

# Powering Africa's growth: the renewable energy landscape

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**Henley**  
Business School

AFRICA

# Foreword

Traditionally, the white paper format has been embraced by those in the know to communicate fresh or emerging ideas, to distil expert opinions into a digestible format, and to put new ideas and solutions on the table. In academia, white papers are a useful bridge between formal journal articles and the sort of conversation-starters we like to interrogate in the classroom.

For the life-long learners and the curious at heart, the white paper is a punchy, to-the-point partner on a never-ending journey of exploration. For the busy executive, manager, and leader, the white paper is a convenient, easy-to-read, and authoritative tool that captures the essence of an argument and opens the door to future debate. After all, deliberation and disagreement are critical elements to effective education and personal mastery. Without exposure to new perspectives and opinions, no leader can even hope to keep abreast of fast-moving shifts and trends. Therefore, the white paper stirs the pot, puts uncomfortable – or just interesting – topics on the table, and entices readers' interest.

Given its convenient and accessible format, and relevant subject matter, the white paper has become an integral part of Henley Business School Africa's annual research output. Like an informative chat with an old friend or colleague, the white paper affords Henley's faculty and professional associates the opportunity to share a snapshot of exciting areas of study as well as to flag, debate, and make sense of unfolding trends. In turn, the business leader receives a front-row seat to new thinking and emerging solutions to current and sticky problems. These insights ensure that today's leaders can make better, faster, and more agile decisions to steer their organisations forward.

In Africa, where leaders from all spheres are buffeted by a range of often interconnected social, economic, and environmental concerns, the sheer volume of issues on the table can be particularly overwhelming. Our white papers attempt to shine a spotlight on what we deem to be key considerations impacting leadership and business on our continent, with the aim of equipping those in the broader Henley Business School Africa family with the will and the way to build a better Africa.

**Jon Foster-Pedley**

Dean: Henley Business School Africa

*'Henley Africa white papers prod and probe innovations worth noting, interrogate complex issues, and discuss ways in which to solve them. They encourage dialogue, impact, and impact-driven research.'*



## White paper

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*Geopolitical developments are putting Africa at the centre of the current energy transition conversation. This position is entrenched due to the continent's mineral wealth, resources, human capital, and market size, which implies significant competitive advantages. Therefore, opportunities are rife for business leaders to reposition themselves as partners of the policymaking processes and initiatives, involving government and civil society to maximise value creation for stakeholders and secure energy security in the future.*

## Acknowledgements

*This work is a real passion of mine. It was a joy to write but the white paper really came together thanks to the Henley Business School Africa team. Thank you for your work. I really appreciate the insights and help of India Gongalves, Zara Cupido and Danie Petzer and the review of Prof. Alet Erasmus. On the other side of the equator, thank you to everyone who provided a sounding board for the categorisation of actors.*



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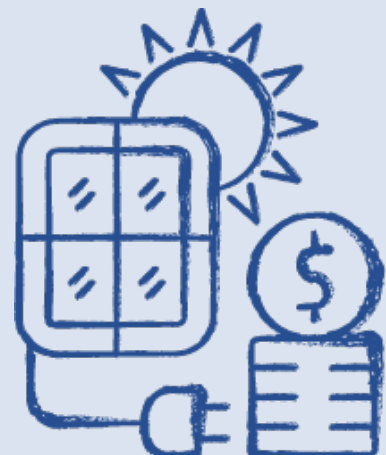
## Disclaimer

Aligned with our mission, 'we build the people who build the businesses that build Africa', we facilitate open, multi-perspective conversations and the generation of thought leadership pieces, such as this white paper. However, the views expressed in this white paper are held by the author and not necessarily held by Henley Business School Africa.

## Executive summary

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**Business leaders are being challenged now, more than ever, to manage competing priorities, including: the pressure to engage meaningfully with communities and deliver social impact, the lack of reliable electricity provision hampering business efficiency, and the call for significant societal transitions towards renewable energy. This white paper serves as a guide to business leaders – examining where we are at present (and the factors that brought us here) and the variety of pathways that lie ahead. A review of Africa’s resources, overarching international frameworks, prospects for advancement and progress, obstacles and barriers, and market opportunities is presented. A classification of actors in the sector is developed as a guide to business leaders thinking about their team and project composition, and how to interact with diverse stakeholders. This white paper is a comprehensive resource to understanding how to unlock value in the renewable energy sector and is a call to engage in the sector without hesitation and invest for a sustainable tomorrow.**







## Introduction

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Transition is currently the central theme of Africa's energy sector, requiring leaders in government and business to adapt, drive change, and seek innovative and inclusive solutions. Transition entails transition in geopolitics, opening new conversations; transition in energy strategies, creating new markets; transition in economic structures, destabilising communities; and transition in skills and expertise, presenting a challenge for government and organisations.

Energy unlocks economic growth and fuels prosperity, provides access to education, and improves sustainability outcomes. In many cases, the Sustainable Development Goals (SDGs) (United Nations Development Programme [UNDP], 2023) can be achieved more successfully with access to energy and enhanced when this energy comes from renewable sources. Solar energy provides security and decreases the reliance on fuels that often have adverse health and safety impacts, particularly in lower-income households, where the availability of solar energy frees income for other purposes. For economies, there is a strong imperative to unleash economic growth and productivity through stable energy provision. Africa has the highest solar potential globally, but it is unfortunately still a largely untapped resource (Armstrong, 2022).

For business leaders, financial and profit imperatives create tension concerning whether to invest in renewable energy technologies or wait for state-led service delivery. Similarly, pressure is exerted by consumers and clients, and an overarching global narrative calling for environmentally friendly products and services. To make the switch to renewable energy and sustainable practices, business leaders need to be able to identify the right opportunities, enable organisational adaptation, and clearly communicate the strategic imperatives driving the change. This can unlock long-term value for businesses and build the core competencies required to aptly deal with challenges in times of energy uncertainty.

The following sections provide an overview of the geopolitical context Africa is currently located in. We then discuss the abundance of resources the continent holds, before examining how it can advance through renewable energy. Thereafter, we examine how renewable energy can contribute to alleviating wicked problems and provide an overview of some challenges in the sector. Finally, we develop a typology of actors to assist new entrants to the sector to understand the field and effectively engage with relevant stakeholders.

# Geopolitical context

## A scramble for Africa's favour

At a geopolitical and strategic level, energy's role has once again become clear with the significant disruption following the Russian invasion of Ukraine. Energy security remains a key concern and has driven the activity of the European Union (EU) and the United States (US) in particular, and increased interest and investment in the African renewables landscape. The world's over-reliance on Russian gas and the extreme spike in the cost of gas and energy – for example, in Germany in August 2021 (International Renewable Energy Agency [IRENA], 2022) – created a sense of urgency in Europe and the US, and something of a renewed scramble for Africa 2.0 (Brouwers, 2023). As is evident from the many delegates who have visited African countries recently (indicated in Table 1), a flurry of activity is currently under way, with some African states beginning to question what

underpins this re-engagement (Brouwers, 2023). This re-engagement with African countries presents the opportunity for these states and organisations to come to the negotiating table as equals, disrupting the existing power structure. As a recent *New York Times* article noted, 'A power balance shifts as Europe, facing a gas crisis, turns to Africa for help' (Bearak et al., 2022). The envisaged re-engagement is complicated by Russia's and China's presence and activity on the continent, testing loyalty and adherence to the current international order. Headlines like 'Can US charm offensive woo continent from China?' (Soy, 2023) or 'US looking to counter China, Russia' (DW, 2023) are increasingly common. Furthermore, China has an advantage in the manufacture of electrolysers, which is putting pressure on the EU and the US to pick up the pace to remain competitive (Baker and Mathis, 2023).

**Table 1:** High-level delegations to Africa **Sources:** Al Jazeera (2023a, 2023b); Brouwers (2023);

Name	Countries visited
Janet Yellen	Senegal, Zambia, and South Africa
Kamala Harris	Ghana, Tanzania, and Zambia
Jill Biden	Namibia and Kenya
Anthony Blinken	Ethiopia and Niger
Chinese foreign minister Qin Gang	Ethiopia, Gabon, Angola, Benin, and Egypt
Sergey Lavrov	Angola, Eswatini, Eritrea, Mali, Mauritania, South Africa, Sudan, and met the Egyptian foreign minister in January; this follows a trip in June 2022, where he visited Egypt, Ethiopia, the Republic of the Congo, and Uganda
Wopke Hoekstra	Kenya and Ghana

DW (2023); Reuters (2023b); Zaytsev (2023)



## Implications for South Africa

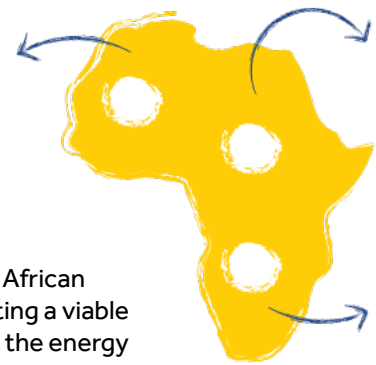
From a geopolitical perspective, business leaders need to be aware of shifts in focus and investment from leading trade partners. For example, countries like Zimbabwe – historically left out in the cold from an investment perspective – are now being courted, given the crucial minerals they possess. However, South Africa risks becoming increasingly isolated, which is bad for business, potentially losing out in terms of the extent to which the country can benefit from the global energy transition. The recent position and action taken by South African business leaders in engaging with President Cyril Ramaphosa are a clear example of the type of active and engaged citizenship that is necessary in leading the energy transition (Mahlaka, 2023)

On a recent visit to South Africa, the Finnish President, Sauli Niinistö, highlighted how African and other emerging market states are bearing the burden of carbon emissions, noting 'Climate change does not treat us fairly. Those least responsible for it are hit the hardest' (Niinistö, 2023). This is echoed by the Intergovernmental Panel on Climate Change:

*Africa is one of the lowest contributors to greenhouse gas emissions causing climate change, yet key development sectors have already experienced widespread losses and damages attributable to human-induced climate change, including biodiversity loss, water shortages, reduced food production, loss of lives and reduced economic growth. (Trisos et al., 2022: 1289)*

These inequalities are evident in many spheres, with Cozzi et al. (2023) from the International Energy Association revealing that 'the world's top 1% of emitters produce over 1 000 times more CO<sub>2</sub> than the bottom 1%'. Cozzi et al. (2023) added that the 'average African' has a carbon emissions footprint that is 11 times smaller than an average North American counterpart. Differences in location, income, and spending power create imbalances in global levels of emissions and how these are distributed (Cozzi et al., 2023). This exacerbates the geopolitical tensions, with calls by some to ignore the call to transition from fossil fuels, while others see only opportunity in the transition.
















The capacity for African countries to localise energy production now seems a much more viable proposition than before. Apart from increasing their energy independence, it will limit their reliance on imported energy. However, there is increased concern that the pressure for African countries to adopt renewable energy solutions is limiting their ability to fast-track economic growth.



## Contemplating the way forward

An urgent conversation is needed to determine ways to support the growth of African renewable energy sources, limiting over-investment in fossil fuels, but supporting a viable energy mix. Unfortunately, wealthy countries' past pledges of support to drive the energy transition in Africa have not always been met timeously, raising concern that there will be a lack of follow-through on required and pledged funding (Bega, 2023).

From the perspective of energy security, economic and social stability, and grid management, fossil fuels as a baseline for energy provision will unavoidably remain an integral component of Africa's energy mix. Yet, energy poverty is extreme across the continent. This is a complex socio-economic and human rights issue, considering that Africa's emissions remain minimal compared to the global scenario (United Nations Conference on Trade and Development, 2023). A further issue is that African citizens yearn for – and are entitled to – development, growth, and enhancement opportunities that electricity provides. According to a 2022 Emissions Database for Global Atmospheric Research (EDGAR) report, 'In 2021, China, the United States, the EU27, India, Russia and Japan remained the world's largest CO<sub>2</sub> emitters', and this cluster of countries represents '66.4% of global fossil fuel consumption and 67.8% of global fossil CO<sub>2</sub> emissions'. These countries saw their CO<sub>2</sub> emissions increase in the previous 12 months (EDGAR, 2022). As per Tiseo (2023), China contributed almost 31% of total emissions globally in 2021. The EU is reportedly the only region to have effected a decrease in emissions (see Figure 1) in 2021 since 1990 – in power, industry, buildings, and other sectors, but not in transport (EDGAR, 2022).

		Globe 2021 vs 1990 (fossil CO <sub>2</sub> )	EU27 2021 vs 1990 (fossil CO <sub>2</sub> )
	Power industry	 <b>+87%</b>	 <b>-39%</b>
	Other industrial combustion	 <b>+65%</b>	 <b>-41%</b>
	Buildings	 <b>+2%</b>	 <b>-32%</b>
	Transport	 <b>+65%</b>	 <b>+16%</b>
	Other sectors	 <b>+101%</b>	 <b>-23%</b>

**Figure 1:** The EU's carbon reduction  
**Source:** Adapted from EDGAR (2022)

While African countries are encouraged to optimise renewable energy sources in their quest for energy security and progress, developed economies are obliged to ensure that they radically reduce harmful emissions to compensate for their outsized contribution.



Nevertheless, the transition to cleaner, more renewable energy sources presents its challenges. Skills and existing market structures that are aligned to traditional fossil fuels need to be updated, implying noteworthy disruptions for individuals, communities, and society. Furthermore, when considering policies and the trend to a just energy transition (JET), a consideration of the number of households whose livelihoods depend on incomes earned at coal mines is non-negotiable. As an indication, coal industry in South Africa is 'the world's fifth largest, [and] employs 90,000 miners' (Cocks, 2021). In addition, the resources required for renewables are not necessarily concentrated in the same areas and regions as traditional fossil fuels. Finally, the implementation of plans like the JET implementation plan (IP) in South Africa (The Presidency, Republic of South Africa, 2022) requires leadership and careful management.

*From a business perspective, it is critical to remain abreast of the trends and latest developments, and to seek opportunities to thrive. Rather than thinking in terms of winners and losers, the energy transformation process should be driven by partnerships and entrench more socially and environmentally responsible business practices.*

# Africa's resources

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A combination of unique resources – minerals, people, and market – provides the potential for Africa to develop advanced technologies and new industries, and to establish global partnerships to accomplish significant change to people's lives continent-wide. Success in this sector can unleash gross domestic product growth, improving government revenues. For businesses in Africa, advantages embedded in the roots of organisations include an understanding of the nuances of the market, access to local skills, and capabilities of the population.

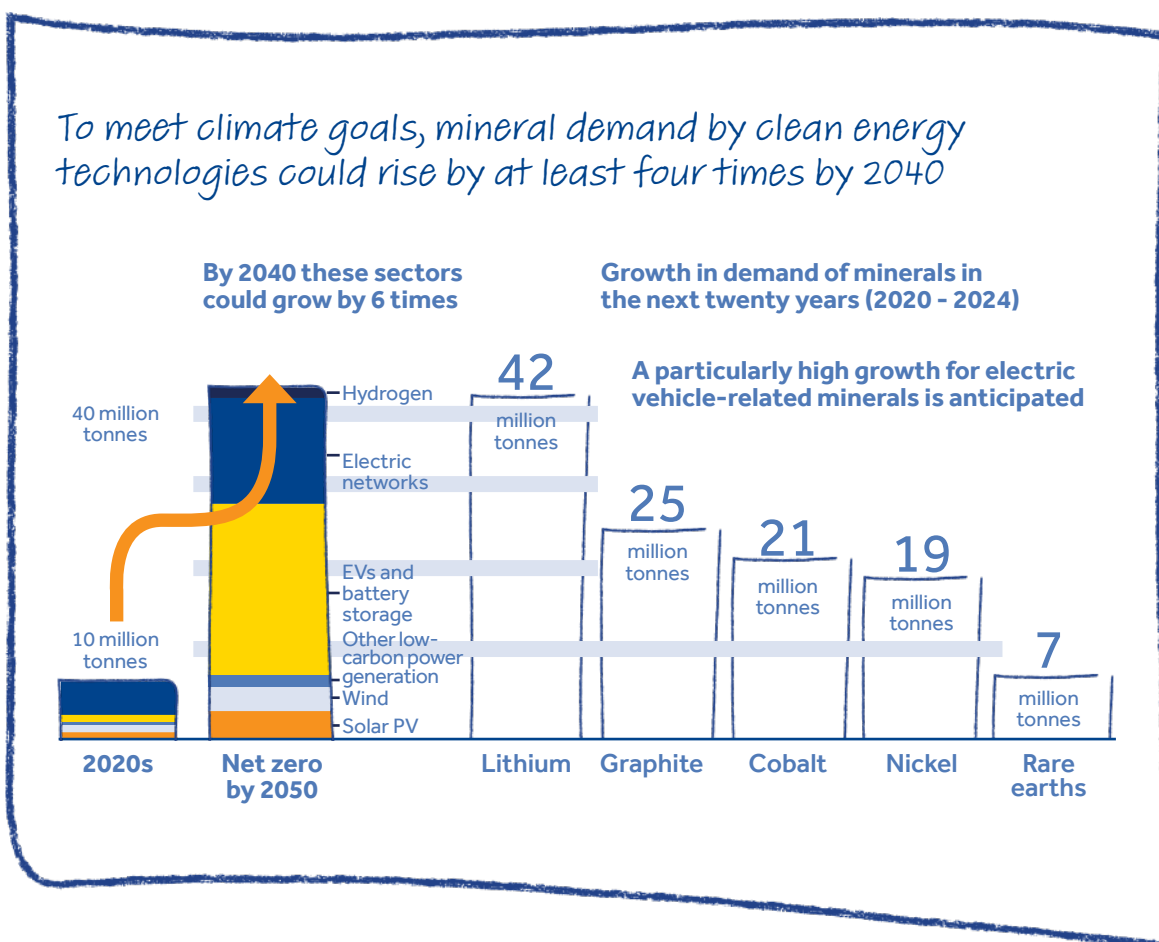
*The required restructuring of businesses, societies, and economies to transition to renewable energy sources, in conjunction with the geopolitical shifts and focus on Africa, places African businesses and leaders centre stage.*

## **Harnessing the continent's mineral wealth**

The global transition to renewable energy and electric vehicles creates a high demand for resources. 'A typical electric car needs six times the mineral inputs of a conventional car, and an onshore wind plant requires nine times more mineral resources than a gas-fired power plant' (Mathe, 2021). A 2021 World Energy Outlook report noted that as countries aim to meet nationally determined contributions and lower greenhouse gas emissions in line with the Paris Agreement, renewables will represent more than 40% of the demand for copper and rare-earth elements, 60%–70% for nickel and cobalt, and a rise to approximately 90% of total demand for lithium (IEA, 2021).

For certain African countries, this surge in demand presents significant financial and social opportunities. The potential job creation and economic benefits that may follow investment into these sectors is substantial. For example, 70% of platinum production globally occurs in South Africa, while 70% of global cobalt is produced in the Democratic Republic of the Congo (Mathe, 2021). Notwithstanding the increase in the cost of minerals and related inputs over time, mineral demand is growing as the focus on renewable energy rises. Figure 2 illustrates the growth in mineral demand.


However, countries are cautioned to learn from past challenges, where economic activity was skewed towards resources, creating dependencies and vulnerabilities in economic systems. Clear strategy at company – and country – level should focus on diversification, understanding what can be accomplished, and how benefits can be gained from clean energy. A recent example of a new way forward in the continent is Namibia’s ban on the export of certain unprocessed minerals – indicating exports will be of value-added minerals, drawing a higher revenue (Reuters, 2023a)



**Figure 2:** Growth in mineral demand up to 2040  
**Source:** Adapted from Smit and IEA, cited in Mathe, 2021

On the bright side, the cost of renewable energy has declined across the board since 2010 (IRENA, 2020), due to improvements in technology, advancements in skills and expertise, more efficient supply chains, and a generally more competitive landscape. Costs have reduced, with photovoltaic solar seeing an 82% decline, 47% for concentrated solar, while onshore wind has declined by 39%, and offshore wind by 29% (IRENA, 2020).





According to the IEA (2022), renewables will account for more than 90% of global electricity expansion through to 2025. This is an opportunity for business leaders to take advantage of scaling renewable energy solutions as the costs decline and technologies improve.

## **Optimising human resources**

The African youth population is simultaneously a threat and a resource. Globally, Africa is the only region expected to see growth in population under the age of 24 in the period to 2050 (Sow, 2018). This large number of people with time, energy, ideas, and talent should be harnessed and motivated to drive the JET IP (Sow, 2018). A comprehensive set of skills and associated training should be provided to youth across the continent and skills transfer should be an integral component of all renewable projects. Investing in the youth now will create a generation of future experts and ambassadors for Africa who specialise in renewable energy. This is also a useful component in mitigating the risks of the youth bulge, which presents a potentially significant threat of instability if they are excluded from the economy.

## **The value of market size and consumer demand**

The market size and consumer demand across Africa are significant resources, particularly if organisations develop products and services at an accessible price point. This is a chance for business leaders to move beyond local borders and seek impact, markets, and profits at scale. Opportunities offered by the African Continental Free Trade Area (AfCFTA) to African businesses allow access to a greater market, with fewer bureaucratic hurdles (ESI Africa, 2021). This is positive, particularly in the post-COVID-19 recovery period, as companies and countries try to recuperate after the difficult economic chapter. Smart solutions and partnerships in the renewable energy sector can be used to boost manufacturing and provide reliable energy to industry. For business leaders thinking of tapping into the broader market demand, the role of energy should be a central theme and recurring question. Business leaders could ask themselves and their teams: 'What else can reliable energy unlock?'; 'How can we innovate beyond energy?'; and 'What creative solutions can we implement to ensure reliable power to our project?'

# Renewable energy in action: unleashing the transformation



## Guided by the Sustainable Development Goals

The SDGs are a set of 17 interrelated priorities and goals for development that cover a range of issues. According to the UNDP (2023), the SDGs represent 'a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity'. The goals include ending poverty and hunger, providing affordable and clean energy, peace building, and partnerships (UNDP, 2023). These goals form the basis for much development work and action, and seek to guide the activity of various actors and stakeholders, including governments, local and international non-governmental organisations, corporates, and academic institutions.

## Leapfrogging Africa into the renewable age

'Africa is in the throes of an energy crisis' (Burger, 2023), leading to mounting pressure to act. Yet, the continent has the opportunity to leapfrog into the renewable age. Mini-grid solutions for communities provide decentralised access to energy, without the overhead of having to install transmission lines to inaccessible places, while large-scale projects coexist with household-level solutions across Africa, with 'plug-and-play solar' at the household level and the development of the Redstone concentrated solar project (BusinessTech, 2022). This means that formerly geographically marginalised communities are now able to benefit from solutions that address their needs effectively. Ownership and a sense of participation are created in this way, fostering active citizenship and valuing the agency of citizens. For example, significant projects have been developed and planned in the green hydrogen sector, fuelled in part by policy in the US (Inflation Reduction Act), which provides subsidies for green hydrogen, and by EU policy clarifying what constitutes green hydrogen (Keating, 2023). Collaboration of this nature ensures investment certainty. Similar moves are required across Africa – ideally at the AfDB or AfCFTA level – to develop a continent-wide standard.

*'Europe and the US have the most proactive incentive policies for the hydrogen industry, while the Middle East and Africa have the largest scale and most economical renewable energy' (The Straits Times, 2023).*

As noted above, African business leaders can work closely with policymakers to co-create workable policies that encourage investment, boost productivity, and have an impact beyond business.



## Exciting projects



From Egypt to the far end of the continent in Saldanha Bay, plans and development zones are being built and investment sought promoting the green hydrogen industry. There is potential to capitalise on existing skills, such as the capabilities in Sasol in South Africa, and transfer them to green hydrogen production (Creamer, 2022). Similarly, the development of clean and renewable fuel may encourage the stimulation of industries, such as green steel by, for example, reinvigorating the ArcelorMittal steel plant in the same area (South African Government, 2022).

Furthermore, massive projects in solar and wind have been developed and innovations, such as floating solar in Uganda, are being tested for feasibility (Renewable Energy World, 2022). The IEA has consistently underestimated the extent to which solar capacity growth occurs each year, highlighting how much the demand has risen in the past decade (Gabbatiss, 2022). Renewable energy projects, such as clean cook stoves, have been in use Africa-wide for decades, although largely driven by donor aid and charity (cf. Cookstove Project: <https://cookstoveproject.org/>). In Morocco and South Africa, world-class concentrated solar projects with significant capabilities, including the ability to store energy, have been developed (AFDB, 2023; BusinessTech, 2022).

## The need for balancing energy reserves

Storage is a critical feature of the renewable energy sector to compensate for the issue of the so-called 'duck curve' or mismatch between the supply of renewable energy and demand during peak hours (The Economist, 2023). This phenomenon is detailed in the next subsection. Unfortunately, peak solar hours do not directly correspond with the peak demand times and wind power is unpredictable. Consequently, energy must be stored to ensure stable electricity supply 24/7. The potential to develop a complete value chain for lithium-ion batteries on the continent is high, considering the significant store of many of the required minerals available (Ismail, 2022). Similarly, green hydrogen as storage could store energy for months, as opposed to hours in batteries, yet with fairly significant limitations in efficiency (Sivertsen and Rødevand, 2023).



## The duck curve



A significant challenge of the transition to a renewable energy future is the duck curve, which refers to the mismatch between renewable peak supply and demand for energy. This mismatch and the irregular supply of renewable energy, such as solar (which may be affected by cloudy days) and wind power (which is erratic), put a strain on the grid. Technologies like green hydrogen offer potential energy storage solutions, although a significant challenge from a technical perspective is the efficiency loss. While hydrogen technology allows for the long-term storage of energy, the loss during transportation and in the transformation from hydrogen to ammonia, for example, is significant, requiring oversized production to compensate for the efficiency loss.

Power surges and declining power levels can weaken a grid over time, as experienced in South Africa, where due to loadshedding, there is concern over the potential of a grid collapse because of the overly strained infrastructure. This would have significant adverse socio-economic effects. There are lessons to be learnt from the South African loadshedding case. Through loadshedding, the ability to track and manage the grid and transmission to a fine degree has been developed and the impact on the grid can be carefully studied. Moreover, the duck curve (see Figure 3) reinforces the case for a fossil fuel baseload to ensure stability.

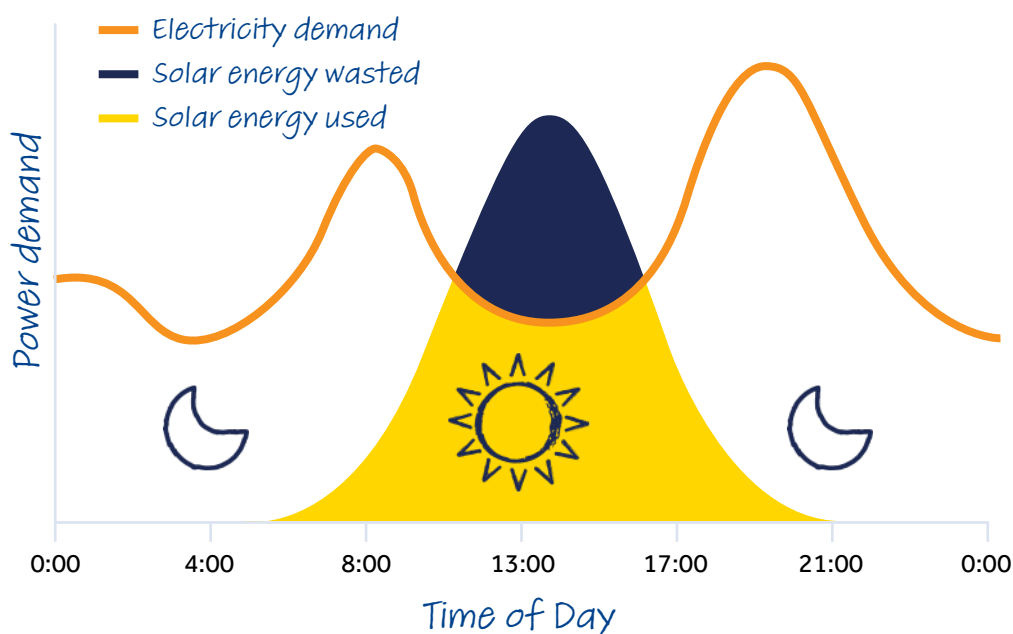


Figure 3: The duck curve  
Source: Adapted from Procorre (n.d.)

## The paradox: challenges and opportunities

To extract the required minerals to fuel battery expansion, the mining industry will require approximately 300 new mines to be opened globally (Sivertsen and Rødevand 2023), presenting challenges and opportunities. Increasingly, mines are turning to solar or renewable power (Daniel, 2022), lowering their carbon footprint. However, mining remains an intensive and extractive process. The related job creation potential is significant, leading to opportunities for communities and for new economic hubs to emerge (Burger, 2022; IRENA and AfDB, 2022).

## Assessing the profitability of investments

Finally, there is increased pressure from energy companies to ensure their investments in renewable energy are profitable, beyond simply achieving lower-emission targets. For example, a recent headline noted, 'Shell demands profit from green energy, not just CO<sub>2</sub> cuts' (Mathis, 2023). Therefore, projects will become more selective, signalling an important shift to a long-term future of investment in this sector.

*Evidence shows renewable energy is no longer a 'greenwashing' component or an additional arm of an organisation, it is becoming central to the profit generation strategy of organisations. The market is aligning with the renewables sector, meaning it is becoming more mainstream.*



# Empowered business: tackling wicked problems

## Wicked problems explained

So-called wicked problems refer to issues that possess multiple sources and are influenced by and impact a multitude of stakeholders in society. To resolve complex problems of this nature requires coordinated efforts. By broadening our understanding of renewable energy and looking beyond power and electricity supply, wicked problems could be brought into focus, creating opportunities for decentralised solutions and more democratic approaches to envisaged development projects. Understandably, these projects may take more time to develop, as they require in-depth consultation at the community level, but can create a sense of ownership, agency, and create or build upon community structures and assets (GreenCape, 2020). Figure 4 depicts the properties of wicked problems.

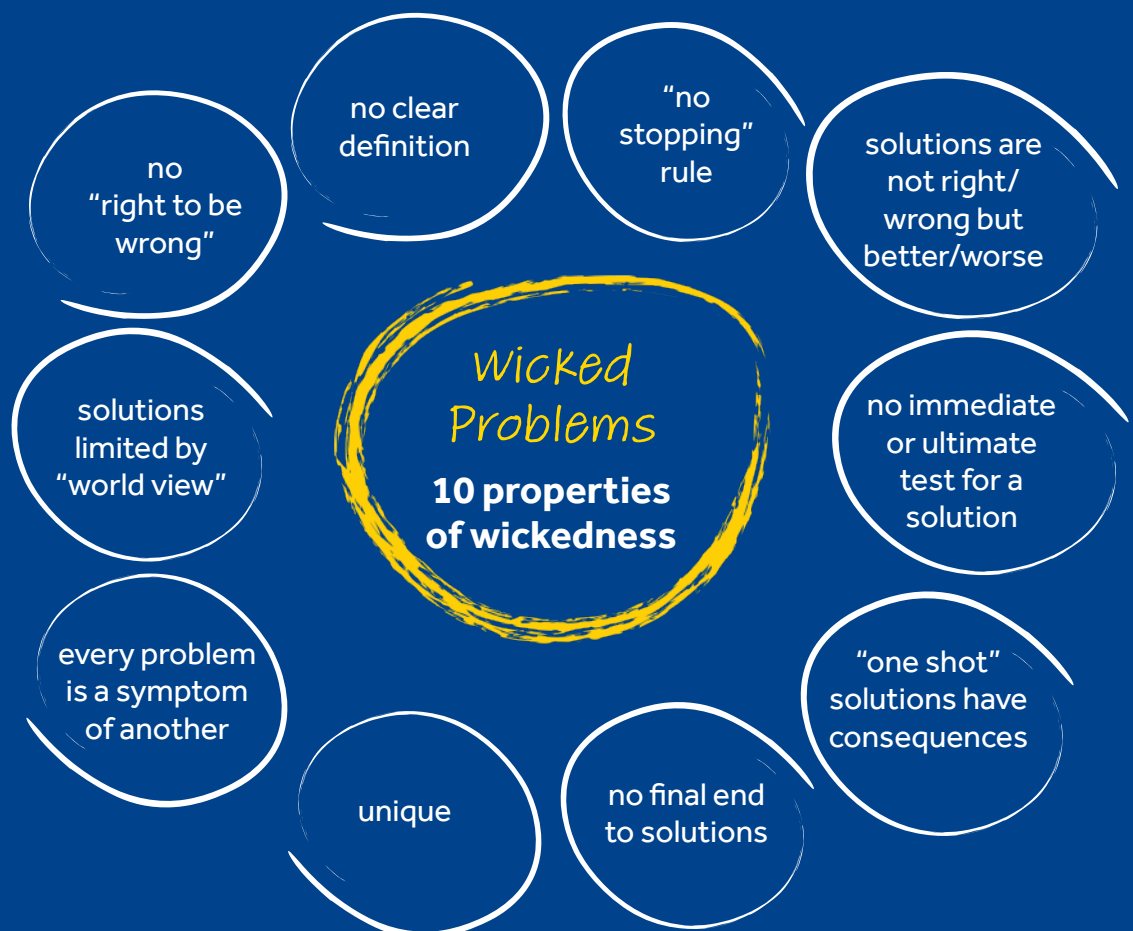


Figure 4: Wicked problems

Source: Adapted from Rittel and Webber (1973); Sarkar and Kotler (n.d.)



Also refer to page 37:  
**Vignette 3:** GreenCape – alternative service delivery



## Just energy transition implementation plan

The South African JET IP highlights that it has a 'focus on tackling the country's systemic challenges of poverty, inequality, and unemployment', and is an 'opportunity for the country to drive industrial development, innovation, and economic diversification' (The Presidency, Republic of South Africa, 2022: 5). This is a clear example of wicked problems thinking and the overlap of wicked problems, policy, and the need to consider broad solutions beyond electricity.

The JET, a process that needs to take place across the continent and beyond, signals a huge opportunity to address wicked problems, despite significant challenges. New supply chains that emerge will replace existing ones, disrupting local markets. This will require innovative responses to ensure local communities are not decimated by job losses, further requiring a delicate balancing act to preserve the economic livelihoods of communities transitioning away from coal. This must occur in tandem with exploring and stimulating economic growth and development in new areas, and attracting investment. From a business leadership perspective, this is a sensitive transition and the business imperative to close or move operations needs to be done in consultation with employees and community members who stand to lose their employment. Responsible planning and an effective corporate social responsibility (CSR) programme developed early and which fosters independent economic activity may be one way to reduce the adverse impact of business closure, reorganisation, or relocation. Business leaders can become experts in this area and lead these types of transitions globally, provided they are done correctly at home.

## Corporate Social Responsibility





## Decentralisation as mission-critical

Grid instability and surges occur due to a mismatch between supply and demand of renewables and the inability to plan for or predict the supply of renewables, such as wind and wave power. This is the duck curve. Similarly, in certain cases, the existing infrastructure required for the distribution of energy is located in places where fossil fuels are abundant, but is lacking in areas of abundant renewables, such as the Northern Cape in South Africa. These challenges could be mitigated by integrating more appropriate, local solutions that can leverage the renewable resources in a specific community or region. For business, small and individual community projects may not seem financially feasible, but economies of scale can be achieved as local solutions are rolled out across the country/continent.

With battery and storage capacity that meet local requirements, the grid and transmission network does not have to cover large areas, particularly where the population is widely distributed. This is one way to think of a future where participation is more widespread, democratised, and accessible. Energy solutions can be designed for specific industrial sites and manufacturing processes to enhance productivity, harness renewable energy, and develop a sense of control over power. This is something business leaders have had to contend with during loadshedding. The downsides are currently being experienced, and the upside to business, society, and the environment is clear.

## Exploring the idea of 'prosumers'

Another example of tackling wicked problems is the idea of 'prosumers' (European Environment Agency, 2022), when households are simultaneously producers and consumers of energy. For example, households are producers of energy via solar panels and excess electricity can be fed into the grid, while being typical consumers, with demand fluctuations during the day. Where 'prosumers' are able to generate more than they use, they should be able to earn money from producing electricity. At a minimum, households will have some of the cost of their energy consumption mitigated by producing electricity.

Creative thinking around small and off-grid or micro-grid projects can present business leaders with various ways to de-risk these projects. In a single community, risk may be high, but spread over 50 or more sites, this risk is spread. In addition, partnering with other service providers, such as in healthcare or education, can mitigate risk by sharing the burden across partners.

It could be challenging to do business with an eye on unresolved wicked problems. Nevertheless, it is exciting that the transformation, rapid shift in the fibre of energy generation, and influx of capital present novel opportunities to redefine business practices. During this transition, opportunities of shared value unfold, enabling the incorporation of circular business practices (European Parliament, 2023; c.f. Raworth, 2017), where role players are involved through all stages of everyday organisational behaviour. A consequence of the transition in the energy sector and related impacts on organisations and society is that businesses with dexterity and awareness of their environment will gain a competitive advantage. Disruptive business models that maximise the shifting landscape, engage closely with communities, and create value beyond their immediate profit objectives are set to thrive.



# Challenges in scaling up

While the increased attention and investment into the renewable energy sector across Africa brings much hope, there are numerous challenges ahead.

## Africa: a complex scenario

The continent has an abundance of significant resources, yet has the lowest rate of electricity access globally (IRENA and AfDB, 2022). Governments are under pressure to address this backlog of demand, rather transitioning to cleaner energy sources. The rapid growth predicted for the renewables sector is based on a very low base of electrification in Africa, translating into approximately 600 million Africans – about 50% of the continent's population – without electricity (Ighobor, 2022). A further 900 million Africans do not have access to clean cooking fuel (Ighobor, 2022), while three billion people are affected by energy poverty globally (Energy for Growth Hub, n.d.).

## Leaders are under pressure to act

Leaders at all levels of government and business are under severe pressure, since:

- Citizens and voters demand energy supply, economic growth, jobs, and a clean and safe environment;
- International bodies and organisations demand the mitigation of the ill effects of climate change and moving swiftly to renewable energy sources, while allowing mining and minerals extraction for international markets; and
- Local industries demand the provision of policies and infrastructure to unleash growth.

*The situation is tricky, Africa's leaders need to balance conflicting imperatives. There is growing demand from a growing population, growing economies, and power-hungry industries amid the strong demand of international bodies and organisations to limit power production causing high carbon emissions.*

## Lack of policy

Policies are required to set the agenda, support investment, and provide stability in the JET. For example, the EU recently published its definition of green hydrogen, creating clarity and facilitating investment (Erbach and Svensson, 2023). Similarly, following the US Inflation Reduction Act, companies are assured of receiving certain tax incentives if they conform to the policy (Clifford, 2023). However, until this becomes uniform across Africa – perhaps led by AfCFTA – a lack of certainty about local use may be problematic.

Currently, 'The (ESG and carbon) regulatory environment in Africa is lax in comparison [to the EU and USA], with low to zero control of carbon and sustainability targets' (Davies, 2022).





Therefore, African governments need to ensure that opportunities for large-scale investment are well established and clearly communicated, providing the necessary security for international investors. While the current global climate change challenges are not the result of carbon emissions from African countries, and rather rest on the shoulders of the affluent West and China, current environmental imperatives are exerting pressure on African countries to drive the changes and enhance renewable energy use across the continent (International Monetary Fund, 2021). This creates a potential mismatch and concern regarding equality in development potential and strategies for African countries relative to the rest of the world (Tongia, 2022).

Consequently, some pushback from African actors is not surprising (Khadka, 2022). Some even strongly support the continued use of fossil fuels for African countries' development, despite the environmental and climate impacts, because the livelihoods of many communities depend on job opportunities created by the coal mining industry (Harvey, 2022; Mcfarlane and Abnett, 2022). Moreover, there is concern over duplicity, as multinational companies invest in African oil and gas exploration, while backing net-zero policies at home (Caramel, 2022).

# Collaboration across stakeholders: a categorisation of actors

For businesses interested in engaging with the renewables sector, it is important to gain an understanding of the types of actors involved and business leaders need to adopt an active stance. The landscape of renewable energy – across Africa and beyond – reveals various categories of thinkers and actors, including *armadillo*, the *octopus*, the *ox*, and the *Labrador*. While light-hearted, this classification developed by the author provides a useful tool to negotiate the energy landscape and helps us to think about how to build and develop projects, how to be more inclusive, and how to leverage the strengths of various actors. In thinking through the various categories, we can understand the motives and drives of different groups of actors. Each group presents advantages and disadvantages.

## The armadillo

The *armadillo* remains protective of fossil fuels, believing that the cost and efficiency of even a bundle of renewable alternatives is too complex, unreliable, and untested for economic growth and societal stability. Armadillos warn against basing a transition on these technologies. These 'animals' withdraw into the safety of proven technologies and the fuel that has brought significant economic development and advancement globally. This group relies on the power of technologies, such as carbon capture and storage, to mitigate climate change. This is not an incorrect position to adopt, as the development witnessed due to the unlocking of fossil fuels has transformed how humankind lives. When engaging with members of this group in advocating for renewable energy and attempting to gain their support for renewable projects, it may be worth considering alternative arguments – for example, discussing the power of renewable energy in mitigating wicked problems and the promise of decentralised solutions – to broaden the conversation and prevent armadillos from withdrawing into protective arguments. There are upsides to renewables that go beyond carbon emissions, which can sway armadillo support.



## The octopus

The *octopus* represents the enablers, drawing in from multiple sources and partnering widely across domains to deliver innovative solutions. These brokers promote and share knowledge and seek to build effective policy in support of the transition to renewable energy. The role of the octopus is to draw diverse groups into a central conversation, to share knowledge and insights, and to provide the opportunity to find common ground across players in the energy sector. These actors are advocates for change who strive to find a way to build common ground as the transition to renewable energy unfolds. To effectively build projects and share ideas, it is useful to identify and engage with these individuals and get buy-in for ideas and plans, as they can involve the right policymakers, government, advisors, funders, and interested parties. Collaborating with this type of effective networker can accelerate the growth and development of projects. It is important to ensure that these people are included and feel they will be rewarded for their contributions to ensure there is consistent engagement and open dialogue.



## The ox

The *oxen* build the projects and develop the infrastructure. These are the people who put in the hours and work required and plough ahead on projects, with the correct technical expertise to bring projects to fruition. This group works as a team to develop technology, experimenting across countries and regions. With boots on the ground and experience in navigating challenges and overcoming various obstacles to project development, oxen's knowledge is indispensable to a successful renewable energy transition. This pragmatic group believes in the power of technology to bring about grid and energy stability through improved battery storage capacity. It is vital to engage with oxen, learn from their challenges and experience, and involve them in the design of projects from the beginning.



## The Labrador

*Labradors* are the optimists. Being loyal to the idea of the renewable future, they call for an urgent and complete push from fossil fuels, redesigning cities and how we live, work, and travel to ensure we can dramatically reduce carbon emissions and fossil fuel use. Labradors can be overly enthusiastic about the prospects of renewables, which may result in them trivialising some challenges that need to be addressed. In engaging with Labradors and to bring them onside, it is useful to engage with their viewpoints, and try to harness their energy and optimism to drive ideation and innovation within projects. These future thinkers can enable us to think differently and see opportunities we may otherwise dismiss.





## Business leaders need to ask themselves

Are you an *octopus*, able to draw diverse groups into the central conversation about energy transition to share knowledge and insights, to provide the opportunity to find common ground for action in your field of operation? Does your project need someone with these skills?

OR

Are you the *armadillo*, believing that the cost and efficiency of introducing renewable alternatives in your sector is too complex or unnecessary, and that the debate about transitioning to green energy sources is premature? How will you deal with the views of people in your organisation who feel differently? Does your team include people who hold this view and, if so, how can you ensure their cooperation?

OR

Will others describe you as one of the *oxen* who has adopted the idea of green technologies, who will build projects and develop the infrastructure based on the correct technical expertise to bring envisaged energy transformation projects to fruition? Can you pull together as a team to achieve shared goals? Have you considered how to create a uniting force in your organisation to achieve concrete results.

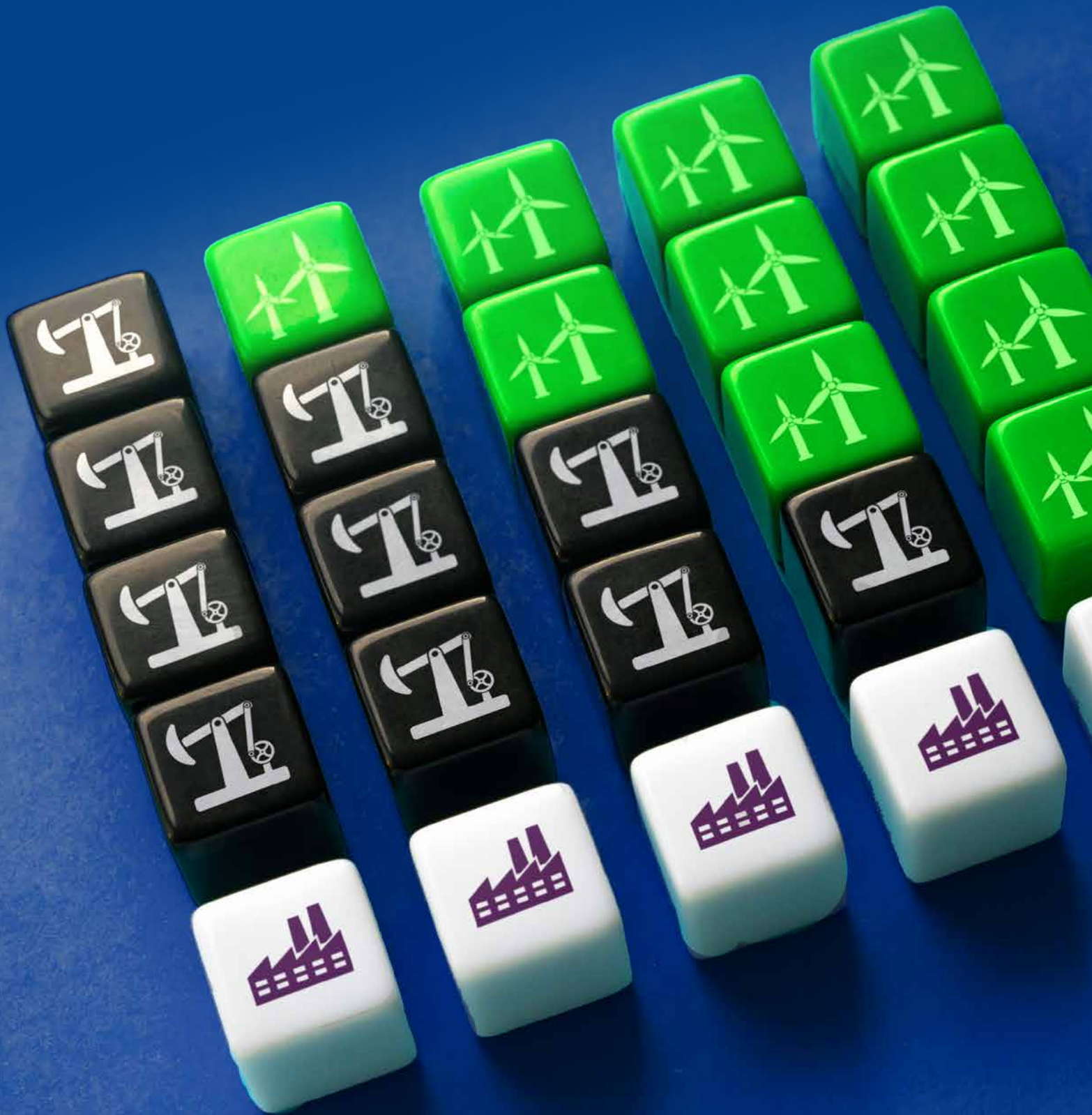
OR

Are you a *Labrador*, an optimist who is loyal to the idea of the renewable future, who will engage with alternative viewpoints, and try to harness their ideas to drive ideation and innovation within projects to enable others to think differently? Are you able to temper your enthusiasm to hold constructive conversations and sway others' opinions? How can your energy create the most value for your organisation and community?



*Business leaders who are building coalitions and leading diverse teams will find the typology of actors who are all part of the energy transition narrative useful in that an understanding of the sentiment that drives them will allow them to draw on the strengths of the various groups and to minimise conflict within teams. Building a shared and inclusive vision and mission for projects that transcends the objectives of each group can assist in building synergies in projects.*





# Conclusion

From a business perspective, there is almost unlimited potential for impact, growth, development, and improvement across Africa. Business leaders need to recognise the time to invest is now. The full spectrum of investment opportunities exists, including mining, manufacturing, industry, training and development, and innovation, with opportunities across regional, state, community, and household level. The potential impact extends beyond energy – directly touching lives, and mitigating wicked problems, working towards the attainment of SDGs. Table 2 presents a call to action for business leaders, with areas for consideration for action and engagement in the renewable energy sector.

From a development and business perspective, organisations can explore examples of resilience in communities, highlighting the pockets of excellence and innovative ideas that can be scaled to generate impact and profit. Undeniably, with this type of transition, policies are vital and, in the policy formation, research and stakeholder engagement are critical to developing effective policies. Large-scale projects can be studied to serve as an example when new projects are conceptualised to mitigate risk.

Amid geopolitical shifts and tensions, and the rapidly changing environment, both business and society can ill afford failure when turning to renewable energy. Therefore, businesses should remain focused on delivering value to local consumers and stakeholders who depend on the provision of energy. Bearing in mind the various actors who have an interest in the renewable energy sector, and noting the stakeholder typology explicating different views that need to be consolidated, particularly to leverage the strengths of the various stakeholders, will enhance business leaders' attempts to develop a broad coalition of expertise and thinkers.

Table 2: A call to action for business leaders

Area of engagement	Action
Policies need to be developed and adapted	Participate in the process; do not wait for the outcome of others' engagement. Lobby for a streamlined and clear policy that encourages investment and provides stability.
Skills must be relevant	Think about the skills necessary for success in the energy transition – and how you can help to grow them locally.
Solutions need to work for all	Ensure inclusivity at all levels – it is key to successful operations. Partner with communities and stakeholders, and co-create solutions that work on multiple levels.
Innovate based on real circumstances	The potential for growth is virtually endless, but it starts by improving on the here and now.

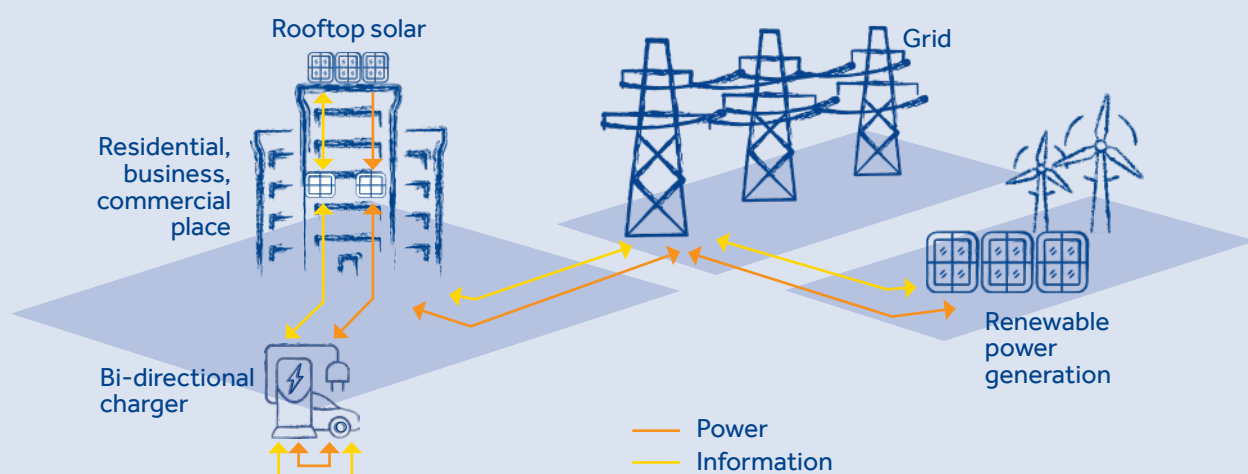


# Vignettes

## Vignette 1: Bidirectional charging, changing the energy landscape

The head of Pre-Development and Innovation for eMobility Charging at Siemens, Stefan Perras (cited in Fahmy, 2023), stated that 'There are giga- and terawatt hours of battery storage sitting in front of garages.' A recent Siemens article (Fahmy, 2023) noted that bidirectional charging – whereby the vehicle batteries serve to provide power to the home during peak demand and charge during the day over peak supply periods – can assist with managing and mitigating the challenges of the duck curve.

In the future, there may be the potential to charge appliances from a vehicle battery or to charge other forms of transport like e-bikes. In addition, technology is being developed to enable home charging for vehicles. The use case here is noted as power disruptions from adverse climate events, such as storms. For many African countries, this example could be extended to almost daily use. Finally, vehicle to grid charging is expected to be crucial to ensuring grid stability, as renewable energy sources increase in scope (Fahmy, 2023).



Source: Siemens AG (cited in Fahmy, 2023)

## The role of business leaders

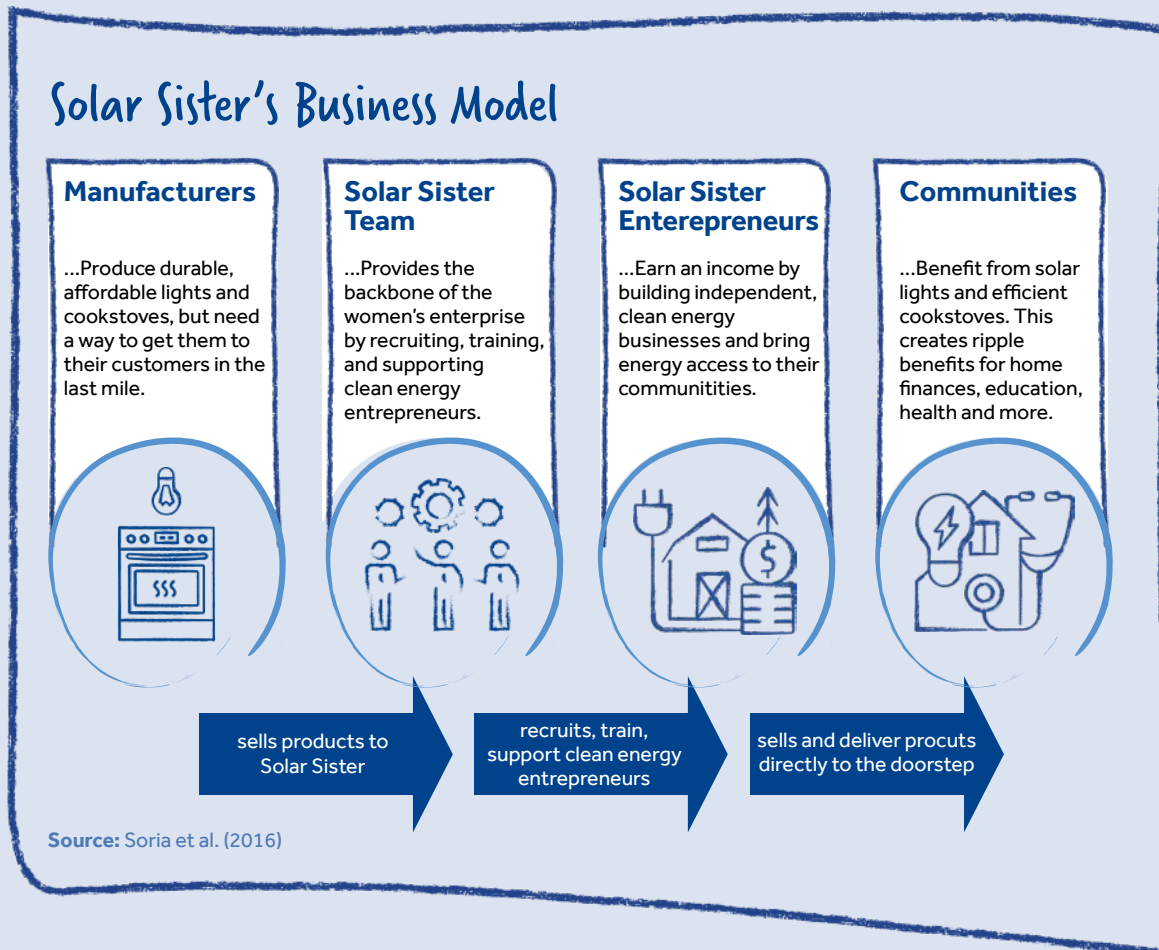
This example highlights how technologies that may seem unrelated (e.g., transport and home appliances) may hold synergies that unleash potential and solve broader challenges. Business leaders are encouraged to look beyond their immediate sectors and innovate to develop solutions in partnership with others – adopting a win-win approach to doing business.

### Key learnings

- Technology: advancements in technology are constantly enabling the transition.
- Expansion: there is scope to develop new markets, products, and services for businesses with an opportunities' mindset, which business leaders can contribute to.
- Context: multiple opportunities exist in Africa and technology can be adapted for a different use case.

## Vignette 2: Solar Sister

This organisation creates employment opportunities for women in rural communities, whilst simultaneously introducing cost savings to households (<https://solarsister.org/>). This is a great example of an organisation that is able to create jobs, solve a problem at the household level and, in so doing, create opportunities for improved health and education outcomes as well as savings at the household level.



## The role of business leaders

This is a classic case of effectively doing business at the base of the pyramid, but going beyond simply delivering products and services. By including the local community, the multiplier effect of the project is felt in job creation. For business leaders, it is a reminder to think *with* local communities and not *for* this group. The challenge of 'last mile distribution' may seem daunting, but it is ultimately familiar ground for community members.

### Key learnings

- Partnership: local engagement is key to success and building trust.
- Human capital: training ensures a consistent level of service.
- Wicked problems: a single solution with multiple positive implications.

## Vignette 3: GreenCape – alternative service delivery

This is a project based on close community engagement and valuing community assets that are generally overlooked. By taking time and engaging in extensive consultation and co-creation processes with community members, key priorities are assessed and established. The team and community work together to bring these goals to life. Buy-in reduces theft and vandalism, as the project and infrastructure become part of the communities' assets.

For example, they have developed Wi-Fi-enabled solar street lights, providing connectivity and enhanced safety to the community. This project is a good example of understanding the difference between the willingness to pay compared to the ability to pay for goods and services, and finding ways to bridge that gap.



Source: GSMA (2023)

## The role of business leaders

This project highlights the potential for profit – not to mention success in CSR objectives – when small-scale project objectives are viewed through the lens of a wicked problem approach. By recognising the complexities of the local context, such as lack of infrastructure and risk of theft, business leaders can truly go beyond energy.

### Key learnings

- Innovate on the ground: seek creative ways to solve multiple problems.
- Identify assets: communities have resources in various forms that have value.
- Building a community brand: consistent engagement with community members.



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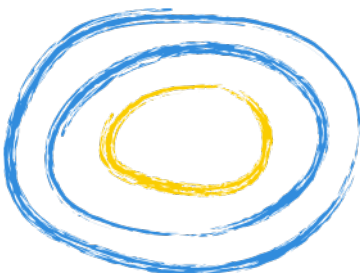
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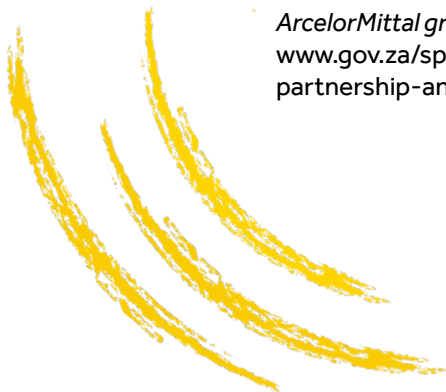
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