



Renewable Energy Sourcing

**The development and implementation
of a sustainable and financially
attractive renewable energy strategy**

2020

[kpmg.nl](https://www.kpmg.nl)

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The context

External pressure is building from governments and investors for corporates to reduce their carbon emissions.

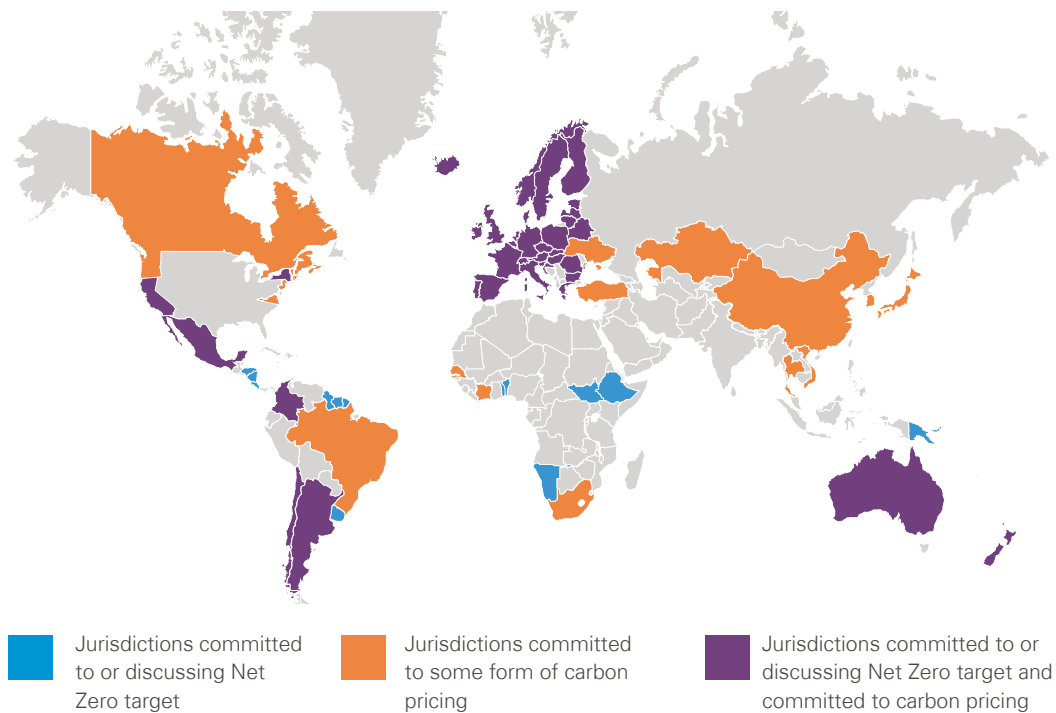
Climate change is also being recognised by investors as a significant threat to the long-term prospects of a company.

Since the 2015 Paris Agreement, 105 countries have pledged Nationally Determined Contributions (NDC) to reduce carbon emissions (see figure 1). Many of these NDCs include some form of carbon pricing or a target to reduce future emissions to 'Net Zero' by absorbing an equivalent amount of emissions from the atmosphere.

Initiatives such as the Climate Action 100+ (see figure 2) are increasing pressure on corporates to provide more transparent disclosure of their carbon emissions and set measurable targets to reduce emissions in the future.

Corporates must respond to governments and investors by implementing initiatives to reduce their carbon footprint. Developing an energy sourcing strategy focused on renewables can provide a significant reduction in a company's carbon footprint by reducing indirect emissions.

Figure 1
Overview of Global NDC commitments



Data source: Energy & Climate Intelligence Unit, World Bank

Figure 2
Climate Action 100+ at a Glance



Data source: Climate Action 100 - 2019 Progress Report



Environmental and climate change risk were identified as the number one threat to growth in KPMG's 2019 Global CEO Outlook

Decreasing cost of renewables



LCOE for renewables has declined steadily over the last decade making renewable energy sources competitive with fossil fuels

Levelised cost of energy (LCOE) is the average cost of electricity generation for an asset over its lifetime. While LCOE does not fully reflect the price to purchase renewable electricity due to factors such as developer returns and differing risk profiles, it can be a useful benchmark for evaluating the competitiveness of renewable energy in a specific market.

As the LCOE for renewables declines, subsidies will also decrease. In many regions, these subsidies provide a stable income stream to finance renewable development.

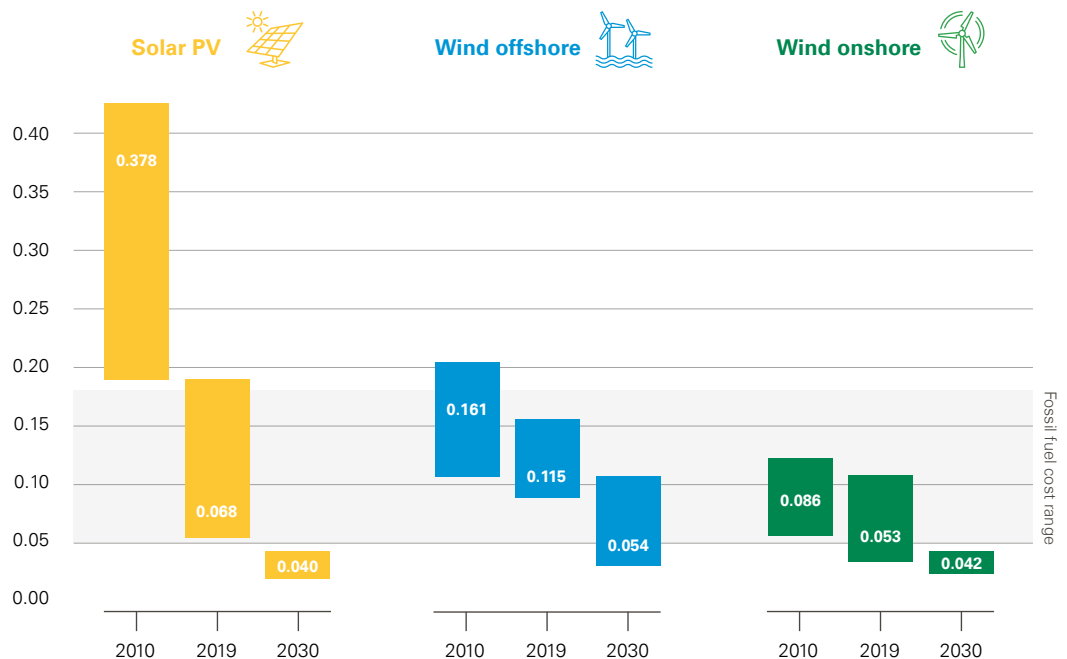
Corporates can offer renewable asset developers an alternative to subsidies by entering into long-term Power Purchase Agreement (PPA) contracts with similar risk mitigating characteristics as subsidies (e.g. fixed price or flexible pricing with caps and floors).

LCOE of renewables has been decreasing steadily since 2010 and is expected to decrease further by 2030 (see figure 1). As a result, wind and solar technologies are as competitive or cheaper than energy generated from fossil fuels.

This presents an opportunity for corporates to take advantage of the decreasing trend in the LCOE of renewables by sourcing renewable energy at competitive prices.

The decreasing trend in LCOE is driven by a combination of lower capital and maintenance costs and an increase in efficiency leading to higher output. In the future emerging technological solutions such as improved battery storage and hybridisation will continue to result in falling LCOE for renewables.

Figure 3
Development of LCOE 2010 - 2030



Data source: IRENA - Global Renewables Outlook 2020, Renewable Power Generation Costs in 2019

Volatile wholesale power prices

Wholesale power prices are often impacted by supply and demand shocks leading to price volatility and uncertainty over future electricity costs.

On the supply side, price movements in fossil fuels such as natural gas and coal cause fluctuations in the wholesale power price. This is further impacted by carbon pricing regimes that are especially costly for coal generated electricity.

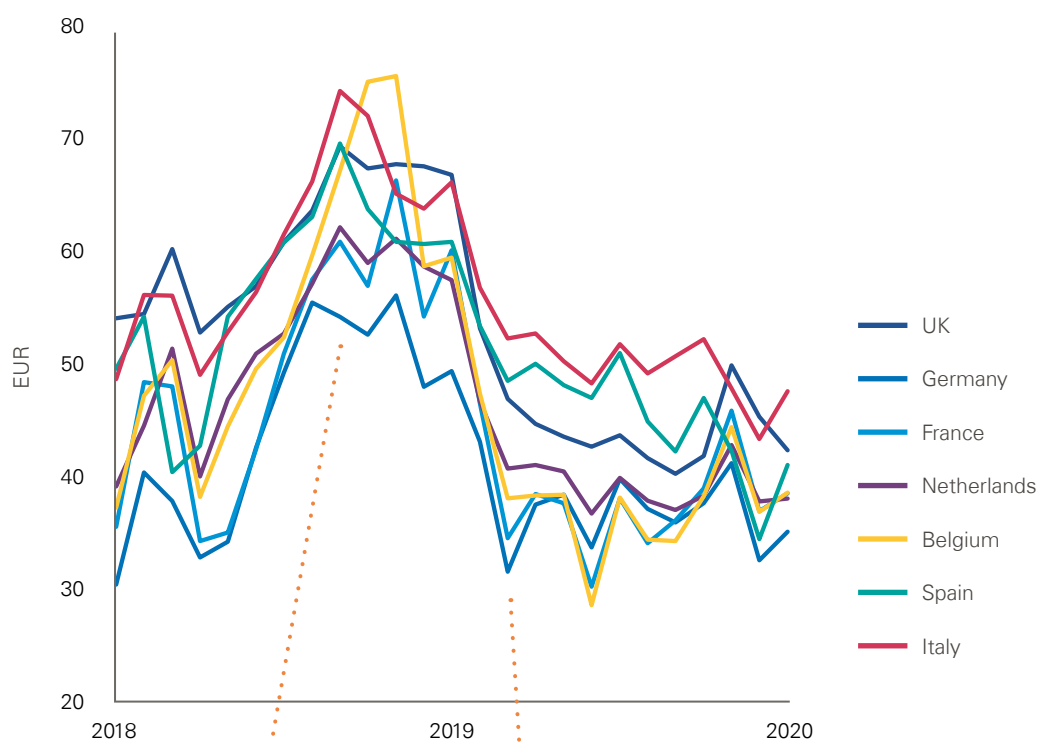
Demand side shocks can result from changes in economic activity or seasonal temperature fluctuations.

More recently the combined effect of reduced demand due to COVID-19 and increased supply from the Russia-Saudi Arabia price war have resulted in a sharp decline in wholesale power prices. However, as recently as 2018, wholesale power prices had increased dramatically.

While the impact of geopolitics on wholesale power prices is difficult to predict, carbon tax regimes are expected to bias the trend upwards.

Corporates can reduce the volatility of their electricity costs by entering into PPA contracts with renewable developers that have fixed prices or flexible pricing with caps and floors.

Figure 4
Electricity wholesale power prices (EU)



Above average summer temperatures in Europe combined with increasing natural gas, coal and carbon prices lead to a sharp increase in wholesale power prices in Q2 2018...

... this was followed by a reversal in Q1 2019 as commodity prices declined and a milder winter reduced demand.

Data source: Reuters



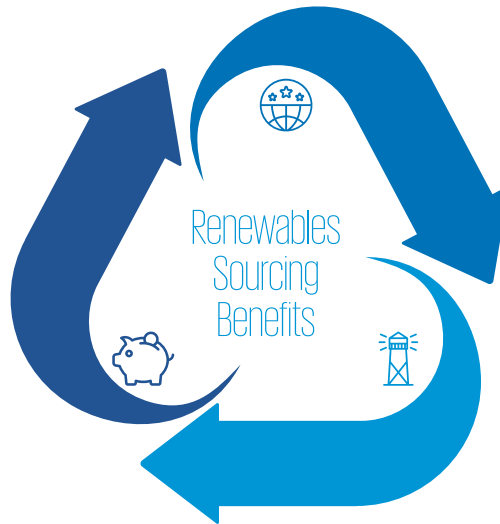
By entering into a PPA, corporates can reduce uncertainty over future electricity costs

Corporate Renewable energy sourcing

Renewable energy sourcing can provide valuable economic, operational, and reputational benefits to your company

Achieve direct financial benefits

- Achieve lower future energy costs, benefiting from decreasing costs of renewable energy
- Possibility to stabilise energy costs over a period of time
- Utilise tax and financial incentives benefits: unlocking access to incentive mechanisms by investing in renewable energy capacity



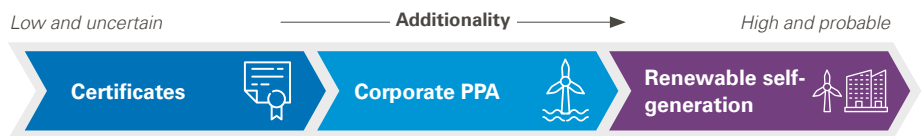
Create long-term brand value

- Respond to investor and consumer demand related to renewable energy consumption and production, driven by increasing awareness of climate change
- Marketing & communications strategy can leverage the renewable energy transition to optimise the perception of investors, consumers, and other stakeholders

Increase resilience to future penalties and outages

- Having a robust renewable energy sourcing strategy would help companies minimise the impact of potential carbon taxes under consideration in various jurisdictions
- Secure access to decentralised, reliable energy sources by obtaining access to predictable and local supply to reduce dependence on third parties and mitigate geopolitical and grid stability risks (primarily in developing countries)

There are a number of options for renewable energy sourcing with corporate PPA and self-generation options providing the greatest additionality and reputational impact



Acquisition of bundled or unbundled energy (or carbon offset) certificates

Certificates can be linked to a specific type of renewable asset and/or geography

Off-site installation owned by a third party supplied through grid

Off-site installation owned by a third party supplied through direct cable to facilities

On-site or off-site renewable energy installation owned by the company

Development and construction risk can be mitigated with different equity ownership structures

Sample assessment against predetermined criteria

	Certificates	Corporate PPA	Renewable self-generation
Financial impact	● ○ ○ ○ ○	● ● ● ● ○	● ● ● ● ●
Environmental impact	● ● ○ ○ ○	● ● ● ● ○	● ● ● ● ●
Operational impact	● ● ● ● ●	● ● ○ ○ ○	● ○ ○ ○ ○
Feasibility	● ● ● ● ○	● ● ● ○ ○	● ● ○ ○ ○



Succeeding in renewable energy sourcing can create significant short-term and long-term value



A successful energy sourcing strategy should always be complemented by energy efficiency projects

Common Corporate PPA structures



There are three main corporate PPA structures each having distinct characteristics and risk profiles

On-site PPA



- In an 'on-site' or 'behind-the-meter' PPA, the renewable asset is **built on the premises** of the consumer and has a direct wire connection to the facility.
- Renewable assets can be customised to suit the load profile of the consumer, both in terms of facility's size (surplus power can be fed to the grid) and in daily profile.
- A utility or developer **can provide shaping services** by supplying residual demand requirements or purchasing surplus power.

Benefits

- Direct link generation/load with low interconnection costs
- Potential demand charges reduction
- Easy to integrate into sourcing portfolio

Considerations

- Need roof or land space availability and permits
- CAPEX burden and (often) no economies of scale
- Supply limited to one site / location

Physical PPA (off-site)



- Under a Physical PPA, the renewable asset is **located off-site**, but **physical delivery** of the power occurs.
- A utility 'sleeves' the renewable power to the consumer **via the grid**.
- Corporates can form a consortium of buyers to contract the electricity from a single renewable asset to improve pricing and reduce legal costs and process burden.

Benefits

- Hedge against market power price volatility (if fixed price PPA)
- Project optimisation due to larger assets (scale effects)
- Potential for multi-site supply

Considerations

- Requires deregulated retail market / wheeling
- Project must be located in the same network as load
- Potential fees for sleeving / wheeling

Virtual PPA (off-site)



- The consumer buys power from a utility at local retail price.
- The consumer also enters into a separate contract with a renewable installation **to settle the difference between the wholesale price and a contractual strike price** allowing the consumer to (partially) hedge its power purchase price.
- There is no physical transmission of power between the producer and the off taker allowing the PPA to be signed across national or state borders.

Benefits

- No location / network limit
- No incremental sleeving / wheeling fees
- Hedge against market power price volatility

Considerations

- Larger potential for accounting impact
- Basis risk when reference price differs from retail price
- No saving for network charges

A proven approach



Built upon experience from earlier successful renewable sourcing strategy implementations KPMG structures each activity into measurable phases

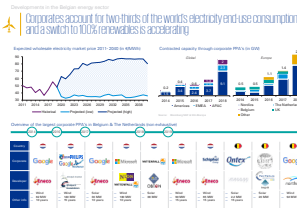
Phase 1 Strategy

A. Understand and define objectives and key decision criteria for energy sourcing strategy

Criteria	Definition
Cost	The total cost of ownership (TCO) of the energy sourcing strategy, including procurement, implementation, and ongoing management costs.
Reliability	The ability of the energy sourcing strategy to meet the organization's energy needs consistently and without interruption.
Flexibility	The ability of the energy sourcing strategy to adapt to changing energy needs and market conditions.
Scalability	The ability of the energy sourcing strategy to grow and expand as the organization's energy needs increase.
Carbon Footprint	The environmental impact of the energy sourcing strategy, measured in terms of greenhouse gas emissions.

Decision criteria matrix

B. Perform market and opportunity space analysis



Opportunity space

C. Prepare a clear roadmap for implementation



Roadmap

Phase 2 Preparation

A. Perform data collection and initial market sounding

Item	Value	Unit
Renewable energy capacity	100	MW
Renewable energy cost	10	\$/MWh
Renewable energy volume	100	MWh

Data collection template

B. Refine and develop a detailed go-to-market strategy



Go-to-market strategy

C. Prepare the data bundle



Marketing documents

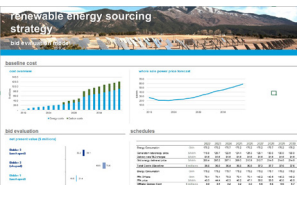
Phase 3 Procurement

A. Initiate procurement process and developer dialogue



Bidder profiles

B. Evaluate bids received



Financial evaluation of bids

C. Negotiate closing and complete the RFP process

Renewable Power Adjacency - Template Term Sheet (U.S. domestic)

This is an indicative Term Sheet ("Term Sheet") that includes the key commercial terms and conditions that Chevron expects to be included in a power purchase agreement ("PPA") that will be negotiated between selected bidders and Chevron. Until a definitive agreement is negotiated and signed, no party shall have any legal obligations, expressed or implied, or arising in any other manner, under this Term Sheet.

Seller: [Seller Name]

Buyer: Chevron U.S.A. Inc.

Facility: The [] project, located in [] (the "Facility").

Installed Capacity: [] MW.

Power purchase agreement

Key contacts



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