

Scenario Planning - A Tool for Navigating Strategic Risk

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The Challenge of Uncertainty

How do you make strategic decisions? How do you decide where to place your bets? Toyota has bet on hybrids; GM has bet on fuel cells. Shell bet on offshore and LNG in the 1970s. Those turned out to be great bets. BP placed a big bet on Russia. Nexen-Opti have bet on coke-to-gas technology. EnCana bet on North American gas; Talisman bet on global conventional oil and gas.

Strategic Risk

All of these choices involve significant strategic risk - the risk associated with major investment decisions that involve long time frames and uncertain outcomes. These are big, tough decisions because they are often company transforming. Think of a \$10 billion investment in oil sands. It can take years to learn whether the decision is brilliant or a bust. Most difficult, the key factors influencing success are uncertain and are beyond the control of the company. Such factors cannot be analyzed away. No amount of research can resolve risks rising from political, technological, environmental or other factors. Expectations about the future that determine the consequences of strategic decisions cannot be reduced to a single forecast with any credibility or confidence¹.

Embracing Uncertainty

One approach to this dilemma is scenario planning. Scenarios are alternative descriptions of the future. They embrace uncertainty. Instead of trying to reduce uncertainty to a single most likely forecast, scenarios try to identify the major forces driving change and the key uncertainties that lead to a wide range of possible future outcomes. Scenarios map out the boundaries of our uncertainties and provide a context of expectations for generating and evaluating strategic options. This process surfaces strategic risks and opens thinking on new ways of managing or mitigating risk in implementing major strategies. While hard decisions are not removed and risks are not eliminated, decisions are based on a broader understanding of the risks and rewards. That is the task of senior management. The worst decision is one made in ignorance where the risks were knowable, but were not identified or fully considered.

Opening Minds

Scenario planning is a process undertaken by a company to broaden its thinking about the future as a basis for developing and implementing robust strategies. There is benefit both in the process and in the product. The

¹ Forecasts using quantitative modeling can be valuable in identifying risks and can be used in conjunction with scenarios. The risk of forecasting is that the projections become "believed".

process is an intensive, highly participatory and interactive learning experience that broadens thinking, deepens shared understanding, creates insight and builds alignment for action. Pierre Wack, the godfather of scenarios at Shell, emphasized that the purpose of scenarios was to open the “mental maps” of managers. Kees van der Heijden, a disciple of scenarios at Shell, emphasized that scenarios are a vehicle for the “strategic conversations” that are vital in making better strategic decisions. In many scenario planning projects, creating a more flexible and more open learning environment is a major objective of the project².

Focus on Strategy

The product of scenario planning is a set of stories describing a range of futures focused on the strategic issues facing a company. The scenarios themselves are not the desired end, rather they are a management tool to improve the quality of strategic decisions. Strategic decisions might involve a specific investment decision, such as whether to build an upgrader and whether it should be located in Alberta or in the United States. For a conventional exploration and production company, a strategic decision might involve a long term strategic direction such as whether to focus exploration efforts on oil or on natural gas. For a major independent or integrated energy company, the strategic decision might be whether to integrate or focus on a specific part of the value chain. For a utility, the strategic decision might be whether to build a coal-fired or a gas-fired power plant. These types of decisions involve tough choices, long time frames and high degrees of uncertainty. It is in these cases that scenario planning is most valuable.

Building Scenarios

Step 1: The Focal Question

Scenario planning begins by identifying a strategic issue. There are an infinite number of stories about the future. The challenge is to focus on those stories that are important. The first step in the process is to agree on the strategic issue we want to address, typically in the form of a “focal” question. The focal question ensures that the scenarios are relevant to the strategic issue at hand or to the strategic decision under consideration. Often, the focal question is informed by interviews at the onset of a project. The focal question might be open and broad such as “What is the future of the coal industry?” or more closed and specific such as “Should we invest in coal-to-

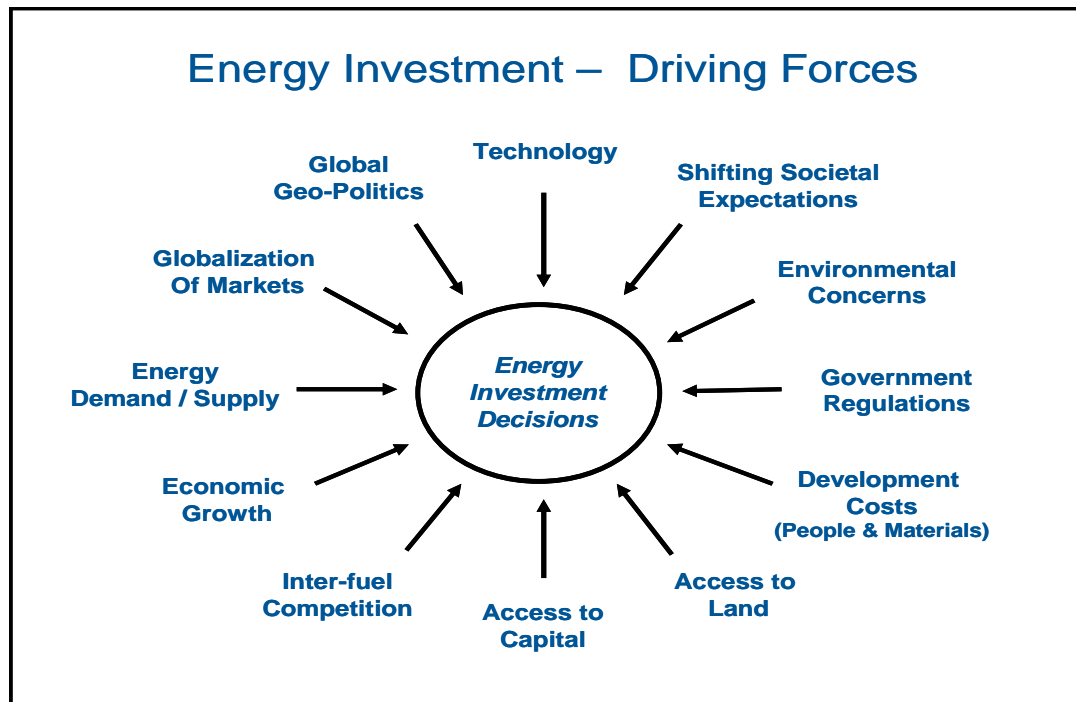
² The objective is, in effect, an effort to change an organization’s culture. Ian Wilson remarked that “scenario planning is not merely a new planning tool, but rather a new way of thinking”. This can threaten traditional views. First, scenarios embrace uncertainty and risk contrary to conventional efforts to avoid risk. Second, scenarios challenge the view that “good” managers “know” where they are, where they are going and how to get there. Competent managers are in control. Scenarios embrace not knowing and are directed to that which is beyond our control. Third, scenarios challenge our ability to know with certainty. All of our knowledge is about the past and all our decisions are about the future. Scenarios challenge an organization’s culture by embracing “not knowing” which is both a condition for success and a desired outcome.

gas technology?" The more specific the focal question is in defining the strategic choice, the more readily the results can be translated in action³. As an example, let us take the role of managers of an energy company who are focused on energy investment choices over the next 10-15 years. The focal question of a scenario planning exercise might be: *"What part of the energy value chain should we invest in?"*

Step 2: Driving Forces

The second step in the scenario planning process is to identify the forces driving future change. The scenarios will ultimately be stories describing how different sets of interrelated forces lead to different future outcomes. Identifying the forces driving the focal question might involve simply constructing a list. An alternative approach is to pose a question about change. For example, what changes could occur over the next 10 to 15 years that would have a significant impact on energy investment decisions? This opens the conversation to a wide range of creative ideas which can be recorded and grouped into common themes. These themes identify the underlying forces that implicitly drive the future. In this exercise, it is important not to revert to preconceived frameworks (e.g., social, economic, political, environmental and technological factors) in identifying driving forces as doing so limits creativity and insight. The intent of the process is to open new thinking and not to reinforce existing frameworks. For our energy investment example, a set of forces is shown in Figure 1.

Figure 1



³ If learning is a major objective, a more open focal question allows a broader discussion.

Step 3: Critical Uncertainties

The third step in the process is to identify critical uncertainties. Our purpose in building scenarios is to explore the boundaries of uncertainty and to look for a broad range of future outcomes. The emphasis is on divergence not convergence. Some driving forces are more important than others and some are more uncertain than others.

Driving forces that have a narrow range of future outcomes are defined as “pre-determined”. We need to include them in all the scenarios, but they do not lead to different scenarios. In other words, these forces are predictable. Demographics are often predictable. Average global economic growth of 4% to 5% over the next 15 years could be viewed as “predictable”. All important, predetermined driving forces and should not only be factored the scenarios, they should be factored into all strategic plans.

Of greater concern in the scenario process is to identify driving forces that are both important and uncertain and thus have a wide range of future outcomes. What are the critical uncertainties facing energy investments and the value chain in the future? Two candidates for critical uncertainties are “environmental regulations” and “technology”.

For the energy industry, the central environmental uncertainty is focused on regulations concerning carbon dioxide (CO₂) emissions⁴. Constraints on carbon emissions are inevitable. The real uncertainty is the cost to comply with emission constraints and form that these emission constraints will take. Will the price of carbon (emissions) be low or high, either through taxes or a cap-and-trade market system?

A second uncertainty is technology. Technological advances are inevitable. The uncertainty is focused on which technologies will advance and their impact on existing business models and investments. Specifically, will technological change reinforce or disrupt the large-scale, low-cost business models that currently dominate the industry?

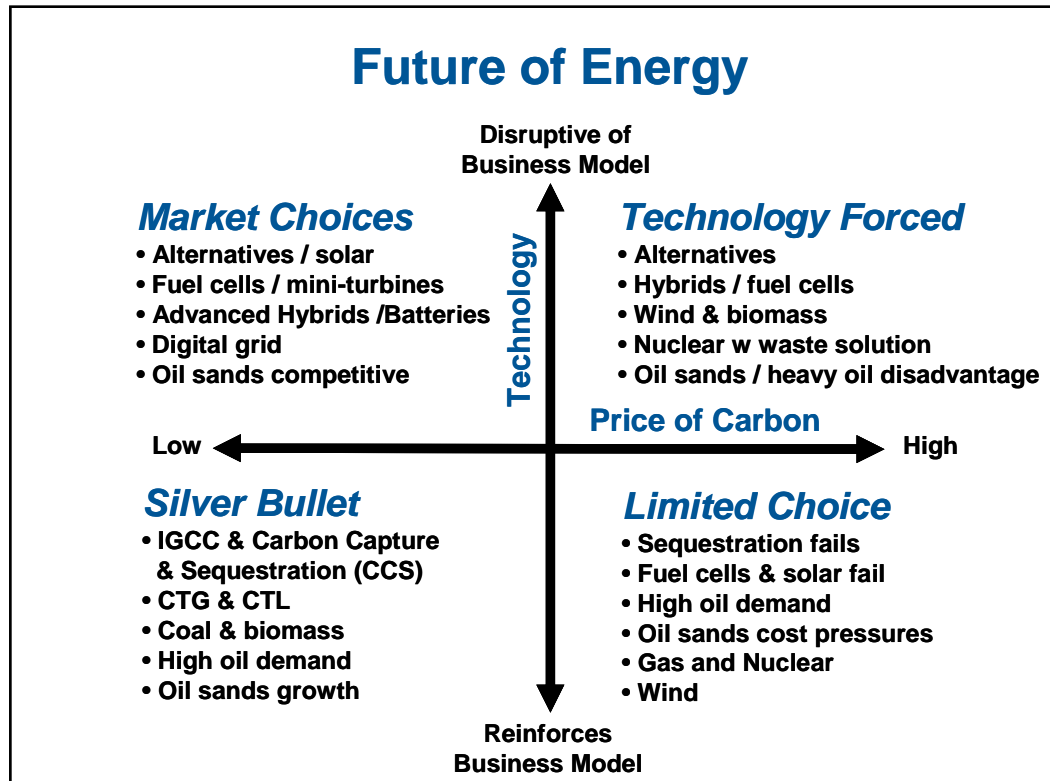
Step 4: Scenario Framework

The critical uncertainties may be interpreted as continuums and represented as orthogonal dimensions as shown in Figure 2. Each quadrant then represents a unique combination of the critical uncertainties - a 2x2 matrix of possible future outcomes. For example, the upper right quadrant defines a future of high carbon costs and the development of disruptive technologies. The scenario question becomes: How does that future come about? What developments need to occur for that future to emerge? What are the major characteristics that would describe this scenario? We have named this

⁴ Cumulative environmental thresholds are another major uncertainty for oil sands investments.

scenario *Technology Forced*. In this way, the logic for 4 distinct but plausible scenarios is established - and the real fun of fleshing out the future begins.

Figure 2



Step 5: Scenario Characteristics and Storylines

Having defined a logical framework, the fifth step in the process involves identifying major characteristics and building a storyline for each scenario. Characteristics are generated in a creative brainstorming session to describe the future end state. The list of driving forces provides a basis for defining the initial set of characteristics. A storyline is then constructed outlining the path from the present to the future. In this way, scenarios are fleshed out into plausible stories of the future.

The intent is not to tell “true” stories of the future. The “real” future will likely contain elements of all four scenarios. The goal is to learn from the scenarios, to gain insights on what could change, why it could change and what this knowledge might mean for strategic decisions. As Lawrence Wilkinson observed, we intentionally push the corners of plausibility and exaggerate the outer limits to the point that our scenarios have near-caricature quality.

Figure 2 highlights characteristics of the four energy investment scenarios with an emphasis on the technologies in each scenario:

In **Silver Bullet** costly constraints on carbon emissions stimulates accelerated development of carbon capture and sequestration technology. Successful demonstrations leads to major investment in coal-to-gas and coal-to-liquids technology stimulating investment in integrated gasification combined cycle (IGCC) facilities to process coal, coke and biomass. This lowers the price of carbon and allows oil demand, primarily to meet rising transportation demand, to grow.

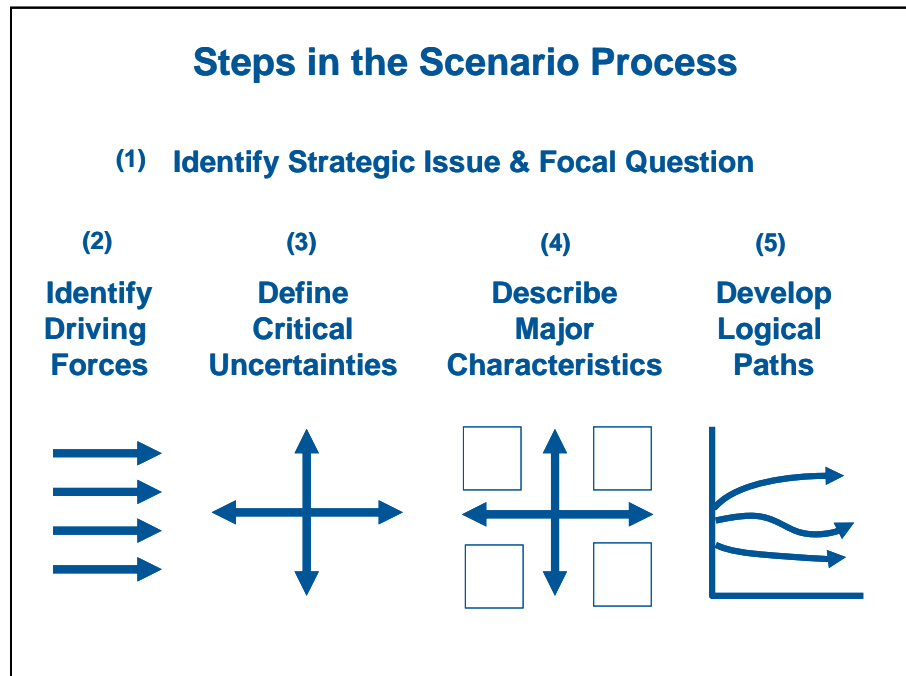
In **Technology Forced** rising societal concerns about the environment and climate change particularly, leads to active government intervention to raise the cost of carbon and push alternative energy technologies. Development of these technologies, supported by the high carbon penalties for fossil fuels, undermines existing business models that emphasize large scale, low cost mass distribution of energy. Nuclear would be an exception. Heavy oil and coal would be at a severe disadvantage.

In **Market Choices** rapid developments in a range of technologies leads to high levels of investment and market penetration. Advances in hybrids, batteries, fuel cells and photovoltaics significantly increase energy efficiency in transportation and electricity markets. Falling coal and oil demand lowers carbon emissions and the price of carbon.

In **Limited Choice** efforts to develop a range of technologies, from CCS to fuel cells to solar, are unsuccessful. Technical difficulties cannot be resolved and costs are prohibitive. Traditional fuels remain the only practical choice despite high carbon costs. Gas, nuclear and wind gain market share but oil and coal remain in high demand to meet rising transportation and electricity demands.

A visual representation of the process from forces to storylines is shown in Figure 3.

Figure 3



Step 6: Scenarios to Strategy – Implications, Issues & Options

As we have emphasized, the scenarios are a management tool to enhance decision making. They are the means to an end and not the end in itself. Having developed the scenarios, we can then ask a range of questions. Three frequently asked questions are:

- 1) What are the implications of the scenarios for the focal question?
- 2) What are the strategic issues that we need to address?
- 3) What are the strategic options that we should pursue?

An initial discussion of threats and opportunities for each scenario provides a lead-in to a discussion of strategic issues and options. In most cases, a scenario planning process will identify 2-3 major strategic issues that need to be addressed. The scenarios serve to raise the issues and provide context and perspective on what the issue is and what strategic responses are available. For major corporations, identifying, responding to and resolving one or two strategic issues in a year is a significant accomplishment.

Implications also lead into strategy development. The scenarios serve both to generate strategic options (e.g., If scenario X occurs, what strategies should we pursue?) and to evaluate their risks and rewards. For example, *Silver Bullet* suggests that successful implementation of carbon capture and sequestration technology would have huge benefits in leveraging heavy oil and coal resources. One strategy would be to invest in the technology. Another would be to invest in heavy oil and coal resources which would benefit from CCS. In evaluating those strategies, if the technology fails and an alternative scenario emerges, investing in CCS or carbon-intensive resources is a disaster. Different strategies will have different risk-reward profiles across the scenarios. In this way, both risky strategies and robust strategies (strategies that work in all scenarios) can be identified for further in-depth analysis, including developing more creative and flexible ways of implementing a given strategy.

Step 7 – Monitoring the Future

Having developed the scenarios and having made strategic decisions, it is valuable to monitor ongoing change. The scenarios provide a basis for defining signposts for each scenario. Scenario signposts serve as early warning system that signals that a particular scenario is emerging. Watching for these signals allows an organization to make sense of change on an ongoing basis and to react more quickly than competitors to significant changes in the business environment.

Conclusion

Scenarios are alternative descriptions of the future focused on a specific strategic issue. Their power is to broaden and deepen thinking about future business environments affecting a company's strategic choices. Through more robust strategic conversations, scenario planning enhances:

- organizational learning;
- insight about the future;
- organizational preparedness, flexibility and agility;
- strategic option generation, assessment and risk analysis; and
- organizational alignment, commitment and performance.

Ultimately scenarios help us understand the uncertainties facing us, what they might mean and how we can respond. Well thought out responses - where we place our bets - is the ultimate objective. As Arie de Gaus, former Coordinator for Group Planning with Royal Dutch/Shell observed:

"The only relevant discussions about the future are when we succeed in shifting the question from whether something will happen to what we would do if it did happen."



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