

# Sustainability in action

# The Street View

# Actis Macro Forum

March 2020







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We face a significant threat to our current way of life if we do not adapt, quickly and dramatically, to the climate emergency. Rapid decarbonisation and a full scale energy transition are essential to halt the current direction of travel. Finance is front and centre in combatting this threat.

## Actis Sustains: Why, how and where

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## The climate emergency

Climate change is front and centre for everyone. Global temperatures are at 3 million year highs. We face a significant threat to our current way of life if we do not adapt, quickly and dramatically, to the climate emergency. Rapid decarbonisation and a full scale energy transition are essential to halt the current direction of travel. Finance is front and centre in combatting this threat. Predictions of the impacts of the climate crisis can seem biblical in their nature droughts and floods. famine and extreme storms, ecosystem collapse and disruption of oceanic and atmospheric circulation. Some of these physical changes involve thresholds in the climate system beyond which major impacts accelerate or become irreversible and unstoppable. The complexity of the climate system means that many outcomes are still unknowndirect effects can become nonlinear when thresholds are breached and biophysical systems break down. We could face severe food and water insecurity in some regions, the advent of climate refugees and mass migration, displacement and conflict triggering the erosion of our political and democratic systems, themselves critical to finding solutions. We are entering uncharted territory-see Exhibit 1.

## How long do we have?

The 2015 Paris agreement commits to limiting global temperature rise to 2 degrees Celsius (above pre-industrial levels), and to pursue 1.5 degrees Celsius, which would cause significantly less harm. The landmark UN Intergovernmental Panel on Climate Change (IPCC) report released in October 2018, uses the starkest language yet to underline the urgency, claiming that we have 10 years left to limit the climate catastrophe. This means that how we respond this decade could shape the outlook for climate risk for the rest of the century. To limit warming to 1.5 degrees Celsius, we have to reduce our net carbon emissions to zero by 2050. This means huge changes to how we live, organise our cities, travel, what we eat, how we farm and how we generate electricity. All of these changes will be a crucial part of the investment land scape - in terms of returns, time horizons and payback profile.

There is some good news in that tackling the climate emergency is eminently doable - we know what needs to be done and we have the tools to do it. What we urgently need is for policy makers, business leaders and financial institutions to galvanise and act swiftly and decisively.

## The role of the renewables revolution

Global demand for energy continues to increase and the 'renewables revolution' is mission critical to a full-scale transition to a low carbon future. The last decade has seen cumulative investment into new renewable generation capacity exceed \$2.5 trillion, and capacity quadrupled to 1650 GW. In 2016, for the first time annual new installation of renewables exceeded that of fossil fuels. Costs continue to decline for wind and solar – which are now the cheapest technology across more than two-thirds of the world (PV cell prices have fallen 90% in the last 15 years). By 2030 wind and solar should undercut commissioned coal and gas almost everywhere.

## Exhibit 1: Breaking new records

CO<sub>2</sub> during ice ages and warm periods for the past 800,000 years



Despite such huge strides, wind and solar generation today remains at just 7% of the total and there is a clear need to accelerate the pace of the switch to renewables.

So, how to finance the switch? And what are the opportunities for investors?

Projected energy investment to meet demand over the next 20 years is \$14 trillion in new investment for non-OECD markets, equivalent to \$1.7 billion of investment per day. It is in these markets that the sun is hot and winds are swift, creating capacity factors for solar/wind assets which can be three times that of European assets, for example. This represents major investment needs and opportunities as well as being an imperative for climate stability.

Climate stability depends on more than progress on generation and transmission. How you use energy also matters. End user strategies play a crucial role in energy efficiency and climate aware investing.

## ${\it Actis is financing the transition}$

Financing the energy transition underpins our investment strategy in energy infrastructure. Actis has always focused on the least-cost, sustainable generation pathway for each of the countries in which it invests, investing in the most affordable technologies relevant for that market. We are supporting the clean energy transformation of electricity sectors, driving the transition of a country's power supply from low levels of access with carbon intensive technologies (typically coal, HFO, diesel) to a low carbon energy mix consisting of gas, wind, solar, hydro, distributed generation and potentially storage. Through distribution companies we strengthen grids, reduce electricity losses and connect new customers. These are all the tools of the energy transition; they are commercially sustainable, and Actis is investing across this value chain in different markets, in different ways. Later in this publication you can read about what we are doing across the world by region.

## Exhibit 3: The great opportunity

14 trillion non-OECD energy investment opportunity

Projected energy investmentin Actis markets



Source: IEA World Energy Outlook 2018



Over the last 15 years we have committed \$5 billion to 17 businesses responsible for the construction and operation of 116 power plants, with over 20 GW of power generation capacity. Through our renewable energy generation platforms we have contributed to the avoidance of 4.7 million tonnes CO₂ emissions. We have also invested in electricity distribution businesses through our ownership of over 140,000km of transmission and distribution lines, providing electricity access to millions of new customers. And in many cases these investments have delivered ancillary benefits in areas like water usage and public health.

## **Ensuring a Just Transition**

We are proud to play a part in financing the energy transition, and through increased availability of electricity contributing to economic growth and social progress at a macro level. At a more localised level, our values-drive-value approach ensures we focus on our licence to operate - our businesses deliver tangible, measurable benefits to local communities so that the value we create is shared with our stakeholders. This includes local job creation, training/upskilling programs to improve employability and boost income-generating activity, providing access to electricity, safeguarding ecological systems and addressing key developmental needs.

In this way, the energy transition in which we invest is an inclusive and equitable one. This is the Just Transition.

## ${\sf Exhibit 4: Welcome to the age of renewables}$

The energy transition is happening



Source: IEA, EIA, Citi Research





Source: IEA World Energy Outlook 2017, New Policies Scenario (TWh = Terawatt hour)

## Actis delivers solutions

This special edition (printed on recycled paper) focuses on the climate emergency in particular but also sustainability more broadly. At Actis, we are proud of our track record of investing in a sustainable manner across all our asset classes. Our businesses are making important strides in decarbonising their operations and delivering services and infrastructure which contribute to the UN Sustainable Development Goals (SDGs).

In this edition, our Real Estate Team -Funke Okubadejo and Ferdinand Rivany discuss our trailblazing work with green buildings. James Mittell from our Energy team and Emily Morse from our Private Equity team combine forces to look at the fast growing potential of off-grid supply, whilst Preyavart Gadhavi from our Energy team updates us on progress in enhancing storage capacity. Preyavart also joins forces with James Magor to explain the importance of rare metals to the energy transition and monitoring their supply chains to limit human exploitation. We hear from James Mittell and Rowan Parkhouse about Lekela Power, now the largest wind platform in Africa. James Magor also provides us with an update on the

Actis Impact Score<sup>™</sup> one year in and how this helps us measure tangible positive impacts, as they align to the UN SDGs.

Our final section takes us on a whistlestop tour across eight of our regions, with our contributing colleagues sharing their 'street views' and stories of how our portfolio companies are responding to global sustainability challenges and opportunities.

#### **Investing in impact**

Investment in impact assets which transform and enrich society-is still limited in scale. In some cases this reflects difficulties of definition or measurement. Stakeholder pressure is driving asset owners into seeking higher allocations to impact, recognising that simply excluding sectors from portfolios does not address the climate emergency. As an example over 70% of world fossil fuel production is state owned and it is hard to see governments giving up revenues which sustain their countries. In other cases countries are understandably reluctant to put themselves at a disadvantage to others through increased carbon clean-up taxes

We continue to believe that real progress arises from action and innovation which delivers cost effective solutions with genuine impact. Our investments around the world prove this point - a track record of delivery has a far greater chance of impact than conference based platitudes. This document tells the story of how Actis has been delivering impact for over 15 years in regions and countries where investment is often difficult, whilst delivering effective returns to our investors.





Source: Bloomberg New Energy Finance 10 Actis Macro Forum









## Gas has a role to play in a Just Transition?

Power generation capacity is projected to grow to 12.5TW by 2040, with 85% / 4.7TW of this growth occurring in emerging markets. A secure supply of energy is required to meet increasing demand and, due to supply intermittency, cannot be footed by renewable energy sources alone. Maintaining a reliable energy grid is a fundamental requirement of an energy system.

Gas will play a critical role in the energy transition acting as a bridging fuel to a low carbon future.

Key benefits include:

- Providing flexible energy supply to counter intermittency of renewables. We are not yet at the point where economies can forgo centralised thermal generation completely
- CO<sub>2</sub> emissions (per unit of energy produced) from gas are around 70% lower than coal and around 30% lower than oil
- Gas is more efficient and more readily available than coal or oil in many key Actis markets (some African nations have significant indigenous reserves). Harnessing indigenous gas reserves and displacing reliance on more expensive, imported fuel sources enables funds to be diverted to other critical services and infrastructure
- Songas, a gas platform in our first energy fund, is an example of this. It is estimated that the platform's use of indigenous natural gas saved the Tanzanian economy US\$5 billion as it reduced use of expensive liquid fuels. It now supplies 21% of Tanzania's electricity
- Aside from the CO₂ advantages of gas versus other fossil fuel sources (coal, HFO, diesel, burning charcoal) gas is also preferable in terms of impact on local air pollutions and human health e.g. SOx and particulates, waste management issues and environmental pollution from leaks and spills

 Inclusion of gas in a system versus 100% wind and solar, reduces overall power prices. This will change however as batteries and other forms of storage become cheap enough. Affordability itself drives economic wealth which enables economies and civil society to better mitigate for and adapt to climate change

## Actis' approach to gas

- Actis' overarching strategy across energy and infrastructure is to identify opportunities for operational efficiencies to maximise energy production. This ensures as much energy as possible is generated from the same quantum of fuel type and that losses are minimised
- We see significant financial and environmental benefits in converting open-cycle gas turbine (OCGT) plants to combined-cycle gas turbines (CCGT). By converting the Azito power plant in Abidjan, Actis increased the generating capacity by 140 MW without any increase in gas consumption increasing the value of the asset while significantly reducing the carbon intensity. CCGTs emit fewer gases (sulfur dioxides, carbon dioxide and nitrogen oxides) into the atmosphere than OCGTs and are more efficient as they reuse waste heat to generate more power
- We focus on harnessing indigenous gas reserves to support national economies to meet rising energy demand in a self-sufficient manner, and to reduce reliance on imports



How?

## Actis in Action: Wind of change

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June 2014, the World Cup kicks off in Sao Paulo, tornados devastate parts of the US Midwest and a Monet sells at auction for \$54 million. Meanwhile, Lucy Heintz, Actis Energy Head of Africa is proposing Project Sky to the Energy Investment Committee, an opportunity to create the leading independent renewable energy company in Africa. Lekela Power was created, a 60/40 joint venture between Actis and Mainstream Renewable Power, an Irish renewable energy developer. Shortly after, in October 2014, "Project Shu" was added to Lekela's business plan, the beginning of the journey to building a 250MW wind project in Egypt. Fast-forward to September 2019 and Lekela is starting construction of its seventh wind farm. the 250MW West Bakr Wind Project, bringing its portfolio of wind projects in construction or operation to 1.018MW and making it one of the largest wind power companies in Africa.

## Actis and Egypt

Actis has a longstanding commitment to Egypt, opening an office in Cairo more than 15 years ago, and having committed and invested close to 1 billion of equity in the country across multiple sectors. This includes the 685MW Sidi Krir power plant back in 2004, Commercial International Bank, the leading bank in Egypt, and Edita Food Industries, the largest independent snack food business in North Africa, to name a few of Actis' landmark investments in Egypt over the years.

## The West Bakr story

Egypt has a history of pioneering renewable energy technologies, establishing the New and Renewable Energy Authority in 1986, which went on to construct over 1GW of state-owned onshore wind projects in the country. Building on this, the Egyptian government set ambitious targets to increase the share of renewables in their electricity generation mix to 20% by 2022 and 42% by 2035. This requires over 20,000MW of wind power, more than 1,000MW per year, creating one of the largest wind markets in Africa. Plentiful natural resources have meant that Egyptian electricity from solar and wind power plants needs no subsidy

Exhibit 1: Lekela's wind projects

and can undercut fossil fuel on cost. Indeed, the wind is so strong at the West Bakr site that the project works at 55% capacity, a level more normally associated with gas power plants than wind, and more than twice the capacity in what you would get in most of Europe. The Gulf of Suez area is the perfect location for wind farms with constant and uni-directional strong winds, which according to Lekela's Egypt General Manager, Faisal Eissa, also makes it a perfect location for kite-surfing.

Based on these attractive fundamentals, the government launched the tender for the 250MW Gabal El-Zeit wind project, the first privately financed wind project in the country. In April 2015, the Actis and



Mainstream teams worked seamlessly together with Lekela's only employee at the time, CEO Chris Antonopoulos, to submit a bid for a 250MW wind project in Egypt. Even contending with a late EPC offer and an uncooperative printer, the team managed to submit the offer before the deadline, but narrowly came second to a consortium led by Engie, for a recordbreaking tariff.

Things looked bleak for a moment but, never deterred, Sherif ElKholy (Actis Partner and Head of the Middle East & North Africa), critical to the project throughout, discussed with the Egyptian authorities the merits of awarding a second project on the same terms given the extraordinarily low prices achieved for the country. The MoU for the West Bakr project was signed in London during President Sisi's visit to the United Kingdom. The race was back on.

Since the submission of the tender bid, the Lekela team has grown considerably from 1 to 43 people in three offices, including 6 in Lekela's Cairo office. After countless meetings with Eng. Lamya Abdel Hady, Egyptian Electricity Transmission Company ("EETC") Head of Studies and Design, and Eng. Eman Rashad, EETC Head of Private Sector Projects, whose never-ending good intellect, humour, patience and diligence were critical for the success of the project, Lekela finally signed the PPA with EETC in February 2019 thanks to support and co-operations from the Egyptian Ministry of Electricity and Renewable Energy, and the Egyptian Ministry of Investment.

Lekela then had just five months to achieve Financial Close for the project with three development finance institution lenders, Overseas Private Investment Corporation ("OPIC"), the US Government development finance institution, The European Bank for Reconstruction and Development ("EBRD") and the International Finance Corporation ("IFC"), part of the World Bank Group, providing senior debt, including a first financing in the country for OPIC. To further complicate matters, shortly after signing the PPA, concerns emerged regarding the projects preferred EPC contractor (who subsequently entered insolvency). Lekela had only five months to re-select a new contractor, negotiate terms, update environmental studies and permits, and sign the EPC contract.

#### Exhibit 2: Efficiency in action

Annual average capacity factors; the amount of generation capacity provided vs the name-plate capacity of the power plant



Source: US data is EIA, Europe data is WindEurope



Hydroelectric Wind PV Coal

Source: Under Scenario 4b, IRENA (2018), Renewable Energy Outlook: Egypt, International Renewable Energy Agency, Abu Dhabi





Taiba N'Diaye Senegal's first utility-scale wind farm

Lekela, supported by Actis and Mainstream, and in close collaboration with The Ministry of Electricity and Renewable Energy, the EETC and New and Renewable Energy Authority ("NREA"), then worked tirelessly over the next five months. The EPC contract was completed in record time going from firm offer to signing over 1000 pages with Siemens Gamesa in only four months.

Finally, on the eve of the PPA deadline after thousands of pages of loan documents had been meticulously negotiated, the rather frantic and sleep deprived team in Egypt managed to submit the final document moments before the receiving official's bus left EETC's offices for the weekend. The project reached financial close in July and issued NTP in early September. This was no mean feat. With the baton passed, shared, sliced and diced, the West Bakr project has been a truly spectacular team effort over time, demonstrating the power of the Actis platform at its best, bringing to bear cross asset class collaboration. The project is now in construction under the management of Lekela and its partners, with operations planned to commence from September 2021.

The West Bakr project proves that good regulation and policy support can bring foreign investment at a competitive price for a growing economy. The project will provide over 1,000GWhs of clean electricity per annum, avoiding 550,000 tons of CO₂ equivalent, and providing more than 500 jobs during construction. Its community investment plan will focus on building technical skills in the renewable energy industry, including bird monitoring, and include a focused inclusion and diversity component. Once West Bakr and projects in Senegal and South Africa are complete, Lekela will be an operating platform of more than 1,000MW of wind power, with more projects to come. Actis and Lekela are not done, we are working on future opportunities and look forward to supporting the Egyptian Government's target to supply 20% of electricity from renewables by 2022, 42% by 2035, and beyond. And, naturally, perfecting our kite surfing technique at the same time.



# Actis in Action: Storing up the future

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What would happen if all six billion people or approximately 85% of the world's population living in an emerging market country had access to affordable, reliable and clean electricity for 24 hours a day and throughout the year? Apart from improving quality of life and lifting millions of people out of darkness and poverty, this would provide unlimited new opportunities for social and economic development across these markets.

Renewables today enjoy grid parity in many emerging markets and have achieved two of the three key objectives for electricity supply-affordability and sustainability. However, given the intermittency of wind and solar supply, renewables have to date fallen short on meeting the third key objective-supplying reliable electricity round the clock.

Competitive battery storage systems provide a feasible solution to overcoming intermittency issues such as load shifting and renewable smoothening. They would enable majority or even 100% renewable electricity by 2050 – up from around 26% today. Given the constraint for battery storage to store electricity for long periods of time (seasonal limitation), we believe the future energy mix will still require some baseload thermal or nuclear capacity in addition to renewables.

Storage systems deliver integration of more renewables, and also help utilities, grid and systems operators to solve several critical and high-value issues such as grid stabilisation (frequency regulation and voltage support), optimising (spinning and non-spinning) reserve capacity, efficiently managing variable demand response and providing blackstart capabilities for main and micro grids.

Batteries (Thomas Eddison commercialised batteries in early 1900s) and battery storage have been around for a while (one of the world largest battery energy storage system of 46MW was installed in Alaska, USA to mitigate blackouts and has been operational since 2003). So, what's new this time?

## Exhibit 1: The collapsing cost of storage

Turnkey EPC costs for a fully-installed nameplate 20MW/80MWh (4hr) AC energy storage system (BNEF Estimate Real 2018)



\* Excludes warranty costs, which are often paid annually rather than as part of the initial capital expenditure. These costs do not explicitly include any taxes and are for a brownfield development so exclude grid connection costs. Includes a 10% EPC margin and developer margin set at 6%. Does not include salvage costs or project augmentation.

Source: Bloomberg NEF



Storage Market : 20GW (c. 60GWh) & \$25bn Revenue by 2025 Source: IFC Energy Storage Report, 2017 Well, it's the rapidly declining cost of batteries and timing in relation to the global focus on decarbonisation.

For battery storage, the timing of falling cost for battery packs has perfectly coincided with the declining cost of renewables, increased focus on decarbonisation and ever-growing challenges of improving grid stability and meeting fluctuating short-term peak demands. This has resulted in battery storage quickly becoming a competitive, attractive solution to several challenges across the electricity supply chain (generation, transmission and distribution).

## Battery cost trend and future

As per BNEF, the lithium-ion battery pack prices have declined by over 85% in less than a decade, in real terms to \$176/kWh in 2018. Riding on the back of strong demand for batteries from consumer electronics, electric vehicles and energy storage, we expect a further 60% reduction in lithium-ion battery pack prices by 2030 (\$70/kWh) as shown in Exhibit 1. Future price reductions for battery systems are expected to be driven by:

## Economies of scale –

Anticipating demand, companies have announced four-fold growth in new lithium-ion cell production capacity by 2025. Estimates are that every doubling of capacity delivers a near 20% reduction in battery prices

## Improvement in energy density – Battery manufacturers are improving existing chemistry by modifying cathode, anode and electrolyte materials to achieve higher

electrolyte materials to achieve higher energy density, which would further drive lower battery pack prices

Recycling and second-life applications – Battery vendors are increasingly focused on improving battery recycling processes for extracting rare metals (cobalt, lithium etc.) and re-integrating them in supply-chain. The second-life battery applications from electric vehicle to utility-scale applications also presents as a potential answer to sustainable deployment of batteries

## Soaring storage

Cheaper batteries, maturing technology and improved understanding of battery storage economics are opening a host of opportunities to utilise battery storage for a variety of utility-scale applications across the electricity supply chain of generation, transmission and distribution. The global energy storage market is all set to grow by 100 fold plus, adding cumulative capacity of 1,095GW/2,850GWh by 2040 from 9GW/17GWh in 2018, attracting \$662 billion of investment (This figure accounts for only equipment and installation costs, not the revenue opportunity).

In emerging markets, **the energy storage market is expected to grow to 20GW/60GWh by 2025 creating a \$25 billion revenue opportunity** as shown in Exhibit 2. The majority of the new utilityscale battery storage capacity is expected to be for firming renewable production, managing peak capacity, deferring the cost of reinforcing aging network infrastructure, and providing grid ancillary services.

With global reach, Actis is strategically placed to support the creation of a regulatory framework for battery storage and participate in attractive investment opportunities to enable early adoption of the storage solutions as recent initiatives in India and sub Saharan Africa attest.

## The evolution of battery storage in emerging markets

The rapid evolution of battery storage solutions is helping power industry players – utilities, system operators, and independent power producers – to identify and tap new opportunities for investments or improve returns on existing investments. There are several opportunities and enablers that are expected to accelerate the investment in battery storage solutions, as listed below:

- More renewable auctions are expected with some form of storage component to increase renewable integration in the energy mix. In 2019 alone, the Solar Energy Corporation of India (a Government of India company responsible for procuring renewable energy) has announced tenders to procure about 4GWh of battery storage capacity mainly to eliminate diesel fuel based generation and provide reliable power supply to its remote isolated regions and island states. Tender opportunities in Jordan and Madagascar along with plans to increase the scope of Scaling Solar programme to include storage to incorporate storage opportunities into the energy incorporating storage into the energy mix

- Battery storage is reaching parity with gas peakers & HFOs in several markets creating cheaper, cleaner alternatives to building new peaking power plants
- Value add or operational improvement on existing assets whether by reducing emissions for thermal assets, reducing curtailment for renewable assets or participating in capacity markets is a viable opportunity
- Standalone battery storage auctions such as South Africa's 1200GWh Distributed Battery Storage Project are expected to become more frequent in emerging markets as it helps with displacing expensive diesel power plants and supports ageing network infrastructure
- Regulatory support in emerging markets is positive with India and Chile leading the way and other markets expected to follow their successful frameworks to incorporate storage into the energy mix
- Attractive returns are achievable with several Tier-1 suppliers ready to offer full-wrap construction, operations and maintenance solutions for 20-25yrs, which removes the construction and operational risk with battery storage solutions
- Sustainable and responsible procurement of batteries is possible. Actis is working with Tier-1 suppliers who can demonstrate that reasonable steps are being taken to trace the source of rare metals such as cobalt and lithium. Actis Environmental, Social and Governance ("ESG") team continues to work with Tier-1 suppliers not only on responsible procurement of rare metals for batteries but also evaluating batteries which don't use rare metals such as lithium or cobalt, recycling and second-life applications for batteries

## Contract structures for battery storage assets

Given the dynamic potential of the battery storage solutions, the business case is often more complex than for thermal or renewable generation assets. For example, a gas plant transforms a gas molecule in to an electron whereas battery storage accumulates electrons which could be dispatched as several different dispatch profiles (10MW in 1 hr resulting in 10MWh or 5MW in 2hrs resulting in 10MWh) or for ther functions such as load shifting, capacity reserve, grid frequency or voltage stabilisation amongst several others. Hence, battery storage economics often consist of a value-stack of services incorporating a range of functions, which are then used for both (i) sizing the batteries and associated balance of plants (inverters, transformers) and (ii) formulating a contractual structure for the battery storage asset.

Different contractual structures could be adopted for battery storage assets depending on certain key factors, while from the value-stack considerations, such as rights on battery services, dispatch control (authority to charge and discharge), standalone or co-location with generation assets (renewable or thermal) and single, blended or time bound tariff/ fee structure.

## Battery storage is the next frontier

16:52:33.490. These nine consecutive digits won't mean much outside of the UK's energy sector, but were an important victory stamp for battery storage when it rescued the UK national grid on 9 August 2019. A single lightning strike sparked a cascade of events that caused the UK's first major blackout in more than a decade. The blackout caused power outages, significant disruption to more than one million people and large swathes of the country's rail network.

Battery storage not only helped to restore the UK grid stability but also reduced the response time – helping the grid to restore its frequency four-times faster than the grid blackout that occurred in 2008.

Hence, the dynamic ability of battery storage will not only help to integrate renewables into the energy mix but also manage frequent blackouts and brownouts for grids, making it an attractive, remunerative and unique solution. With Actis aiming to supply clean, affordable and reliable electricity to billions of people, battery storage is no longer a limited technology but a competitive, mature and present-day enabler for the global energy transition towards a more sustainable and decarbonised future.

## Exhibit 3: Contract structures for battery storage

Contract or PPA Right on battery services		Authority to charge/discharge (dispatch rights)	Tariff or fee structure	
Energy Storage Tolling Agreement	<ul> <li>All battery services are sold to Utility or Offtaker</li> </ul>	Offtaker	Fixed Fee and Variable (Energy) Fee	
Capacity Sales Agreement	<ul> <li>Capacity &amp; capacity attributes are sold to Utility or Offtaker</li> <li>Sponsor could sell other Battery Services to Third- Party or Merchant</li> </ul>	Project Sponsor	Fixed Fee	
Hybrid Power Purchase Agreements (For e.g., India's 1200GW/ 3600GWh SECI Hybrid PPA)	<ul> <li>Sale of bundled products</li> </ul>	Two subsets: Project Sponsor - If PPA dictates battery function for RE Smoothening only Offtaker – If PPA allows Utility/Offtaker to use batteries for more services	Blended Tariff (Generation plus storage capability) or Time- bound Tariff	

Source: DNV GL and Orrick's Energy Storage Update 2018

# Actis in Action: Solar Home Systems —beyond the grid

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## **Energy access**

Established in 2015, United Nations' Sustainable Development Goal 7 ("SDG7") - to ensure access to affordable, reliable, sustainable and modern energy for all by 2030 - signals a recognition of the importance of access to energy services and of the centrality of energy in achieving many of the other development goals.

In previous editions, we have discussed how increased access enables higher value-add economic activities to advance. However, despite some good progress, there remain 1 billion people globally without access to electricity, 590 million of which are in Africa. Development in technology and declines in cost of solar panels and lithium-ion batteries are unlocking alternative electrification options, including distributed generation and off-grid solar.

# Off-grid solar is the most cost-effective solution for a significant proportion of people lacking electricity access

For the 1 billion people without electricity at a global level, 30% of new electricity access is expected to come from traditional grid extensions, with the remaining 70% coming from off-grid decentralised systems, particularly solar home systems (SHS) and mini-grids. This is the cheapest way to provide power to these people, driven by a combination of factors, primarily distance from the existing grid, population density and intensity of energy demand.

## The Solar Home Systems market today, and the financial services industry emerging behind it

Collectively the 1 billion people off-grid are spending US\$27 billion each year on basic lighting and other energy services from traditional energy sources (kerosene, candles, battery torches, other biomass and fossil fuels). Off-grid solar products are not only cheaper than these conventional solutions; they are also safer, cleaner, and

## Exhibit 2: The ideal mix

Most cost-effective mix of technologies for delivery of universal household electricity access in rural areas



## Source: World Energy Outlook, IEA, 2014

more reliable. Importantly, this means off-grid solar products substitute existing customer spend into unsatisfactory products for the provision of a necessary service, they are not nice-to-have.

The early off-grid market has been dominated by small "pico" solar lanterns to provide basic lighting, led initially by government support and innovative charities like SolarAid. Today larger solar lights and plug-and-play solar home

## Exhibit 1: Least-cost electricity access options

Electrification choice	Typical capacity	Description	Comment
Main Grid Extension	Multiple MWs and GWs	Expansion of existing grid with supply from central power generation	Main grid extension is generally the least-cost option for people who already live close to the grid (such as urban and peri-urban populations)
Mini-Grids	25kW-5MW+	Small generation plus distribution grid system providing electricity connections to multiple localised residential & commercial customers	Mini-grids are usually least-cost for people who live a distance from the main grid such that extension costs are higher than installing local generation and storage capacity, but in a location densely populated enough to support the fixed costs of building the infrastructure
Solar Home Systems ("SHS")	5 - 300W	Residential energy solution, generally a small standalone solar panel on a rooftop with system components inside the home	Solar Home Systems are the least cost for everyone else – those living in sparsely populated areas, where running poles and wires from even a local mini- grid becomes expensive

## Exhibit 3: Benefits of off-grid solar products vs kerosene/candle



Source: Lighting Global

## Exhibit 4: SHS product categories and energy service provided

Overall category	Solar module capacity watt peak (indicative)	Categorisation by services provided by product
Portable lanterns	0-1.5 Wp	Single light only
	1.5 - 3 Wp	Single light & mobile charging
Multi-light systems	3 - 11 Wp	Multiple light & mobile charging
Solar HomeSystems	11 - 20 Wp	SHS, Entry Level (3-4 lights, phone charging, powering radio, fan etc.)
	20 - 50 Wp	SHS, Basic capacity (as above plus power for TV, additional lights, appliances $\&$ extended capacity)
	50 - 100 Wp	SHS, Medium capacity (as above but with extended capacities)
	100 + Wp	SHS, Higher capacity (as above but with extended capacities)

Source: GOGLA

system products are in high demand. These products can not only provide lighting but also power for phone charging, radios, televisions, fans, refrigeration and a variety of other services from highly efficient appliances designed specifically for off-grid.

Solar lights and home systems are now readily available in many hard to reach regions of Africa and Asia, more than 150 million off-grid solar devices have been distributed to customers, providing electricity access to more than 400 million people. The industry is in high growth mode and investors are paying attention, 2018 saw a record \$500+million invested globally in off-grid energy access companies, taking total investment to over \$2 billion to date, including commercial debt and equity players.

Two distinct business models have emerged; cash-sales and Pay-As-You-Go (PAYGo). The PAYGo model allows customers to finance their solar system through a lease-to-own arrangement, with a small down payment and regular affordable instalments over a period of 1-5 years via mobile money, airtime or scratch cards, overcoming the issue of upfront cost for the customer. This is driving the growth of the SHS market currently under way.

PAYGo SHS typically incorporate technology that allows remotely controlled shut-offin case of non-payment, helping to minimise default rates but also providing access to interesting and proprietary customer consumption and credit data. This opens up the market to a completely new way of thinking as a route to provide financial services for the first time to hundreds of millions of underserved customers who have never had a bank account or credit rating.

PAYGo companies are monitoring their data closely to cultivate long-term customer relationships that can be leveraged to upsell larger systems and are expanding into other financed-product offerings for appliances and wifi, but also pure-play financial services like insurance and cash loans. We are also hearing of PAYGo companies considering models for on-grid consumer financing.

Further, SHS businesses do not reflect the profiles that we usually see in the energy and infrastructure space. Payments are based on a fixed US\$ amount a month

or day irrespective of the electricity produced, rather than a US\$/kWh tariff that we are used to. The distribution and operational model for SHS is sprawling and complex, credit risk is based on basic consumer surveys and diversification rather than single customer offtake contracts with credit enhancement.

As such, most PAYGo SHS companies could (and should) be classified as a consumer finance and services business.

The industry is still working this out, SHS companies don't know how to classify themselves as they approach a broad range of tech, financial services, consumer, energy or infrastructure investors for backing. At Actis we have participated in fundraising pitches from the leading SHS businesses and observed senior management team disagree live as to whether they are a consumer finance or an energy business. We have seen some large European utility players investing in the market, such as Engie's backing of Fenix. This is providing credence towards the sustainability objectives of these utilities, whilst providing early access to the sector's large potential, and helping a continued move towards the global trend of "Utility 2.0"; the Utility of Future ideal of being an integrated customer-centric service provider rather than a producer and mover of kWh.



## The SHS-led consumer finance sector is set to be a huge market opportunity, but needs careful consideration on how and when to participate

Forecasts are for 80% CAGR in off-grid SHS sales to 2022. With a giant opportunity available across multiple geography and service offerings, SHS businesses are moving in different directions, at different speeds, with different models, and we are seeing the emergence of the industry's first winners and victims as these routes are tested.

The exciting fundamentals and clear impact story of SHS dressed up into crisp PowerPoint presentations led by enthusiastic young entrepreneurs has proved alluring, as shown by the recent influx of investment. However, the sector remains young and the ultimate industry picture is still being determined. Too many well-funded management teams have focused on growth at all costs, rather than profitability and the customer. Some investors may have moved too guickly as demonstrated by the spate of recent SHS company geographical retreats, product recalls due to technology failure, high default rates as a result of poor credit controls, over indebtedness, and the insolvency of the high-profile East-African focused Mobisol in 2019. Mobisol closed on a significant investment in 2016 from leading international development



Source: Wood Mackenzie - Strategic investments in off-grid energy access

## Exhibit 6: SHS – for and against

Pros		Cons
1. Obvious commercial offering	<ul> <li>PAYGo SHS payments displace ex spend with a cheaper and better pr the consumer</li> <li>Close relationship with customer e profiling of lifestyles, needs and de offer customised products and ser</li> </ul>	ting oduct for1. Capex and balance sheet intensive-PAYGo companies typically hold consumer debt on their own balance sheet and have an asset heavy working capital cyclenables nands to vices-Because they are extending consumer credit without accepting deposits like a commercial bank, in the short term PAYGo companies require regular injections of working capital to cover their receivables for the tenors of the customers' loans, requiring regular raises from capital markets-We are seeing some interesting off-balance sheet fund raises in this regards
2. Under- penetration of formal financial services creates wider opportunity	<ul> <li>Clear overlap of consumers that liv and do not have access to formal fi services</li> <li>PAYGo SHS provides an opportuni other financial services such as loa health insurance to the most hard customers</li> <li>Much of the value chain provides si synergies with other financial servi distribution channels already in place</li> </ul>	<ul> <li>Payment collection and default rates</li> <li>Default rates are low to date, usually lower than 15%, because the solar kits are affordable and become first necessity products for customers</li> <li>Some companies have seen higher defaults, possibly due to relaxed credit standards in the pursuit of growth</li> <li>Handling of defaults can be labour intensive, particularly in rural areas</li> </ul>
3. Enables assessment of credit risk & build-up of credit history	<ul> <li>Consumers can create a formal creation history (providers collect repaymers)</li> <li>Creates a positive virtuous circle; b pricing of risk, leads to greater creation and potential to up-sell</li> <li>Ownership of data creates sticky, l standing customer relationship</li> </ul>	dit       3. Reputational       -       Ethics of charging high effective interest rates to typically low income segment could be seen negatively, requires careful management in order to be a responsible provider e.g. threat of being seen as a pay-day loan lender         ng-       -       Perception of high price of electricity to the customer relative to the central grid requires consideration, onus on provider to demonstrate prices are fair
4. Modern payments infrastructure	<ul> <li>Mobile money and airtime are excert these markets</li> <li>Consumer is often incentivised to electronic rather than cash payme is opportunity within our Actis payn portfolio to help in this regard)</li> <li>Where infrastructure is limited, case collection is possible</li> </ul>	ing in4. ObsolescenceSolar costs and technology are improving fast, new advances can make existing equipment obsolete, possibly creating a raft of low tech goods doomed for the dump over the long runnAs consumers increase their income, there is some uncertainty as to whether they will still use their off-grid supply
5. Regulation	<ul> <li>Generally progress regulation in su of energy access and financial inclu (provision of basic need)</li> <li>e.g. Ethiopia waived duties for off-glighting products meeting quality a standards, Uganda has a 45% subs solar equipment, Kenya has impler various tax exemptions for import equipment</li> </ul>	opport sion5. Regulation-Off-grid is being encouraged generally by policy makers, but risk of negative regulations exists as the sector grows and potentially threatens the incumbent utility, and other conflicted partiesdy on ented d solar-These risks include possible change of tax regime, application of interest rate caps and introduction of energy license requirements-For example, the East African Community re-interpreted the tax rules on solar lights in August 2016 which led to an overnight introduction of a 24% tax on the import of solar lights

and commercial investors and provided electricity to more than 500,000 customers. Whilst some are retreating and rationalising, others march on with their expansion plans at all costs. There is not a clear "right path" today.

On the previous page we outline the current pros and cons that we see in the sector through a Financial Services ("FS") lens.

## Looking to the future

Off-grid solar demonstrates that installing a solar system in a home, an apparently small intervention, can enable out-sized gains in welfare, productivity, and income generation. In emerging markets, the sector could lift millions of households out of energy poverty and provide them a route to financial inclusion, opening up new economic opportunities for the next generation.

In many ways the business models being deployed in this space are on the cutting edge of emerging trends shaping electricity and financial service markets in developed economies; decentralised technologies, complex data analysis, the Internet of Things, mobile banking, and so on.

We could see a double leapfrog; over traditional electricity-grids and traditional financial services, straight to distributed generation and mobile banking. With \$26 billion expected to be invested in the SHS sector by 2030, the private sector has a vital role to play in scaling the offgrid industry.

As off-grid SHS providers look to enter the next phase of growth, the business models being deployed will continue their refinement. There will likely be an increasing focus towards strategic M&A in order to scale and deepen customer worth through value-stacking of adjacent services on top of basic electricity connections.

When our pre-conditions for growth, scale and success are met, Actis is uniquely positioned to participate in this exciting sector given our knowledge and experience of Energy, Financial Services and the emerging markets.





# Actis in Action: Supply Chains for a Just Transition

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Sustainable energy is at the heart of the global strategy to tackle the climate emergency. The transition from burning fossil fuels to a cleaner, sustainable energy mix with more renewable energy generation complimented by battery storage will, over time, decarbonise the power sector. However, while renewable energy is rightly recognised as the 'poster child' of the transition to a climate-resilient.low-carboneconomy. the industry must address social challenges to ensure a Just Transition. In this article, we explore some of the issues associated with the supply of critical metals to support the global renewable energy transition and how Actis is managing this risk.

Wind turbines, solar power plants, and battery storage technologies (henceforth collectively referred to as energy transition technologies) rely on minor critical and rare earth metals including lithium, copper, uranium, silver, tellurium, platinum-group metals and rare earth elements such as dysprosium, neodymium, lanthanum, praseodymium, europium, and cerium. While this list not only poses a challenge worthy of the most advanced spelling bee, each of these metals is critically important for improving operational performance and reducing levelized cost of energy transition technologies. For example neodymium and dysprosium in wind turbines make generators more efficient, because no electricity is required to induce a magnetic field and improve grid compatibility, and the use of cobalt in batteries is vital to ensure they won't overheat or catch fire.

Exhibit 1 demonstrates the various critical and rare metals used in the manufacture of wind turbines, PV solar and batteries.

Exhibit 1: Critical and rare metals

## Metal content in wind turbines

## Comparison of metal content in geared and direct drive wind turbines

	Geared	Direct Drive
Aluminium	•	•
Chromium	•	•
Copper	•	•
Iron	•	•
Lead		•
Manganese	•	•
Neodymium		•
Nickel	•	•
Steel	•	•
Zinc	•	•

## Metal content in PV Solar

## Comparison of metal content in solar photovoltaic technologies

	Crystalline Silicon	Copper Indium Gallium Selenide	Cadmium Telluride	Amorphous Silicon
Aluminium	•			
Copper		•	٠	
Indium		•		
Iron	•			
Lead	•			
Nickel	٠			
Silver	٠			
Zinc			•	•

## Metal content in energy storage

## Comparison of significant metal content in lead-acid and lithium-ion batteries

	Energy storage batteries		
	Lead acid	Lithium ion	
Aluminium		•	
Cobalt		•	
Lead	•		
Lithium		•	
Manganese		•	
Nickel		•	
Steel	•	•	

Source: The World Bank, The Growing Role of Minerals and Metals for a low Carbon Future

## So, what are the concerns about critical metals?

Renewable power plants need up to 40% more critical metals per unit of power produced, depending on technology, than conventional fossil fuel power systems. Supply chain risk and social impact of critical metals play a central role in assessing the attractiveness of renewable energy.

The supply chain of critical metals has several key uncertainties related to the reserves, availability, application and recycling, making it very complex to predict. Reserves are highly concentrated by geography, scaling of production of a new mine takes about 10 to 20 years, and mining relies significantly on the production of common metals, as it is usually not economically viable to produce critical metals on a standalone basis. For instance, tellurium is a by-product of the refining process of copper and indium, a by-product of zinc refining.

Exhibit 2: Critical metals - a complex supply chain

Critical metal mining is afflicted by human rights issues. Copper and cobalt deposits, abundant in southern DRC are mined by legitimate, internationally recognised mining companies, sideby-side with unregulated "artisanal" miners. Children with little or no safety equipment are mining tens of metres below the ground, digging for cobalt and copper, and the material they produce, once sold to traders, is indistinguishable from legitimately mined minerals. This presents an acute challenge for turbine manufacturers, solar panel producers, battery assemblers and purchasers of their products...like Actis energy platforms.

## So, what is Actis doing with regards to the supply chain of suppliers?

Engagement with suppliers to understand the due diligence they are undertaking to ensure traceability of critical metals in their supply chain is key to managing the risk. Actis' Responsible Investment team, together with the Energy Operations team, work with current and prospective suppliers across our Energy Infrastructure business to understand the policies and codes of conduct and the supply chain management process they have implemented. We seek to understand how suppliers are risk rated, how resources are deployed to work with higher risk suppliers, what associations and certifications they are signed up to, and the type of audits and inspections that take place.

While undoubtedly difficult, auditing the supply chain down to the smelter level has become recognised as the minimum acceptable level of assurance, in an ideal world we should aim to trace critical metals to individual mines. Actis' suppliers have dedicated teams working with organisations like the Responsible Minerals Initiative to make sourcing decisions that improve regulatory compliance and support responsible sourcing of minerals from conflictaffected and high-risk areas. This is only the start of the challenge to ensure we can maximise the benefits of the low carbon transition while minimising the hardships of workers and communities -The Just Transition.



Exhibit 3: Largest global producers of critical metals to support the global renewable energy transition





# Actis in Action: Building green to tackle climate change

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Property is a significant contributor to global climate change, with construction and buildings combined accounting for nearly 40% of global CO<sub>2</sub> emissions. The IEA points out that there is potential for global building energy demand to remain flat between now and 2040, despite total building floor area growing by a further 60%. On average, buildings in 2040 could be nearly 40% more energy efficient than today by implementing 'green' building principles.

Green building is a building that, in design, construction and / or operation, reduces or eliminates negative impacts, and potentially creates positive impacts, on our climate and natural environment. There are a number of features which can make a building 'green', including but not limited to:

- Efficient use of energy, water and other resources
- Use of renewable energy, such as solar energy
- Pollution and waste reduction measures, including enabling of re-use and recycling
- Use of materials that are non-toxic, ethical and sustainable

In addition to having positive environmental impacts, green buildings also offer a number of economic or financial benefits for different stakeholders. These include cost savings on utility bills (through energy and water efficiency) for end users, higher property value for developers, increased occupancy rates and lower operating costs for building owners. Globally, energy efficiency measures could create an estimated €280 to €410 billion in savings on energy spending. Industry professionals believe that green buildings command more than 6% increase in asset value and 14% lower operating costs over 5 years as compared to traditional buildings.

## Emergence of local green building standards

Adoption of green building standards has varied in our markets. In Africa, there is now a trend of emergence in local green building councils affiliated with Green Star (South Africa's green building rating) and adoption of the International Finance Corporation's Excellence in Design for Greater Efficiencies (EDGE) tool, which provides a streamlined approach to encapsulating green building fundamentals for developers new to the concepts in developing countries. In Asia, South Korea has developed its own green building certification system, the Green Standard for Energy and Environmental Design (G-SEED) that assesses ecofriendliness of buildings by evaluating eight environmental areas. In China, the Ministry of Construction developed the Green Building Evaluation Standard. China also launched its Green Building Action Plan in 2013, requiring all public buildings, public residential buildings and commercial buildings with a gross floor area greater than 20,000 sgm to achieve at least one star in the China Green Building Evaluation Standard. India implemented the national Indian Green Building Council (IGBC) rating tool with a focus around decarbonising the economy and a push to renewables. In South East Asia, Singapore led the effort by launching the BCA Greenmark certification which has now been adopted in several other countries in the region.

## Green by design approach

In Africa, Actis has implemented a "green by design" approach to real estate investments that meets both our commercial and environmental goals. We hold one of the largest institutional portfolios of green-accredited assets in sub-Saharan Africa; a reflection of our commitment to meeting Africa's growing infrastructure needs sustainably. Actis has built the first internationally certified green commercial buildings in Nigeria, Ghana, Kenya and Cameroon. These include Heritage Place, One Airport Square and Green Stara LEED certified A-Grade office building in Lagos and Green Star rated-building in Ghana, both of which

are 30-40% more energy efficient than comparable buildings. The first LEED certified retail mall in east Africa, and the Douala Grand Mall in Cameroon (under development) have attained the IFC EDGE areen rating, with predicted savings of 29% and 51% in energy and water costs respectively. Also in Kenya, the residential component of the Garden City mixed use development achieved Kenya's first 4-Star Green Star rating for a multi-unit residential development. Actis industrial platform, Impact, is developing industrial estates in South Africa, Kenya and Zambia with an intent to reduce carbon footprint and conserve water. Impact is working with the South African Green Building Council to develop Zambia's first green building standards for logistics and industrial spaces.

In addition to "green by design" principles, we have leveraged where feasible, the rapidly declining costs of solar PV combined with sub-Saharan Africa's high irradiance levels, to deliver significant cost savings and lower emissions via the installation of rooftop solar solutions. For instance, Garden City mixed use development in Nairobi, Kenya has one of Africa's largest solar panel covered carparks which generates 1200 MWh per year. Actis' Jabi Lake Mall is set to become Nigeria's first solar-powered mall-a 600KW rooftop solar plant is being installed that will sell power to the mall. CO<sub>2</sub> emissions will be reduced by over 13,000 tonnes, while also providing cheaper and more stable energy as an alternative to the existing grid supply.

Most Actis real estate projects in Asia have generally applied for green certification standards (either local or international). For example, in South Korea, we have successfully obtained grade Green 2 and 3 G-SEED (e.g., roughly equivalent to LEED Gold and Silver respectively) for our commercial projects located in Seoul. Some of the green features implemented to achieve these certifications include harvesting rainwater, reusing greywater, generating energy through solar panels, using geothermal energy, installation of energy efficient LED lights, and utilising ambient air whenever possible to minimise use of heating and cooling systems. Our residential development projects in Pune, Bangalore and Gurgaon in India are targeted to achieve IGBC Green Homes Pre-certified Gold / Platinum



or EDGE certification while our office development project in Gurgaon is aiming to achieve for USGBC Platinum. In addition to implementing energy efficient lights and water-saving fittings, generating energy though solar panel and harvesting rainwater, these projects also utilise sustainable building materials and provide for waste treatment and electric vehicle charging stations.

Recognising the environmental and economic benefits of green buildings, and in-line with our commitment to responsible investing, Actis has consistently adopted and will continue to prioritise green building principles in our real estate investment markets across our footprints.





**Certification:** Grade Green 2 G-SEED (roughly equivalent to LEED Gold)

Max. capacity of rainwater harvesting facility: 435 ton / day

**Estimated energy saved by using energy-efficient equipment:** ~470,000 kWh per year by using LED lights, energy efficient fans and pumps

**Energy generated with solar panels:** ~100,000kWh per year

**Other eco-friendly facilities:** Capacity to reuse greywater: 54 ton / day

Energy saved compared to buildings. with the lowest energy efficiency rating (Level 7)1): ~42 mil KWh/year (Level 1)

Note: Primary energy saved. Ratings by Korea Energy Agency.

Young City is a development comprising of two 13-story office towers (99.140 m2 in GFA) located in the southwest of Seoul, What was once an industrial zone crowded with factories has become an attractive commercial zone with both office and residential buildings. The transition is still in progress, transforming old industrial structures into unique and eco-friendly cultural space. Completed in November 2017, Young City is one of the earliest and most successful redevelopment projects in the area and has significantly contributed to the transition.

The buildings are certified for Green 2 G-SEED, which is a program designed and implemented by the government (roughly equivalent to LEED Gold). To obtain the G-Seed rating, the properties have to be evaluated by a government designated agency. There are a total of 54 test items for commercial properties to evaluate the following eight subjects - (i) Site and Transportation, (ii) Energy and Environment, (iii) Materials and Resources, (iv) Water Efficiency, (v) Building Operation and Maintenance, (vi) Ecological Environment, (vii) Indoor Environment, and (viii) Innovative Design. Applicants for G-Seed must earn scores for the 54 tests, which will be used to determine the level of the certificate.

#### Heritage Place, Lagos



Heritage Place is a Greenfield development of a 14-floor, 18,000m2 international A-Grade, LEED-rated office tower in a defined location within a prime commercial area in Lagos, Nigeria. The building offers international standard office space and services, designed to high efficiency and energy standards, in a market characterised by the low quality of existing office stock. Heritage Place is the first commercial building in Nigeria to achieve LEED certification in design and construction. Heritage Place applies cutting edge technology to ensure it meets the risina environmental standards and has been designed to consume at least 30% less energy than comparable buildings in Lagos. This is achieved via a combination of the building's orientation which maximises natural light and ventilation, and minimises solar exposure, reducing the energy requirements for cooling, heating and air quality systems; use of high efficiency glazing and external thermal envelope that also reduces demand on cooling requirements; and automatic presence detectors and high - efficiency lighting reduce and resupply energy when and where it is needed. This has helped lower the operational cost of the building considerably, with energy costs up to 40% lower as confirmed by some tenants.

Water is conserved from rain water harvesting to re-use in the irrigation of the gardens, condensate recovery from the building's cooling units and accurate control systems in the bathroom facilities also reduce wastage. High level of indoor air quality and occupant's thermal and visual comfort are increased by ventilation rates, quality of materials and heat recovery through the centralised fresh air supply system.

Heritage Place received the Lagos Green Award for 2018 from the Lagos State Ministry of Environment, in recognition of its contribution to Lagos' sustainable environment and its green credentials has been a draw to secure blue chip tenants with high awareness on sustainability including climate change.

# How (much?): Actis Impact Score<sup>™</sup>-measuring the impact of investments

## John Thompson

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Launched in 2019, the Actis Impact Score™ (AIS™) is a proprietary framework measuring the positive social and environmental impacts of our investments and enabling comparisons across sectors and geographies. As one of the first open-source impact measurement frameworks in the private equity industry, how has the initiative been received? And what's next?

With over 70 years of experience investing in emerging markets, targeting financial returns alongside positive social and environmental impact, Actis has a long and rich history of investing responsibly to create highly resilient and valuable businesses that benefit society. Yet finding a way of systematically measuring the impact we have on communities and stakeholders has, until recently, been decidedly challenging.

Nevertheless, advancements such as the United Nations' Sustainability Development Goals (SDGs), which are a blueprint to a more sustainable future, and the Impact Management Project (IMP), which established global consensus for how we talk about impact, created fertile conditions for Actis to produce the AIS<sup>™</sup>. Developed in 2018 and launched the following year, the AIS<sup>™</sup> applies established principles, such as the five dimensions of impact developed by IMP, to calculate scores and multiples that quantify positive impacts as well as increases in impact, to sit alongside financial performance measures such as IRR and MOIC

We caught up with James Magor, Director, Responsible Investment at Actis, and Tom Beagent, impact measurement specialist and Director at PwC, to discuss progress on implementing the AIS<sup>TM</sup> and what comes next for the impact investment industry. PwC is also responsible for verification of Actis' disclosures in relation to the IFC's Operating Principles for Impact Management.

## James Magor

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Tom Beagent Director, PwC

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## James, how has the Actis Impact Score™ been received by your stakeholders and more generally in the market?

James: "We've had a great response both internally, among our deal teams and company management, as well as externally. There is a much higher degree of scrutiny around impact intentionality and measurement in today's market, particularly among institutional investors, so this has resonated well with them. Our investors are interested to see the correlation between financial returns and positive impact, and AIS<sup>™</sup> is a clear way of helping demonstrate this. We've applied the impact score to every investment we made in 2019 and, during 2020, we will have the first verification of our approach as we review how our companies are performing. We look forward to proving our long held philosophy that values drive value.

"We've also had a really positive response from other private equity firms – including large- and mid-cap asset managers, and competitors of ours. We made the scoring framework open source as we'd like to encourage greater transparency around impact measurement. This has led to others reaching out to us asking about applying the AIS<sup>™</sup> to their investments and development of scoring methodologies – that's highly encouraging."

# What have you learned from the development and implementation of the Actis Impact Score™?

James: "We've learned a lot over the past year or so, but there are three main areas I'd highlight. The first is that a quantitative scoring system does not replace the role of narrative. Our investments generate emotive human



stories and these have to accompany the score to produce a holistic picture. The second is that, despite the rigour of the scoring methodology and the governance we have put in place around this, it's hard to entirely remove subjectivity – you can't always benchmark profound social outcomes with a statistic. And the third is that, in many instances, you have to make evidence-based assumptions about impact outcomes particularly when empirical data is not obtainable.

"For instance, if your investment provides people with well-paid employment, there is evidence to suggest that this will improve their livelihoods, but it's hard to measure this change over a typical investment timeframe. Another example is healthcare. There is credible research to support our assumption that access to medical diagnostics improves the medical outcome for patients, but it's hard for Actis as a private equity investor to quantify this impact on the patients of the doctors that access these services."

## Tom, how familiar are the issues that James just outlined when it comes to impact scoring?

Tom: "These are the sort of challenges that our clients grapple with too. To build trust the industry ultimately needs to be able to compare the impact of different investments, track changes in impact over time, and demonstrate to investors alignment with impact objectives. It is good to see the AIS™ tackling this challenge. Tracking impact performance over time allows you to tell the story of how you have enhanced the impact of a business which may help enhance the multiple a buyer is willing to pay.

"Another challenge I see is understanding the overall impact of an investment on peoples' wellbeing. We spend a lot of time researching evidence of changes in wellbeing. Given that perfect information doesn't always exist, there is a need for judgement and healthy scepticism. One of the biggest risks faced by the impact investment is impact-washing and I think the AIS<sup>™</sup> provides a way to guard against this by monitoring impact progress over time."

## So what are the critical success factors for an impact investment strategy?

**Tom:** "Firstly, when focusing on impact, there needs to be transparency around the impact objectives. Impact means different things to different people and so there really needs to be clarity up-front. Secondly, asset managers need to be able to show they can deliver on these objectives using hard facts. This is where measuring, managing and reporting impact comes in as the way to build trust. When it comes to measurement, there needs to be a shift from outputs to outcomes - rather than just focusing on the outcome for the company, investors need to understand what has changed for the stakeholders. Sometimes this can be a real challenge, as shown by the medical diagnosis example James touched on earlier. And finally, there has to be intentionality-you need to be able to demonstrate that the outcomes you achieve are different from what would have happened if another investor had been involved."

## To what extent should investors hone in on sectors that are intrinsically impactful?

Tom: "Making an impact doesn't necessarily mean picking the cleanest businesses; they may be the ones that least need help. In fact, more impact can often be achieved by investing in businesses with challenges, in which investors can play a role in helping the company better meet the needs of society whilst not detrimentally affecting the environment. It's critical to recognise that all businesses have an impact and that investors can help shift this significantly towards the positive – what we refer to as impact turnaround."



**James:** "Precisely. At Actis, our platforms construct a lot of renewable power plants, yet

we recognise that solely backing the development of renewable energy isn't enough in many of our markets, where there is a deficit in baseload power supply. We are actively supporting the transition from, for example, oil to gas, and we believe that the conversion of existing thermal power plants to cleaner fuels is just as important as building new renewable ones. We are also working to minimise any negative social consequences of the low carbon transition for workers and communities living near our power plants by investing in skills development to catalyse direct and indirect employment opportunities. Managing the social consequences and creating opportunities is a crucial part of the Just Transition".

## How do you see impact investing evolving over time?

Tom: "I believe there is a lot of capital looking for return and impact. Impact investing is still young and one of the challenges is a shortage of players with a track record that can show both. Initiatives like the Impact Management Project and the IFC's Operating Principles are helping drive consensus around impact measurement and management. By drawing on these Actis shows how thinking can be put into practice. Further out, the Impact-Weighted Accounts Initiative, driven by Harvard Business School and supported by the Impact Management Project, aims to shift impact measurement towards the quantification of a monetised value of impact, and eventually we'll see these measures reach a par with IRR."

James: "In the short-term, we're looking forward to our first verification audit by PwC. We believe verification is crucial to mitigate against the potential in the industry for impact-washing and fosters trust among investors.

"Over the next few years, I think we'll see a broader acceptance that all investments have impact and there will be a drive towards ensuring it is intentionally positive. I can see a time when impact investing ceases to be viewed as a niche strategy and simply becomes an essential part of investing. Even today, it is becoming increasingly difficult for investors to ignore the link between financial value and sustainability."



# Where?

We continue to believe that progress requires action and innovation which delivers cost effective solutions with genuine impact. We examine how Actis has been delivering impact for over 15 years across our markets, whilst delivering competitive returns to our investors.

# The Street View: North Africa

## **Sherif ElKholy**

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## What is happening

Efforts to protect the environment and combat climate change are becoming increasingly noticeable across the North Africa region. This sharpened focus has manifested itself in various initiatives in Egypt.

The Ministry of Environment has campaigned to increase public awareness of the environmental hazards of single-use plastics and has been promoting environmentally friendly alternatives, such as biodegradable and paper bags. The infamous "winter black cloud" was averted in 2019 as the farmers switched from burning to processing almost 80% of waste from rice cultivation into compost. Which was subsequently sold and put into productive purposes including animal feedstock, fertilisers, and even furniture production. Another sign of change has been the "Youth for the Nile" initiative, launched to continuously clean up the Nile River of waste in collaboration with young volunteers.

## What Actis is doing

At Actis, we are thought-leaders on responsible investment and thus have consistently supported and endorsed our (current and ex) portfolio companies in the implementation of initiatives to reduce environmental impact.

Egypt-based snack food business Edita, a former Actis portfolio company, made a number of energy efficiency improvements that delivered a 20% reduction in energy consumption and invested in new chillers using 30% less water during our investment, saving the company approximately US\$1m per year in operational expenditure. In 2017, it also invested in a stateof-the-art wastewater treatment plant to improve water quality and increase recycling of waste, and undertook a conversion from LPG cylinders to natural gas. These moves contributed to a successful high value sale in a difficult business climate in 2017.

At another former portfolio company, EI-Rashidi EI-Mizan, we supported the company in its conversion from a water-heavy, largely manual sesame extraction process into a fully automated production line that used considerably less water and was much more environmentally friendly.

These environmentally friendly measures in our portfolio companies led to considerable cost savings through the reduction in energy and water consumption, thus making them perfect examples of values driving value.

Cleopatra Hospital Group, one of Actis' current portfolio companies, is also actively working to minimise its environmental footprint and has undertaken a complete infrastructure renovation plan to ensure compliance with international environmental standards. It has also launched an initiative to replace electric boilers with solar heaters at one of its hospitals, leading to a significant reduction in its consumption of fossil fuels and electricity consumption, while giving access to an abundance of clean energy for heating with no  $CO_2$ emissions.

Last but certainly not least, Egypt's environmentally friendly policies would not be the same without its remarkable shift towards clean energy sources, particularly with the development of one of the world's largest solar parks in Benban. The development of the park is part of Egypt's plans to produce 20% of its energy needs from renewable sources by 2022 and 42% by 2035, both of these targets are well on their way to being met, and potentially overachieved.

Actis supported Egypt's thrust into clean energy, and our investee company Lekela is currently building one of the largest wind farms in North Africa. The West Bakr Wind Farm, located in the Gulf of Suez, is a 250 MW Wind Farm, which is due to start commercial operations next year.

Actis is also supporting Egypt's flagship three-year program on promoting gender equality in the renewables sector. This ties in well with Actis' commitment not just to scaling renewables but also focusing on an inclusive transition to a low carbon future.



# The Street View: East Africa

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## What is happening

For a country like Kenya where smallholder, rain fed subsistence agriculture is the mainstay of the economy, climate change and with it the inconsistency of weather patterns is already causing significant problems. Kenya is the largest and most diversified economy in East Africa and climate risks pose a huge threat to the development and prosperity of the country and the region.

As a reminder of the devastating consequences of climate change, Kenya has experienced both unprecedented drought and torrential rains this year. This has limited food supply, causing rising inflation, and led to the loss of over 200 lives. Increasing interseasonal variability has severely impacted cereal production and livestock rearing with losses from the prolonged 2008 to 2011 drought estimated at \$12.1bn.

Kenya has long been sensitive to its global responsibility to reduce its carbon footprint and was one of the first countries on the continent to enact national policies addressing climate change and promoting ecologically sustainable development. Adherence to these policies coupled with years of pursuing a renewable energy generation strategy, Kenya is today able to claim that approximately 70% of its energy generation capacity is derived from renewable sources, mostly consisting of geothermal and hydroelectric sources but latterly including wind and solar.

## What Actis is doing

Actis, through its various investments, continues to support the country in the realisation of these sustainable development goals. One such investment is Kipeto Wind Farm, a 100MW project located 50 kilometres south of Nairobi. Once complete later this year, the project will boost Kenya's renewable energy generation capacity to 75%, bolstering Kenya's position as one of the top renewable power producers globally.

Another Actis investment embodying this commitment to mitigating the impact of climate change is Garden City Mall, a 35,326 square metre mixed use real estate development in Nairobi. The mall hosts the largest solar-panelled carport in Africa, generating c.1,200 MWh/year, and incorporates water recycling and harvesting systems that significantly reduce potable water demand. These eco-friendly features saw the mall become the first project in East Africa to achieve a Gold Pre-Certification LEED Building Design rating. Furthermore, the Government of Kenya awarded Garden City 'Vision 2030' status due to its outstanding contribution to fulfilling the country's development goals.

By incorporating these sustainable investment and development initiatives in our projects, we continue to see the adoption of these practices by local developers, businesses and investors alike. Actis, as a key player in Kenya, aims to continue supporting the development of such projects as part of a concerted effort to mitigate the effects of climate change.



Garden City, Kenya

# The Street View: West Africa

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## What is happening

Buildings and construction industry accounted for 36% of global final energy use and nearly 40% of energy-related carbon dioxide (CO<sub>2</sub>) emissions in 2017.

Given expected robust growth in West Africa with strong population growth and urbanisation at >4% pa, there is an impetus to implement low carbon power solutions and to increase the energy efficiency of both new and existing building stock in order to counter the impact of population and floor area growth on the building sector's emissions.

Final energy demand in buildings has risen by 5% since 2010 around the world, with the impact from the growth in floor area and population outpacing the impact of energy efficiency improvements.

The buildings sector's energy use continues to grow, despite improvements in building envelopes and systems, which are not fast enough to offset strong population urbanisation and floor area growth.

## What Actis is doing

Energy and water efficiency measures, and climate change risks, are systematically considered during the design phase to enhance environmental sustainability and reduce operating costs.

Actis is committed to sustainable development by: (i) developing resource-efficient, green-certified properties; and (ii) using an asset management strategy implementing actionable resource efficiency programs and low carbon power solutions.

Through our real estate portfolio, our commitment to green buildings features has delivered an impressive record of accomplishment across West Africa, with a range of highly successful sustainable developments: Heritage Place, Lagos; One Airport Square, Accra; and the upcoming Douala Grand Mall in Douala, which are the first Green certified buildings in their respective markets.

## **Douala Grand Mall**

Douala Grand Mall will bring the first destination shopping centre to Cameroon's largest city; the mall will provide shopping, entertainment and dining to the greater Douala area, serving approximately four million residents. Visitors will have a wide variety of offerings with 143 retail stores. 22 restaurants, a movie theatre and a supermarket. Douala Grand Mall will open to the public in June 2020 and has been certified to IFC - International Finance Corporation EDGE. Douala Grand Mall is considered the first certified green building in the CEMAC region. Douala Grand Mall will be c.30% more energy efficient and c.51% more water efficient than other buildings in the market and 50% less embodied energy in materials.

Douala Grand Mall was able to display such performance due to 'green by design' features introduced during the initial stage of the project looking at minimising the carbon footprint of building materials, as well as reducing the vulnerability and increasing the resilience of buildings to climate change, as listed below:

- Reduced window to wall ratio, reflective paint/tiles for the roof, insulated roof and external walls, energy-saving lighting, occupancy sensors where appropriate and skylights to provide daylight to 50% of the top floor area
- Dual flush water closets, waterefficient urinals, and aerators and auto shut-off faucets
- Composite in-situ concrete and steel deck floor slabs, steelclad sandwich panel for roof construction, curtain walling and steel profile cladding for external walls, and solid dense concrete blocks and plasterboards on metal studs for internal walls





Source: GABC 2017 Global Status Report based on IEA World Energy Balances and Statistics

Buildings & construction are a major driver of energy demand and global CO<sub>2</sub> emissions.

## The Street View: South Africa

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Our private equity business spans a diverse range of sectors. In each area, we strive to mitigate the risks posed by climate change and identify the value creation opportunities that it presents. We are investors in supermarket chains, where the potential for resource savings is significant. For example, Food Lovers Market in South Africa, and also Companhia Sulamericana de Distribuição in Brazil, have both committed to resource efficiency, waste reduction and recycling programs. These programs have already delivered tangible benefits, such as a 60% reduction in energy consumption.

## What is happening

Public awareness of the devastating environmental impact of plastic waste has reached heightened levels across the globe. High profile television and social media initiatives on the impact of plastic waste on sea life and sustainable seas are increasingly becoming mainstream media conversations. Perhaps less awareness exists around the impact that this ever growing plastic demand has on global warming and climate change. However, a growing number of recent studies highlight the high energy intensive process of creating plastics from fossil fuels as a contributing factor to climate change.

## What Actis is doing

Actis portfolio investment Food Lover's Market, South Africa's leading fresh produce retailer, is becoming a plastic-free future shop with the announcement that, as of December 2019, it is the first national retailer in South Africa to ban plastic bags in all corporate stores and now only offers paper bags, boxes and Food Lover's Market canvas bags. This is after the successful implementation of paper straws in 2018 and the positive response to the implementation of a ban on plastic bags in Western Cape stores during 2019.

The response from consumers has been overwhelmingly positive - the paper bag itself is very strong and can be used seven times on average, carrying weight of about 10kg.

Further to the ban on plastic bags, Food Lover's Market is also introducing reduced plastics on bakery range items and the trialling of biodegradable trays with fully recyclable cling film in the butchery range.

These plastic reduction efforts were borne out of Food Lover's Market's Earth Lovers program, a Board led initiative to increase the group's sustainable practices. From energy to waste, packaging to water, Food Lovers Market embraces the responsibility of running a business in the most sustainable way possible and introducing plastic-free options is part of this journey.



# The Street View: Africa Energy

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## What is happening

The drying up of Victoria Falls, the destruction of Cyclone Idai across Mozambique, and the water shortage in Cape Town: climate events in Africa are devastating, especially given the continent's weak ability to respond and recover.

30% of Africa's installed generation capacity is renewables, with 77% of that from hydro plants. The continent's pivot to renewables is clear cut, regardless of the climate incentive. The old argument of "Let the developed world take the burden of higher cost renewables while we build our dirty but cheap baseload" no longer rings true. Renewable generation is now lower cost per kWh to produce than thermal, plus renewables increase the continent's energy security, as they don't require the importing of gas, coal or liquid fuels which come with hard currency invoices in addition to the carbon emissions

Despite the sound business case for renewables, political will is often years behind the private sector. African utilities and governments have been slow to embrace renewable technologies because of outdated misconceptions on price, entrenched interests in the thermal fuel sector and a focus on the transition of labour from mining to new industries.

## What Actis is doing

We, the Actis Africa Energy Infrastructure team, are focused on two things: first, reducing the pace of climate change via our investment strategy, and second, reducing the risks of climate change within our own energy investments.

Our Energy Infrastructure investment strategy in Africa covers all the tools of the low carbon trajectory, including generation, distribution and storage. On the generation side, we focus on power

generation from solar PV, wind and gas, with selective investments in liquid fuel burning assets which we can switch to lower-carbon gas. We view gas as a lower carbon, medium term baseload solution preferable to other more polluting and less flexible resources such as coal and liquid fuels and therefore bridging the gap to an all-renewables future. Actis is the only investor who has wind projects under construction in all four of Africa's regions-north, south, west and east. By the end of 2020, upon completion of the wind and solar projects currently under construction, the net carbon savings from the Actis Africa platforms (1428MW Lekela and BioTherm renewables portfolios, offset by the 629MW thermal portfolio of Azura), will be 1.5 million tons of carbon per year.

Our investment strategy in Africa also focuses on power distribution companies such as Eneo, the integrated utility in Cameroon. A key part of the investment thesis of Eneo is to reduce the losses on the network, as well as developing a commercially sustainable sector for the long term. Reducing energy losses means that less energy production is required to supply the same amount of electricity, while a commercially sustainable sector with cost reflective tariffs and demand growth that is met by appropriately priced generation, progressively loses the need for explicit government support in the form of guarantees.

Energy storage is starting to gather momentum as a transformational technology for African energy sectors. Battery technology can support weak grids so that they can digest more low cost but intermittent wind and solar generation, as well as providing services and reducing system losses. We see a number of energy storage opportunities in our pipeline.

Climate change is already included in our due diligence on resource risk. Diliaence requires investors to "ao the extra mile" as the market has historically under-valued the risk due to shorter term investment horizons. We are increasingly seeing the need for deeper analysis, for example within the Kipeto (100MW Kenyan wind development) transaction we incurred additional cost installing a LIDAR instrument at site to enable confirmation of the thesis of the driving mechanism behind the wind resource and concluded that climate risk would not be a factor in returns.

Within the spectrum of climate change in Africa, there is clearly need, opportunity and risk. Winners will be those who ride the wave of investment opportunities while having sophistication and expertise in navigating the associated risks.



Victoria Falls in dry season

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## What is happening

India has been aggressively pivoting towards clean energy generated by solar and wind. In a short span of 5 years, ever since its ambitious announcement in 2015 to target 175 GW of renewable (100 GW solar, 60 GW wind, 5 GW small hydro and 10 GW biomass) installations by 2022, overall renewable capacity more than doubled from c. 32 GW to c. 84 GW (implying a 22%+ CAGR) primarily owned and built by private investors. Approximately 87% of this growth (i.e. 46 GW) was contributed by the addition of utility scale wind and solar capacities, which together today stand at 70 GW. Encouraged by the collective action of investors and developers, supported by an enabling policy framework, the Prime Minister has recently announced an increase in this target to 450 GW of renewables by 2030.

## What Actis is doing

Actis has been at the forefront of this renewable revolution in India capitalising on its experience of investing in the Indian power sector since the late nineties and its global track record of building majority owned energy platforms. In line with its strategy to invest in buy and build platforms across emerging markets, Actis established the Ostro Energy (Ostro) platform in 2014, targeting a capacity of 1 GW of wind and solar projects in 4 – 5 years. Actis executed this business plan ahead of schedule and signed power purchase agreements for 1.1GW by early 2017 - equivalent to powering 1 million Indian homes and avoiding 1.4 million tons of CO₂ per annum.

Apart from building a high quality portfolio of projects, Actis also established best-in-market ESG practices in the business. Actis played a key role in hiring a head of ESG who was further supported by a full time head of safety and community liaison officers who led the execution of community engagement programs on project sites. The execution of ESG guidelines and procedures was monitored closely through an ESG sub committee comprising members from Actis' investment and responsible investment teams and Ostro employees.

Detailed ESG diligence was conducted for each project to identify and mitigate specific ESG risks including areas where Actis pushed Ostro to go beyond standard market practice. For example, to help address challenges endemic to India regarding labour conditions and labour standards. Ostro developed a Labour Accommodation Standards Policy, based on international best practice. Ostro ensured that this policy formed part of its agreements with contractors. This was subsequently shared with other Actis renewable platforms as an example of best practice.

Strong emphasis was laid on ensuring that Ostro engages proactively with local communities by addressing specific community needs. As a result, Ostro developed a community investment strategy for each of its projects. For example, a project in Rajasthan provided the local community with access to clean, safe drinking water, a scarce resource, through solar powered automated water dispensers ("ATM" for water). This innovative technology addressed a serious health issue of fluorosis (fluoride poisoning caused by naturally occurring high levels of fluoride in the groundwater), an issue which is endemic across the state. These ATMs run 24 hours a day and use reverse osmosis and UV light

to purify water. The ATMs are cloud connected, enabling Ostro's Head of ESG to remotely track the volume of water dispensed, the number of families using the machine and paying via 'pay per use'. Families were given a top up card to access clean water for a small amount of money. To date, over 1.5 million litres of clean drinking water has been delivered by the ATMs to local communities.

Healthcare community projects have enabled Ostro to provide over 60 health camps across three projects, which reached c. 5,000 people. Ostro also conducted around 11 livestock health camps in two projects which were attended by around 28,000 livestock.

In early 2018, Actis sold the Ostro business to ReNew Power, a large renewable energy platform backed by investors Goldman Sachs. Our actions helped facilitate a profitable exit demonstrating that values delivered value.

Further continuing its commitment to climate focused investing, Actis founded Sprng Energy in 2017, with a target of building 2 GW of renewable capacity. Fast-forward to today, Sprng already has a portfolio of about 1.7 GW portfolio of wind and solar projects of which 650MW is already operating and remaining projects under execution.

Actis is replicating its ESG strategy in Sprng now and implementing wide reaching community engagement programs in Sprng projects. For example, in its first project Rewa 250MW solar, Sprng has executed a community engagement plan focused on healthcare access for local communities. This program has benefitted 35,131 patients to date including 55% women and over 2,400 indigenous people. Through addressing over 13 types of different ailments, the program has resulted in net community savings of INR 9.95 million (\$140,000). Since September 2018 Sprng has invested over \$60,000 into its community programs. In addition to healthcare, these also include improvements to

WHERE

education infrastructure, provision of safe drinking water and delivery of skills based development training.

Actis is also investing in the Indian renewable sector through the Actis Long Life Infrastructure Fund wherein it targets large operating renewable assets with the objective of holding them for the long term and maximising their yield through superior performance, leveraging our in-house operations team. We are also actively looking at renewable and clean energy investments in other South and South-East Asian countries including Bangladesh, Vietnam, Indonesia, Philippines, Thailand and Malaysia.

In Real Estate, across three existing partnerships, Actis expects to invest in development of over 5 million square metres equally split between office development and housing. Actis' commitment to reducing its energy footprint across its projects begins with sustainability embedded in its design approach. Actis drives an ESG agenda with its partners covering sustainable building designs, construction practices and materials to reduce the carbon footprint during the project lifetime including the construction phase.

In TREIT, an office development program, we expect to build over 2.5 million square metres over time. Our design approach targets obtaining LEED Platinum green building standard. These buildings will reduce energy load by over 40% compared to conventional buildings, which represent most of the current office stock in India. When the entire program is fully developed and operations stabilised, this would add up to savings of a whopping~90 million KWh/Annum. TREIT is also advancing construction practices through initiatives such as pre-fabricated structures for labour accommodation, installation of RO plants for drinking water, use of energy efficient lighting at construction sites and labour camps.

In housing development, Actis partnerships have adopted a wide range of sustainability initiatives, e.g. treatment and recycling of STP water for non-potable uses, LED lights in construction zone and common areas, low flow-rate CP fittings, efficient refuse treatment, rain water harvesting pits, AMF's in DG sets, heat reflective paint over the roof, solar water heating systems, using sustainable materials like fly ash in bricks and concrete, and parkingspaces with electric charging facility, etc. In the Mahi program - one of Actis' housing focused partnerships, these initiatives have won the two projects Gold and Platinum precertifications respectively from the Indian Green Building Council. In the Place program, the mid-income housing focused partnership, Actis has adopted IFC's EDGE standard for a majority of the projects. The initiatives in these projects include solid waste treatment and using solar power for water heating.



## The Street View: China

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## What is happening

From 2016 to 2018, China eliminated 150 million tons of steel manufacturing capacity and 20GW of coal-fired power. Renewable energy played a central role in reducing China's reliance on fossil fuels, in particular coal. China has become the world's largest renewable energy producer by a wide margin, with a total capacity of 728 GW at the end of 2018, more than double that of the United States. China also leads in the adoption of plug-in electric vehicles (EVs) with an estimated addition of over one million vehicles in 2019 alone, continuing to represent more than 50% of the global market for EVs.

## What Actis is doing

Actis has been a pioneer in investing in these sectors. Starting in 2005 with our investment in Suntech, then one of the world's largest solar panel manufacturers, Actis extended its decarbonisation focus to other sectors within its China private equity investments. For example, in the consumer sector, the biscuit brand Jiashili closely monitors and discloses in its annual ESG report its greenhouse gas discharge. Jiashili cut its discharge by 36% in 2018 compared to 2017, partly due to a switch from natural gas to electricity to power its machinery. In the industrial sector, the fabric company RGB has a dedicated social responsibility team, led by its Chairman himself. In 2017, RGB upgraded its heating facilities to be fuelled by natural gas and electricity rather than coal. Its environmental

related investment typically accounts for more than 15% of its total capital expenditure.

Turning to the Chinese real estate investment market, Actis believes recognition of our responsibility to climate change has always been important to our business. We seek to develop 'green by design' buildings and to increase efficiencies during the development and operation stages of projects. For example, in our logistics development project, Isen, LED lighting is designed and installed instead of traditional T5 lighting. Furthermore, reclaimed water systems are designed for the outdoor landscape irrigation system and the toilet flushing system. A power transformer station has been situated in between two logistic warehouses in order to provide a relatively shorter power cable distance supply to the two warehouses to reduce the voltage loss. The Actis team is making every effort to have sustainable construction and green building design, to minimise negative impacts on the environment.



Project Isen, China 44 Actis Macro Forum

# The Street View: Korea

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#### What is happening

Korea's model of economic growth and industrialisation that has transformed it into a major global economy has also left it as a heavy emitter.

Understanding this growing challenge, the government has been taking initiatives to reduce

## Exhibit 1: Energy matrix by capacity and production (2018)



particularly in the energy sector as demonstrated by the current regime's ambitious renewable energy plan which would also be vital in order to meet the Paris Agreement. In the real estate sector, the Korean government has developed environmental assessment and certification programs targeting new development. Two notable sets are (i) the Green Standard for Energy and Environmental Design ("G-SEED") certification program and (ii) the Building Energy Efficiency Certification ("BEEC") program.

greenhouse gas emissions

The G-SEED is a government green building certification program that assesses the eco-friendliness of buildings by evaluating eight environmental areas that collectively have 54 sub-items. Each building under evaluation earns points by satisfying these 54 sub-items and are categorised into four levels accordingly. The BEEC program focuses more on carbon dioxide emissions and energy consumption. The Korea Energy Agency (KEA) estimates carbon dioxide emission and energy consumption of buildings for heating, cooling, and hot water supply and rates them by ten levels.

## What Actis is doing

These programs have continued to be updated with stricter requirements. Meeting these has been particularly challenging given that (i) local authorities may set the bar higher than standard regulations at their discretion and (ii) our target properties are mostly located in prime districts of Greater Seoul under stricter requirements set by these local authorities. We have engaged consulting firms specialising in green building certification systems and successfully obtained Grade 1 BEEC and Green 2 and 3 G-SEED (equivalent to LEED Gold and Silver, respectively according to the consulting firms) for our projects located in prime areas of Seoul. While these certificates are granted at construction completion with an option for renewal, we have continued to endeavour to reduce energy use and greenhouse gas emission even after the construction completion. Some of these initiatives include harvesting rainwater, reusing greywater, generating energy through solar panels, using geothermal energy, installation of energy efficient LED lights, and utilising ambient air whenever possible to minimise use of heating and cooling systems.



Note: both total capacity and production exclude self-users, which account c.4% of the total, respectively.

Source: Statistics Korea

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Source: EDGAR (Emissions Database for Global Atmospheric Research)

Japan

Russia

Korea

Canada

USA



94

91

8.0

China

Sermany

5.8

Italy

5.6

Y

50

France

24

Brazil

19

ndia

12.1

13.6

# The Street View: Latin America

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# H

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## What is happening

Latin America is home to important global natural assets such as the Amazon rainforest and Colombian Paramos. The region is also more susceptible to severe weather occurrences, from hurricanes in the Caribbean to summer storms in Brazil, which have been systemically heavier in intensity on the back of the global rising temperature – according to NASA the global temperature has risen 1.62 Celsius degree since the 19th century, and, not coincidentally, five of the warmest summers occurred in the last 10 years.

Therefore, it isn't a surprise that all Latin American countries listed climate change as their top threat in a poll conducted by Pew Research Survey.

The inception of robust renewable energy policy has been one the most important factors for the 11% carbon emission reduction over the past 20 years in Latin America according to Climate and Development Knowledge Network (CDKN).

## What Actis is doing

Actis believes that financing the energy transition isn't just about preventing climate catastrophe but, creating relevant economic impact. Since 2010 we have invested in 7 renewable energy generation platforms (GME, Atlas, Echo, Atlantic, Zuma, Aela, Pelicano) and are the 2nd largest renewable player in the region. These investments represent over 4GW of capacity installed throughout the continent.

By supporting the emergence of leading renewable platforms, we also foster the continuous pursuit of innovative solutions to broaden the impact of our investments. Through our energy companies we have also implemented the following initiatives:

- I-REC for Atlantic and Echo Energia, Brazil: The I-REC certificate was created in 2015 to facilitate the consumption of internationally recognised clean energy. Our former business Atlantic sold I-REC certificates to European industrial conglomerates and invested the funds to support a public school located in a remote borough of Curitiba where its main office is located. In 2019. Echo Energia. where we are still invested. obtained I-REC certificates for its operating wind power plants of nearly 1.0 GW
- Echo Energia Water & Sewage Program, Brazil: As part of its ESG commitment, the company implemented a water & sewage program for the community surrounding its 132 MW in Lagoa Nova. The project directly impacts 14,000 habitants, providing access to clean water and better infrastructure for solid waste recycling, enabling the treatment of 25 tons of waste per month and responsible for recycling c.40% of the city's waste. The project also encompasses the training of the local community and a reforestation program
- Zuma, Actis' Mexican wind and solar platform, contributes to the country's 35% clean energy goal for 2024. In one year, Zuma has generated 1,989 GWh of wind and solar energy, close to 2.71% of all clean energy generated by the Mexican National Power System. Furthermore, Zuma is contributing to Mexico's international commitments on carbon emissions reduction

towards 2030. Since the start of our commercial operation in 2016, Zuma's projects avoided the emission of 1,157,831 tonnes CO<sub>2</sub>, representing 2% of all reductions needed to accomplish the National Determined Commitments for the power sector, made in the 2015 Paris Agreement. Setting up ESG operating standards, Zumaalsoimplemented reforestation programs in all the company's projects, vehicles use minimisation policies in the O&M phase, PV lamps installation initiatives in public spaces of municipalities where we operate, and waste management, recycling policies and energy efficiency protocols in our HQ and generation plants

- Saavi in Mexico, Actis' gas thermal power plant (TPP) platform, has been able to significantly reduce emissions by implementing the following initiatives on its portfolio:
  - installation of a Control and Monitoring system (Selective Catalytic Reduction) reduced the emissions by 90% in La Rosita TPP
  - Burner combustion systems were implemented in 4 assets within Saavi's portfolio, reducing system emission also by 90%
  - Water consumption was reduced by 8,500,000 m<sup>3</sup> per year
  - The installation of a Fuel Gas Control System in Bajio reduced emissions by nearly two thirds. At an institutional level, the company was also able to reduce electric power consumption through the different offices by up to 50%. More systematically, Saavi's state of the art combined cycle gas turbines have displaced expensive and dirty fuel oil-based generation
- Atlas, Actis' pan-Latin American solar platform, has been able to avoid the emission of nearly

655,000 of CO₂ emission through its operating portfolio. The company also implemented environmental training programs in all schools within its influence. The reforestation initiative with the support of local communities has contributed to soil preservation and drought prevention







# actis



## Average annual global temperatures 1850-2018

#ShowYourStripes

Source: showyourstripes.info using data from UK MET Office

This 'warming stripe' graphic is a visual representation of the change in temperature measured in each country over the past 100+ years. Each stripe represents the temperature in that country averaged over a year. For most countries, the stripes start in the year 1901 and finish in 2018.

## Values Drive Value

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- Actis office
   Countries in which Actis has invested since 1998
   Other Actis target markets since 1998

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