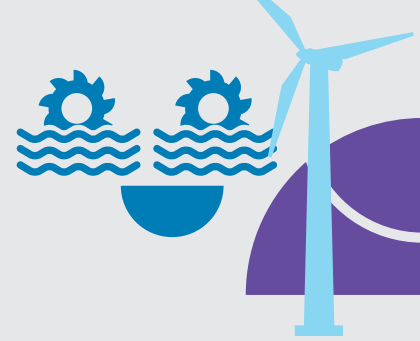# Capgemini

22nd
Edition

November
2020

WEMO

World Energy
Markets Observatory

Climate Change & Sustainability

**How the energy sector is helping private and public
organizations to achieve climate change and
sustainability objectives**

Climate change is a business-critical issue facing every organization. For corporate players, addressing this need requires radical reinvention of business models, open collaboration, and sustainability-driven technology choices.

"The way we see it, for corporate players, there is great need to create a climate transformation plan that addresses the key areas of offers, operations, and customer engagement," explains Alain Chardon, director of Energy Transition, Capgemini. "To help organizations comply with this new need, the energy sector has identified solutions across these areas that will reduce consumption, lower costs and encourage the use of renewable energy sources, develop new mobility approaches, implement synergies and a circular economy within the organization and with its suppliers and clients."
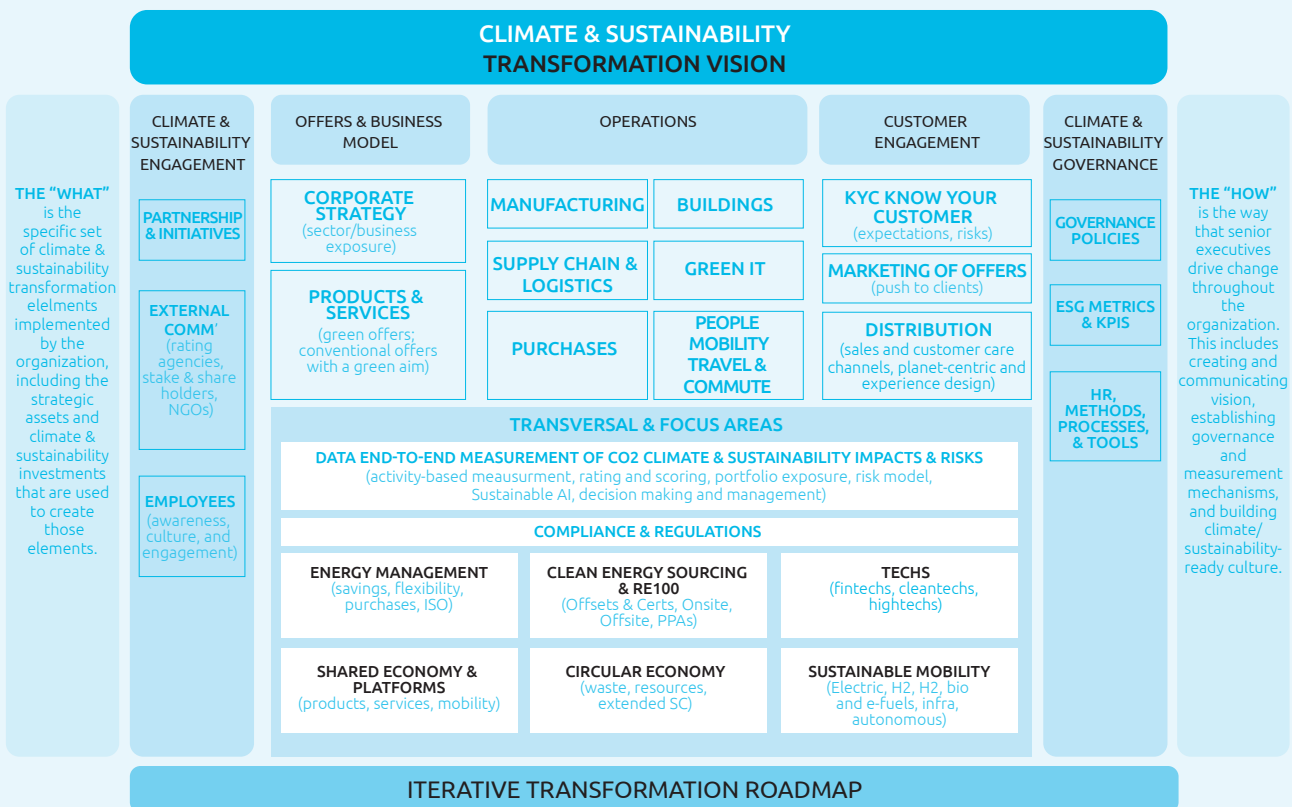
The 22nd Edition World Energy Markets Observatory (WEMO), Capgemini's annual thought leadership and research report that tracks the development and transformation of energy markets around the world, explores these solutions in greater detail, helping organizations realize their climate and sustainability transformation from vision to effective transformation. Here we explore some of the most high-value solutions offered by the energy sector to organizations across industries and around the world.
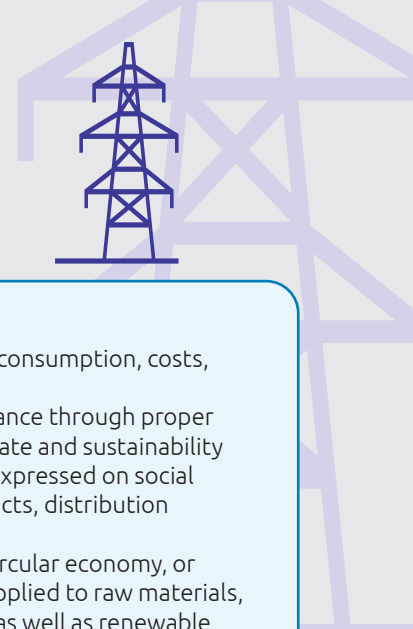
Earlier this year, Capgemini released a Climate & Sustainability Framework which helps organizations across industries set an enterprise-wide transformation vision and roadmap to achieve climate change objectives.

FIGURE 1

CAPGEMINI CLIMATE & SUSTAINABILITY FRAMEWORK

CXOs: where does your company stand on each item?

CLIMATE & SUSTAINABILITY TRANSFORMATION VISION

THE "WHAT" is the specific set of climate & sustainability transformation elements implemented by the organization, including the strategic assets and climate & sustainability investments that are used to create those elements.

CLIMATE & SUSTAINABILITY ENGAGEMENT
- PARTNERSHIP & INITIATIVES
- EXTERNAL COMM' (rating agencies, stake & share holders, NGOs)
- EMPLOYEES (awareness, culture, and engagement)

OFFERS & BUSINESS MODEL
- CORPORATE STRATEGY (sector/business exposure)
- PRODUCTS & SERVICES (green offers; conventional offers with a green aim)

OPERATIONS
- MANUFACTURING
- BUILDINGS
- SUPPLY CHAIN & LOGISTICS
- GREEN IT
- PURCHASES
- PEOPLE MOBILITY TRAVEL & COMMUTE

CUSTOMER ENGAGEMENT
- KYC KNOW YOUR CUSTOMER (expectations, risks)
- MARKETING OF OFFERS (push to clients)
- DISTRIBUTION (sales and customer care channels, planet-centric and experience design)

CLIMATE & SUSTAINABILITY GOVERNANCE
- GOVERNANCE POLICIES
- ESG METRICS & KPIS
- HR, METHODS, PROCESSES, & TOOLS

THE "HOW" is the way that senior executives drive change throughout the organization. This includes creating and communicating vision, establishing governance and measurement mechanisms, and building climate/sustainability-ready culture.

TRANSVERSAL & FOCUS AREAS

DATA END-TO-END MEASUREMENT OF CO2 CLIMATE & SUSTAINABILITY IMPACTS & RISKS (activity-based measursment, rating and scoring, portfolio exposure, risk model, Sustainable AI, decision making and management)

COMPLIANCE & REGULATIONS

- ENERGY MANAGEMENT (savings, flexibility, purchases, ISO)
- CLEAN ENERGY SOURCING & RE100 (Offsets & Certs, Onsite, Offsite, PPAs)
- TECHS (fintechs, cleantechs, hightechs)
- SHARED ECONOMY & PLATFORMS (products, services, mobility)
- CIRCULAR ECONOMY (waste, resources, extended SC)
- SUSTAINABLE MOBILITY (Electric, H2, H2, bio and e-fuels, infra, autonomous)

ITERATIVE TRANSFORMATION ROADMAP

Capgemini's climate and sustainability framework shows how organizations can reconsider every aspect of business through the lens of:

- Leveraging data and insights to drive sustainable performance: visualizing energy consumption and carbon emissions data to identify opportunities to reduce impacts in processes or in real estate
- Product offer, for instance through product lifetime management (PLM) solutions in industry saving time, lost costs and energy, improving life expectancy and the global CO_2 footprint, or building information management (BIM) in the construction industry
- Manufacturing, through Industry 4.0 plant floor management, including energy and CO_2 focus in its operating parameters
- Supply chain: implementing stock procurement models and transport management systems based on AI to reduce uncoordinated purchasing plans, optimize fleets and logistics, reduce fuel consumption, costs, and emissions
- Customer engagement, for instance through proper AI observation of customer climate and sustainability expectations and weak signals expressed on social media regarding services, products, distribution network, brand experience
- Platforms for shared services, circular economy, or industrial territorial symbiosis applied to raw materials, intermediate goods and waste, as well as renewable energy or heat, and mobility
- Corporate risk management: cliamate and sustainability end-to-end data management has started in financial services (know-your-customer ratings, business portfolio risk exposure towards climate, etc.) and it will expand to other services and industry sectors in 2021–2025.

Energy efficiency

One of the most important parts of an organization's energy transformation strategy is energy efficiency.

"Before organizations consider how to green their energy strategy, they should first think about how to become more sufficient and efficient," urges Chardon. "Energy efficiency is an effective way to generate cost savings and also to reduce consumption."

For example, one of the most obvious ways for companies to reduce energy consumption is through real estate strategy and building renovation, which includes thermal insulation reflection and heating, cooling and lighting equipment replacement by more natural or energy efficient systems. Our research shows that, at present, renovations with little energy savings dominate the European market, whereas deep renovation remains minor in both residential and non-residential buildings. Our analysis reveals that in order to reach the 2030 EU-energy efficiency and climate targets, the region must double or even triple the renovation rate of buildings, thus opening a wide market and creating many jobs.

Another area of opportunity for efficiency is through smart home/building applications. These solutions vary in terms of investment, ranging from high – such as an automated, sensor-based energy and use monitoring system – to low, such as the use of a mobile app that tracks electricity consumption and offers users tips on how to change consumption habits to save both money and energy.

Green electricity

This year's report found that new investments in clean energy in Europe have stabilized in value over 2018–2019, but have grown by 42% in capacity over the same period. Research shows that the cost of renewable energy has fallen substantially, especially solar PV, with capacities increasing by 104% with only a 17% increase in investments. This means that present and future investments will deliver far more capacity than in previous years.

In fact, these technologies are the cheapest sources of new-build generation and have more job creation potential than fossil fuels. As such, our analysis indicates that clean energy will be prioritized in economic recovery packages, which will ultimately help regions come closer to meeting climate change goals.

At the same time, this year's report highlights how corporates can find real value in consuming renewables through power purchase agreements (PPAs), which outline the source, price, and other terms of energy production. Our research shows a 46% increase in the global PPA market between 2018 and 2019, led by the United States, Europe, and Asia. We also see pricing becoming more competitive, with the cheapest corporate PPA in Spain for solar at €35.3 per MWh and Sweden for wind at €30.5 per MWh .

That said, there is some uncertainty about how COVID-19 may impact corporate PPAs. Even though some contracts have been finalized during the crisis, we expect there to be lower electricity demand from corporates in the short-to-medium term as well as a rebound in renewables subsidies in green recovery plans. Will this soften the market?

Green thermal

Thermal energy, which accounts for about half of all final energy use in Europe, represents a large and complex part of the region's overall energy consumption and emissions strategy. Decarbonization in this area is a difficult but necessary step to take to achieve 2030 and 2050 climate change goals.

Our research indicates that the electrification of heat has continued to accelerate. This has the potential to reduce heat-related GHG emissions by 50%. Accelerating adoption of heat pumps offers a cost-effective way to electrify heat and optimize the production and distribution. Other important levers are use of heat from renewable sources such as geothermal, biogas or biomass energy, industrial waste heat, or fossils combined with carbon capture (CCUS).

Green hydrogen

Green hydrogen, which is produced through water electrolysis and powered with electricity from renewable sources, remains one of the most expensive forms of hydrogen, with costs ranging in the 3.5 – 6 €/kg range. However, our research indicates that low-cost green hydrogen will be achieved by scaling up both electrolysis plants in industrial clusters or ports and renewable power plants.

This is welcome news in the energy world as hydrogen is the cornerstone of several industrial processes, such as refining, creation of ammonia for fertilizers, and methanol. The International Energy Agency (IEA) estimated that hydrogen will eventually replace fossil fuels in long-range aviation and maritime transport and in high temperature industrial processes, such as iron, steel, glass, and cement production.

To review the full findings from the 22nd Edition World Energy Markets Observatory, download a copy of the report today.

Download Now

Green mobility

Another priority area in Europe for Hydrogen and e-liquids is transportation, as it is the only major economic sector in which GHG emissions have increased in recent years, now accounting for around one-quarter of the EU's total emissions.

Biofuels and bioliquids are also instrumental in helping EU countries meet their 10% renewables target in transport. This is especially important when considering the greening of public transport systems, the vast majority of which still run on fossil fuels.

Another critical factor in mobility is related to limited availability of electric vehicle (EV) public charging points in Europe. The development of a charging network must be accelerated to sustain the rise in EV adoption and enable this part of Europe's long-term climate plan.

Finally, looking to public transport, governments must enact specific measures to support the use of shared mobility options as part of their COVID recovery plans. Investments in hygiene measures such as disinfection, face mask availability, and adherence to social distancing will be necessary to revive the use of public transport and cut back on emissions created by private vehicles.

Many readers familiar with these issues will recognize that these ideas represent a fraction of energy efficiency and green energy solutions available to organizations. To learn more about a full range of sustainability solutions, download a copy of the WEMO report.
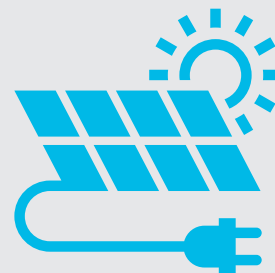
A perspective from our Capgemini thought leaders:

Alain Chardon
Director Energy Transition, Capgemini Invent

Ozlem Bozyurt
Managing Consultant, Capgemini Invent

About
Capgemini

Capgemini is a global leader in consulting, digital transformation, technology, and engineering services. The Group is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. A responsible and multicultural company of 265,000 people in nearly 50 countries, Capgemini's purpose is to unleash human energy through technology for an inclusive and sustainable future. With Altran, the Group reported 2019 combined global revenues of €17 billion.

Learn more about us at

www.capgemini.com