of steps needed to test and prepare an extremely complex solution for full-time operation.

---

To find out more about Cat microgrids visit your local dealer or go to www.cat.com/microgrid
Communiqué

Dr Sidi Ould Tah, Director General, BADEA

BADEA SUPPORTS CLEAN ENERGY IN AFRICA

Dr Sidi Ould Tah, Director General, of the Arab Bank for Economic Development in Africa (BADEA) talks to us about the bank’s future plans and its reaction to the Covid-19 pandemic.

Since its foundation in 1974, the Arab Bank for Economic Development in Africa (BADEA) has worked to strengthen economic, financial and technical cooperation between the Arab and African regions by participating in the financing of economic development in African countries, stimulating the contribution of Arab capital to African development and providing technical assistance for development projects in Africa.

Owned by 18 Arab countries and based in Khartoum, the bank has essentially funded infrastructure, rural development and social projects in the public sector and to some extent the private sector and trade financing.

Under its 2030 Strategy, BADEA will be implementing a Five Year Plan 2020-24 with infrastructure; private and trade financing; SMEs, women and youth entrepreneurship; and agricultural value-chains as the four major pillars.

Beneficiary countries have a wide range of financing opportunities including for medium and long-term renewable energy infrastructure projects and renewable energy import/export under the private sector and trade financing window. Renewable energy projects aiming at expanding the agriculture value-chains and/or of SMEs are given a particular attention. BADEA will also provide necessary capacity development in renewable energy under its technical assistance scheme.

In the following interview, BADEA’s Director General, Dr Sidi Ould Tah, talks to us about the organisation’s current plans in the energy sector and how Covid-19 might affect them.

What is the driver for BADEA’s support for Africa’s energy sector?

One of the main pillars for BADEA is infrastructure. Over the past 45 years, 55% of our financing has been to infrastructure, and energy is a core element of that. Mainly we have been funding hydro power and more recently we’ve been engaged with IRENA in supporting solar energy, particularly focused on rural electrification.

What are your future plans?

We’re currently starting implementation of our 2020-24 plan as part of BADEA 2030, which is very much aligned to the SDGs and also to the African Union’s Agenda 2063. The SDGs also give a great importance to renewable energies. As you can imagine, our country strategy is also very much aligned with the countries’ main strategies and of course their strategies also take very seriously the choice of clean energy.

So based on that, we expect over the 10 coming years that BADEA will contribute significantly in supporting clean and renewable energy in Africa and to partner with all the multilateral agencies working in the continent, but also alongside the private sector and with Governments.

How important is the renewables sector?

We expect an increase in renewables activity. In the past we tended to focus on public sector projects but with the new strategy we are also increasing our involvement in financing private sector and PPPs as well as trade. So while we used to provide financing for renewable energies through the public sector window, with the new strategy and
its five-year plan (covering 2020-24) we will have three windows aimed at providing financing for renewable energies. The first window will remain the public sector, but two new windows are being launched. One is the private sector window, which can provide long-term financing for private sector projects but also for public-private partnership (PPP) projects. And the third window is trade finance. Through trade finance we can send equipment from Arab countries to Africa. This can be solar panels or cables or any components used in renewable energy projects.

What will be the impact of the coronavirus?
Everybody is under the shock of Covid-19 but that will not prevent us from continuing our programmes to fund renewable energy. We believe that Covid is an emergency situation and we are providing emergency funding.

At BADEA, our main focus is on partnership. If you look back at our history, for every dollar from its own resources BADEA was able to mobilise four from other partners, especially from the Arab Coordination Group. Recently the Arab Coordination Group had a meeting at the level of heads of institutions and it agreed to put on the table $10bn to contribute to the fight against Covid, and also post-Covid recovery programmes.

We believe we can tap a substantial amount to continue the funding of renewable energy in Africa in the post-Covid period.

PROMOTING GREEN ENERGY SINCE 1974

BADEA has a long track record in financing renewable energy. Under its infrastructure portfolio the Bank has funded numerous hydroelectric dams with a combined power generation capacity of nearly 1,400 MW and added 17,503km of power transmission networks across the continent.

This contribution to renewable energy is expected to significantly increase and include other sources such as wind, geothermal and solar under BADEA 2030, a strategic framework aligned with the UN’s Agenda 2030 and the AU’s Agenda 2063.

BADEA has also partnered with other members of the Arab Coordination Group in their operations in Africa and used its leverage to crowd more investment into green energy under the Programme for Infrastructure Development in Africa (PIDA).

BADEA’s recent work includes working with Uganda’s Rural Electrification Agency (REA) in providing funding for renewable energy schemes in Kamuli, Buyende, Kayunga, Jinja, Iganga, Mukono and Bulwe districts. The total loans amount to $33m, of which BADEA is funding $15m and OFID $15m, with the Ugandan government providing the remaining $3m.

Rwanda is another country that has secured BADEA funding for energy sector projects. In March 2019, the government and BADEA signed a concessional loan agreement worth $20m to finance rural electrification projects in Nyamagabe and Nyaruguru districts. The project envisages supply and construction of distribution networks, meters and service cables to connect houses, commercial and public centres.

As countries roll out their strategic responses to the Covid-19 pandemic, considerations of plans based on green energy sources are coming into play. Swift action by governments and all stakeholders is essential to help Africa get back on the path to economic growth, and BADEA stands ready to play an active role in these efforts.
What is special about the East African energy sector?

There’s so much potential in the energy sector in this region. First, look at the size of the population we are serving. Taking in large countries like Sudan and Ethiopia, you’re looking at a market with more than 220m inhabitants. There’s a large number without energy access, which means there are a lot of opportunities in the power sector, whether in generation or in transmission & distribution (T&D).

There are many big projects underway now in power generation and some of them have been already commissioned. For example, there are major generation projects such as the Renaissance dam in Ethiopia and the Julius Nyerere hydropower plant in Tanzania. There are so many generation projects happening, we could even have a surplus of energy.

The region is looking for massive funds for T&D and this is one of our priorities at Elsewedy Electric in the coming five years. We will be heavily concentrated on the T&D sector. And we do believe that East Africa will have a very special place in this strategy.

What is Elsewedy’s presence in this market?

We are Africans and this is our main interest and in a sense, our backyard. Like most multinational companies, we use Kenya as our regional hub. We started out exporting from Egypt with an office in Nairobi serving the demand. The region is the biggest market we have for cable and transformers. However, we also built our own factories in Ethiopia, with a cable factory that has been operating successfully for 10 years.

Being African and understanding the needs of the market gives us a privilege over some other competitors. We are not new to the market, we have been in there for last 15 years and have a presence in most countries.

Which power projects in the region would you like to highlight?

There are two main dimensions to this. In projects we participate in we go with EPC plus Finance (EPC+F). This is our long-term history of participating in most African countries. We have a successful story in Ethiopia, where we have undertaken some large projects under EPC+F terms. And we have invested large amounts in Ethiopia, where we have big expansion plans.

One of our recent success stories is the Julius Nyerere hydropower plant in Tanzania, which we consider a landmark of our success in penetrating the African market. This single project represents hundreds of MW. It’s still only the early stages, but we expect this will be a very important focus for us.

We also have expansion plans in Uganda, which has real potential considering the exploration of oil and gas resources there and the impact that will have on the country’s GDP, which should allow for better growth in the power sector.

How do you see prospects for renewables? What is your activity in this space?

Renewables for us is one of the main business units – it’s got a very high priority in our overall strategy. And East Africa is very advanced compared to other parts of the continent. It’s a good base for us to be a part of.

At Elsewedy Electric we have many projects in Egypt and Sudan and we’re aiming for IPP projects in Kenya that appear very promising. In the next few year we will be pursuing several projects in solar and wind. We have increased our expertise and know-how in renewables and that has allowed us to go global.

What about your plans in the T&D sector in East Africa?

Most companies have given special attention to generation for the last few years and now the focus is shifting back to the T&D sector, which is hugely important. Unfortunately it is lagging behind and perhaps should have been given more attention years ago in order
sometimes there is a delay in implementation. And in some countries, there are security issues.

Efforts are taking place to create a regional customs union. In regard to the guidelines for movement of goods and labour, that could create a real boom for us, which is why we are trying to create a strong regional hub serving the whole regional community from Zambia to Kenya. It’s a very promising region and there are a lot of opportunities for us there.

How about the impact of coronavirus? What impact will it have on the region’s electricity sector?

It goes without saying that coronavirus has impacted everybody, everywhere. And definitely there is an impact at the country level because it has lowered GDP rates, which in turn will reflect on the power sector. All of these have a reflection on the shorter term business cycle. But we are expecting things to come back by the second quarter of 2021.

There is also a job loss significance which will have some impacts on social stability. Furthermore, we are seeing a sharp rise in inflation in some countries, which is something you have to consider when you have an investment in these countries.

How is regional energy integration progressing?

There are big plans for regional integration and that starts out from Egypt, which is linked to Sudan in the south. The main connections are between Egypt and Sudan, Ethiopia and Kenya and Rwanda and Uganda. Others in the region have existing connections that will be reinforced in future, such as between Ethiopia and Kenya. That will be a very important process. We are creating up to 2,000 MW interconnection transmission lines on 500 kV, which will be really a big project on completion. And Ethiopia is planning to serve southern connections. This is almost finished and will be integrated by year-end 2020.

Overall, I see that the regional energy integration process is really strong. Our East Africa board is doing a very good job in terms of integrating power and supporting the interconnection of power between countries in the region. We believe that East Africa will be a real role model for energy integration in the very near future.
THE RISE OF GRID-SCALE RENEWABLES

Uptake of grid-scale renewables is uneven but they are becoming a more attractive option. Neil Ford reports

NORTH AFRICA: SOLAR RIVALS WIND

Two of the most mature markets for renewable energy investment on the African continent, Egypt and Morocco, are also among its largest.

Morocco has led the way, focusing initially on wind. Five new wind farms have been developed under the 850 MW Integrated Wind Energy Project: Boujdour, with 300 MW, Midelt (180 MW), Jbel Lahdid (200 MW), Tiskrad (100 MW), and Tangier II (70 MW).

Boujdour is the most recent, with Enel Green Power and Nareva Holding signing a contract with the Moroccan Agency for Sustainable Energy (Masen) for the development in November 2019.

There are now 16 wind farms operating in Morocco, along with eight hydro schemes. But while these have made the biggest contributions to Morocco’s renewable energy capacity so far, solar is catching up fast. The 500 MW-plus Noor solar complex in Ouarzazate is already the world’s biggest concentrated solar power (CSP) project.

The developers are optimistic that the venture will prove ground-breaking. “There will be a world before, and a world after Midelt,” according to Masen Chief Executive Mustapha Bakkoury.

Masen is at various stages of pursuing tenders for other solar power projects, including a combined CSP-PV scheme in the Drâa-Tafilalet region of undetermined capacity and 200 MW spread across seven PV plants in the south and east.

In November, Saudi Arabia’s Acwa Power signed a PPA with the government to supply power from the 200 MW Kom Ombo PV plant, which is expected to be complete by April 2021.

Cheap solar in Tunisia

Egypt and Morocco are the only countries in North Africa to have developed significant renewable energy capacity to date, but Tunisia could be set to join them. The Tunisian Ministry of Industry held a tender last year that resulted in Scatec Solar securing contracts in December 2019 to build three solar plants with combined generating capacity of 360 MW – one of 240 MW and two of 60 MW – in Sidi Bouzid, Tataouine and Tozeur.

The winning bid of $0.0244/kWh was the lowest on record anywhere in Africa, which suggests that Tunisia could become an attractive solar market, particularly if exports to Europe can be secured. Contracts on two 100 MW projects at Gafsa and Kairouan were also awarded to a joint venture of France’s Engie and Morocco’s Nareva, and to TBEA of China respectively.
TRACT with Eskom. The first of these came on stream in 2015 and the most recent in 2019; the first two were developed by Abengoa and the last two by Sener Group. All four are located in the Northern Cape, along with other big solar PV schemes, Jasper (96 MW), Muli-lo-Sonnedix-Prieska and Kalkbult (both 86 MW). Northern Cape is about as far from the main centres of power consumption as it is possible to be in South Africa, but the gains from the province’s superior solar resources make up for the additional transmission costs.

Despite the growing attraction of solar, new wind farms are still being developed in South Africa. In March, the final turbines were installed at the 140 MW Kangnas project near Springbok in the Northern Cape, two weeks ahead of schedule and reportedly on budget. The $246m project, which has been developed by Sweden’s Mainstream Renewable Power, comprises 140 MW spread over 61 2.3 MW Siemens Gamesa turbines.

Wind and solar power have the big advantage over large hydro or thermal power plants in that capacity can be added incrementally when needed and often much more quickly. These advantages seem to have driven investment in South Africa, despite the continued dominance of coal-dependent parastatal Eskom. Eight of the continent’s 10 largest solar power projects are in South Africa, most of which have been developed under the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP).

The largest of these is Solar Capital’s 175 MW De Aar PV facility, which supplies Eskom with an average of 83,458 MWh/year under a 20-year PPA, plus four 100 MW CSP projects: KaXu Solar One, Xina Solar One, Il-ang a 1 and Kathu Solar Park, all of which have the same long-term contract with Eskom. The first of these came on stream in 2015 and the most recent in 2019; the first two were developed by Abengoa and the last two by Sener Group.

All four are located in the Northern Cape, along with other big solar PV schemes, Jasper (96 MW), Mulilo-Sonnedix-Prieska and Kalkbult (both 86 MW). Northern Cape is about as far from the main centres of power consumption as it is possible to be in South Africa, but the gains from the province’s superior solar resources make up for the additional transmission costs.

Despite the growing attraction of solar, new wind farms are still being developed in South Africa. In March, the final turbines were installed at the 140 MW Kangnas project near Springbok in the Northern Cape, two weeks ahead of schedule and reportedly on budget. The $246m project, which has been developed by Sweden’s Mainstream Renewable Power, comprises 140 MW spread over 61 2.3 MW Siemens Gamesa turbines.

Tail wind at Lake Turkana

Most potential wind power sites in Africa are located around the coasts, particularly in the northwest and around the Red Sea. But the largest development to date is inland. The 310 MW Lake Turkana wind farm, 600km northwest of the Kenyan capital Nairobi, was officially completed last July with 365 turbines connected to the national grid. Many inland parts of Africa have limited wind resources, but Lake Turkana benefits from a wind corridor created between Mount Kulal and Mount Nyiru.

The project could soon lose its status as the region’s biggest wind farm, if China’s Sany Heavy Industries develops a 600 MW wind farm in Tanzania, as announced in December.

The 850 KW turbines deployed in the Lake Turkana project are small by current standards, in part because development took six years to come to fruition and the industry had moved on a lot in that time. Wind farms now under development are using much larger units.

A case in point are the 3.45 MW turbines used on West Africa’s first large-scale wind farm, the 158.7 MW Parc Eolien Taiba N’Diaye in Senegal, which is due to be completed this year.

New markets open up

The UAE’s Amea Power is helping to open up new African markets. In March, the Ugandan government announced that it had reached agreement with the company to develop renewable energy projects in two regions. Karamoja region will benefit from a 120 MW wind farm and 80 MW solar PV plant, while a 10 MW PV and 10 MW wind farm will be built in West Nile region in the northwest. China Energy Engineering Corporation hopes to develop another 500 MW of solar in Uganda.

Amea has also begun work on the 50 MW Blitta PV facility in Togo and has announced plans to build
GRID-SCALE RENEWABLES

Grid-scale renewables

a 50 MW solar plant in Koulikoro region in Mali. However, it has reserved its biggest investment for Egypt, including a 500 MW wind farm at Jabal Al-Zayt.

In the longer term, offshore wind could also play a part in the African power sector as the cost of installing and operating the technology is falling rapidly. There is potential for some smaller island countries to develop offshore wind that could be used to supply their own markets, while exporting the bulk of their production to larger markets on the continent itself.

Realising geothermal potential

Where it is available, geothermal energy provides another valuable and cost-effective renewable resource for African countries. It’s also one that, unlike solar and wind, is not intermittent, as it relies on heat from below the earth to power turbines.

The East African Rift Valley is one of the world’s hotspots both in terms of geothermal potential and project development. The Olkaria V plant came on stream in Kenya in September, adding 160 MW additional capacity to national baseload capacity. It was developed by Italy’s Steam and Portugal’s Gesto Energy on behalf of state utility, the Kenya Electricity Generating Company (KenGen). Other projects are being considered by IPPs, including Kenya’s own Sosian Energy and Mauritius-based Quantum.

There is geothermal potential of varying degrees right along the length of the Great Rift Valley. Ethiopia and Uganda have moved closer to developing their own geothermal plants over the past year.

In April, a consortium of Reykjavik Geothermal, Berkeley Energy, Iceland Drilling Company and InfraCo Africa signed a PPA to build the 150 MW Corbetti facility in the Ethiopian Rift Valley. Addis Ababa hopes to eventually oversee the development of 1 GW of geothermal capacity.

Future development

Although wind, solar and geothermal power projects are being developed at a faster pace in Africa than ever before, the sector is starting from a very low base. Many countries have still made little progress in attracting investment to large-scale projects.

Cash-strapped governments lack the financial resources to help fund projects themselves – and indeed will struggle to do so even more as a result of the economic impact of the Covid-19 crisis – but they could do more to encourage development. Analysts say there is scope for some governments to improve their regulatory environments and ensure that transmission utilities cooperate with IPPs, rather than protecting vested interests.

The renewables revolution offers the potential to promote greater competition in power generation, while falling costs are making wind and solar power an increasingly attractive economic option.

Mercé Labordena, senior policy advisor at SolarPower Europe, says that the growth of solar power in many African countries has been constrained by higher power prices and financing costs than in industrialised countries, which have more stable policy conditions and higher credit ratings.

Apart from low-cost financing, technology-neutral tender designs that allow for combinations of different technologies, such as solar, wind and storage, “would allow for the growth of the utility-scale solar segment in a sustainable manner”, she says.

“The combination of the different technologies would allow for not only injecting power into the electricity grid, but also for the adoption of innovative business models to provide grid services.”

SCATEC SOLAR COMPLETES DYASON KLIP 2 IN SOUTH AFRICA

Renewables development in South Africa, like Egypt and Morocco, was originally focused on wind power. But falling costs and improving efficiency have brought solar to the fore. Solar power is a more economically viable option than wind across much of the country and so stands to make the biggest impact in efforts to allow coal-dependent South Africa to diversify its energy mix and reduce greenhouse gas emissions.

In April 2020, the 86 MW Dyason Klip 2 solar plant was completed in Northern Cape Province. The final phase of the 258 MW Upington solar power complex, it has been developed by Norwegian IPP Scatec Solar. The concessions for all three 86 MW phases at Upington were awarded in the fourth round of South Africa’s Renewable Energy Independent Power Producer Programme in 2015.

Dyason Klip 2 comprises polycrystalline PV modules and 37 inverters, with a horizontal single-axis tracker system. The contract also included the construction of access roads for both project development and operating and maintenance (O&M) access, plus transmission lines to connect it to the grid. This takes the burden off Eskom, as the grid operator, to connect it. The project is expected to produce 217 GWh a year, equivalent to the power consumption of 40,000 South African homes, while avoiding 200,000 tonnes of carbon emissions a year.

In common with other renewable energy ventures in South Africa, ownership is shared with the local community and black empowerment investors, giving local people a real stake in its success. This is a model that could be replicated.
LARGE HYDRO IS BACK IN FASHION

Given the criticism dam construction has attracted in recent years, it might seem surprising that a hydropower boom is currently taking place in Africa. Although vast headline-grabbing hydro schemes were in vogue across Sub-Saharan Africa in the decades following independence, the technology fell out of favour after the turn of the millennium.

Increasingly erratic rainfall patterns were resulting in fluctuating hydroelectric production at the continent’s dams. Meanwhile, the impact of dams and reservoirs, in terms of population displacement, loss of land and damage to local wildlife and environments, was being considered more seriously. The World Bank and several other multilaterals reduced their support for new large hydro schemes.

Those problems all still exist, but the climate change benefits of hydropower, together with the capacity to generate a lot of electricity, are now seen as sufficiently important to make it a worthwhile investment in the eyes of some governments and funding institutions.

As a result, a string of large projects, long planned but never developed, are now either under construction or being actively considered again.

Some hydro schemes actually produce substantial methane — a potent greenhouse gas — from rotting vegetable matter in the reservoir. But the amount is likely to vary project to project, and the technology is regarded as being, on balance, a means of tackling climate change, rather than causing it, analysts say.

However, the impact of climate change on rainfall patterns is forecast to be more extreme in southern and eastern Africa than almost anywhere else in the world — even if the American Geophysical Union forecasts higher overall rainfall in the Ethiopian Highlands. So banking on large-scale hydropower to solve power problems remains a risky business across the continent.

GERD – AFRICA’S BIGGEST
The biggest hydro project on the continent by some distance is the Grand Ethiopian Renaissance Dam (GERD), which is being built on the Nile, just 15km from the border with Sudan. The dam is intended to create a reservoir holding 74bn cubic metres of water.

Its forecast generating capacity has been upgraded to 6.45 GW. But there has been some discussion that operating criteria could be changed in order to overcome opposition from Egypt and Sudan, which are concerned the project will adversely affect their water supply downstream.

Funding and engineering problems, together with the political controversy, have resulted in repeated delays to the construction schedule. At the time of writing, GERD was forecast to come onstream in 2021.

The process of filling the reservoir is scheduled to start in late 2020, although it remains to be seen whether talks with Egypt and Sudan over water management will be concluded by then.

It also seems likely that construction work could further delay it, as the project was reported to be only
LARGE HYDRO IS BACK IN FASHION

two-thirds complete in April 2019, and officials put the figure at just 72% as recently as April 2020.

Ethiopia’s hydro programme is not limited to the GERD. A series of other big projects have increased national generating capacity from 710 MW in 2005 to 4.65 GW today.

The most recent addition was the Genale Dawa III scheme in the south-east of the country which added 254 MW in February. The government hopes that the various schemes will turn Ethiopia into the biggest power exporter in Africa via a string of new cross-border transmission lines.

MAMBILLA INCHES FORWARD

While many countries would like to develop wind, solar or thermal generating capacity to inject some diversification into generation mixes that are too dependent on hydro, Nigeria could be said to be moving in the opposite direction to some degree.

Successive governments banked on developing gas-fired plants to improve the country’s dire power supply situation, a strategy that has proved largely unsuccessful, in part due to gas supply problems. Now, Nigeria is looking again to hydro to help fill the supply-demand gap.

In February 2020, the country took one step closer to developing what would be Africa’s second biggest hydro project, when Minister of Power Sale Mamman, announced that a legal dispute that had held up the development of the 3.05 GW Mambilla scheme had been settled.

The government had to settle a claim from Sunrise Power, which had been given a contract to develop the project that was cancelled in 2007. The company has agreed to take $200m in compensation, according to media reports.

Mamman said that construction on the $5.8bn project is now due to begin before the end of this year. It is to be built on the Donga River in Taraba State, in the east of the country, and will require the construction of four dams. Exim Bank of China has reportedly agreed to provide loans to cover 85% of the funding.

China Civil Engineering Construction Corporation was selected as the main contractor on the revival of the venture in 2017, but could not start work until the legal action was completed.

The government has said surveys for the project have started and construction is expected to take six years, once it is underway.

INGA STUCK ON DRAWING BOARD

Meanwhile, efforts to tap further hydro potential offered by the long-mooted Inga hydropower developments on the lower reaches of the Congo river in Democratic Republic of Congo remain bogged down. Part of the problem is the sheer scale of envisaged projects in relation to the tiny size of the domestic market of the impoverished DRC, and the area’s isolation from larger markets.

A number of projects mooted for Inga could produce more than 40 GW of power, if they all got off the ground – nearly double the capacity of the world’s biggest existing hydro scheme, the 22.5 GW Three Gorges Dam in China. They are envisaged as mainly run-of-the-river projects and so would involve less dam-building than reservoir-based projects.

That sort of capacity means most of the power would need to be exported from this remote and under-developed region. South Africa would be an obvious market, but getting the power there remains far from straightforward.

The most likely development to get off the ground could be the 10 GW Inga III project, from which the South African government has said it would take power. But Spanish contractor ACS reportedly pulled out of the project in January 2020, having signed a preliminary agreement with Chinese firms Sino Hydro and Three Gorges in 2018 to develop the scheme.

The partners were apparently been unable to agree a development plan. Congolese officials expect the Chinese companies to pursue the project alone and to finance construction independently, without direct investment by Kinshasa.

Elsewhere, work began on the 2.1 GW Rufiji scheme at Stiegler’s Gorge in Tanzania last July, although it has been controversial because it lies at the heart of one of the biggest and most remote wildlife reserves in Africa, the Selous Game Reserve.

The $1.38bn project will provide generating capacity of 2.12 GW and is being developed by two Egyptian firms, JV Arab Contractors Company and Elsowedy Electric Company. It is due to come on stream in 2022, which would be a fast turnaround for a project on this scale.

African Energy Supplement
POWERING AFRICA FOR ECONOMIC GROWTH

Rensource is in the business of:

Powering Industries
We help businesses save energy costs using clean renewable technology. Rensource develops, builds, and manages solar-hybrid power plants against long-term power-purchase agreements with creditworthy counterparts.

Powering Communities
We have deep experience in building mini-grids and managing the communities around them. Rensource develops, finances, and manages power provision in urban and rural economic clusters.

Powering Commerce
Through our technology platform SPACES O2O (offline to online) we have built an ecosystem of tools and services to enable merchants to manage their business and have a broader range of products to distribute. The tools include MerchApp for easy inventory and sales management, MerchBuy for order management, and Merchist for visibility and demand generation.

To Partner info@rensource.energy
Website www.rensourcenergy.com
Lagos — 3B Tiamiyu Savage street, Victoria Island, Lagos
New York — 1250 Broadway, 36th Floor, New York, NY 10001
Siemens Gamesa has been pioneering wind energy projects in Africa for 20 years. With knowledge, expertise and deep understanding of the continent’s energy challenges, Siemens Gamesa is today the leading provider of wind power solutions in Africa. Installations total 3.5GW, representing 55% market share of wind capacity in the continent.

Siemens Gamesa is driving energy transition to deliver cleaner, more reliable, more affordable energy for millions of African people supporting long term sustainability and economic growth.

www.siemensgamesa.com
Siemens Gamesa has been pioneering wind energy projects in Africa for 20 years. With knowledge, expertise and deep understanding of the continent’s energy challenges, Siemens Gamesa is today the leading provider of wind power solutions in Africa. Installations total 3.5GW, representing 55% market share of wind capacity in the continent.

Siemens Gamesa is driving energy transition to deliver cleaner, more reliable, more affordable energy for millions of African people supporting long term sustainability and economic growth.

www.siemensgamesa.com
**TRANSFORMING THE AFRICAN ENERGY SECTOR**

*Rashid Ali Abdallah, Executive Director of the African Energy Commission (AFREC), sees the electricity sector as the key driver for economic development in Africa. He talks to James Gavin about what AFREC is doing to assist Africa’s energy transition*  

AFREC is a specialised agency of the African Union (AU), under the Commission of Infrastructure and Energy with a broad objective to lead the development and harmonisation of energy policies, create and continuously update its database of energy statistics, mobilise technical and financial support for the energy sector in member states and carry out capacity building programmes. AFREC is also entrusted with the daunting task of commercialising and integrating energy resources on the African continent.

**What does AFREC view as the main priorities for Africa’s electricity sector?**

As one of the continent’s key economic drivers, the electricity sector needs urgent actions and policies to ensure secure, reliable and affordable energy supplies, which are crucial input for mitigating poverty, securing prosperous livelihoods and diversifying national economies in alignment with Agenda 2063 of the African Union.

One of AFREC’s priorities is to transform the electricity sector at the national level and ensure that utilities become more viable by introducing cost-reflective tariffs that will enable them to maintain their operations at an acceptable quality of services and invest for extension.

---

The electricity sector needs urgent actions and policies to ensure secure, reliable and affordable energy supplies.

---

Other priorities for the electricity sector are to transition the electricity sector to introduce more and more renewable energy such as solar, wind, geothermal, big hydro and small hydro, considering that the cost of generation from these resources has dropped dramatically in recent years and they have become more competitive compared with conventional generation based on fossil fuels, which are widely used in Africa at the moment.

There’s also a need to transform the continent’s electricity market to have more efficient lighting and appliances. According to data from AFREC, it is estimated that 60% of electricity used in Africa is consumed by lighting, refrigerators, air conditioning, motors and distribution transformers.

The fourth priority is to promote an enabling environment for private investment, which is crucial for the electricity sector. The government is taking steps to ensure a more efficient and transparent process for private sector participation in the sector.

There is still a huge gap in energy investment and this cannot be filled by governments alone. There’s a need to bring the private sector on board. It is important to transition the African electricity market to more efficient lighting and appliances by introducing Minimum Energy Performance Standards (MEPS) and labelling, to reduce electricity bills for consumers, release more electricity for prospective customers and reduce the government fuel bill for existing power plants as well as reducing the CO2 emissions.

---

**Interview**

Rashid Ali Abdallah  
*Executive Director of the African Energy Commission (AFREC)*
sector participation for on grid and off-grid generation and allow it to fill a considerable gap in the investment needed for Africa to meet the universal access by 2030. Investment is also needed for transmission lines and distribution networks.

The fifth priority for AFREC is to exploit all available energy resources for the expansion of electricity systems (renewable or non-renewable) so that Africa can diversify the energy mix in power generation, to ensure sustainable development for the sector.

Special attention should be paid to integrating natural gas in electricity generation in Africa, since 40% of new discoveries of natural gas in the world in recent years have been in Africa, mainly in Tanzania, Mozambique, South Africa, Senegal, as well as other parts of the continent.

Last but not least, we need to think about how to establish a regional market for electricity.

The establishment of a regional market for electricity is one of the main drivers of African integration which forms part of the AU’s Agenda 2063. Cross-border trading in electricity will allow the supply of electricity within the region from countries with resources to other countries with no electricity sources. To achieve this, investment in the regional interconnector transmission lines is required as well as development of regional markets.

**What programmes and initiatives is AFREC undertaking, for example in harmonising regulatory frameworks?**

AFREC developed a new strategy in 2019 composed of five programmes: the African Energy Information System (AEIS), Energy Efficiency Programme, the Bio-energy Programme, the Oil & Gas Programme and the Energy Transition Programme.

The Africa Energy Information System emerged because we believe lack of information is one of the most crucial issues constraining the African energy sector.

Since 2012 and together with all AU member states, AFREC has designed and set up a comprehensive continental energy database and facilitates rapid dissemination and exchange of information among member states, Regional Economic Communities and other African institutions.

In the same vein, AFREC is planning to establish a centre for National Determination Contribution (NDC) to provide support to African member states, to develop or update the NDC and identify the road map to energy transition.

Another project is the energy efficiency programme which AFREC is implementing together with the UN Environment Programme (UNEP). The programme aims to develop a harmonised regional market for energy efficient lighting, refrigerators, air conditioners, motors and power distribution transformers. This will be achieved by strengthening the legislative and regulatory framework for adopting minimum energy performance standards (MEPS) and labels.

Additionally, AFREC is implementing a bio-energy programme. Bio-energy is another form of renewable energy fuel which AFREC considers of importance. AFREC’s bio-energy programme aims to improve reporting and monitoring of bio-energy in order to improve the sustainability of these resources.

Another key programme focuses on oil and gas. Africa contributes about 10% of global production and 80% of this is exported. Unfortunately, Africa is still a net importer of oil products for the very obvious reason that we don’t have the refinery capacity. And we don’t have infrastructure for cross-border trading.

The Energy Transition Programme aims to develop Deep Decarbonisation Pathways as the first ever action-oriented project undertaken in Africa as a whole apart from South Africa. It aims to provide a clear understanding of transformations of the energy system needed in the short, medium and long term to achieve these intertwined targets in the specific prevailing conditions in Africa.

**How important are new renewable energy programmes for Africa? Could progress be faster?**

Boosting renewable energy is a core focus. The share of renewable energy, excluding big hydro and traditional biomass is still marginal in many countries in Africa, despite the remarkable achievement made in some countries like Morocco, South Africa and Egypt where considerable deployment of solar and wind projects have been observed in recent years. But in some countries it still accounts for less than 5% of the total primary energy supply, even though renewable energy costs are lower compared to other energy sources.

The African Renewable Energy Initiative (AREI) is one of main initiatives contributing to fast track deployment of renewable energy.

**How important is attracting private sector investment and expertise to the energy sector? What is AFREC doing in this regard?**

Critically, private sector investment will play a key role. If you look at our energy sector, we still have 600m Africans without access to electricity and about 95% without access to clean cooking. These challenges, among others, offer tremendous opportunities for the private capital and expertise. In addition to that, Africa is showing unprecedented growth driven by industrialisation and emerging economies which face the challenges of energy supply. In this regard, African countries need to transform their existing energy infrastructure and develop cleaner, flexible, more efficient and adaptable systems from the start based on both private investment and government capital.
GROUND SHIFTS FOR THERMAL POWER

As renewables mount a growing challenge, Neil Ford reports on thermal projects across Africa

Natural gas and coal-fired generating capacity continues to play an important role in Africa’s power mix, but the ground is starting to shift in the face of the ongoing rise of renewables. Coal in particular may be facing a challenge, at least in terms of its share of feedstock, with large scale coal-fired plants being shelved. Gas in contrast should have a continued role to play, even if Covid-19 related issues could stymie project progress over the next year. Gas’s chief selling point – as a transition fuel that can help countries meet ambitious carbon-reduction targets – remains in play, even if the oil and gas industry’s problems may force changes to project scope and scheduling.
COAL GIVES WAY TO GAS IN NORTH AFRICA

There’s a distinct feeling of the calm after the storm in the North African thermal generating sector. In 2018, Siemens completed the world’s three biggest combined-cycle gas-fired plants for Egyptian Electricity Holding Company: Beni Suef, New Capital and Bursalah, which collectively provide a colossal 14.4 GW in new capacity. The same year saw Morocco’s 1.4 GW Safi coal-fired plant come on stream. Yet with both countries increasingly embracing renewable energy, it is likely that such big thermal projects will become increasingly rare.

This could be an Africa-wide process in the case of coal, as its forecast rise as an African generation feedstock seems to be fizzling out. For instance, the development of the 6.6 GW Hamrawein coal-fired plant in Egypt has been shelved. It was to have been developed by a consorti-um of China’s Shanghai Electric and Dongfang Electric, and Egypt’s Hassan Allam Construction. However, it has been reported within the country that an incredible 15.2 GW of coal-fired capacity – all of the capacity in the project pipeline – has now been cancelled or indefinitely postponed.

There is no sign of the position of existing thermal plants being threatened. In January, Abu Dhabi’s TAQA signed an agreement with Rabat for a new PPA for the Jorf Lasfar plant to run from 2027 to 2044, signalling that coal will remain part of the generation mix for decades to come. It also underlines that Morocco’s drive for renewables is underpinned by a desire to promote energy security rather than cutting emissions.

It remains to be seen whether the Covid-19 emergency will have much impact on the development of the planned $4.5bn LNG import terminal, also at Jorf Lasfar in Morocco.

WEST AFRICA: CÔTE D’IVOIRE LEADS THE WAY

Activity in the thermal sector in Sub-Saharan Africa over the past couple of years has been quieter than in North Africa and shows little sign of picking up, with one or two obvious exceptions. Most surprisingly, there has been less investment in gas-to-power projects than might be expected. Improved regulatory environments in some markets, coupled with a desire to replace ageing diesel-fired generators with more efficient gas-fired plants, were expected to result in the development of smaller fields or stranded gas reserves but this has still not happened.

Perhaps the biggest centre for thermal generating projects in Sub-Saharan Africa is Côte d’Ivoire. World Bank support is driving the development of new capacity, as the country continues the long process of rebuilding the national economy and infrastructure following the damaging civil war and political stalemate that followed. Globeleq Holdings’ Azito gas-fired plant is to be expanded from 457 MW to 710 MW with the support of MIGA guarantees. The expansion will allow older and less efficient thermal units to be decommissioned.

In March, the International Finance Corporation (IFC) agreed €303m ($336m) in funding for the 390 MW Atinkou gas-fired plant, which is to be built west of Abidjan. It will be operated by the Eranove Group, which already owns the 544 MW Ciprel plant in the same country. The IFC considers gas-fired capacity to be a “greener” option for power generation, which it is in comparison with small scale, inefficient diesel plants.

The shortcomings of the Nigerian power sector are well versed. Thermal plants accounted for 10,142 MW out of 12,522 MW of installed generating capacity at the end of last year but the amount actually in operation is often less than half this level, mainly because of gas supply problems. Until these are solved, it seems unlikely that Nigeria’s severe power supply problems will substantially improve.

However, in February 2020, the United States Trade and Development Agency (USTDA) agreed to finance technical, economic and financial studies into the construction of a 1,350 MW combined cycle plant in Abuja, which is to be owned by NNPC Gas and Power Investment Company. USTDA’s grant seems to be the result of US firm GE’s involvement in the project.

Another planned Nigerian gas-fired plant is closer to development. In March of this year, Morocco’s Neo Themis signed a deal to build a 550 MW combined cycle plant in Akure, in Ondo State, for Nigeria’s Kingline Development. The two companies say that costs will be kept down and development speeded up by the presence of existing gas and power transmission infrastructure.

The government has been planning to award a contract under tender for its construction. It would have regasification capacity of 7bn cu m/year, much of it bound for a planned, associated 2.4 GW new gas-fired plant, but repeated delays coupled with the ongoing crisis could threaten its development.

The biggest new project in North Africa is not in Egypt or Morocco, as might be expected but in Algeria, where a South Korean consortium signed a deal in January to develop the Umashes 1.3 GW gas fired plant, 340km southeast of Algiers. Hyundai Engineering & Construction Company and Posco International are to develop the project for state owned Sonelgaz. It will greatly increase national generating capacity but it has taken a long time to bring the project this far, as the preliminary deal was signed in 2015. The plant is scheduled to come on stream in 2025.
The picture on coal-fired projects in East Africa is more mixed than elsewhere on the continent. While the 1,050 MW Lamu coal-fired plant is looking less and less likely to be built, Kibo Energy’s coal-to-power project in southwest Tanzania is progressing. Court action seems to have suspended the development of the Lamu plant, while a series of reports into the project have concluded that it is both uneconomic and environmentally damaging. Apart from producing high volumes of greenhouse gas emissions, coal emits air pollution that results in a variety of lung and other health problems.

Kenya’s National Environment Tribunal revoked one of the project’s licences last year, partly because the National Environment Management Authority had not considered the impact on climate change in awarding it. The US-based Institute for Energy Economics and Financial Analysis says that the scheme would be a “costly mistake” because it would result in the country being tied in to a 25-year PPA on a take-or-leave basis. On the other hand, it is understandable that African governments are reluctant to be lectured on the ills of hydrocarbon-fired power plants, given that emissions from the vast majority of African countries are much lower than in the rest of the world.

By contrast, Kibo Energy’s 300 MW Mbeya coal-to-power project in Tanzania is still on course for development. The Tanzanian Ministry of Minerals awarded the developer the necessary mining permits last November to allow it to develop the mine, which has proven reserves of 120m tonnes of coal, and an adjacent mouth-of-mine power plant. In the longer term, the company would like to increase the project’s generating capacity to 1 GW. Construction is expected to take three years and the plant could export some of its output.

The government of Tanzania is looking for a new contractor to complete the expansion of the Kinyerezi I gas-fired project from 150 MW to 330 MW after Norway’s Jacobsen Elektro pulled out. The plant is 85% complete and the government says that the Norwegian firm has been paid 68% of its fee. Prior to the coronavirus crisis, it had been hoped that the plant could be completed before the end of this year but it now looks like taking longer than that to bring it on stream, even once a new contractor has been appointed. Sumitomo Mitsui brought the 240 MW Kinyerezi II combined cycle plant on stream in October 2018.

Difficulties have been reported between Danish firm AP Møller and AEP Energy Africa of South Africa over the future of a 103.57 MW thermal plant in Nairobi. The two firms had planned to buy operator Iberafrica in 2018 but the South African firm has complained that its former partner completed the deal alone without consulting it. In April, AEP Energy Africa appealed to the secretariat of the Common Market for Eastern and Southern Africa to intervene in the dispute.
The coal power sector has run into problems in Southern Africa too, even in South Africa, which has more coal-fired capacity than the rest of the continent put together. In particular, the remaining units at Eskom’s flagship projects over the past decade, Medupi and Kusile, have still not come on stream. Medupi currently has just three of its six units in operation and Kusile one out of six. Each project is eventually due to have generating capacity of 4.8 GW but even in 2012, when costs were rising, they were both expected to be fully on stream by 2017-18.

Estimates vary but construction costs on both projects have certainly overrun by tens of billions of rand and further increases are possible. There have also been numerous technical problems, particularly at Medupi, which tripped dozens of times last year. Eskom had aimed to use the extra capacity provided by the two mega projects to take older plants offline for repair but has been unable to do so. Prior to the Covid-19 emergency, Eskom had again been forced to introduce power rationing, although the supply situation eased when the lockdown began and power demand fell.

Elsewhere, plans for two new 150 MW coal-fired plants in Mozambique were cancelled last October. Japan Bank for International Cooperation and Nippon Export and Investment Insurance had been expected to finance them but decided to withdraw their support, apparently because of a dispute over financial guarantees rather than environmental concerns. However, the government hopes to develop thermal plants fuelled by coal bed methane. A PPA for a pilot 2 MW plant was agreed with developer Tlou Energy in April but commercial scale plants are planned in the longer term.

Progress is inching forward on Kibo Energy’s planned 150-300 MW coal-fired plant in Mozambique, with a preliminary supply agreement signed with Brazilian mining giant Vale last September. Far more capacity will be provided by a proposed 2 GW gas-fired plant to be built in Maputo. An LNG import terminal is to be built in the Mozambican capital that will be supplied by Total with liquefied gas from the far north of Mozambique. It appears that LNG is considered a more economic and probably more secure option than building a north-south gas supply pipeline down the length of the country.
ENGIE PLAYS THE LONG GAME IN AFRICA

ENGIE is one of the few global energy companies to invest significantly in both utility-scale and off-grid renewable power projects in Africa. Yoven Moorooven, Chief Executive Officer of ENGIE Africa, explains why that strategy makes sense and why it’s important to invest for the long term.

ENGIE faced a steep learning curve as a first mover in the Africa’s renewable energy sector. But the company and its African customers and partners are now reaping the rewards.

ENGIE Africa employs around 4,000 people across the continent from Morocco to Uganda. Many of them work in the off-grid sector, designing and installing infrastructure, and providing services for solar powered mini-grids and individual solar home systems. But ENGIE operates right across the sector, having invested substantially in grid-scale renewables and the expansion of its energy services business.

“Our approach in the last couple of years has been to say: we know Africa is huge and has a lot of challenges, but we can develop the business in a way that makes the most impact, both in terms of bringing economic value to us as a company, and to individual countries and their people,” explains CEO Yoven Moorooven.

That approach has resulted in the creation of a diverse project portfolio, both in terms of project type and geographical distribution, and it is one that is growing fast. ENGIE now has some 3 GW of renewables and thermal generating capacity in Africa and can provide more than 4.5m people with access to electricity. Another 12 GW of capacity is in the project pipeline.
ENGIE has been operating for some years in two of the continent’s most dynamic markets, South Africa and Morocco. In South Africa, its portfolio of wind, solar photovoltaic (PV) and concentrated solar power projects has added some 1.2 GW of capacity. In Morocco, a joint venture with local partner Nareva Holding operates the 300 MW Tarfaya wind farm. ENGIE also operates thermal power plants in both countries.

The growth of interest in renewables on the continent means ENGIE Africa has been able to expand into new markets. ENGIE and its partners inaugurated Egypt’s largest wind farm, the 262.5 MW Ras Ghareb project, in December 2019. In Tunisia, it is working on a 120 MW solar PV project, while in Senegal it is starting construction of two 30 MW solar PV projects. The company has also signed an agreement with the government of Djibouti to build a 30 MW solar PV project there in partnership with Électricité de Djibouti.

On the off-grid side, ENGIE bought home solar solutions pioneer Mobisol in September 2019 to complement its existing Fenix International home solar business and its ENGIE PowerCorner mini-grid business. Mooroooven is a firm believer that off-grid renewable energy, in both urban and rural environments, will become an increasingly important partner to utility scale generation in the drive to bring energy access to all Africans, as envisaged in the UN Sustainable Development Goals.

Building on the utility scale and off-grid renewables businesses, the company also runs an Energy Services business that provides installation, maintenance, facility management and other energy services across the continent.

TAILORED STRATEGIES

Making a success of these investments has required strategies tailored to the specific market segments. For smaller off-grid developments, that has meant devising what Mooroooven describes as a “plug and play” strategy, whereby an approach to scaling up the business is road tested in one African country and, if it works, applied in other countries with suitable operational frameworks.

This strategy has allowed ENGIE to expand its off-grid business for communities and individuals, building on pioneering projects in Uganda and Tanzania with operations in Mozambique, Kenya, Rwanda, Zambia, Benin, Côte d’Ivoire, and Nigeria.

For utility-scale and larger off-grid projects, ENGIE is focusing on establishing activities in a relatively small group of countries with conducive operational frameworks, rather than spreading itself more thinly across many markets where it may be more difficult to get projects done.

“It is important for us to build a stronghold in countries where we have a physical presence. We’ve scaled up our operations in South Africa and Morocco so now we would like to get scale in other countries, such as Egypt and Senegal,” Mooroooven says.

ENGIE also adopts a “quick entry/quick exit” strategy. If things aren’t going well in a new market, the company would rather leave and look elsewhere for more productive opportunities than stay for years trying to make further projects work there.

“Like any company, we have constraints on capital and resources, so this is just a good way of doing business,” he says.

Financial sustainability is another central plank of ENGIE’s approach to its African projects. The company believes it is better to invest in projects that are able to stand on their own two feet commercially, rather than those reliant on subsidies for survival.

“Financial sustainability is another important partner to utility scale generation. This is just a good way of doing business,” he says.

“It’s not about getting a short-lived win until the subsidies – and probably the business – disappear. What is important for us is that a business is sustainable and profitable over the long term,” he says.

BETTER BUSINESS ENVIRONMENT

Mooroooven is well placed to assess prospects for investment in the African power sector in an increasingly competitive global marketplace. He took over as ENGIE Africa’s CEO in April 2018, having originally joined the company as part of its Global Energy Management team in 2013. His experience before that included stints at Gaselys in Paris and then Macquarie, where he became Head of EMEA Energy Origination in 2010 when he was just 31 years old.

He remains positive on the investment outlook for African renewable energy projects, while expressing caution over the extent to which the impact of the Covid-19 pandemic will be felt in the sector.

“Nobody knows what the full effect will be, but Africa has managed the situation pretty well, when it comes to Covid-19. I think we will see African economies adopting a new normal and working things out,” he says. “The challenge will be to ensure that Africa does not drop down the priority list for external investors, who have fewer financial resources than they did before the pandemic. African projects will continue to need these external investments and African governments may be reluctant even to try to launch major energy projects, if they don’t think enough investors will participate.”

Despite the challenges resulting from the pandemic, he believes the African power sector is still a good prospect for a company such as ENGIE that is seeking to scale up its operations.

“It’s getting better to do business on the continent, and with such a young population, demand is going to grow fast. The business environment is improving by the day,” he says.
Africa’s leaders are learning to love off-grid renewable energy. What used to be seen as, at best, an adjunct to large-scale thermal and hydro-based national grid supply is now being recognised as a major weapon in the drive to provide electricity access to all Africans.

The adjustment from policies based around centrally managed grids towards more devolved power sources needed a shift in mindset, but laggardly uptake of off-grid supply was also based on practical issues. Early interest in solar power was tempered by high costs, and the poor quality of the equipment available. Costs have fallen, while efficiency and reliability have improved. The growing urgency of the battle to stem global warming, the potential health benefits and wider availability of private investment have added extra impetus.

Mini-hydro power makes a valuable contribution to both on- and off-grid supply in countries with the right resources, such as Rwanda. But in most of Africa, off-grid renewable energy means solar photovoltaic (PV), whether it be at the household level, or providing power for whole towns and villages, or business parks.

The market for off-grid solar products is now growing fast. In East Africa alone, 2.43m units of off-grid solar products, such as solar lanterns, and solar home systems were sold in the second half of 2019, an increase of 40% on the first half of the year, according to off-grid solar association GOGLA.

The positive social and economic impact is being widely felt among users. A February 2020 report by consultancy 60 Decibels and backed by the UK’s CDC, called Why Off-grid Energy Matters, found that 88% of off-grid energy customers surveyed felt access to energy products or services had improved their quality of life. A fifth said they were using their energy product for income-generating activities.

The associated health impact of reduced use of kerosene and other traditional fuels for lighting is another major benefit. Switching to electric light reduces exposure to fine particulate matter by as much as 50-80%, while saving close to half a tonne in CO2-equivalent emissions per household, according to 60 Decibels.

**DYNAMIC MARKET GROWTH**

The International Energy Agency forecasts that, with the right policies, Africa could add an average 15 GW a year of all types of solar PV capacity until 2040 – compared with an estimated 6.4 GW in 2019 – as countries seek to make electricity access universal.

Those growth levels are for a best case scenario, but even if they are only partially realised, the off-grid solar power sector is going to continue to attract attention from investors and would-be startups, as well as being revolutionary for users.

Small-scale solar equipment and services provider Azuri calculates that, with around 120m African homes currently without power and a potential for each household to spend $200 a year on power, the sector represents a commercial opportunity of $24bn a year plus whatever goods and services can be sold to customers over a “Solar-fintech” platform.

In practice, it will take time to get close to supplying all of these homes, even assuming they go the “solar-fintech” route – and it will be hard for the very poorest Africans to afford even the cheapest energy services. There is also a risk that companies serving the household solar market could start to move upmarket to more lucrative consumers, as they become established, in search of more reliable revenue streams, leaving new low-income market entrants unserved.

But whatever the challenges, the small-scale solar sector is an area that can be viably served by private investors and has been expanding fast, as we report in the following article.

Mini grids based on solar PV are
also becoming more widely deployed in Africa. These require a higher magnitude of spending and more complex infrastructure than small-scale solar and so present a distinct set of challenges, which we look at in the third article of this section.

**PANDEMIC THREATENS FINANCES**

While progress across the off-grid sector has been gathering momentum, future prospects have been clouded by the impact of Covid-19, which has interrupted construction and threatened its financial footing.

Some with low incomes were already making financial sacrifices to bring power into their homes, and now their limited resources may make paying for power a struggle.

“The Covid-19 pandemic is disrupting every off-grid company’s operations and threatening their ability to provide vital power,” says Damilola Ogunbiyi, CEO of SEforALL, a non-profit sustainable energy organisation, and Chair of the 2020 Africa Energy Forum.

An SEforALL survey published in April 2020 showed that, on average, solar home system companies expected to lose 27% of their revenues in the following months due to the pandemic’s effects, while for mini-grid companies, the figure was 40%.

Reversing these impacts may take time, as there is a risk that some of these providers could collapse.

“Ensuring service continuity will require governments to work with donors and investors to support off-grid providers to stay viable and operational. This could include providing emergency financial support to help pay essential staff, ensure safe working environments and, most importantly, allow them to continue servicing their existing customers,” says Ogunbiyi.

Keeping the sector afloat at this difficult time looks essential if ambitions of attaining universal energy access in Africa are to be realised.

**CASE STUDY**

**SMALL HYDRO, BIG IMPACT**

Mini hydropower projects can provide valuable energy in the more mountainous parts of Africa, and have the advantage over solar power of providing round the clock electricity without the need for battery storage.

Rwanda is one country where the technology works well and is being deployed more extensively to bolster supply. The country has little more than 200 MW of installed generation capacity – around half of it from hydropower projects ranging in size from over 100 MW down to run-of-the-river micro-hydro. Even on a small scale, it’s a valuable contribution in a country where the electrification rate in rural areas is only around 12%.

In one of the latest developments, Norwegian renewables-focused fund manager Empower New Energy signed a power purchase agreement with the state-owned Rwanda Energy Group in December 2019 for a 1.9 MW grid-connected hydropower plant in one of the country’s poorest areas. The project will also provide irrigation for farmers.

The run-of-the-river Rucanzogera plant in western Rwanda may be small, but its impact will be high. Set to produce 10.2 GWh of electricity annually, it will improve energy access for some 10,000 people, bringing power to streets, schools and medical facilities. It will mitigate 7,000 tonnes of CO2, according to Empower.

The fund manager says its investment model uses a portfolio ownership approach to deliver the benefits of Green Bonds and other financing instruments to small and medium-scale projects, with more planned in Africa. Empower will hold equity in the project, along with the project’s developers locally based Travaux d’Ingénierie Générale du Rwanda (TIGER) and Norwegian small-power developer Malthe Winje.

The project has a budget of around €7.9m ($8.9m), of which €0.5m is being provided by Energy and Environment Partnership Trust Fund (EEP).
PAY-AS-YOU-GO SOLAR REAPS REWARDS

PAYG off-grid solar is bringing electricity to millions. Ian Lewis reports

Falling costs and improved sales networks mean that small-scale solar power for households or micro-businesses is taking off across Africa. Crucially, this is fast becoming a self-sustaining sector that can generate its own revenues, and allowing numerous companies of all sizes to cater for demand on a commercial basis.

The reasons for this change in the landscape for small-scale solar are not hard to find. As consultancy Kleos Advisory put it in a recent report on the sector: “In 2010 a typical solar unit could replace a kerosene lamp for around three hours per day – hardly a replacement for grid power. Today an affordable solar unit can power a 32-inch television with satellite, 24 hours a day. In five years’ time affordable solar units are expected to be able to power all the key routine devices many Africans have in their homes, such as mobile phones, TVs, fans, lights and the Internet.”

The widely used pay-as-you-go model for the sector enables consumers to buy a small solar unit with a rechargeable battery pack on a rent-to-own basis. They make repayments via mobile phone at a cost similar to those of buying kerosene for lighting and paying someone else for phone recharging. Typically, they can pay off the costs of the solar unit and other equipment in around 18 months and then own it outright.

GOGLA, an association representing the off-grid solar industry, estimated in 2019 that over 5m pay-as-you-go sales had been made in Africa since 2015, with more than 1m sales in the first half of 2019 alone.

SUSTAINABLE BUSINESS

Kleos, whose report was carried out in collaboration with small-scale solar provider Azuri Technologies, says this means that up to 25m people are getting the benefits of off-grid power via this model without any direct government or development institution financial support, and with the prospect of a rapid rise in uptake over coming years.

However, there is little prospect that household-scale solar installations could power heavier duty equipment, such as washing machines or hair dryers – and this is not going to be a solution for powering cookers anytime soon. Kleos says that for most off-grid Africans using small-scale solar this won’t be a problem because they have limited power needs or have access to a diesel generator to run any more power-hungry equipment. But, at the moment, that is unlikely to include the very poorest Africans.

This has led to some criticism that proponents of small-scale solar are overstating the benefits to those without electricity access, because the poorest remain excluded. They might be able to acquire a simple solar powered lamp, or even a non-rechargeable battery powered torch with a long lifespan, but not a generator or a solar system.
SUPPORTING THE SECTOR

CDC Chief Executive Nick O’Donohoe says greater inclusivity is needed but there are Africans who are so poor that it is hard for energy businesses to serve them on a commercial basis and they will continue to require aid, grant support or subsidies. However, this shouldn’t detract from the benefits off-grid solar has brought. “There are probably 50m low-income Africans that have access to power who wouldn’t have been able to afford it before. And in most cases, it’s replacing kerosene in homes. So, it’s a win-win by any standards,” he says.

A report published in February 2020 by consultancy 60 Decibels, and backed by UK development finance institution CDC, notes that despite the growing availability of financing, the poorest were underrepresented among users. Some 37% of off-grid energy customers around the world live below the $3.20 a day poverty line, compared to 60% of the population as a whole in the developing markets in which 60 Decibels operates.

“These data suggest that whilst off-grid energy offers tremendous promise to bridge the global energy divide, to do so we need to see more accessible financing options, lower prices, smarter subsidy, and wider distribution,” the report says.

M-KOPA, one of the world’s largest pay-as-you-go solar energy companies. The company’s off-grid solar home systems now operate in over 750,000 low-income households in Kenya and Uganda.

CDC invested $11.6m of equity in M-KOPA in 2016 and a further $7m in 2017. In 2017, CDC also provided $20m of debt financing, as part of a $55m local currency facility with Stanbic, FMO and Norfund.

Typically, consumers can pay off the costs of the solar unit and other equipment in 18 months.
The wider adoption of mini grids, largely powered by solar energy, offers the tantalising prospect of bringing a robust electricity supply to African towns, villages and businesses with no likelihood of being connected to the national grid anytime soon.

However, while mini grids may be cheaper to establish in remote areas than a link to the national grid, the outlays required to set them up are still much larger than, say, small-scale household solar services. And the less densely populated the area the grid serves, the more expensive it gets. In some rural or semi-rural settings, the cost runs to some $2,000 per connection.

This means that it’s almost impossible for private companies to build mini grids in rural or semi-rural areas without support from government or development financial institutions.

“Mini grids are a difficult area largely because at the moment, and for the foreseeable future, they will require substantial amounts of subsidy,” says Nick O’Donohoe, Chief Executive of UK development finance institution CDC. “Once you provide the connection, then perhaps you can run them sustainably, but providing the connection is going to require some steps.”

In June 2019, 12 energy and impact investors published a paper to coincide with the 2019 Africa Energy Forum in Lisbon, asking donors and other potential backers to reduce financial risks for them. Between them, the group held more than $2bn under management and had built or were developing about 100 mini grids.

But, where the right backing is available, mini grids are making a significant difference. In December 2019, Kenya-based PowerGen connected a mini-grid system in Rokota, Niger State, which provides around 3,000 people with reliable power from a 64 kWp solar system, backed by a 360 kWh battery storage system for use in the evenings.

PowerGen has also agreed to build nine more mini grids across Niger State for Nigeria’s Rural Electrification Agency, as part of a World Bank-supported programme for off-grid energy development across Nigeria.

NEW OPPORTUNITIES

Mini grids are more viable in some environments than others, even if those project funding risks remain. Mid-sized towns too distant from main population centres to be on the grid, commercial and industrial (C&I) complexes or compact institutional settings are all areas where there can be high demand in a limited area, lowering connections costs and thus improving prospects that customers can afford to pay.

Gridworks, a company set up by CDC, said in December 2019 it was putting $7.2m of equity funding into Mettle Solar, a South African C&I power company, which provides power to business customers across Africa. This was the first investment by Gridworks, which has a remit to invest in transmission and distribution, as well as mini grids and C&I solar projects.

METKA West Africa has recently provided local solar-power grids for four Nigerian universities (see case study).

MINING CUSTOMERS

Africa’s mining sector also presents opportunities for off-grid power provision on a relatively large scale, where customers usually have more reliable cashflows and deeper pockets than low-income families, or even some governments.

“We are following the mining sector in sub-Saharan Africa very closely, as this is an area where we feel more comfortable investing, as well as acting as an EPC contractor. The major mining companies in Africa are often more bankable off-takers than many state utilities,” says Vangelis Kamaris, CEO of METKA West Africa.

John Lewis, Managing Director of African operations at power generator Aggreko also believes the remote operations of well-financed mining companies offer some of the best opportunities for off-grid investments in Africa.
He notes that several mining firms have adopted green strategies that push them to at least partially replace oil-based power generation with renewables. In some cases adding solar can be a simple case of lowering costs in the longer term by cutting the amount of diesel that needs to be imported to a remote plant.

“Mining continues to be a strong area for us, we’ve done a number of new deals over the past 12 months. We’re working on several hybrid solutions involving thermal plus renewables and storage,” he says.

At Resolute Mining’s Syama gold mine in Mali, Aggreko has been installing three 10 MW thermal Wärtsilä Modular Blocks and a 10 MW battery storage system to replace less efficient diesel-based generation. In a second phase, an additional 10 MW Wärtsilä Modular Block and 20 MW of solar PV power are due to be added. The project is intended to enable Resolute to achieve a 40% cut in the cost of electricity, using a more environmentally friendly solution.

Nigeria is fast becoming an African pace-setter for solar mini-grid development. Demand is being driven by the lack of a national grid connection, or unreliable supply from the grid, even if there is a connection.

Currently, either of these situations usually requires the use of costly and polluting diesel generation, which the country is striving to reduce.

As part of its Energising Education Programme (EEP), supported by the World Bank and African Development Bank, Nigeria is working to bring off-grid power to 37 universities and seven teaching hospitals. These institutions provide ideal locations for mini grids, as they have high power demand in a relatively compact area and the supply needs to be reliable.

METKA West Africa was contracted by the Rural Electrification Agency to build some of the first university mini grids, including one at Bayero University Kano (BUK) and another at the Federal University of Petroleum Resources Effurun (FUPRE), which are now operational.

Generating capacity for the BUK project is 7.1 MW, comprising 3.5 MWp of solar PV generation from 10,680 solar panels, 2.4 MW from backup generators and 8.1 MWh of battery energy storage. This makes it one of the largest hybrid generation projects of its type in Africa. It provides electricity for some 55,000 students and 3,000 staff at BUK, including accommodation, educational and commercial facilities, as well as powering street lighting across more than 11km.

METKA estimates that by reducing the need to deploy diesel generators the BUK project will save 49.4m kg of carbon emissions annually.
INDUSTRY’S HEAD TURNED BY RENEWABLES

Africa’s energy transition is creating opportunities for industrial users to tap into non-fossil fuel supply sources – delivering greater reliability and improved prices. James Gavin reports
African economies stand to be transformed by the energy transition, with industry and agriculture increasingly able to tap into new forms of energy that are both easier and cheaper to deliver – and whose carbon footprint is just a fraction of the coal and heavy oil-fired power plants on which they once relied. The continent’s growing use of sizeable biomass, geothermal, hydropower, solar and wind power reserves are changing the reality on the ground for companies across a range of sectors.

This should not be a surprise. According to the International Renewable Energy Agency (IRENA), Africa could meet nearly a quarter of its energy needs from indigenous and clean renewable energy by 2030. Modern renewables amounting to 310 GW could provide half the continent’s total electricity generation capacity. Given this substantial looming ramp-up, it is clear that industry will be well placed to take advantage.

As IRENA notes, for industries that have long laboured under the heavy burden of supply unreliability – retarding their growth prospects – clean, indigenous and affordable renewable energy solutions offer the continent a real chance to achieve its economic, social, environmental and climate objectives.

The issue of unreliable power services has long been a bone of contention for African companies, whose margins have been squeezed by having to pay more for back-up energy sources.

Many of these came in the form of heavily polluting diesel generators, which are also expensive. However, as IRENA says, the distributed nature of renewable power generation can also help to alleviate the problem of power service unreliability.

Power can be generated much closer to the point of consumption, thereby reducing the probability of service failure on transmission or distribution networks. For corporate Africa, that is a major plus.

“Africa is going to have to have a complementary mix of projects including utility-scale projects coupled with distributed power from mini grids, captive power plants and C&I. Mini grids entail smaller plants at the load centres for communities. That may not always be suitable for industrialising economies, but that has to be a solution for emerging Africa in helping to increase Africa’s electrification rate,” says Bhavtik Vallabhjee, Head of Power, Utilities and Infrastructure at South Africa’s ABSA Group.

All this has amplified the attractiveness of wind and solar technologies attractive for a number of sectors from energy generation, cement and mining to agriculture and food processing.

A number of companies have already taken up the challenge, and started to adapt to the new renewable supply sources that are coming on stream.

In 2018, Saudi Arabia’s Acwa Power inaugurated a 120 MW wind project in northern Morocco that will supply electricity to a number of large industrial companies, mainly operating in the cement sector. The 370 GWh of energy that the plant will produce and supply annually to industrial companies is equivalent to a yearly average consumption of a city of 400,000 people and will contribute to the reduction of more than 144,000 tonnes of CO2 emissions per year.

The project was driven by the low cost of energy produced by renewables, with Acwa Power saying it can deliver energy to cement plants at 20% less than customers can buy from the grid, with the price locked in over the long-term.

The roots of this transformation go back some 15 years. French cement giant LafargeHolcim became a pioneer in renewable energy use in Africa in 2005, at its Tetouan plant in Morocco. It installed the first-ever windmill at a cement plant that year, and in 2008 extended it to reach 32 MW capacity. The windmills now save an average annual 90,000 tonnes of CO2.

Over the past few years, LafargeHolcim says wind power has replaced an increasing share of fossil fuel-based energy at all nine plants in Morocco. In September 2019, the substitution rate reached 84% (9% of which was provided by the Tetouan wind farm), saving about 334,000 tonnes of CO2.

LafargeHolcim Morocco planned to increase this rate to 90% by 2020.

Industrial plants in Africa are also making greater use of steam generation from wind and solar farms, not just electricity generation – thereby helping to integrate more renewables into industrial plants given the high amount of industrial processes that routinely use steam.

For example, concentrated solar plants use the sun’s rays to heat liquid. For African cement companies, securing a long-term wind power agreement also offers the benefit of hedging against the volatility of fossil fuel prices (as the LafargeHolcim project in Morocco demonstrates).

Other industrial users in Africa have established their own wind farms. In Kenya, Mombasa Cement, the country’s second-largest cement producer, commissioned a 36 MW wind farm at the end of 2019 to power its manufacturing operations. The Kilifi wind farm, 45 km from Mombasa, comprises 12 wind turbines of 3 MW each located on a 1,200-hectare site. The surplus electricity produced by its wind farm will be sold to the state-owned utility Kenya Power.

The chief benefit for Mombasa Cement is that the Kilifi wind farm will reduce its reliance on the Kenyan state power grid, which has in the past experienced a series of damaging grid failures.

Surplus electricity produced from the wind farm will be sent by overhead cables to a substation at Mombasa Cement’s premises to feed the national grid. The company initiated the setting up of a 132-kV transmission line direct from the main supply in Kalo-
Industry and the energy transition

INDUSTRY’S HEAD TURNED BY RENEWABLES

leni to ensure stable supply earlier this year.

Perhaps the biggest transformation underway is in the minerals and resources sector. In South Africa, the country’s Minerals Council’s latest assessment is that some 869 MW of solar power and up to another 800 MW of conventional power could be added to the national grid by mining companies over the next three to four years.

South African miner Gold Fields has had plans to build a solar plant at its South Deep gold mine outside Johannesburg for more than three years. Given the country has experienced a number of severe power cuts in the past year, the impetus for mining groups to secure their own power generation has increased exponentially. As Gold Fields Chief Executive Nick Holland told Reuters news agency earlier in 2020, “Government must accelerate the approval of renewable power projects planned by miners so that they can deal with job-destroying tariff hikes and supply interruptions.”

Mining companies – ironically involved in the most CO2 emitting industries – appear increasingly serious about establishing their own renewable energy solutions. A number of mining companies in South Africa are planning to build solar power plants, including a 200 MW plant under development with Sibanye-Stillwater, a 75 MW facility planned by Anglo American, the 40 MW solar park planned by Gold Fields and a 200 MW PV plant from Vedanta. Junior mining company Orion Minerals, which is looking to reopen the Prieska zinc-copper mine in the Northern Cape, is reported to be in the process of establishing its own renewable power plant which could have 38 MW of installed capacity.

The mining story is not just South African. In southwest Mali, B2Gold, a Canadian mining group, is studying the addition of a 30 MW solar power plant at its Kekola mine, which would reduce operating costs and greenhouse gas emissions. The current on-site power plant has sufficient capacity to support the expanded processing throughput, with or without the solar plant. The plant would also likely include a battery storage component.

Also in Mali, Resolute Mining signed a power supply agreement with Aggreko in December 2019 to develop a new solar hybrid modular power station at the Syama gold mine. The planned power station will combine battery, thermal and solar generation technologies, with Resolute Mining paying a levelised energy tariff of just $0.15 per kilowatt-hour. The company said the rate compares favourably with current energy costs at the mine ranging from $0.23 to $0.26 per kilowatt-hour. The company said design work for the plant has started and is scheduled to be delivered in two stages, with the first phase set for completion in 2020 and the second in 2023.

With the competitive advantages of solar and wind starting to sink in across boardrooms, industrial users appear poised to make up the next wave of growth in Africa’s booming renewable energy sector. Watch this space.
Sustainability. In one place.

20-22 OCTOBER 2020 • AMSTERDAM

For more information contact: aef@energynet.co.uk

africa-energy-forum.com
DOMINION PETROLEUM: A LEADING OIL DISTRIBUTOR IN WEST AFRICA

David Jones-Mensah, the MD of Dominion International Petroleum Ltd, describes how his team built this wholly-owned Ghanaian company into a leading supplier of petroleum products across West Africa.

Dr David Jones-Mensah, Managing Director, Dominion International Petroleum Ltd

DOMINION INTERNATIONAL PETROLEUM LTD (DIPL) is a leading Ghanaian Bulk Distribution Oil Company that supplies customers in the West African sub-region with gasoil, gasoline, premix, kerosene, cracked fuel oil, crude oil, jet fuel, and bunkering services. It is also part of the Sidalco Group.

In the following interview its MD, David Jones-Mensah, one of the continent’s youngest leaders in oil and gas, describes how he built the company up, its growth strategy, and future prospects for the oil and gas sector in Ghana.

Can you share some of DIPL’s early successes with us?

In 2012, DIPL received its licence as a Bulk Oil Trading Company from the National Petroleum Authority (NPA). We were the first Bulk Distribution Oil Company (BDC) in Ghana to start operations by importing a full cargo of 28,000 metric tons of gasoline and 32,000 metric tons of gasoil to sell. DIPL has since been ranked by the NPA as one of the leading Bulk Distribution Oil Companies in the country.

We have partnered with players such as Shell, BP, Total and Glencore in various sectors and established our reputation as a reliable brand, with customers in Ghana and beyond. BP and Glencore are DIPL’s leading international suppliers of petroleum products for the West African sub-region. Over the past few years, DIPL has experienced a great increase in the supply of petroleum products to oil marketing companies (OMCs) such as Vivo Energy Ghana Ltd (which operates Shell fuelling stations), Engen Ltd and other indigenous OMCs.

What is your growth strategy for DIPL in the medium and long-term?

DIPL procured 16.7 acres of land in Tema to construct the first privately-owned 45,000 metric ton automated tank storage and loading gantry. This initiative was part of a plan to become the leading distributor of petroleum products in the West African sub-region.

Since then, the company has redeveloped its business strategy to construct Ghana’s leading automated petroleum storage facility and increased its storage capacity to 80,000 metric tons in order to meet the needs of the West African sub-region. Construction is set to start very soon.

Your contribution to the growth of the oil and gas industry in Ghana is significant. What is the main drive in your entrepreneurial journey?

My proficiency in problem-solving from a very early age has influenced my vocational call for entrepreneurship. This ability coupled with my love for the oil and gas sector is what drives me daily. After the fall in oil prices, I and my very able DIPL team have been focused on reshaping the vision and sustainability of the company. We found ourselves in an increasingly competitive market with unstable industry policies, both locally and internationally. As a result of this, we had to sidestep the competition and offer products and services tailored to meet our clients’ needs.

At 27, you are one of the youngest leaders in oil and gas. How did you become so successful so early?

I have always viewed my age as an immense opportunity. My personal mantra is to persevere regardless of the situation. I also believe that my generation has the change agents Africa needs to introduce cutting-edge solutions to the problems facing our continent today.
There is a growing global recognition of youth inclusion, predominantly in Africa, and this is challenging the status quo of the African mentality. Our continent is going through the process of exploiting the full potential of an ever-growing youthful population, which will contribute to poverty reduction, sustainable development, and ultimately, the positive transformation of Africa.

How did you feel when you were nominated for the African Leadership Oil & Gas Young Business Leader of the Year Award?
I was humbled and honoured by this high distinction conferred on me by such an esteemed organisation. I hope this award inspires Africa’s youth to consistently pursue their dreams through hard work, determination and perseverance.

DIPL is run by a surprisingly young group of directors. What is the idea behind investing in young professionals?
We have a long-term outlook in relation to business sustainability and a core ingredient in achieving this goal is to invest in an energetic and resourceful team. DIPL’s managers are not only young, they have a proven track record in the energy sector and have taken a collaborative approach with customers and partners to identify and implement optimal solutions. We invest in long-term partnerships and understand that the commercial context can vary over time.

As I said earlier, I strongly believe that the youth can deliver cutting-edge solutions to problems, and in this industry, besides expertise, being able to react quickly to changes and devise solutions to serve our clients is our main motivation and priority.

One of the main challenges in Africa is a lack of political will to encourage local content and participation. What is your view on this?
The best approach to change this is creating awareness at different levels. It is very important to engage individuals at the household, community and policy levels in order to influence our policymakers and enable them to understand their role as gatekeepers of our natural resources.

Policies formulated in the right direction aim to, among other things, attract increased local value-added investments, create more job opportunities and indigenous knowledge, expertise and technology. However, it must be structured in a way that does not negatively affect the interest of existing foreign direct investments in the petroleum sector.

How are new oil discoveries off the shore of Ghana impacting your business strategy?
Production is expected to grow rapidly over the next six years, and our emerging oil and gas industry continues to attract key global industry players with the requisite skills and capacity to develop our discoveries. So the sector’s potential to be a driver for Ghana’s desired economic growth is evident and backed by sustained investor interest.

Following the recent major oil discoveries in Ghana, DIPL is well positioned to develop the downstream infrastructural capacity of the oil and gas value chain. This will compensate for the shortfalls faced by the industry and help improve local participation in the downstream sector. We will develop local capacity in all aspects of the oil and gas value chain through education, skills and expertise development. Thus, we will promote growth in the petroleum industry through collaborative efforts.

How would you describe Ghana’s current business environment in the oil and gas sector?
The government’s agenda to create a petroleum hub in the long-term in order to facilitate the exploitation and commercialisation of our oil and gas has positioned Ghana as one of the fastest-growing economies in the world. The petroleum hub development corporation is part of a roadmap which aims to engage stakeholders to play a significant role in drafting the bill.

The idea is to ensure the value proposition offered to potential investors is well structured in order to de-risk investments. This way, the oil and gas industry can be one of the catalysts to transform our economy.

Can you tell us about DIPL’s initiatives in the field of CSR?
DIPL has teamed up with Memory Tree Initiative to reduce the carbon footprint of the energy sector in the West African sub-region. We intend to plant at least 10,000 trees every year to help preserve natural ecosystems and biodiversity. We want to be a lead campaigner for sustainable environmental practices in Ghana.

As the energy sector is the largest contributor to greenhouse gas (GHG) emissions, we have decided to be one of the first bulk distribution oil companies importing petroleum products with a 50 ppm sulphur content. This is part of our strategy to help find sustainable solutions to climate change and regional GHG emissions.
Exposure to air pollution caused by burning raw coal, kerosene or traditional biomass for cooking damages health, especially among the women and children most exposed to it.

The Covid-19 pandemic has just raised risk levels again, as the virus has a greater impact on those with respiratory illnesses prevalent among those using those cooking methods.

The pressing need to tackle this health risk – and the harmful climate change impact from cooking emissions – have long been voiced. But data showing progress makes grim reading.

In Sub-Saharan Africa alone, a stagnant access rate combined with rapid population growth have led to a rise in the number of people without access to clean cooking from some 750m in 2010 to 890m in 2018, according to Tracking SDG 7: The Energy Progress Report, published in May 2020 by a group of organisations including the IEA, the WHO and the World Bank Group.

More people without access to clean fuels and technologies now reside in Sub-Saharan Africa than in Eastern Asia and Southeastern Asia. Globally, the figure is almost 3bn people.

“If observed trends in access and population continue, it can be estimated that in 2030 Sub-Saharan Africa will have the greatest access deficit, at around 44% of the region’s total population. This represents a substantial geographic redistribution of the global access deficit and associated health, economic, and societal burdens. Future policies should take these trends into account, the report said.

In six of the 20 “access-deficit” countries identified by the agency, 5% or less of the population had access to clean fuels, and all are in Africa – Democratic Republic of Congo, Ethiopia, Madagascar, Mozambique, Uganda, and Tanzania.

**Valuable Initiatives**

There are many initiatives doing valuable work in this field.

The Clean Cooking Alliance, for example, brings together public and private sectors to support research, clean cooking standards, and enterprise capacity building. The alliance has called for clean cooking to be incorporated into pandemic emergency response plans to ensure that progress is not reversed. It cites India’s plan to give away millions of cooking gas cylinders to those in need as an example of positive actions.

SEforALL, the UN-Backed initiative to drive faster action meet energy access goals, calls for a more joined up approach to tackle the clean cooking crisis. It said in response to the Tracking SDG 7 report that a lack of political urgency and sustained investment, the absence of market-enabling conditions, and poor institutional frameworks had hindered wider uptake of clean cooking.

“We must commit to implementing all necessary actions, including, but not limited to, mobilising finance, supporting innovative business models, undertaking market development activities to scale and replicating best practices,” SEforALL said.

The organisation called for these measures to be supported by national clean cooking targets and enabling laws, policies and regulations to send strong market signals and a stable investment environment.

Targeted public education campaigns were needed to emphasise the health, safety and climate benefits of transitioning from traditional cooking techniques to cleaner and healthier alternatives, it added.

The hope is that, at a time when governments have developed the ability to mobilise resources to tackle Covid-19, they may now apply those skills to improving access to clean cooking – a more harmful crisis for Africa’s long-term future than the pandemic.
INTRODUCING
UTILITY SCALE
COMPLETE SOLAR
ELECTRICITY
POWER SYSTEMS
IN NIGERIA AND
GHANA

OVER 150
FILLING STATIONS
POWERED IN NIGERIA
AND GHANA SO FAR

Do you need a quote or you want our survey engineers to come visit your place for site assessment?
KINDLY CONTACT US TODAY!!!

40KVA Complete Solar Power Plant
For a FILLING STATION at ABEOKUTA, OGUN STATE

30KVA Complete Solar Power Plant
For a FILLING STATION at EPETU, IBEJU LEKKI.

www.pcsolaruk.com | info@pcsolaruk.com | 08120955444, 0809552800
41B, Olutoye Cres/Adeniyi Jones, Ikeja, Lagos State, Nigeria.
A long-term partner for Africa’s growing energy needs

- Renewable Energy
- Energy Infrastructure
- Off-Grid Solutions for Access to Energy
- Energy Services and Facility Management

www.engie-africa.com