

# How to develop a customized corporate energy strategy

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**C**orporations that adopt a wait-and-see approach to issues of energy usage and global climate change mitigation legislation are taking a substantial risk. If left unattended or handled poorly, energy issues could cause problems for future business activities and occupy management's time for decades to come. Yet how can management do enough to develop a sustainable energy model but avoid making energy/environmental short-term strategy decisions that will damage long-term business prospects? Companies that are heavy consumers of energy, that create major greenhouse gas emissions through their operations, and those that manufacture energy-dependent products will all be challenged to address this issue while simultaneously maintaining efforts to keep costs low, introduce new products, and build market share.

Corporations need a structure for thinking through the development of a new energy/environment strategy and the business implications of different strategy alternatives. To maximize the involvement of senior management, the energy/environment strategy process should be one that corporations could apply themselves. To that end, this four-step process focuses on the major energy/environment issues requiring corporate decisions; it generates two alternate scenarios of the future that span the possibilities and identifies basic policy choices for corporations and also the tradeoffs to be made.

The first step develops an understanding of the major energy and environmental challenges that the organization could face in the future, one that puts a spotlight on the major uncertainties. The second step captures that understanding in two alternative scenarios of the future. The third step identifies possible policies and actions for addressing the challenges using the scenarios to think through the different ideas. And the fourth step develops a strategy to be implemented that is flexible enough to adjust to possible events and developments in the future. Company executives can navigate this process in several days, though the services of an outside facilitator familiar with energy issues and the scenario process would likely speed the process along and add significant value.

## Step 1: understanding the energy future's spectrum of uncertainty

This first step helps develop structured thinking about the forces and drivers of energy, the environment, economic development, and business activity. This step requires divergent thinking to identify the forces and drivers that will shape the issue in the future and convergent thinking to focus on the most-important ones and the major uncertainties.

### *Future dynamics*

This analysis begins by identifying all the forces and drivers that could shape the future for energy, climate change, environmental management, and the marketplace. These include the macro issues like economic growth, political will, physical changes to the environment, and social values, as well as the micro issues like energy market dynamics, environmental technology, and global business practices. After brainstorming the many possibilities, the

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most important and uncertain ones are selected. In a recent project, for example, the process focused on four major drivers of uncertainty for the future: the dynamics of energy supply and demand, global warming effects, society's environmental-mitigation and remediation priorities, and world economic development outcomes.

*Area of uncertainty 1: future energy markets.* The questions of how energy demand and supply will evolve and what prices will be paid for that energy over the next two decades are critical to developing an effective corporate energy strategy. To gain some understanding of the range of possible energy market outcomes, estimates were made of two plausible end points for how energy markets could evolve. These end points are not predictions of the future, but simply possibilities developed to help understand the dynamics of energy demand and supply:

**Abundant hydrocarbons.** One very possible outcome for future energy is a world that continues to be dominated by abundant oil, natural gas, and coal at relatively low prices. This outcome may not align well with the world's environmental needs, but powerful market forces related to economic growth objectives of both developed and developing countries could lead to the discovery and development of many more hydrocarbon resources around the world to the point where prices remain low because of all the competition among energy suppliers. In this extreme, coal usage would increase dramatically compared to today's levels, while oil prices would remain low, in the range of US\$40/barrel to US\$60/b in real terms until 2020.

**Shift to alternatives.** In another very different possible outcome, concerns about global warming stimulate consumers and local governments in developed countries to stop new coal power-plant construction while energy security concerns drive major-economy governments, including China and India, to implement a variety of carbon taxes and market incentives to reduce dependence on hydrocarbon fuels, increase supply of renewable energy, including nuclear, and increase energy efficiencies. Crude-oil prices peak in 2020 at US\$200/b.

*Area of uncertainty 2: global climate changes.* Climate change is a global crisis that could bring different regions of the world significant benefits, major problems, or a combination of both. But it's highly uncertain because we don't know what the full effects of climate change will be, or when they will occur. Two different outcomes for how the global climate could change over the next 15 years and its impacts are:

**Abrupt effects.** By 2020 global temperature increase from greenhouse gas (GHG) emissions and their impacts could rise by 0.5°C over average temperatures in 2000. This rise would likely have a negative impact on agricultural activity in India, Africa, and Mexico, but a positive one generally for North America, Northern Europe, and Russia. But perhaps more important, the changes would result in significant shifts in the world's ocean and wind flows, water resources on large landmasses, and the number and severity of summer storms.

**Incremental effects.** Another possibility is that global climate changes by 2020 related to GHG emissions are still modest. The changes and their impacts are definitely coming but they still have not been experienced to an appreciable degree. Droughts and floods still occur regularly, and agricultural production continues to fluctuate in typical fashion. Weather patterns appear no more severe than in the past. Sea levels are rising, but life goes on.





*Area of uncertainty 3: global environmental values and priorities.* While there is general consensus on the global climate change problem, the motivations, willingness, and priorities of governments, businesses, and individuals to do something could still diverge significantly over the next 15 years. Based on experiences over the last two decades and recent trends, two different possibilities for how global environmental values and priorities could develop over the next 15 years are:

**Global agreement; national discords.** In one extreme, both developed- and developing-country governments reach an agreement to reduce GHG emissions and accept binding obligations to implement the necessary actions. The United States, European Union, China, Russia, and India could all be part of the agreement that could include World Trade Commission (WTC) trade sanctions in the event of missed targets for a country. Individual countries would likely continue to bicker over the strict requirements (and fairness of them). Each country would likely be responsible for the methods used to reduce their nation's emissions, although the overall agreement would probably include a global emissions credit system.

**Global disagreement; national accords.** At the other extreme, no global agreement on emissions reductions would be reached, and each country would develop and execute whatever policies they could. China and India in particular would likely emphasize their economic-development priorities over reducing their emissions. There would still be considerable political commitments to reducing emissions, but effective policies would often not be executed.

*Area of uncertainty 4: world economic growth.* Can world economic growth continue to expand at a relatively high rate, bolstered by generally strong performances in the EU, the United States, China, and India or will the next 15 years be a difficult time with wildly fluctuating business cycles and uneven performances everywhere? To what extent will the United States' economic growth slow down because of retiring boomers, slowing business productivity, and immigration restrictions? And to what degree will developing countries be able to sustain their high growth rates?

**Developing global economy.** Sustained high growth in developing countries continues as a result of a progression of policies around the world to leverage the demand and resources of the global economy. China's government leaders continue to have strong convictions about the priority of economic development and increased standards of living in China, and are reluctant to reduce economic growth.

**Economic nationalism.** A different possibility is that too many governments would attempt to manage their economic growth and political goals through active use of trade, investment, fiscal, and labor regulation and legislation. Both developing and developed countries would continue to maintain a variety of trade barriers, labor restrictions, and national subsidies in order to protect their people from the effects of market forces. China's leaders and Russia in particular might be unwilling to endure the negative effects of market forces in the world.

Expressing the most important forces and drivers in the form of uncertainties and two plausible outcomes has some important benefits. First, by focusing on the most important forces, the process prevents executives from getting trapped in the complexity of the issue and wasting time on insignificant matters. Second, by hypothesizing future dynamics and outcomes of the most important forces interacting with each other, the process helps executives understand the forces and drivers better and begin to visualize some of the challenges ahead. And third, by explicitly describing the range of uncertainty of those forces, executives avoid the trap of creating policy based on one set of assumptions about the future and begin to see the benefits of strategy flexibility and future monitoring of key indicators.

## **Step 2: two alternative scenarios of the future**

In this step, two energy/environment/business scenarios are created. While these scenarios lack the detail to make individual energy/environmental strategy decisions, they do offer

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important insights about the uncertainties, challenges, and tradeoffs corporations will face in the next five years in adjusting to a rapidly changing world. They also can be used to test a company’s current energy/environmental policy. To do this, executives should ask, “How well would my current strategy perform in this future if it were to occur?” “What would be the specific threats and opportunities for my organization in this scenario?” And, “Would my current strategy be an advantage or disadvantage if this scenario were to occur?” After examining these issues for both scenarios, executives will have a strong basis for deciding whether a new policy is required.

The outlines of the two scenarios are constructed from the possibilities of the four major uncertainty areas (see Exhibit 1.) The possibilities are combined to create two counterpoints of possible energy, climate-change, environmental priorities, and economic outcomes, thus highlighting the wide range of possibilities companies might face.

Brief scenario stories summarize the possibilities of the future in an understandable format and help executives discuss the challenges.

**Scenario 1: “Roller Coaster”**

In the Roller Coaster scenario, as a global consensus emerges on mitigating climate change, a détente between developing and developed economies on economic development and energy usage is reached. A sustainability worldview evolves, leading to a carbon-tax scheme for developed countries, strict emission limits being adopted in China and India, and the elimination of trade barriers between developing and developed countries. As a result, prices for carbon-based energy steadily increase with the cost of crude oil to refiners in North America reaching \$200 per barrel by 2020. In the midst of high-energy prices and a changing climate, companies and innovation become increasingly global. The world economy is generally strong, though with significant ups and downs.

If Roller Coaster were to occur, organizations would face some interesting threats and opportunities.

- Energy prices would be much higher, perhaps by more than 200 percent above 2007 levels. Renewable energy sources would become much more competitive and demand for renewable energy would increase significantly. Cost structures for many manufacturers would be substantially affected.
- Major investments would be needed to develop new energy sources and meet new standards. Energy investments require long-lead times, and organizations will be challenged to move to new sources before the different winners and losers amongst the new sources have been sorted out.

**Exhibit 1** Two alternate energy/environment scenarios of the future

<i>Scenario:</i>	<i>Scenario 1: Roller Coaster</i>	<i>Scenario 2: Stuck on Carbon</i>
Future Energy Markets:	Shift to Alternatives	Abundant Hydrocarbons
Global Climate Changes:	Abrupt Effects	Incremental Effects
Global Environmental Values and Priorities:	Global Agreement; National Discords	Global Disagreement; National Accords
World Economic Growth:	Developing Global Economy	Economic Nationalism



- Much-more stringent environmental-management requirements would be implemented (and they would often be global in their application). Environmental management could become a key management function in an organization, on par with finance, product development, and manufacturing.
- Changing climate could speed up the deterioration of physical infrastructure, and governments will be chronically short of resources to make needed repairs and replacement. If this happens, reordering of government priorities will be needed and many current government services will have to be rationalized.
- Many organizations will be forced to shift their operations from one geographic location or country to another in response to the changing climate conditions. New personnel and expertise will be in high demand. A gold-rush like environment could develop in the growing-temperate regions.
- New competition from the developing countries would emerge as the barriers to global economic activity shrink and as ideas, investment, expertise, and knowledge flow more readily.
- Foreign partners will likely be leveraged more in the value chain. New innovation models will develop and ideas and resources will be used more effectively in creating and delivering new products and services.

### *Scenario 2: “Stuck on Carbon”*

In the Stuck on Carbon scenario the world is generally caught between the agendas of the developed countries and developing countries. Weak economic performance ensues for both, bolstering the demand for protectionist policies all around. As countries and policies become increasingly nationalistic, climate-change tensions increase as countries act according to their own agendas. An uneasy *détente* is eventually reached between the developing and developed countries on economic growth issues, but little can be agreed on climate-change mitigation. Enabled by a lack of investment in energy alternatives and little increase in energy demand, low energy prices are prevalent throughout the scenario. The situation for China and India is volatile because many world leaders view China’s and India’s demand for coal and oil as “irresponsible;” but the general populations of China and India have strong convictions about the priorities for economic development and increased standards of living.

If Stuck on Carbon were to occur, organizations would face a number of threats and opportunities:

- Efforts to increase energy efficiency, develop alternative energy sources, and mitigate global warming would be costly and few financial benefits would flow to those that did.
- Carbon-energy ownership by countries or companies defines the world’s “haves” from the “have-nots”. Armed conflicts over carbon energy resources between nations would be common.
- The public in both developed and developing countries is not engaged by the debate over what to do in the face of global warming trends. In developing countries the public is unwilling to pay for mitigation and pre-emptive changes. The problem is still somebody else’s.
- Everyone believes a global warming tipping point will occur after which dramatic effects will be seen. No one prepares for this unpredictable event, despite the understanding that liabilities for inaction could be significant.
- Developing countries struggle to maintain their economic growth paths and severe ups and downs are experienced.
- Abundant, reliable energy supplies would be available in the world.
- Coal resources would continue to be exploited, but using cleaner technologies, more efficient and environmentally appropriate mining technologies. Coal trade would grow around the world.

### Step 3: consider the full extent of the strategic possibilities

By developing two very different, yet plausible, scenarios of how the energy/environmental future could play out, we are now in a powerful position to identify the range of issues facing a company on this issue, develop good strategies for addressing the threats and opportunities, and identify the circumstances in which those strategies could succeed or fail.

We use the scenarios throughout this step to stimulate our thinking about the possibilities by deliberately and thoughtfully immersing ourselves in each scenario, assuming for the moment that this is how the future will unfold. To develop a complete inventory of the strategy options the organization would have, we ask persons with different backgrounds and experience and the strategic thinkers of the organization to provide their ideas.

In this brainstorming for strategy ideas, we use a strategy template such as the one shown in Exhibit 2 below. The template encourages consideration of the various choices available to management for exploiting or addressing the challenges that could emerge in the future, including possible products to develop and produce, technologies to invest in, business models to implement, and capabilities to develop.

#### *Good strategy choices for “Roller Coaster”*

With the world committed to addressing the global warming issues, organizations will be expected to make significant changes in how they source and use energy and how they participate in the world. New standards will be set, and organizations will be judged or penalized based on how fast they respond to the new standards.

Organizations will be challenged to implement two strategic approaches for energy/environmental management/sustainable development. The first would be to reduce drastically the amount of carbon energy that an organization buys and uses. This

#### **Exhibit 2** Example of strategy template for energy/environmental issue

<p>STRATEGY TEMPLATE</p> <p style="text-align: right;">Scenario: _____</p> <p><b>Title:</b></p> <p><b>Strategic Goals:</b></p> <p><b>Overall Approach:</b></p> <p><b>Energy Supply:</b></p> <p><b>Energy Use:</b></p> <p><b>Research/Technology:</b></p> <p><b>Human Resources Capabilities:</b></p> <p><b>Compliance Management:</b></p> <p><b>Investments:</b></p> <p><b>Product/Services Design:</b></p> <p><b>Infrastructure/Facilities/Location:</b></p> <p><b>Other:</b></p>
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might come from implementing comprehensive energy efficiency measures throughout the organization or by changing sources. The second would be to flatten the organization or diversity its operations around the world. Both approaches would contribute to the value of the organization in Roller Coaster, but the first would contribute the most toward reducing the organization's carbon footprint and carry less business risk in its implementation.

#### *Good strategy choices for “Stuck on Carbon”*

In a world where economic criteria would still be the most important, organizations will be expected to move as diligently as they can toward improving their use of energy but without threatening their main purposes. Energy resources will be relatively cheap, and survival in a very competitive world will have short-term importance over reducing carbon usage.

Organizations will attempt to navigate two strategic maneuvers in Stuck on Carbon on energy/environmental management/sustainable development issues. First, they will take advantage of all the investment in natural gas and clean coal technologies and energy efficiency technologies by governments around the world. They will overhaul their energy practices without risking their own money. Second, they will plan, prepare, and wait for the predicted global warming effects. With so much uncertainty about location and nature of global warming effects, it makes little sense to change operations and energy use practices very rapidly.

Multinational organizations in developing countries must prepare for a different world and be diligent about doing the right thing. The media, international institutions, non-governmental organizations (NGOs), and home-country governments expect multinationals to operate as examples and will castigate those that don't.

#### **Step 4: choose a strategy based on the trends and the uncertainties**

The process of brainstorming strategy ideas by scenario and discussing the strengths and weaknesses of those ideas by scenario and across the two scenarios allows managers of an organization to fully explore many possibilities and openly discuss the relative merits of the ideas. The managers can then develop together a final solution that takes into account the major uncertainties they worry about and that also has a reasonable potential for meeting the organization's strategic objectives.

In the case of developing an energy/environmental/sustainable development strategy, managers would identify and sort through many ideas about initiatives, strategic approaches, and actions before settling on a final choice. The overall goal is to develop an integrated strategy that coordinates functional initiatives under a set of goals and priorities.

The consideration of possible strategies must be mindful of implementation realities that can be a significant constraint on strategic choice and major external uncertainties. These realities and the forces of the external environment are brought to bear in the discussions by evaluating the possibilities across a common set of factors. Typically two to six factors are used, reflecting different elements of costs, risk, or value. Exhibit 3 highlights potential evaluation factors for energy/climate change mitigation strategy ideas.

Strategy success will only occur for issues like energy and climate change mitigation if the final strategy has the flexibility built into it to take into account the uncertainties of how the global business and climate environment could evolve. A key requirement then is to monitor closely what's going on and look for signposts that indicate which future will occur.



### Exhibit 3 Factor definitions

Factor	Key Questions	Measures
Link to Energy/ Environmental Goals	<p>To what extent will this idea contribute to the long-term energy/environmental goals of the organization?</p> <ul style="list-style-type: none"> <li>Does it contribute to desired compliance with laws, regulations, and society's expectations?</li> <li>Does it lead to a desired energy-usage position?</li> <li>Does it lead to a new energy capability?</li> <li>Does it protect or develop a highly-important alliance?</li> </ul>	<p>High (5) = Very Strong Contribution</p> <p>Medium (3) = Moderate Contribution</p> <p>Low (1) = Weak or No Contribution</p>
Commercial Value	<p>What is the financial impact of this idea if successful?</p> <ul style="list-style-type: none"> <li>What annual revenue will be generated?</li> <li>What margins will be achieved?</li> <li>What investments will be required?</li> <li>How will costs go up?</li> </ul>	<p>High (5) = Financial measures improve</p> <p>Medium (3) = Financial measures are not affected</p> <p>Low (1) = Financial measures decline</p>
Timing	<p>When will it be possible to realize goals with this idea?</p> <ul style="list-style-type: none"> <li>What is the payback period to recover investment?</li> <li>How soon must the idea be implemented?</li> <li>How long will it take to show results?</li> <li>When will this idea be needed in the next 10 years?</li> </ul>	<p>High (5) = Immediate results can be shown</p> <p>Medium (3) = Five years before success</p> <p>Low (1) = More than ten years before impact</p>
Resilience Across Scenarios	<p>Is success of this idea independent of the scenario of the future?</p> <ul style="list-style-type: none"> <li>Is it dependent on one scenario or the other?</li> <li>Is it dependent on a particular driver or assumption about the future?</li> </ul>	<p>High (5) = Successful in Both Scenarios</p> <p>Medium (3) = At least OK in Both Scenarios</p> <p>Low (1) = Not Successful in One of the Scenarios</p>
Execution Risk	<p>What is the likelihood that this idea can be implemented successfully?</p> <ul style="list-style-type: none"> <li>Can the organization execute well in this area?</li> <li>Are capable human resources, processes, and infrastructure available?</li> <li>Is the organization experienced with all market technical aspects?</li> <li>Will plans reflect the organization's experience and have sufficient contingency?</li> </ul>	<p>High (5) = Highly Likely</p> <p>Medium (3) = Somewhat Likely</p> <p>Low (1) = Unlikely</p>
Organization's Market Position	<p>What is the impact to the organization's market position under this idea?</p> <ul style="list-style-type: none"> <li>What is the organization's relevant track record and reputation?</li> <li>Does the organization have established relationships with relevant stakeholders?</li> <li>Does the organization have proprietary technology or know-how?</li> <li>Will the organization's costs be lower?</li> </ul>	<p>High (5) = Better Position than Today</p> <p>Medium (3) = Same Position As Today</p> <p>Low (1) = Worse or unknown Position</p>

Where organizations choose to place their monitoring probes and how they distinguish meaningful signals from the background noise will determine whether they will be sufficiently aware of the changes in the environment that are important to their strategy. The objective is not merely to provide input on major uncertainties, but to create an ability to act.

A table (Exhibit 4) highlights key indicators to monitor and some signposts to look for that indicate particular outcomes are likely.

### Exerting leadership on energy and climate change mitigation

The two scenarios cover the spectrum of possibilities for how the future could play out until 2020, just 13 years away. The Stuck on Carbon scenario highlights the implications of remaining wedded to carbon energy sources for political and economic reasons, while the Roller Coaster scenario highlights the implications of a global policy commitment to limit global warming effects. Although the developments of the Roller Coaster scenario would entail the greatest change, risks, and benefits to companies, even the slower developments

**Exhibit 4** Signposts for scenarios

<i>Uncertainty Issue</i>	<i>Indicator</i>	<i>Roller Coaster Signpost</i>	<i>Red Signpost</i>
Future energy markets	Price of crude oil	Cost per barrel rises above \$120 barrel	Cost per barrel stays less than US\$80
Future energy markets	Alternative energy supply	Growth rate for solar and wind renewables exceeds 12 percent per year	Growth rate for solar and wind renewables remains less than 8 percent per year
Global climate change	Agriculture-growing seasons	Agriculture productivity in Canada increases substantially	Little change in agriculture production in Canada
Global climate change	Sea levels	Consensus that levels will be at least 2 inches higher by 2020	No consensus that levels are rising
Global environmental values and priorities	High mileage cars	Consumer purchases of high gas mileage cars (greater than 35 miles per gallon) grows at 10 percent per year	Consumer purchases of high gas mileage cars (greater than 35 miles per gallon) grows at less than 5 percent per year
Global environmental values and priorities	China environmental priorities	Regionally-owned Chinese power plants implement emission equipment and meet national requirements	New power plants fail to implement emission control equipment as required
World economic growth	Trade flows	WTO governance of trade barriers continues to improve	WTO efforts crumble in the face of non-compliance by major countries
World economic growth	Economic growth in developing countries	India's growth rate averages greater than 8 percent from 2007 to 2012	India's growth rate fluctuates and averages less than 5 percent

in the Stuck on Carbon scenario would entail advantages and disadvantages to companies that call for awareness, preparation, and strategic initiative. The overall conclusion is that companies must begin their strategic initiatives today if they haven't already.

As past energy crises have shown, the major challenge will be getting the organization to act. To facilitate action there are several next steps the organization must navigate. First, the organization must build an organization-wide commitment to taking action on the issue. Second, it must make the implications real for each business unit or individual. Third, it must develop the plans, resources, and capabilities for taking the necessary actions. And finally, it must execute.

This process to develop a new energy strategy addresses the prospects that the way an organization manages its energy and environmental threats and opportunities over the next 15 years could invigorate or cripple it. The organizations that will be most affected initially will be those whose operations create a lot of greenhouse gas emissions. But rising energy and climate change mitigation costs will affect all organizations, and consumers, investors, and local governments will increasingly hold them responsible for developing a sustainable model. The four-step process outlined here provides corporate executives the practical means to interpret the global forces buffeting them, to identify new pathways for creating value in the future and to get started.

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