



Annual Review 2017



Electrifying

Communities

for a Sustainable

Future

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Letter from the CEO

Martin Haupt

A year of growth –
extending our reach
and strengthening
our organization to
deliver clean energy
to the economies
that need it most

If 2016 was a year for laying the foundations of establishing Phanes Group as a leading end-to-end solar provider in the Middle East, North Africa & Central Asia (MENA plus) and sub-Saharan Africa, 2017 was about reinforcing our position. We grew our team, strengthened our partnerships, and extended our reach with a firm focus on growth markets, where our holistic business model has the greatest potential for positive impact.

Our ambition is to electrify new markets for a sustainable future, and we see sub-Saharan Africa in particular as a region where renewable infrastructure can act as a powerful catalyst for economic, social, and environmental development. At the same time, many countries in the region are undergoing a significant period of transition among their regulatory and investment environments. Our integrated approach, and an emphasis on bankability across all stages of the project value chain, gives us the advantages of speed and agility as we navigate these dynamic markets. Furthermore, we are convinced that our end-to-end strategy ensures Phanes Group's profitability in an increasingly competitive marketplace.

With this in mind, our priority for 2017 has been the execution of our business model in Africa, to achieve solid progress both in project development and in laying a strong organizational foundation for long-term growth on the continent. We've reinforced our African footprint significantly – which now represents more than 67 percent of our global activity.

In Nigeria, we progressed our 60.5 MW on-grid PV plant in Sokoto State, which was one of the least advanced projects among the first 14 that had signed a solar PPA with the government in 2016. By the end of 2017, we were already preparing for financial close. In the off-grid sector, we successfully delivered a pilot in Niger's Boki village, demonstrating the viability of our "modular" approach to rural

electrification. Reconciling the ability to address the diverse needs of individual communities while still retaining economic viability when rolled-out on a wide scale, we have developed a system of "building blocks". Comprising mini-grids, solar home systems and containerized solutions like solar-powered basic healthcare facilities or classrooms, these building blocks can be produced with economies of scale and combined according to each village's needs upon deployment. Our plan is to roll-out similar projects across our other African markets – starting with an initiative with the Agency for the Promotion of Electrification in Rural Areas of Niger (ANPER) to electrify 1,000 additional villages in the country over the next three years.

In addition, we are now actively deploying projects across countries, including Malawi, Guinea, Côte d'Ivoire, Ghana, and Mozambique. In the coming years, we see that closer integration between our on-grid and off-grid solutions will become increasingly important for our work on the continent. We also see a particular opportunity in addressing the needs of the private sector, and are accordingly developing an "opportunity" or ESCO (Energy Service Company) approach for captive markets in the region, including mines and factories.

In our home market of Dubai, the DP World Solar Power Programme neared completion by the close of 2017. The 23.2 MW development will soon provide 40 percent of the total energy consumption in Jebel Ali Free Zone (JAFZA) and Mina Rashid Port. The project shows the potential for distributed solar as a sustainable energy option that is both scalable and able to integrate with a city's existing infrastructure. I'm confident that it also highlights the business case for private sector participation in helping to meet a nation's renewable energy targets.

The expansion of our footprint in Africa has been the driver for growth within our team, and we've invested in new talent accordingly. We've strengthened our technical and commercial



“ Our priority for 2017 has been the execution of our business model in Africa, to achieve solid progress both in project development and in laying a strong organizational foundation for long-term growth on the continent.”

teams with further regional experience, and brought in additional expertise to support our increased project financing requirements – strengthening our position as a fully fledged end-to-end developer. At the same time, we forged relationships with key organizations, such as Power Africa, the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE), and Africa Finance Corporation (AFC). We also established close ties to the United Nations Development Programme (UNDP).

Throughout it all, Corporate Social Responsibility (CSR) became increasingly important across all aspects of our business model. Our off-grid pilot in Niger, which was financed entirely by Phanes Group, is a strong example of how our projects can improve the livelihoods of the communities we serve. The project demonstrates our ability to bring power to homes and community facilities, which otherwise could not be reached by traditional utilities. Looking broadly, we also launched the Phanes Group Solar Incubator in September 2017. The initiative allows us to identify and support promising PV project developers in sub-Saharan Africa that would otherwise not have access to the expertise and network necessary to achieve bankability for their projects. Alongside top-tier partners such as Hogan Lovells, Proparco, responsAbility, RINA Consulting, and Solarplaza, the incubator program supports local projects with strong CSR concepts and significant potential to benefit their communities – providing them with commercial and technical knowledge, paired with access to funding.

We concluded the year in a sound position financially, marking our third consecutive year of profitability. I am also proud to say that our efforts have been rewarded with industry recognition. Amongst others, Phanes Group was named "Leading UAE Renewable Energy Company of the Year" at the 2017 UAE Business Awards, while also being the only MENA headquartered company to be nominated as a "Rising Star Company" at the prestigious S&P Global Platts Global Energy Awards.

Looking to the near future, it's clear to me that Phanes Group is well prepared for its next phase of growth. During 2018, we'll continue to expand our footprint in sub-Saharan Africa, with a particular focus on closer integration between our on-grid utility-scale strategy and our off-grid rural electrification activities. Having developed along a clearly defined roadmap since we founded Phanes Group, we continue to grow towards our goal of becoming a leading medium-sized PV developer and Independent Power Producer (IPP) focused on new markets.

To close, I would like to thank the entire Phanes Group team for their continued dedication and excellent work as we continue this exciting journey. ●

Our leadership's take on the principles that guide us

Responsible & Sustainable Business

To Phanes Group, sustainability is an integral part of our business model, a trait that's embedded across our corporate activities.

Among all of our projects, sustainability and social responsibility are a priority from day one. This starts from the initial assessment phase through to execution as our team analyzes every opportunity to maximize the positive environmental, economic, and social impact. To this end, this year we established a Compliance and Regulatory Affairs function in line with our commitment to work to the highest international standards on all levels. Our subsequent adoption of the International Finance Corporation (IFC) Impact Framework, as well as a planned agreement with the United Nations Development Programme (UNDP), is a

further reflection of our commitment to sustainability best practices.

Beyond this, we place a strong emphasis on the potential of our projects to improve livelihoods within the communities we serve – prioritizing local job creation and skills transfer. We also pay close attention to specific community needs, and dedicate resources for each project to deploy solutions for local issues. Examples can include pairing electricity generation with the provision of basic resources, like solar-powered water pumps. Rural electrification remains a key focus for us, and as we continue to make significant progress in scaling up our off-grid activities in Niger and other markets across Africa, we seek to broaden the ways in which solar can support sustainable social wellbeing.

Across every function of the organisation, Phanes Group commits to a set of principles that we believe define a responsible and successful business



Andrea Haupts
Chief Operating Officer

Our pilot project in Boki, Niger – which has connected 120 households, a school, and a medical center, amongst others – shows how such off-grid projects can help bring improved healthcare, education, and a higher quality of life to areas that traditional utilities are not able to reach.

Finally, we've seen the need to empower local talent – those who are best placed to understand the requirements of their communities – to realize solar projects of their own. With this in mind, we launched the Phanes Group Solar Incubator this year. Working with a network of top-tier partners, the incubator initiative supports promising local developers with strong PV projects and CSR concepts by providing commercial and technical knowledge, as well as the chance to co-develop their projects with us to bring them to financial close. ●

Trusting Relationships



Malik Bencherchali
Managing Director
Business Development

One of the biggest challenges facing solar energy developments in sub-Saharan Africa has been carrying projects beyond the planning stage. For solar developers, apart from bankability, the first hurdle to overcome is to show true commitment, and the capability to deliver quality projects.

Over the years, we've forged a deep network of local partnerships on the ground to support our projects and create trust. For us, establishing trusted relationships is the key to our business, alongside a requirement to understand the particularities of the communities we serve, to make sure we deliver what is needed. Along these lines, we have secured project framework agreements with key international and regional financial and development institutions operating in sub-Saharan Africa, including the Economic Community of West African States (ECOWAS), the African Biofuel & Renewable Energy Company (SABER), and the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE).

We've also seen that being physically present in our markets is indispensable for understanding the needs of our stakeholders and building trust. We have set up a satellite office in Abuja, Nigeria to be closer to the markets we serve, while prioritizing a hands-on approach with our commercial and technical teams, who frequently travel to our target markets. ●

Innovative Mindset



Alessandro Ortu
Head of Project
Development

Innovative thinking in all aspects of our business has guided Phanes Group towards a leading position in our focus markets, especially sub-Saharan Africa.

We've seen that our integrated approach, where we have commercial and technical teams working hand-in-hand, has given us a particular advantage in creating competitive project designs and innovative financing solutions at pace. Direct communication between teams allows us to ensure that any competitive advantage gained from the technical side is transferred to the commercial side, and vice versa – a necessity for adapting within the fast-changing environments we work in.

A good example is our 'modular' approach to rural electrification, which we've developed to address the specific needs of individual communities while achieving the economies of scale necessary to make such activities bankable on a larger scale. We've achieved proof-of-concept through our pilot project in Boki, Niger, and are working on a large-scale roll-out for the coming year.

In addition, for the first time, we have added this year a Chief Technology Officer (CTO) role within the engineering team. This allows us to stay closer to developments on the technical side, so we can integrate new solutions by bringing new applications of PV solar technology into sharper focus, and to diversify our portfolio.

Looking forward, we see the further integration of our on-grid and rural electrification activities as being key to reaching new markets, as we expand our reach across sub-Saharan Africa and increasingly explore new opportunities in our neighboring Central Asia region. ●

Introducing Phanes Group

Phanes Group is an international solar energy developer and investment manager strategically headquartered in Dubai, UAE. Since the company's inception in 2012 we have gradually expanded our market reach, technical capabilities, and talent pool to become a leading end-to-end PV player with an Independent Power Producer (IPP) business model. Today, we have a growing portfolio of solar investments and developments spanning multiple geographies, with a distinct focus on new markets. Globally, our clean power contribution exceeds 70 MW, with a further 1.5 GW currently in our pipeline or at the planning stage.

We take a holistic approach to solar, uniting the competencies and expertise necessary to oversee and deliver the entire solar project value chain. From project selection and development, to construction and financing, to asset management and monetization, we unlock value through our integrated approach. As a new markets specialist, this business model allows us to adapt to fast-changing environments where the necessary regulatory frameworks and physical infrastructure are often still being developed.

Our focus lies on the Middle East, North Africa, & Central Asia (MENA plus), as well as sub-Saharan Africa – each a market with attractive business opportunities and a strong need for the provision of clean energy. To strengthen our presence in sub-Saharan Africa in

particular, we've established a satellite office in Abuja, Nigeria. A pillar of our business is the strong relationships and ties we have established with local partners and the local communities we serve. This is because we believe in thoroughly understanding the markets we operate in, so we can deliver projects to the highest standards while considering the positive impact we can create on the ground. This approach enabled us to establish an even

Electrifying new markets for a sustainable future

stronger footprint in Africa during 2017, as we prepare for our next phase of growth.

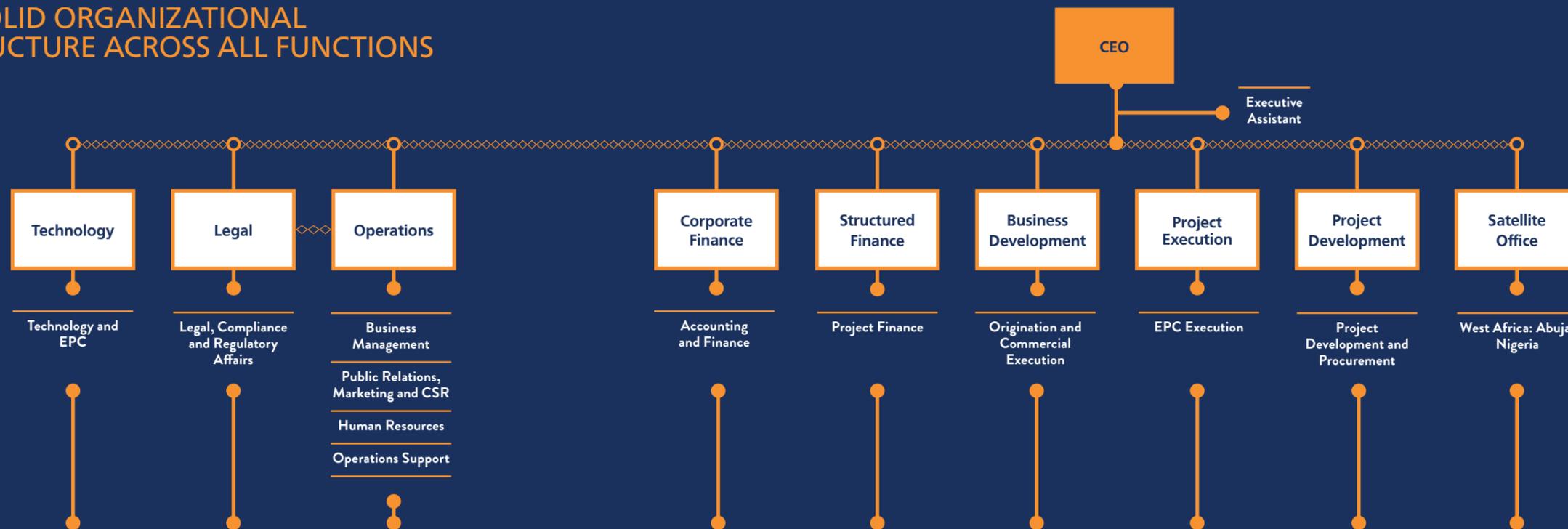
In line with our holistic approach to solar, we have roots in developing both on-grid and off-grid projects. As we continue to develop, we are convinced the integration of these two approaches will become more and more critical to our mission: bringing comprehensive energy solutions to the economies that need it most. ●



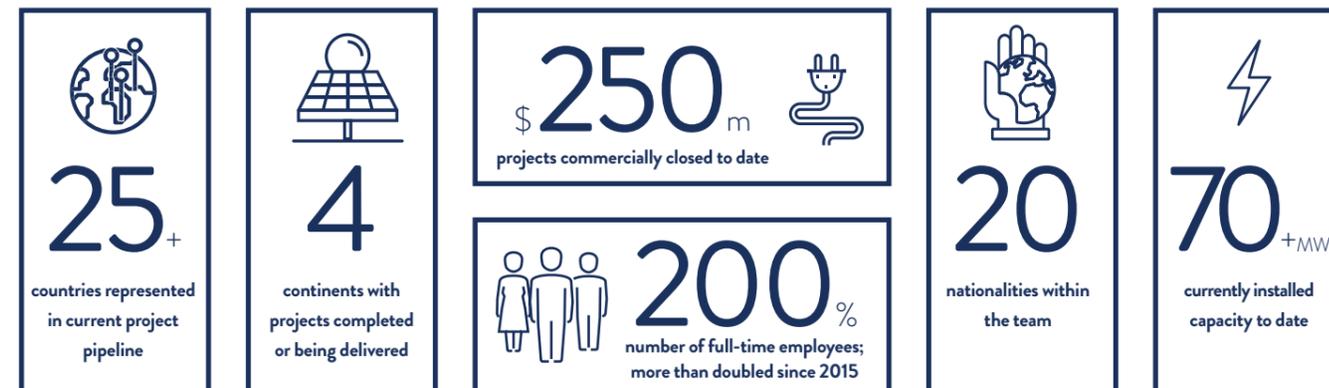
THE MANAGEMENT TEAM

From left to right: Christos Katsaros (Head of Legal Department), Martin Haupts (CEO), Andrea Haupts (COO), Malik Bencherchali (Managing Director, Business Development), Hanna Lopatina (CFO)

A SOLID ORGANIZATIONAL STRUCTURE ACROSS ALL FUNCTIONS



Becoming a leading solar Independent Power Producer (IPP) focused on emerging markets



OUR CORPORATE DEVELOPMENT OVER TIME

We have advanced along a clearly defined roadmap, evolving from an advisory boutique to become a leading end-to-end PV player with an Independent Power Producer (IPP) business model.

Milestones: Projects

Securitized 30 MW portfolio

1st UK rooftop project

Monte Plata construction
African market entry

UK portfolio complete
Monte Plata Phase 1 complete
Pipeline exceeds 1,000 MW
DP World construction
Nigeria portfolio

Rural electrification program Phase 1 in Niger, pilot project successfully deployed
Project wins in Ghana, Guinea Conakry, Malawi
Launch of inaugural Phanes Group Solar Incubator

2012 2013 2014 2015 2016 2017

Advisory focus, capital markets

Addition of technical team, with 100% focus on PV

Launch of dedicated project development unit: PAG Renewable Energy Services

Strengthening of balance sheet through partnership with Neo Solar Power / General Energy Solutions

Added asset construction unit
Launch of satellite office in Nigeria

Added Operations & Maintenance (O&M)

Milestones: Corporate

Inception of distributed solar brand

FUTURE

- Independent Power Producer (IPP) business model
- Becoming a leading player in MENA plus and in sub-Saharan Africa
- Wide-scale roll-out of rural electrification initiatives

PHANES GROUP'S ACTIVITIES IN OUR FOCUS REGIONS: SUB-SAHARAN AFRICA, MIDDLE EAST & NORTH AFRICA, CENTRAL ASIA



Phanes Group offices
 Headquarters: Dubai, UAE
 Satellite office: Abuja, Nigeria
 Development activities

Since Phanes Group's founding in 2012, we have followed a clear strategic roadmap from our origins as an advisory boutique towards our goal of becoming a leading solar Independent Power Producer (IPP) focused on emerging markets. Over the last six years, Phanes Group has developed into a credible end-to-end developer, EPCM (Engineering, Procurement, Construction Management) and O&M (Operations & Maintenance) provider with fully fledged origination and capital market capabilities. We have demonstrated proof-of-concept of our business

model — building a successful track record of projects, while developing a strong pipeline, and putting in place a profitable organization. Looking forward, we continue to focus on the development of the core markets where our business model has the most opportunity for impact. We're building on the momentum of the past year to further establish the company's footprint in sub-Saharan Africa. At the same time, we continue to expand in our home Middle East and North Africa market, while increasingly focusing on the growing opportunities represented by our neighboring Central Asia region. ●

PHANES GROUP FINANCIAL PERFORMANCE INDICATORS

	2017	2016
Project development revenue increase	47%	27%
Gross margin	29%	49%
EBIT	14%	14%
Net result	9%	9%
Capital structure strengthening by reducing gearing	72%	76%

Diversification of Business Model: Project developer and EPCM in 2015, EPC contractor in 2016, O&M and IPP from 2018

The projects, people, and processes guiding our development

Our focused evolution continued throughout 2017, as we made strong progress in expanding our project portfolio in sub-Saharan Africa, on-boarding new talent, and strengthening our corporate competencies.

Projects

LANDMARK PROJECTS AROUND THE WORLD SERVE AS PROOF-OF-CONCEPT FOR PHANES GROUP'S HOLISTIC APPROACH TO SOLAR.

Today, Phanes Group is developing 20+ focus markets in sub-Saharan Africa as we continue to strengthen our presence in the region. Key projects include:

- Niger, Boki Rural Electrification Pilot, 28 KW
- Niger, Rural Electrification Phase II, 1,000 villages
- Mozambique, Kitaka, 50 MW
- Mozambique, Dondo, 20 MW
- Côte d'Ivoire, Akouédo, 2x25 MW

- Nigeria, Sokoto, 60.5 MW
- Nigeria, Jigawa, 57 MW
- Nigeria, Kebbi, 110 MW
- Niger, Portfolio of On-Grid Sites, 35 MW
- Guinea, Coyah, 60 MW
- Ghana, Dawa, 50 MW
- Malawi, Nkhotakota, 26 MW
- Mali, Bla, 75 MW

BOKI, NIGER

Successfully completed this year, our off-grid pilot project in Boki, Niger serves as proof of concept for our modular approach to rural electrification.

DP WORLD, UAE

Our Project Execution team brought the region's largest distributed project, the 23.2 MW DP World Solar Power Programme, to near completion at the end of 2017.

SOKOTO, NIGERIA

One of the first 14 PPAs signed between solar developers and the government, our 60.5 MW on-grid project in Sokoto, Nigeria is now approaching financial close.

People

Our people are the core of our organization, and we added new expertise to the team in response to our rapid growth and the expansion of our project pipeline this year.

We added important new roles, including a Chief Technology Officer, Business Manager, and Legal, Compliance & Regulatory Affairs Manager – while at the same time expanding our Business Development and Project Development teams to match our growing operational demands.

We've also added a Head of Legal to our Management Team, reflecting the strategic importance of the function across our activities, both on the project and corporate level.

Processes and competencies

Phanes Group has all the necessary competencies and expertise in-house to oversee and deliver the entire solar project value chain – from project selection and development, to construction and financing, to asset management and monetization. This serves as the foundation for our integrated business model, which we continue to refine as the company grows.

CSR continues to be an increasingly integral part of Phanes Group's business model. Our pilot project in Boki, Niger shows the potential for the positive social impact that our rural electrification initiatives can bring to communities not reached by traditional utilities. To help empower local developers to realize projects of their own, we've launched the Phanes Group Solar Incubator to support promising CSR-focused projects through commercial and technical knowledge, as well as financing and development.

This year also highlighted the strength of our Project Execution team. Their work on the DP World Solar Power Programme showed our expertise in the delivery of multiple sites of different sizes and requirements simultaneously, as well as effectively coordinating multiple stakeholders within a shifting regulatory environment. The realization of this project is a pivotal step in the development of MENA's distributed generation market, and shows the value of in-house asset construction capabilities when working with new markets.

Close coordination between our commercial and technical functions allows us to unlock value while increasing efficiency throughout the project development process.

The addition of a dedicated Structured Finance team strengthened our capabilities to source the most suitable financial instruments to fund projects while establishing new relationships and tightening existing ties with Development Finance Institutions (DFIs). Together, our capital markets, structured finance, and investments expertise enable us to meet the bankability requirements needed to drive a project from its initial stage to successful commercial close.



DP World Solar Power Programme

UAE

The Middle East's largest distributed rooftop project

Shortly before the turn of 2017, Phanes Group began construction on the DP World Solar Power Programme in our home market of Dubai, after winning a competitive bidding process against leading solar players from around the world. When complete, the project will be the largest distributed solar development in the Middle East, comprising 88,000 panels across more than 60 warehouses, office buildings, and carparks in DP World's global headquarters in the Jebel Ali Free Zone (JAFZA) and Mina Rashid Port. We made great strides in this direction this year. Our progress in Phase I of the project saw 11.5 MW of power being connected, and the project is now nearing completion. The project supports DP World's efforts in becoming one of the world's least carbon-intensive port operators. Significantly, it is also part of Dubai's efforts to diversify energy sources in line with "Dubai Vision 2021" and



Carparks, DP World Global Headquarters - Jebel Ali Free Zone (JAFZA)

Installations have been completed across carparks at DP World's global headquarters in Jebel Ali Free Zone (JAFZA). Amidst a highly-visible, and highly-used site that remained in operation during construction, the installations showcased the Oryx team's agility in adapting to specific site requirements. The system also required extensive re-construction of existing steel works – with the team effectively re-building the site's infrastructure

the "Dubai Integrated Energy Strategy 2030", which seek to reduce energy demands by 30 percent by 2030. The solar panels will produce 42,600 MWh annually, eliminating 25,000 tons of CO2 from our atmosphere. It is a pioneer under the "Shams Dubai" distributed PV net-metering initiative, and has been accredited under the UN Component Project Activities for Small-Scale Solar in the UAE.

The DP World Solar Power Programme demonstrates a viable way forward in

88k solar panels upon completion

A Focus on Phanes Group's Project Execution team:

ORYX SOLAR SYSTEM SOLUTIONS LLC

Our progress on the DP World Solar Power Programme this year highlights the strength of Phanes Group's Project Execution team, Oryx Solar System Solutions LLC.

Launched in 2016, Oryx consists of a highly experienced international team of engineering, design, construction, and project management experts for the construction and execution of PV solar projects. The division provides Phanes Group with the competence to oversee the implementation of projects, ensuring quality and efficiency with tight risk management.

Especially in new markets where the regulatory and market environments

for solar are still evolving, we have seen how having an in-house asset construction competence plays an important role in enabling the realization of pioneer projects. With the project almost at completion at the end of 2017, the Oryx team has demonstrated unique expertise in its delivery, including:

- Providing technical evaluation and design for multiple sites simultaneously of different batch-sizes and rooftop requirements
- Handling complex supply-chain demands for diverse building portfolios
- Closing the project finance gap, before achieving critical-mass
- Complex management of multiple sub-contractors
- Stakeholder management prior, during, and after construction – including lenders, lenders' technical advisors (LTAs), utilities, government agencies, local authorities, contractors, and investors

Once complete, Cruise Terminal (CT) 3 will be the largest single-site rooftop PV installation in the United Arab Emirates



“ The DP World Solar Power Programme demonstrates a viable way forward in advancing Dubai’s vision to become a global leader of clean energy and green economies.”

DP World Solar Power Programme:
Tackling the Challenges of Distributed Solar

- 25 independent projects, each with single Points of Connection (POC)
- 12 different building profiles, with 6 different roof types
- Including the region’s biggest single-site rooftop (2.6 MW)
- Major civil works through heavy industrial zone and 24/7 traffic flow
- Parallel work on up to 12 projects
- TUV Nord inspection plus 600 inspections by civil and electrical authorities

advancing Dubai’s vision to become a global leader of clean energy and green economies. Amidst the ambitious utility-scale developments that have been announced throughout the MENA region in recent years, distributed solar projects like the DP World Solar Power Programme can provide the granular integration necessary to achieve the region’s renewable energy goals. At the same time, the complexity of such projects presents unique logistical and



Carpark installations, Jebel Ali Free Zone (JAFZA)



The project includes installations on special-use buildings, such as DP World’s Cold Store facilities in Jebel Ali Free Zone (JAFZA) – refrigerated buildings that remained in operation during construction. They illustrate the diversity of rooftop requirements involved in the DP World Solar Power Programme



financing challenges that need to be overcome to reach bankability and successful delivery. Phanes Group’s work on the DP World Solar Power Programme shows practical ways to overcome these issues, serving as a blueprint to unlock the potential of distributed PV solar for the region. ●

Nkhotakota Project

Malawi

Strengthening Malawi's developing energy infrastructure

1 of 3

developers to be selected under Malawi's first competitive tender within the power sector

26 MW

installed power capacity

15%

current electricity access rate in Malawi, with the government targeting an increase to 30% by 2030

In May 2017, Phanes Group was selected by the Electricity Supply Corporation of Malawi (ESCOM) as one of three companies to win a tender to develop solar projects totaling 70 MW across the country. Significantly, this was Malawi's first competitive tender within the power sector, attracting bids from twenty one companies across the world.

Phanes Group has since been developing a 26 MW ground-mounted PV solar project in the town of Nkhotakota, located in Malawi's Central Region. The development will provide power to the

national grid under a Power Purchase Agreement (PPA) with ESCOM.

We made significant progress with technical developments during the course of the year, including the completion of key studies that will lead us towards financial close by mid-2018. Construction is targeted to begin by the end of 2018.

The Nkhotakota project supports a significant push by the government to strengthen Malawi's electricity infrastructure. With a total installed capacity of 361 MW, reaching just 15 percent of the population, Malawi is

currently seeking solutions to a critical power shortfall. Recent droughts have made the country particularly vulnerable, as over 95 percent of total electricity generation relies on hydro power.

The new capacity added by Nkhotakota will contribute to the government's target of increasing power access to 30 percent by 2030, and support the diversification of the national energy mix. Significantly, as one of the first projects of its kind in Malawi, Nkhotakota will also serve as an example for future private investment into the country's power sector. ●



Sokoto Project

Nigeria

A pioneering project within Nigeria's developing renewables market

We entered the sub-Saharan Africa market at the end of 2016, acquiring and commencing development on three grid-connected and ground-mounted utility-scale PV projects in Nigeria, totalling 227.5 MW. The most advanced of these projects is the 60.5 MW Sokoto project, which is backed by one of the 14 first solar PPA's signed between developers and the Nigerian government.

While Sokoto was one of the least developed of Nigeria's solar projects at the time of acquisition, it is now one of the most advanced — we are now preparing for financial close, planned for the second quarter of next year. Within the course of 2017, we achieved essential development milestones, from concluding key permitting and licenses, to securing the site through a land-lease agreement, and to completing necessary technical, environmental, and social studies. We finished the year with the signing of the

grid connection agreement.

The Sokoto plant will be one of Nigeria's first major solar projects, and will contribute to the country's national goal of generating 2,000 MW of power from renewables by 2020. Within the context of the country's developing renewables sector, it will also demonstrate the viability of the Public, Private Partnership (PPP) model to set Nigeria on a positive route to greater energy security and economic development.

Finally, the project has the potential to improve the livelihoods of the surrounding communities, and make a positive impact on the environment. Phanes Group places a strong priority on facilitating local knowledge transfer, and the Sokoto project will play an important role in developing the skills of those driving its construction and management. Through the supply of clean energy, the project will also reduce CO2 emissions by more than 1.4 million tons during the course of its lifetime. ●

1 of 14

first solar PPAs signed between developers and the Nigerian government

60.5 MW

installed power capacity

2,000 MW

Nigerian national goal



Sokoto site



We reflect upon a strong year of development, in which we built a solid footprint and laid the foundations for long-term growth in sub-Saharan Africa

Strengthening our position in Sub-Saharan Africa

With more than 600 million people lacking access to energy in sub-Saharan Africa, the need for sustainable and affordable electricity is clear. Currently, just six countries in the region have an electricity access rate above 50 percent, while the rest record an average 20 percent access rate. When available, electricity supply is often costly and prone to power cuts. Today, electrifying Africa is one of the largest development challenges internationally, and will continue to be one of the continent’s major drivers of economic and social growth for years to come.

Speaking to the urgency of the situation in the foreword of the Africa Progress Panel 2017 update report, Kofi Annan, Chair of the Africa Progress Panel, said, “Africa’s energy needs are massive. They are also urgent. The traditional way of expanding

energy access – increasing electricity generation capacity and extending the grid – is still vital. But it is slow. We have to electrify Africa faster.”

The main challenges in the region’s energy markets remain bankability and successful delivery of planned projects – the core issues that our integrated approach to solar seeks to address. With this in mind, we entered sub-Saharan Africa at the end of 2016, committing to a region that requires significant attention from global markets and organizations in order to better the livelihood of its populations, while at the same time presenting strong growth opportunities for the PV solar industry. With a focus on both on- and off-grid projects, we have fortified our footprint in the region through creating valuable partnerships and the identification of strong project opportunities.



“ The main challenges in the region’s energy markets remain bankability and successful delivery of planned projects – the core issues that our integrated approach to solar seeks to address.”

In Nigeria, amidst the government’s efforts to facilitate frameworks that encourage private power investments, our 60.5 MW project in Sokoto state is one of the projects paving the way for renewables to play a stronger role in the country’s development.

Elsewhere on the continent, we have work spanning several countries, winning bids for projects in Malawi, Guinea-Conakry, and Ghana – along with developments in Mali, Niger, and Mozambique. Many of our projects have been rapidly mobilized based on requirement and necessity. For example, in Malawi, we are developing a 26 MW project in the country’s Central Region – awarded as part of the Malawian power sector’s first competitive tender. The solar plant supports government efforts to broaden energy access and strengthen Malawi’s electricity infrastructure at a time when draughts have brought particular vulnerability given its high reliance on hydro-power. Through such projects, we aim to establish the link between stable, financially viable investment opportunities and critical, affordable energy supplies for emerging markets.

Our projects support the UN Sustainable Development Goals (SDG), which we are working towards, providing sustainable investment opportunities with positive social and environmental outcomes. However, from a broader perspective, the work of Phanes Group and our partners is contributing to wider impact. For example, the solar-powered classroom project we collaborated with DP World on is now operational in Somaliland – supporting education in the community. Our rural electrification pilot in Boki, Niger has connected key infrastructure throughout the village – supporting higher standards of healthcare and helping to improve quality of life.

Finally, to help develop local talent in the region, we have also launched the Phanes Group Solar Incubator to support promising PV developers with strong CSR concepts to bring their projects to bankability. Through this initiative, we seek to empower individuals who know the needs of their communities best, with the knowledge and network necessary to realize their goals.

We continue to build on the progress we’ve made in Africa to date, and work to see clean and reliable energy access increase substantially in the coming years, together with the socio-economic benefits it brings to local communities. ●

An integrated approach

Combining on-grid and off-grid, for the electrification of sub-Saharan Africa

The lack of energy provision in sub-Saharan Africa suggests that an integrated approach combining both on- and off-grid solutions is becoming increasingly important to adequately serve the region. Across the continent, both electrified and non-electrified areas have serious power concerns that can be addressed by the quickly-deployable and sustainable nature of solar technology. With roots in both utility-scale and distributed generation, as well as a track record of successfully deploying both on- and off-grid projects, we are well poised to serve the region in the years to come — providing comprehensive solutions to its evolving needs.

ON-GRID

1

Nigeria
SOKOTO

60.5 MW
Utility-Scale On-Grid

2

Nigeria
JIGAWA AND KEBBI

167 MW
Utility-Scale On-Grid

3

Guinea
COYAH

60 MW
Utility-Scale On-Grid

4

Niger
PORTFOLIO

35 MW
Utility-Scale On-Grid

5

Ghana
DAWA

50 MW
Utility-Scale On-Grid

6

Malawi
NKHOTAKOTA

26 MW
Utility-Scale On-Grid

7

Mali
BLA

75 MW
Utility-Scale On-Grid

OFF-GRID

8

Niger
BOKI PILOT RURAL ELECTRIFICATION PHASE I

28 kWp
Off-Grid

9

Niger
RURAL ELECTRIFICATION PHASE II

1,000
villages over the next 3 years

SOLAR INCUBATOR

10

Ivory Coast
AKOUEDO

50 MW
(2 plants x 25 MW)
Utility-Scale On-Grid

11

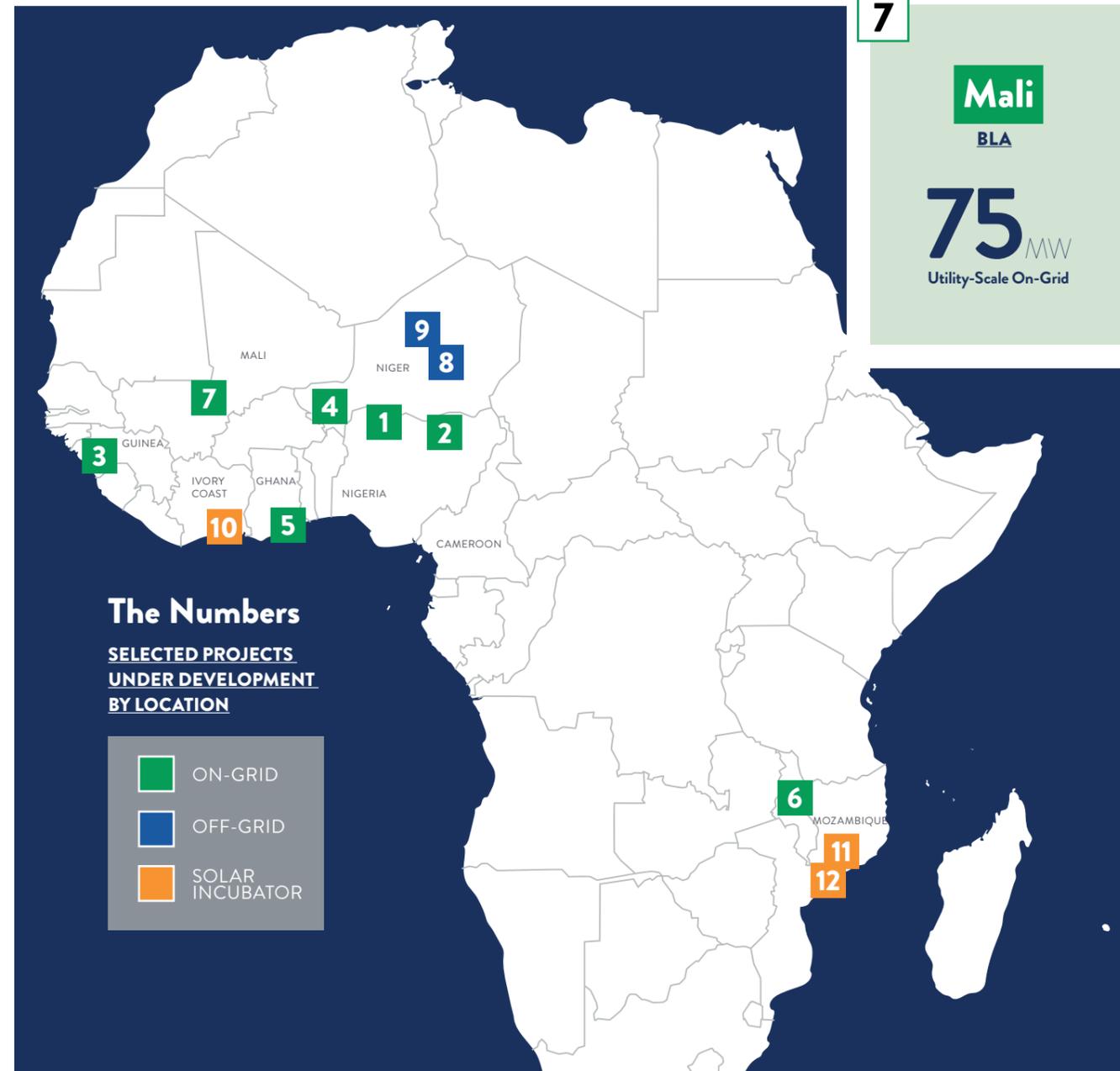
Mozambique
DONDO

20 MW
Utility-Scale On-Grid

12

Mozambique
KITAKA

50 MW
Utility-Scale On-Grid



The Boki Rural Electrification Pilot Project



Boki village

To date, 120 homes have been powered, as well as a medical center, school, and mosque. Four street lamps have also been installed. Together, these connections help to improve quality of life, providing power to support the village's educational and medical capabilities, and allowing for increased income-generating activities

In 2017, we completed our mini-grid pilot project in Boki, Niger – a significant milestone in the development of Phanes Group's rural electrification strategy.

The Boki pilot represents a comprehensive approach to reaching communities not yet served by traditional utilities – an approach we target to roll-out on a large scale in the coming years.

Working in partnership with Niger's rural electrification agency ANPER (L'Agence Nigérienne de Promotion de l'Électrification en Milieu Rural), we identified Boki as the ideal location for our pilot, with a strategic location as well as needs that are representative of the majority of communities throughout the country. With an overall electrification rate of 25 percent, according to the International Renewable Energy Agency (IRENA), decreasing to five percent in its rural areas, Niger's government has recognized the importance of renewables as it seeks to strengthen its energy infrastructure. As the country works


28 kWp
size of project


1,000
villages it seeks to electrify in stages over the next three years


2,615
population of the Boki village



Mini-grid installation, Boki rural electrification pilot



Phanes Group employees with local residents

to define the role clean energy will play in its development, we aim to continue supporting the process with examples of commercially viable solutions like the Boki project.

The project is up and running as of November 2017, consisting of a 28 kWp mini-grid serving as a primary source of electricity for both communal areas and individual homes throughout the village. To date, 120 homes have been powered, as well as a medical center, school, and place of worship. Four street lamps have also been installed.



Boki village entrance


120
houses electrified

1


School electrified


Health center electrified


Mosque electrified

BRINGING POSITIVE IMPACT TO THE COMMUNITY



EDUCATION

Prior to the implementation of the rural electrification project, children could only attend classes in the daytime, which would often be cancelled in cases of extreme heat. With adequate lighting, children are now able to learn in the evening as well. Night classes have also been opened for adults.



ENTREPRENEURSHIP

The project has enabled the creation of businesses supporting the local economy. A daily night market has been started in the village, along with a welding shop, and various household operations such as the selling of cold water and ice.



HEALTHCARE

The local medical center can now continue operating at night, and is supported with the necessary power for critical equipment such as refrigerators for vaccines and other medication.



QUALITY OF LIFE

The installation of streetlights has increased mobility across public spaces in the evening, and power is now available for household electronics such as televisions, mobile phones, and fans. Fifteen refrigerators have also been installed in the village, supporting access to fresh food throughout the day.



Together, these connections help to improve quality of life, providing power to support the village's educational and medical capabilities, and allowing for increased income generating activities.

The Boki pilot serves as proof-of-concept for Phanes Group's modular approach to rural electrification. A key challenge of large-scale rural electrification programs lies in providing both granular customization and mass-scale in a way that's still economically viable. Our "building blocks" approach allows customization while achieving the economies of scale necessary to make our activities bankable. Leveraging our technical and project

From top left:

Teacher and students in class

Demonstrating the Solar Home System (SHS) in action

At work, in the medical center

Battery storage system



development expertise, we have created a system consisting of modular solutions (e.g. solar mini-grids, solar home systems, containerized basic healthcare facilities, containerized education centers) that can be produced on a mass scale, while being combined according to need.

With Boki serving as proof-of-concept, our next step is to roll-out our program, targeting 1,000 villages across Niger over the next three years. As of year-end 2017, we have identified, together with ANPER, 100 sites for the next phase, and we continue to work closely together to ensure the successful expansion of the program. ●

OUR MODULAR SYSTEM APPROACH

Coming from a utility-perspective, Phanes Group adopts an approach of modular-systems for our rural electrification initiatives – aiming to meet the energy needs of villages as a whole. Leveraging our technical and project development expertise, Phanes Group has developed comprehensive solutions for off-grid communities across sub-Saharan Africa.

SOLAR MINI-GRIDS

The mini-grid solution is a container equipped with a modular solar energy system which can provide 28 kWp. With all components delivered within a single container, it is ready to be deployed upon arrival on site.



SOLAR HOME SYSTEMS

Solar Home Systems (SHS) – for individual houses for day-to-day needs such as connecting lights or charging mobile phones. These units are portable and easily installed in homes.



SOLAR MEDICAL CLINICS, SOLAR EDUCATIONAL CENTERS

Shipping containers converted into key infrastructure such as medical clinics and educational centers. Either powered by the mini-grid or equipped with its own rooftop solar system, it will provide electricity for essential equipment – enabling refrigeration of vaccines, the lighting of school spaces, charging of mobile equipment, and more.



Supporting community-led solar entrepreneurship through the Phanes Group Solar Incubator



Your Project, Our Expertise, For a Sustainable Future:

In September 2017, we announced the inaugural Phanes Group Solar Incubator, to identify and support promising local PV developers with on-grid projects in sub-Saharan Africa that would otherwise not have access to the expertise and network necessary to achieve bankability. Supporting local projects that show significant potential to benefit communities, and with a strong CSR component, the program provides mentoring in commercial and technical knowledge, as well as the opportunity for co-development together with Phanes Group. Significantly, it brought together top-tier partners such as Proparco, responsAbility, Hogan Lovells, RINA Consulting and Solarplaza – all of whom contributed their expertise during the selection and mentoring process.



In recent years, the talent pool in the renewables sector in sub-Saharan Africa has been growing strongly. A basic lack of electricity in the region is the single biggest impediment to growth, and the number of local entrepreneurs striving to change that through sustainable, clean energy programs is increasing by the day.

Unfortunately, a high number of PV solar projects lack the elementary bankability requirements necessary to bring them to financial close. This often means great concepts never see the light of day.

Part of our continued commitment to the sub-Saharan region is to not only develop and execute Phanes Group owned projects, but also empower and inspire groups and individuals within the community to do the same. With that in mind, last year we inaugurated



950 MW
collective projects submitted
across 15 countries

the Phanes Group Solar Incubator – an initiative that called for PV solar developers to present projects based in sub-Saharan Africa, with a strong CSR aspect that seeks to better the lives of the communities around them.

Our goal was to identify local talent across the continent, and within a number of weeks we had received submissions for projects equating to almost 1 GW across 15 sub-Saharan countries.

Above: Evaluation panel during live pitching session

Left: Finalists, Marlon Dos Santos, Emile Guei, Yonnas Kefle

“Part of our continued commitment to the sub-Saharan region is to not only develop and execute Phanes Group owned projects, but also empower and inspire groups and individuals within the community to do the same.”

THE SHORTLIST IN BRIEF

PROJECT:
AKOUEDO: 2 X 25 MW PV SOLAR PLANTS

DEVELOPER:
EMILE GUEI

LOCATION:
CÔTE D'IVOIRE

BRIEF:
The Akouedo project seeks to rehabilitate a former landfill site. Along with the solar plant, the project has also been designed to house modern infrastructure for sustainable, circular management of waste.



PROJECT:
KITAKA 50 MW

DEVELOPER:
MARLON DOS SANTOS'

LOCATION:
MOZAMBIQUE

BRIEF:
50 MW on-grid plant supporting energy supply in the region. Agriculturally-focused CSR concept seeks to support farmers through solar water-pumping and farm set-up.



PROJECT:
ETHIOPIAN UNIVERSITIES PROJECT: 25 MW UP TO 100 MW

DEVELOPER:
YONNAS KEFLE

LOCATION:
ETHIOPIA

BRIEF:
Providing power for six universities, allowing institutions to operate at night time through on-site storage and smart grid energy managed systems.



“ This kind of achievement will help stoke the fire for future renewable projects in Mozambique, and the surrounding area.”

After a challenging and intense evaluation phase, we announced three finalists in mid-October, all exhibiting strong CSR components. They were then invited to the “Unlocking Solar Capital” conference in Abidjan, Côte d’Ivoire, on October 26, to present their concepts to a live audience, reviewed by our esteemed evaluation panel.

A unanimous decision was made, and Marlon Dos Santos’ Kitaka project was selected as the winning concept, making him eligible for the incubator workshop. What we found particularly compelling about his concept was the fact that Marlon was joining us as part of a group of young Mozambicans that had developed Kitaka as a means of fuelling the agricultural sector in their local community, and in turn, were driving the renewable sector in Mozambique.

The project will cover 85 hectares of land, leased from the Mozambican government, and will yield an estimated 51,628 MWh. Marlon’s passion particularly struck a chord with the panelists, as he talked through his project’s potential to influence local food security, drought resistance, poverty reductions, and female empowerment.

At financial close, Marlon’s project will be the largest solar project in Mozambique – which is a very exciting prospect. It will also be the only PV solar project to be completed by a Mozambican company. This kind of achievement will help stoke the fire for future renewable projects in Mozambique, and the surrounding area. These are of course critical not only to the local communities, but also to wider national economic growth. ●

Media and industry engagement

Phanes Group's role in the renewable energy conversation

As our business and brand have grown, we have been able to play an increasing role in contributing to key discussions through the media, industry events, and associations.

Our CEO Martin Haupts has been receiving growing recognition as a thought leader for the budding MENA and sub-Saharan Africa based PV industries. His thoughts on the potential of solar to transform Africa's booming solar sector have been featured across leading publications in the Middle East and Africa. He has also been invited to speak at key conferences in our industry, globally. Appearances in 2017 included the World Future Energy Summit – held in the UAE to discuss distributed solar and the future of utilities in new markets. Martin also sat on the Nigeria Panel at the 2017 African Energy Forum in Copenhagen, Denmark.

Phanes Group continues to play an active role in the wider international renewable energy community through our membership in key associations. We are proud to have joined Power Africa as a partner this year in supporting the goal of adding more than 30 GW of electricity generation capacity and 60 million new home and business connections by 2030.

Our team's work has been increasingly recognized through international awards. Amongst others, the company won "Leading UAE Renewable Energy Company of the Year" at the 2017 UAE Business Awards, and was the only MENA company to be nominated as a "Rising Star Company" at this year's S&P Global Platt's Global Energy Awards.



"Finalist, Business of the Year, 2017"



"Highly Commended Finalist Renewables Category, 2017"



"PV Solar Company of the Year UAE, 2017"



"Leading UAE Renewable Energy Company, 2017"



Phanes Group launched its first Solar Incubator program, aimed at identifying PV projects of potential in sub-Saharan Africa by providing access to funding, and commercial and technical knowledge

Business & Financial Times

Phanes Group Incubator received applications at the volume of almost 1 GW across 15 African countries. Three shortlisted finalists presented their projects to a live panel, which ultimately selected Marlon Dos Santos's 'Kitaka Solar Project' as it most aligned with the competition's mission to develop PV initiatives with a strong Corporate Social Responsibility (CSR) component

Nigerian Tribune

Solar solutions provider Phanes Group has crowned the Mozambican renewable energy entrepreneur, Marlon Dos Santos and his 50MW Kitaka solar project as the winner of its first Solar Incubator programme

ESI Africa

Companies like Phanes Group are opening alternative models of funding for organizations to be able to install renewable energy equipment more easily

Arabian Business



CSR at the heart of our business model

Since our founding, we have been a company driven by responsible action. As our footprint and overall business expands, we are committed to creating a positive social and environmental impact in line with our project reach



“We aim to finance ideas with growth potential and strong entrepreneurial spirit, that successfully serve broad segments of the population. This is why we are excited to be collaborating with Phanes Group on this incubator.”

– Joseph Nganga, Executive Director, responsAbility Renewable Energy Holding



“RINA Consulting is keen to assist Phanes Group in this ingenious initiative to unlock solar potential on the continent. We look forward to helping projects find their way to implementation in this challenging but exciting market.”

– Lee Smith, Project Manager for Africa, RINA Consulting



“The Solar Incubator seeks to foster both local innovation and investment to bring potential opportunities to fruition for the social and economic benefit of the region and its people.”

– Christopher Cross, Partner, Hogan Lovells



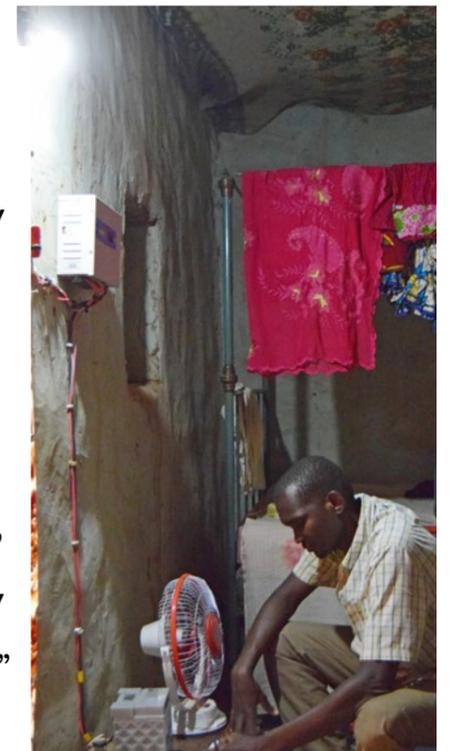
“See, my son is happy for the light. It’s my house - I have TV. God bless you and your company. Now we can watch TV and become city people.”

– Resident, Boki village



“We are very proud of the new installation. It has completely changed [daily life]. It’s helping our children, who are studying at school. It’s also helping storeowners. With the light, there’s no problem - they can stay open until any time.”

– Resident, Boki village



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www.phanesgroup.com

Burlington Tower, Level 32, Offices 3206-3211

Business Bay, Dubai, UAE P.O. Box 212733

T: + 971 4 558 7450

info@phanesgroup.com