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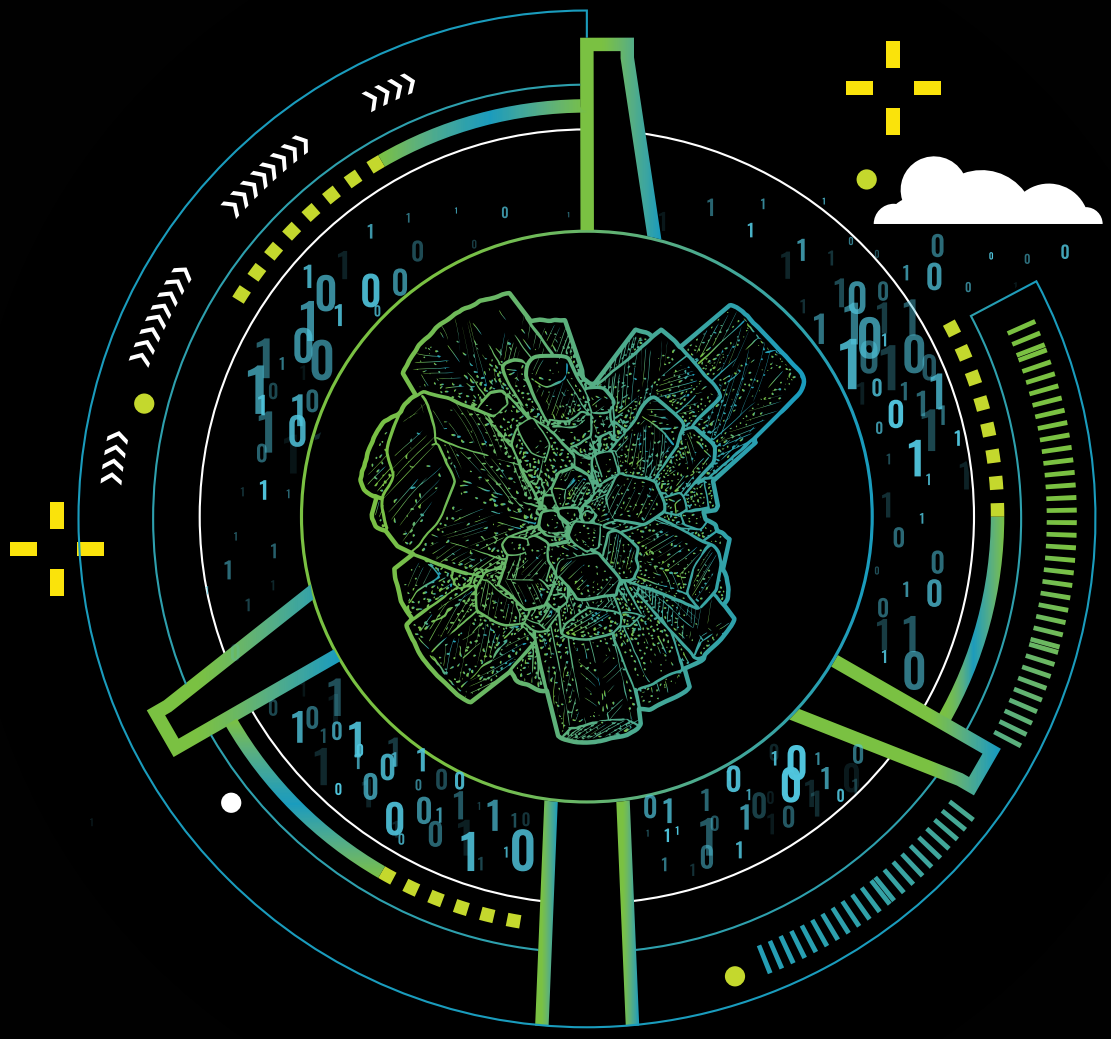


Energy Transition Strategy

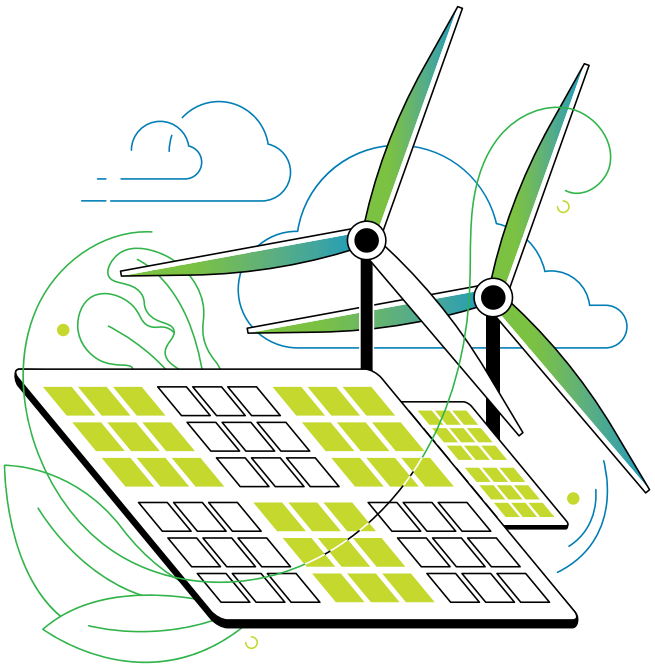
From vision to impact

May 2022

MAKING AN IMPACT THAT MATTERS since 1845

Contents

Introduction



Energy transition is fast becoming a priority for many organisations in Africa. What was previously seen as a first-world concern has become a top agenda item globally. The need for cleaner and reliable energy has never been this critical to ensure that, globally, society adheres to decarbonisation requirements that aim to reduce, and ultimately prevent, catastrophic consequences related to the climate change crisis.

Africa is the most vulnerable continent to climate change based on climate scenarios above 1.5 degrees Celsius.[1] Even though the continent only accounts for approximately 3.8% of the world's carbon dioxide emissions,[2] the region is taking the decarbonisation agenda seriously, given the impact that climate-related disasters have had and will likely have on government, business and society at large.[3]

In 2016, 54 countries in Africa signed up in support of the Paris Agreement, agreeing to include climate resilience and low-carbon economies in their respective National Determined Contributions (NDCs)[4]. Some African countries have also made commitments to reduce their greenhouse gas (GHG) emissions by up to 55% by 2030.[5] In South Africa, for example, government made a commitment to cut emissions by a further 28% by 2030, compared with the country's 2015 pledge.[6]

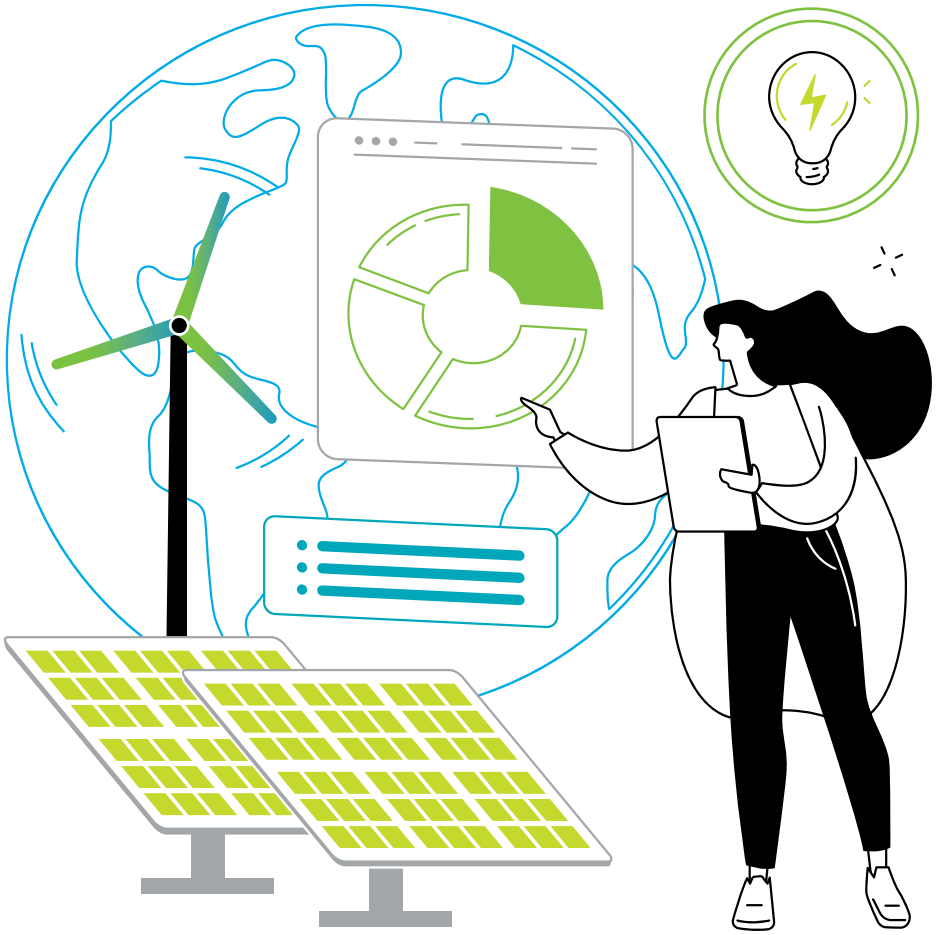
Government-led commitments coupled with customer demands and a substantial carbon cost premium on products and services implies that organisations must follow suit. Indeed, some organisations are already leading the way in this regard. For example, Sasol, a global integrated chemicals and energy company, tripled its 2030 scope 1 and 2 GHG emissions reduction target to 30% from a 2017 baseline for its South African operations.[7] Anglo American, a global mining company, aims to achieve carbon neutrality (scope 1 and 2) across all its operations by 2040,[8] which includes its operations in Southern Africa.

Large funding institutions too are increasing their focus on providing financing to expedite the energy transition. For example, Standard Bank Group, Africa's biggest lender by assets, plans to raise as much as US$20 billion by 2026 to help fund renewable energy projects.[9] The African Development Bank aims to commit around US$2.8 billion in new financing to South Africa over the next five years. The latter includes a substantial package to help state-owned power utility Eskom transition toward cleaner sources of energy.[10]

However, changing to a cleaner source of energy is but one part of the energy transition challenge. Done right, energy transition is a fundamental system redesign challenge that includes changes to both the demand and supply side, the interactions between the two, and the broader organisational value chain. This means that organisations need to become strategically flexible, where they can clearly separate no-regret moves from more risky choices. Strategically flexible organisations make commitments where uncertainty is low and it supports their core transition strategy, and develop options where uncertainty is still high, but the complete inaction to redesign would put the organisation at a future disadvantage.

Leaders need to become comfortable with embarking on their energy transition journey without necessarily having the full solution defined – call it a transition mindset – committing to no-regret moves and remaining open to pivot as required due to the changing energy landscape. While some leaders have made positive strides in defining their organisation's energy vision, and while others have energy-related initiatives on the go, much more needs to be done to have comprehensive energy strategies in place – strategies that fundamentally redesign a sustainable energy system.

What is an energy strategy?



As organisations define their decarbonisation ambitions, they are clear about their vision. Leaders have shown commitment towards the energy transition by boldly stating their intentions to meet and, in some instances, exceed the 2050 net-zero emissions target under the Paris Agreement.

In late 2021, Deloitte and Reuters Events conducted a survey among approximately 2 800 executives globally to better understand the biggest challenges and opportunities business leaders face as they execute on their decarbonisation strategies. The survey included about 150 respondents from Africa, who supported the view that business leadership has committed to the energy transition: approximately 80% of the African respondents noted that their organisations' leadership is either highly committed or discussing the issue.[11]

While the commitment, in the form of leadership statements on energy vision are seen as inspiring, show intent and willingness of organisations to address energy obstacles, such vision statements often lack the detail to chart the path that enables their implementation. A clear, comprehensive, and pragmatic energy strategy is needed to define the path an organisation will travel to translate the energy vision into reality.

An energy strategy provides organisations with a strategic map to navigate the uncertainty within the energy landscape by outlining the required strategic choices on the demand side, supply side, and in the value chain. Strategic choices, which are inherently integrated within the energy landscape, ultimately aim to position the organisation favourably with current and future customers, maximising the value for all stakeholders. This will better position the organisation on a path to achieve the vision with regards to energy security, energy emissions and favourable energy economics.

An energy strategy that is not cascaded into the organisation creates misalignment where governance, budgets, human capital, business processes, tools and technology have no contribution to the realisation of the strategy. Moreover, as organisations define their energy strategies, they should consider how these strategies could be created to collaborate within an ecosystem to enhance the shared value at stake, creating exponential gains for all stakeholders.

While the ecosystem concept can be expansive, the ecosystem definition should be driven by creating shared value where the sum of value created by the ecosystem is greater than the ecosystem components alone. Partnering with specific industries can help organisations, especially mining players, to accelerate the fundamental rethink of the energy system.

Each of the strategic choices of an energy strategy is unpacked in more detail below, according to those that address the demand side (scope 1 and 2 emissions) of operations; the supply side (also scope 1 and 2 emissions) of operations, as well as the broader organisational value chain (scope 3 emissions).

1. Demand-side strategic choices

The demand-side dimension of an energy strategy aims to understand organisation-wide energy demand. This enables energy use optimisation. Key strategic choices to consider on the demand side include the organisation's willingness to remove, reduce or reschedule demand.

At Deloitte, we have found that avoiding and reducing energy demand before tackling the actual mitigation of emissions works best. Our experience suggests that organisations often neglect the rescheduling of demand in energy strategies due to the large dependence on human behaviour changes. Many organisations focus mostly on 'remove and reduce' energy efficiency initiatives to address demand management. Energy efficiency initiatives in mining, for example, could include initiatives such as the replacement of energy intensive motors, from single speed drives to more-efficient variable speed drives (where it makes sense to do so), or the replacement of diesel-powered vehicles to more efficient battery electric vehicles.[12]

Historically, South African operations were designed on the assumption that energy is available on demand. In other words, organisations had a high reliance on fossil fuel grid energy, which was typically available round the clock; as well as diesel fuel, which has relatively inexpensive storage. However, as organisations transition towards intermittent or non-dispatchable, variable energy sources, such as wind and solar, energy storage will play an increasingly important role to successfully transition towards the substitution of fossil fuels. The configuration and the size of the primary energy conversion, as well as the energy storage requirements, can be significantly reduced if organisations first reduce energy waste and radically improve energy efficiency on the demand side.

Expensive energy storage of renewable power can be reduced further through intelligent system design by maximising the value of flexible demand to make optimal use of renewable power when it is available. Work is therefore stored and performed at a more optimal point during the day when energy from non-dispatchable sources is available. This limits the excessive need for energy storage on the supply side. For example, Cronimet Mining Power Solutions rescheduled the crushing operations at their Thabazimbi chromium mine in South Africa to leverage availability of solar energy, thereby optimising the design of the solar plant.[13]

Therefore, energy demand optimisation becomes a key consideration for capital investment and maintenance decisions relating to primary energy conversion and energy storage assets.

2. Supply-side strategic choices

Key decisions are required to outline how the organisation will secure reliable, low emissions, and economically viable energy to fully satisfy its operations. For some organisations, this means a full transition that is disconnected from the national power grid. It is, however, more likely that many organisations will remain "grid-connected" and draw on the advantages of a grid connection. For example, grid-connected and grid-integrated operations can generate energy from renewable sources and feed energy, produced beyond the requirements of the operations, back into the grid (regulation permitting). This strengthens the resilience of the overall electricity supply system, reducing energy costs and expedites the Southern African region's drive towards decarbonisation.

Making clear supply-side strategic decisions also provide organisations with the opportunity to reduce risk to future returns (e.g., increase in prices due to carbon tax, future fuel price uncertainty) and provide another means to differentiate the business. For example, there is increased financial pressure on organisations to reduce carbon emissions. In support of sustainable investing, BlackRock, a multinational investment management corporation, is refitting its investment strategy to put sustainability at the forefront. Since 2021, the investment firm requires that every company it invests in discloses how their business model will factor in carbon dioxide emission and how it will be compatible with a net-zero economy.[14]

Downstream customers are also using an organisation's carbon footprint as a key criterion for buying decisions. Effectively, an organisation becomes more attractive to customers by reducing the carbon intensity across its entire value chain. The European Union has also proposed a Carbon Border Adjustment Mechanism (Border Tax) that would impose financial penalties on suppliers and encourage producers outside the continent to transition to renewable energy production processes.[15]

A key strategic choice also to consider includes whether the organisation will source energy from a third party, generate its own energy supply, or make use of a hybrid model. Each choice will have its own set of implications for the organisation, such as either insourcing or outsourcing the skills and capabilities if ownership of self-generation is preferred. Moreover, if own generation is pursued, and considering favourable regulations, organisations need to decide if generation will be limited to the operation, or whether an alternative revenue stream can be leveraged through the wheeling of energy

by becoming a supplier of energy to the national grid – the so-called "prosumer". If the capability of supply–and–demand balancing is available, and regulation permits, it opens more opportunities to the organisation, such as leveraging the financial benefits of demand response, where the organisation is curtailing grid supplied energy during peak times by switching to own supply.

In the event that the organisation prefers to generate its own energy supply, another key strategic choice is the organisation's risk appetite to invest in either proven technologies, such as solar and wind, or emerging technologies, such as hydrogen, tidal turbines, or small modular nuclear reactors; or a combination of both. The technology landscape is constantly changing as new technologies surface, or as technologies fall away as business cases are proven not feasible.

Over the last decade, the levelised cost of renewable energy has continued to decline driven by technological advancements. This includes benefits from economies of scale in the value chain due to significant growth in capacity. Between 2010 and 2020, the global weighted-average levelised cost of electricity of utility-scale solar photovoltaic for newly commissioned projects showed an 85% reduction. Moreover, over the same period, the cost of other technologies such as onshore wind, declined by 56%; concentrated solar power by 68%, and offshore wind by 48%.[16] Storage is also a key component in enabling the next phase of the energy transition, with lithium-ion battery storage costs dropping by more than 80% since 2012.[17]

Investment in emerging technology could also deliver game-changing returns to the organisation in the medium to long term. Beyond financial injections, this could also take the form of partnerships with technology producers to use the organisation's operations to expedite the development of the technology. Collaborative and integrative capacity have replaced capital capacity as the most important factors in determining or creating a competitive advantage. For example, Rondo Energy developed an ultra-high thermal energy storage technology (a heat battery) that has the potential to substantially accelerate industrial heat decarbonisation, leveraging the continued exponentially declining costs of solar and wind. The Rondo Heat Battery is charged intermittently from renewable energy sources, and subsequently stores and provides heat, on demand, for up to 16 hours at temperatures up to 1 200 degrees Celsius.[18]

Another example is Hydrostor. Founded in 2010 and based in Toronto, Canada, Hydrostor focuses on the development of utility-scale energy storage facilities. Its proprietary advanced compressed air energy storage technology improves on the well-established compressed air energy storage by increasing efficiency and eliminating emissions, while providing location flexibility. The company recently secured an investment of US$250 million from Goldman Sachs Asset Management. This emerging technology is particularly attractive to sectors, such as mining, as it leverages existing mining infrastructure.[19]

Our experience

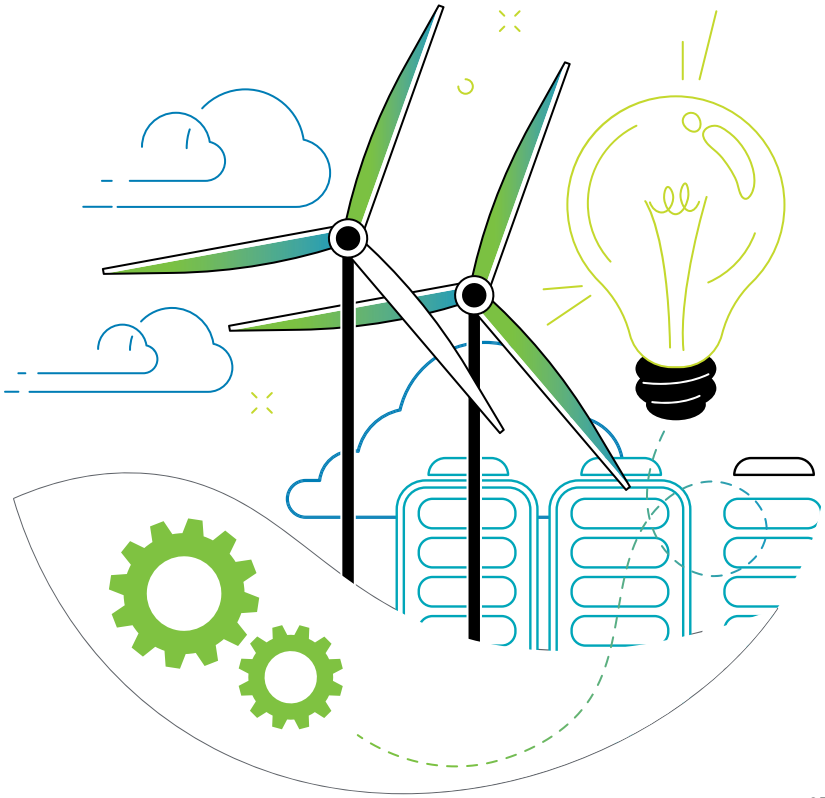
From a technical perspective, there is nothing untoward with decarbonising the energy supply without considering demand optimisation. However, our experience suggests this is not optimal, and therefore is likely to be less economical and likely slower in adoption, which will limit the potential for greater Environmental, Social, and Governance (ESG) impact. Looking at the overall system more holistically may appear more complicated and requires more upfront planning and effort, but it has the potential to unlock much greater value for the organisation, and accelerate the transition with lower cost and risk. In the initial phase of transition, the energy transition investments in renewable generation should not necessarily be delayed until changes to the demand side are completed. It becomes a lot more critical when organisations plan for a full transition towards renewable energy to have an integrated systems strategy in place to optimise the value for all stakeholders. However, as mentioned above, these are key strategic choices that must be made as part of the organisation's energy strategy.

3. Value chain strategic choices

Value chain emissions (also referred to as scope 3 emissions) may not be a key focus for an organisation initially, given the organisation's limited control on how these emissions are reduced, either upstream or downstream. However, an organisation's energy strategy should consider how scope 3 emissions are integrated into the decarbonisation drive, as value chain emissions can account for more than 70% of an organisation's carbon footprint.[20]

Therefore, a key strategic choice that should form part of the energy strategy is whether the organisation will reduce or mitigate emissions either up or downstream in the value chain. For example, for a company that manufactures products, there will often be substantial carbon emissions from the extraction, manufacture, and processing of the raw materials. If the decision is to reduce or mitigate scope 3 emissions, a key consideration is whether the organisation will partner with upstream suppliers and downstream customers to reduce their emission's footprint, or pursue a carbon offtake strategy, such as investment in biosequestration and carbon capture technology.

Apple, a multinational technology company, has committed to help suppliers accelerate the use of renewable energy as they manufacture its products. As of 2022, over 200 of its major manufacturing partners have made commitments to manufacture all Apple products using only renewable energy reducing Apple's scope 3 emissions.[21] Rio Tinto, a global mining group, has partnered with an Australian steelmaker, to decarbonise the energy intensive steelmaking process by leveraging the advancement in clean hydrogen, instead of using traditional coking coal.[22] Danone, a global food and beverage company, committed in 2015 to reduce its full scope 1, 2 and 3 emissions intensity by 50% between 2015 and 2030. One of the company's initiatives focused on the reduction of scope 3 emissions by redesigning upstream farmers' feeding strategies and capturing and converting biogas emissions from manure to energy.[23]



Making your energy strategy practical: five key considerations

As mentioned, energy strategies are rooted in an organisation's vision. This vision, coupled with business strategy, is paramount for organisations to make a set of strategic choices within the energy realm that will unlock new value for the organisation, and its stakeholders. Organisations should set their sights on creating value (versus compliance) and define a set of strategic energy choices that outline where the organisation will play and how it will win in these defined areas. The set of strategic choices provides the conceptual boundaries to guide the organisation during its energy transition.

Five key considerations to making an organisation's energy strategy practical are discussed below.

1. Foster business-wide buy-in

To set up a comprehensive energy strategy, strong business-wide ownership is required, driven by the organisational leadership, and traditional silos between departments must be broken down. The energy strategy, like the business strategy, should be the direction set for the whole organisation and not just the technical division or business units. It is paramount to work with and include "corporate antibodies", and bring these stakeholders along to maximise the chances of success.

2. Stakeholder communication and engagement

The energy strategy must be supported by a strong and continuous stakeholder engagement programme to allow employees, shareholders (including investors), communities, and customers to stay abreast of energy developments within the organisation. Naturally, the message must be adjusted and tailored to the different audiences to maximise the understanding and support for the energy strategy. However, the stakeholder engagement programme also goes beyond communication to key stakeholders of the business. Engagements should include sessions with government and other policy makers to allow the organisation to influence the greater energy narrative within their operating space. This can promote a more fruitful environment for the larger energy ecosystem to flourish, enabling exponential growth, which will benefit all stakeholders involved.

3. Understand the set of strategic choices

To enable the organisation to make the set of strategic energy choices, a clear understanding is needed of the current context and future energy prospects of the organisation. The strategic choices are unique to an organisation to some extent, and organisations need to consult widely to define the set of strategic choices that fit their operating context.

Internal stakeholders familiar with the subject matter should be consulted, and the internal perspectives can be augmented with external subject matter experts. At this point it is also important for the organisation to understand the various options available for each of the strategic choices. Desktop research and further consultation with subject matter experts can broaden the thinking horizons and allow organisations to look beyond their current constraints.

Where subject matter capabilities are not available, organisations should consider reaching out to the industry. For example, to enable the decision on which technology to invest in, decision makers need to understand the current and future technology landscape, which include, technology maturity, cost, learning rates, advantages, disadvantages, just to name a few. This process must be replicated for each of the strategic energy choices, to enable decision makers to clearly understand the current context, potential options available, implications, and risks associated to promote data-driven decision-making for the energy strategy.

4. Be bold, but pivot as required

Leaders need to remain strategically flexible and make clear commitments where uncertainty is low and develop strategic options where the ambiguous nature of the energy transition journey needs to leave room for future development, given the pace of technology advancement and regulatory changes in the energy transition space. However, clear signposts or triggers must be put in place to allow the organisation to revisit the energy strategy frequently and for new developments to be incorporated.

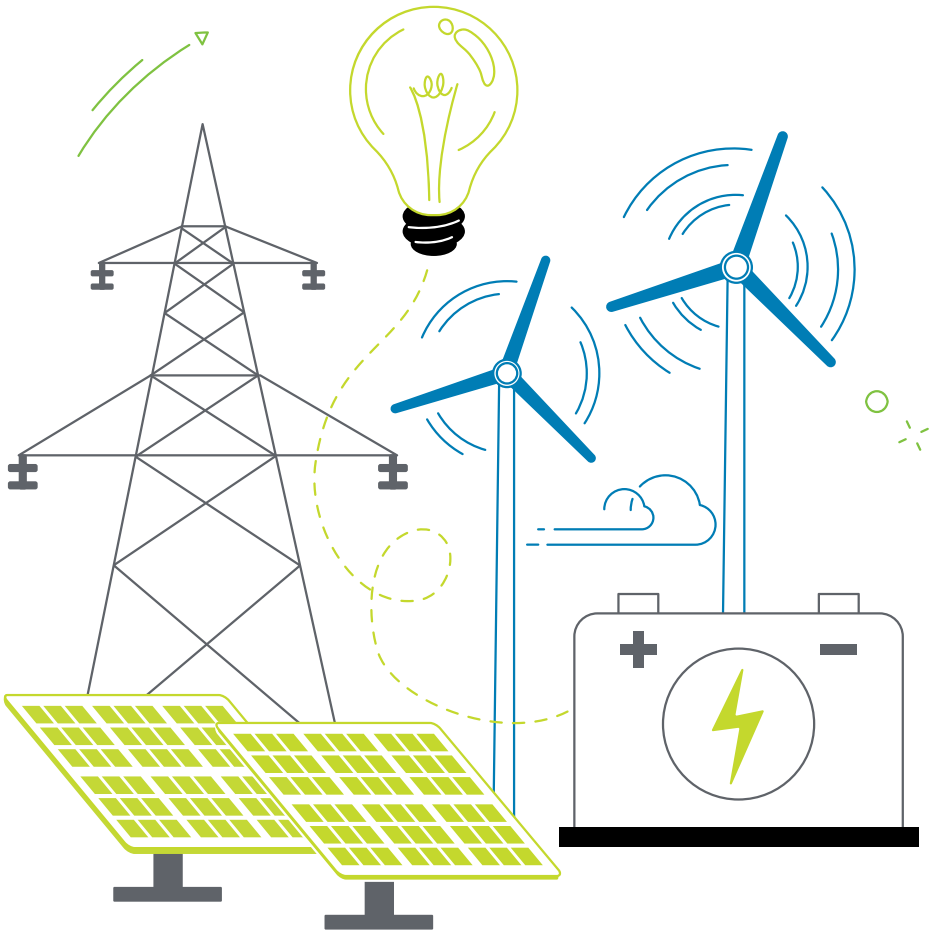
After the strategic decisions, aligned to the context of the organisation, have been made, it can be packaged into a comprehensive energy strategy. Various value adding initiatives can subsequently be explored and prioritised based on their potential to meet the set targets and close the gap between the status quo and the vision.

5. The Energy Value Office

To unlock value through implementation, a robust mechanism is required to successfully execute the prioritised initiatives. Energy enables a business to operate and given this strategic importance, a dedicated focus is required, supported by the C-suite.

Deloitte's experience suggests an Energy Value Office significantly increases the execution success of energy initiatives by providing favourable conditions for the initiatives to succeed. Favourable conditions also include the establishment of clear governance, enabling prompt decision-making, and supporting the execution authority, with a focus on value. Therefore, the Energy Value Office should be equipped with the necessary strategic and execution skills and capabilities to drive the energy strategy forward.

The Energy Value Office also provides a continuous feedback loop to the energy strategy to allow the strategy to be updated, as new insights become available, such as execution barriers, technology advances, etc.

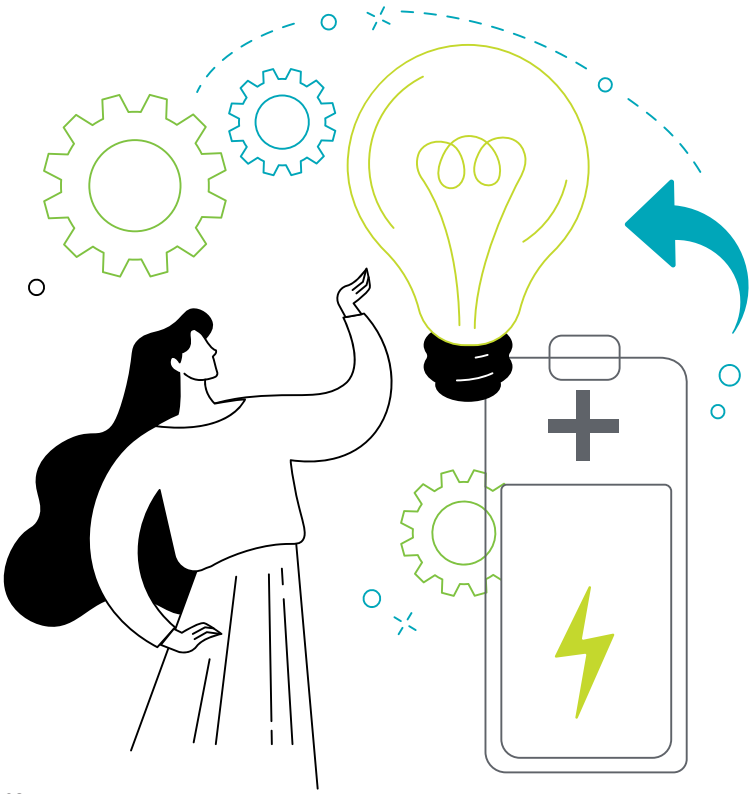


Conclusion

The need for cleaner, more reliable, and economically viable energy has never been this great. As such, the energy transition is a key priority for many organisations to help reduce or prevent the catastrophic consequences due to climate change. Many organisations set ambitious decarbonisation commitments and goals to meet the targets required to limit the effects of climate change. The organisation's commitments and goals are often in the form of an energy vision, together with a deliberate effort to implement various energy initiatives.

However, for organisations to successfully transition, a fundamental rethink of the energy system is required, both internal and external to the organisation. This requires a comprehensive energy strategy. An energy strategy provides organisations with a strategic map to successfully navigate the uncertainties rooted within the energy transition, and is a set of strategic energy choices, where an organisation makes key decisions to address the demand side and supply side of the operations, as well as the broader organisational value chain.

To make the energy strategy practical, and to ensure the organisation's energy vision leads to impact, we have outlined five key considerations as organisations embark on or continue with their energy transition. Although not exhaustive, these considerations provide important areas of focus to ensure an energy strategy is comprehensively developed and able to ignite the fundamental energy system rethink required to orchestrate an energy solution around energy security, energy emissions, and energy cost.



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