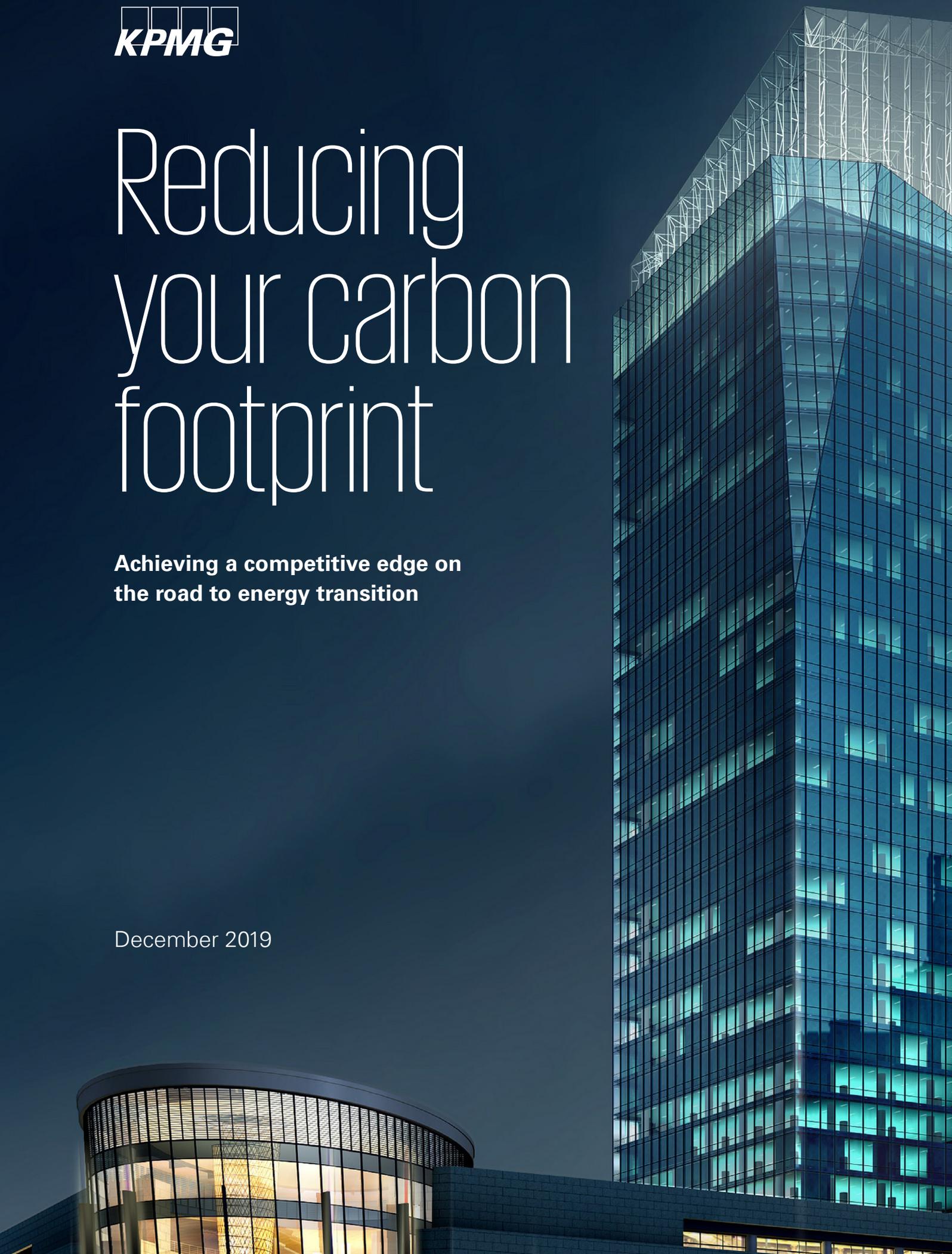




Reducing your carbon footprint

**Achieving a competitive edge on
the road to energy transition**

December 2019



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The context



Ambitious goals have been set in order to reduce global greenhouse gas emissions

Transitioning to a low-carbon economy is seen as the most effective tool to mitigate climate change. The political commitment behind the transition was confirmed by the 2015 Paris Agreement, which demands that global greenhouse gas emissions fall to net zero in the second half of the century (see figure 1).

We are still in the early stages of this transition and it is not yet evident how all the changes and their consequences will play out. However, it is clear that – next to energy companies – large energy intensive corporates have a leading role in significantly reducing emissions, through energy efficiency programs and/or by procuring renewable energy (see figure 2).

Figure 1
Potential emissions reductions by 2050

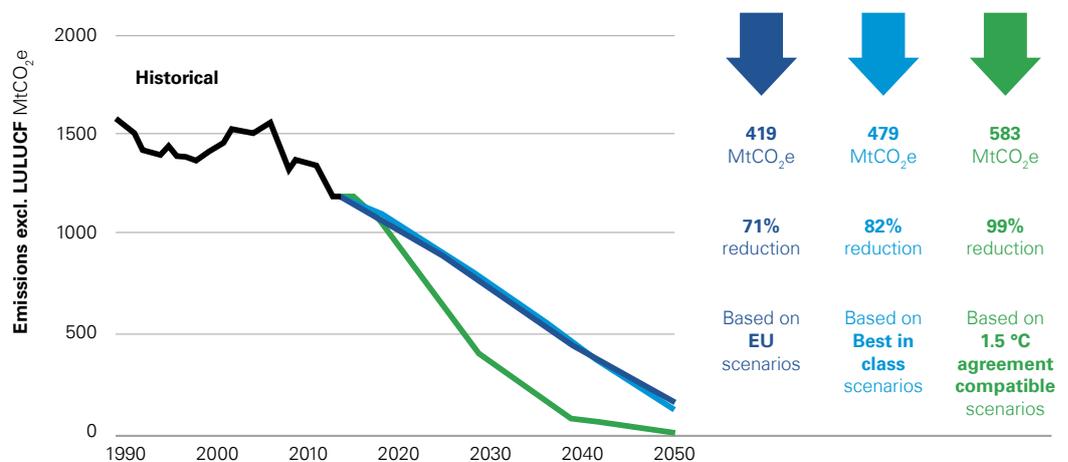
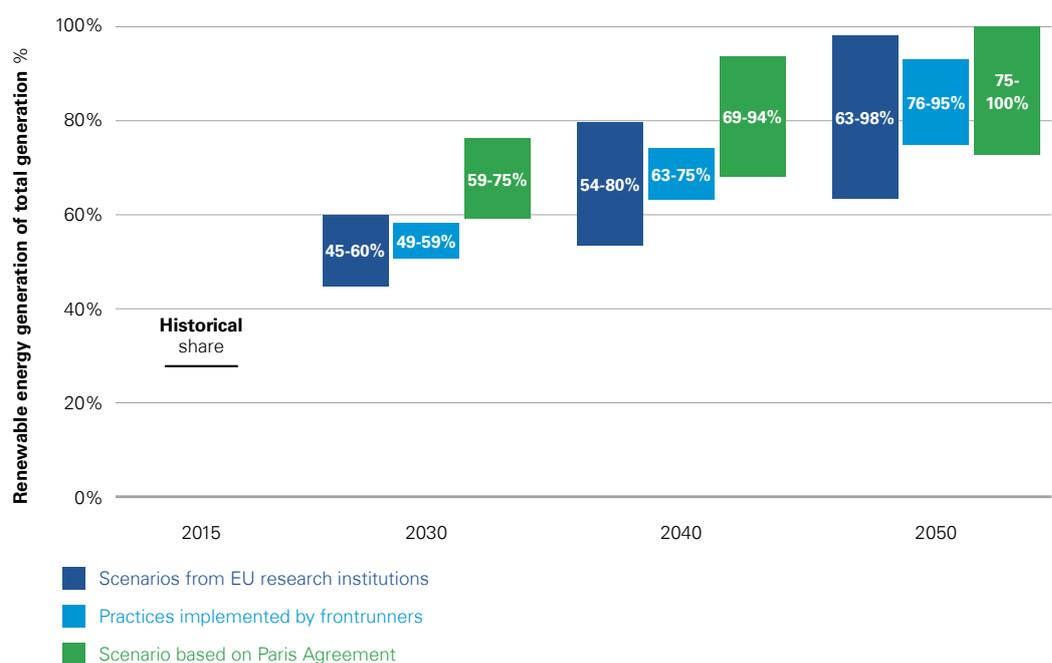


Figure 2
Percentage share of renewable energy in total energy generation



Data source for figure 1 and 2: Climate Action Tracker (November 2018)

Lowering carbon footprint



Corporates account for two-thirds of the world's electricity end-use consumption. Switching to 100% renewables is accelerating...

Every year large corporates spend millions on energy. Outside the energy-intensive industries, the majority of firms treat energy procurement as a cost to be managed rather than a strategic area for risk reduction and value creation.

However a significant amount of companies – primarily in Europe, Asia and the US – already report renewable energy consumption (see figure 3).

Clear ambitions regarding renewable energy targets have been communicated (see figure 4), implying further growth of renewable energy sourcing in the future, among other things, driven by falling costs of renewable energy sourcing.

A large part of the biggest global corporate consumers of energy have renewable energy targets in place, some of them committed to procuring 100% of their electricity from renewable sources (see figure 5).

Figure 3
Regional overview of companies reporting renewable electricity consumption

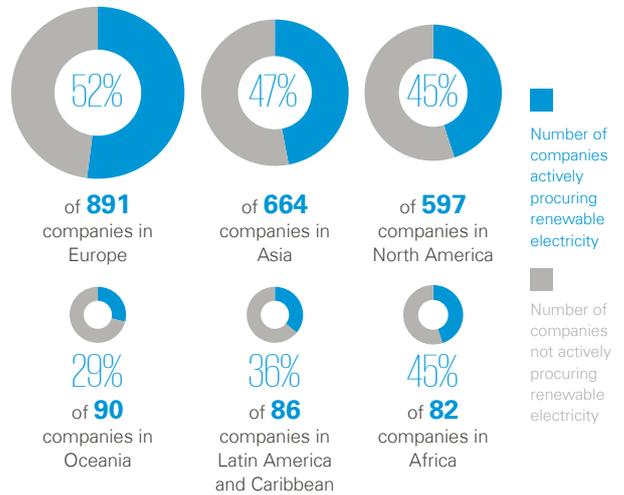


Figure 4
Corporate renewable electricity targets by level of ambition

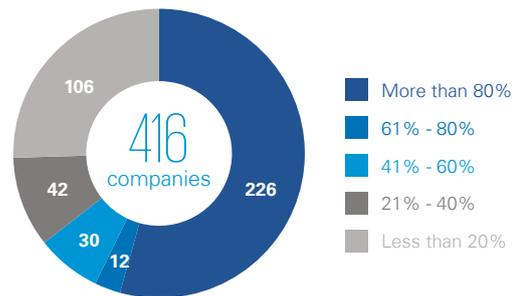
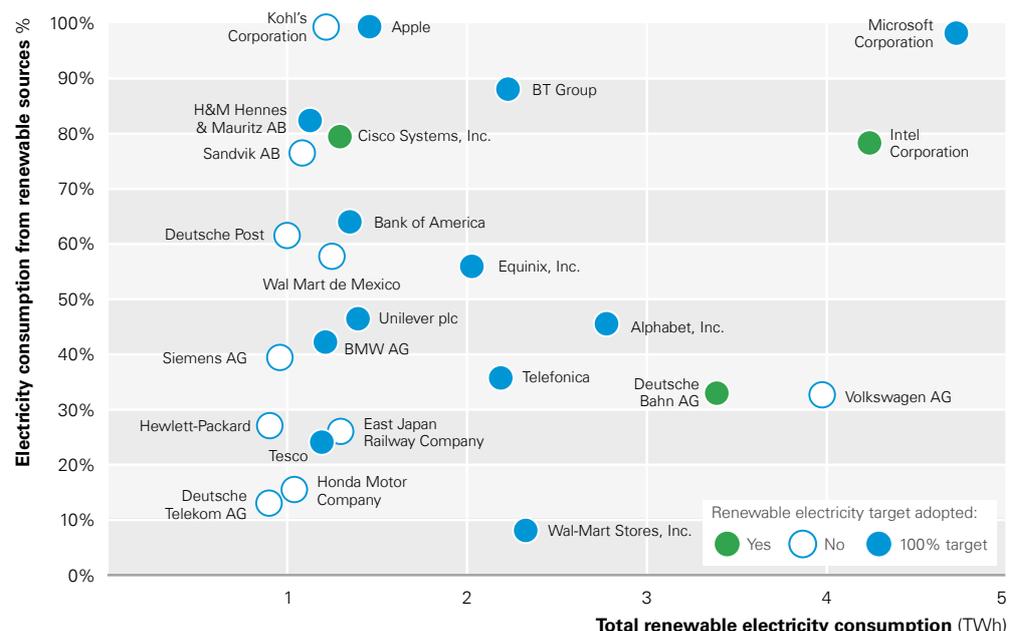


Figure 5
Corporate renewable electricity consumption index



Data source for figure 3 and 4: Climate Action Tracker (November 2018)
Data source for figure 5: IRENA - REmade Index 2018



Corporates have multiple options to lower their carbon footprint, varying from energy efficiency projects to the development of own renewable energy generation assets

A set of opportunities with different investment characteristics is emerging, creating new services and business models within the energy space for corporates to benefit from.

Main options to lower your company's carbon footprint



Energy efficiency projects

Projects leading to reduced carbon emissions due to decreased energy consumption or less emissions per energy unit



Certificates

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



Renewable energy procurement through PPA

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



Renewable energy through self-generation

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

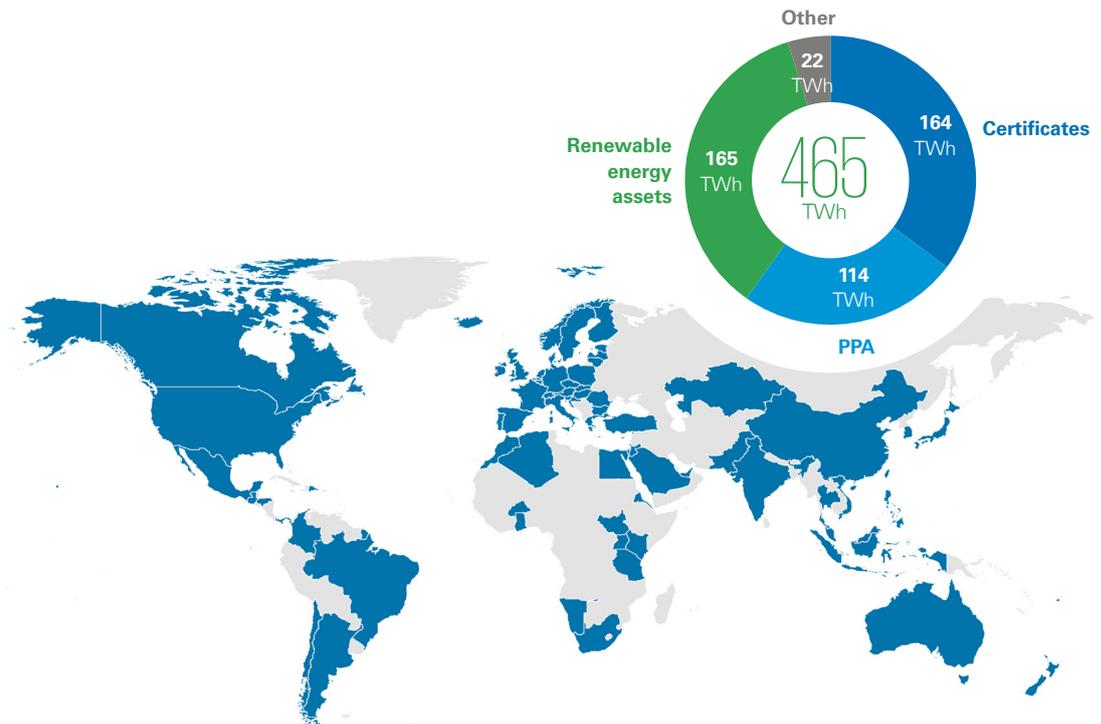
Additionality*

Low and uncertain

High and probable

Figure 6

The market for corporate sourcing of renewables in 2017 reached about 465 terawatt-hours and is spread over 75 countries worldwide



* The net incremental renewable capacity deployed or renewable energy generated as a direct result of corporate sourcing of renewable energy beyond what would occur in its absence.

Data source for figure 6: IRENA - REmade Index 2018

Corporate sourcing of renewable energy



When sourcing renewable energy, corporates face key challenges and need to manage different risk profiles as operations could span different geographies and markets



As such, they have to form views on the main strategic considerations if they are to succeed...



Limited experience and capability within the organisation to implement and manage programmes to achieve the renewable energy targets

A wide range of technologies and contracting options presenting complex choices for decision-makers

Insufficient funding or financing options to meet the targets on time



Lack of supporting local infrastructure or country-level commitment to manage the planning process

Variety of investment cases across jurisdictions depending on local prices, taxation, subsidies and/or other financial incentives

Lack of credible technical partners in some geographies

Technical

- Energy supply/demand management
- Technology type (wind, solar, hydro, biomass, geothermal)
- Installation type (on-site, off-site)
- Operations (owned, outsourced)
- Grid access & stability

Governance

- Legal structure
- Operating structures
- Division of tasks and risks
- Partnership considerations



Social & environmental

- Social acceptability regarding e.g. change of landscape, noise/light pollution
- Investment in local infrastructure
- Local sourcing and employment
- Environmental performance (e.g. carbon reduction)

Economic

- Investment profiles, returns and timelines
- Financing structures and partnerships
- Contracting strategy (PPA, green tariff, certificates)
- Accounting and tax implications



...and they need to secure the right combination of expertise across different functions to develop the most suitable solutions

Corporate expertise required for renewable energy sourcing...



Finance

- Financial modelling & forecasting
- Development (of) new business models
- M&A support
- Reporting & accounting impact assessment
- Tax frameworks & incentives



Technology

- Technology forecasting & feasibility assessments
- Engineering & maintenance
- Risk management at global/local levels



Markets

- Market analysis & forecasting
- Regulatory compliance
- Stakeholder engagement
- Political climate



Supply chain

- Partner analysis
- Renewable energy procurement



Governance

- Legal/ governance models
- Managing (new) operating structures

...and corporate functions to be engaged.



A proven approach

Renewable energy sourcing requires an integrated and phased approach



KPMG has a proven approach backed by advanced optimisation tools to support corporates on their journey towards 100% renewable energy...

1

Evaluation of corporate objectives & constraints

- Definition and evaluation of short-term and long-term objectives
- Definition and evaluation of key measures to be taken, decision drivers and corporate constraints:
 - Strategic
 - Financing & tax
 - Technology & operations
 - Social & environmental

2

Sourcing options & strategy

- A four-step approach to evaluate/develop local projects:
- Baseline calculation
 - Technical options
 - Market conditions (sourcing options, pricing, tax & incentives, readiness & social acceptability)
 - Commercial/financial models (capex/opex) scenario analysis

3

Develop strategy

- Options for evaluation & decision-making
- Projects clustered into short-/long-term sourcing strategy
- Financial options development and implications for the clusters
- Definition of go-to-market strategies and programme governance

4

Validation & roadmap

- Validation of most viable options and go-to-market strategy and implications with decision-makers
- Develop short-/long-term roadmap for implementation
- Set up programme structure & governance model

5

Implementation

- Manage the procurement process and interact with vendors for comparative assessment
- Contracting and negotiations taking into account legal risks related to complex structures
- Develop governance structure and processes

Who to contact



Magali Vercammen

Energy Sector Lead KPMG Belgium

mvercammen@kpmg.com

+32 2 708 47 18



Jorn De Neve

Energy Sector Lead Partner KPMG Belgium

jdeneve@kpmg.com

+32 2 708 47 78



Rudolf Stegink

Energy Sector Lead KPMG Netherlands

stegink.rudolf@kpmg.nl

+31 6 5133 4600



Jaap van Roekel

Energy Sector Lead Partner KPMG Netherlands

vanroekel.jaap@kpmg.nl

+31 6 5120 5183

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