

**Seminar on
“A View from Shell: Future of the Energy Industry”
by Dr Khong Cho-Oon and Dr Peter Snowden from Shell International**

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1) Overview of Scenario Planning

“Prediction is very hard, especially when it is about the future.” – Yogi Berra

Dr Khong began by qualifying that “scenario planning” was not a magic bullet for predicting the future. Instead, scenario planning was primarily a tool to understand the outside world by distilling meaningful information. This was particularly useful for large organisations because the complexity of issues that an organisation faced increased with its size.

Dr Khong likened the Shell scenario planners to “window cleaners” who continually scanned the external environment for information that would challenge the standard world view of the decision makers. By building scenarios, the team focused on areas of concern that affected the company’s bottom line and raised issues that needed to be resolved, thereby filling in the blind spots of management. This was crucial since Shell operated in a highly unstable business environment with difficult operating conditions, and a long lead time from resource discovery to product sales. However, he said that scenario planners should avoid projecting their beliefs onto others and expecting them to act in similar ways. This would not happen because different people had different sets of motivations and assumptions.

Success of scenario planning at Shell

Scenario planning was developed in the early 1970s by Pierre Wack at Royal Dutch/Shell. He challenged the prevailing view that the future was merely an incremental extension of the present by suggesting the possibility of an oil supply disruption, which led the key decision makers at Shell to rethink their assumptions. As a result, Shell greatly improved its competitive position in the 1973 oil crisis and ensuing oil glut.

Difference between forecasting and scenario planning

Forecasting was done by extrapolating trends, but this limited their accuracy since trends did not continue indefinitely. Thus, forecasts posed an inherent danger as they were often constructed based on a single perspective of the present. Should there be a bifurcation in the current trend, strategies formulated from forecasts based on the trend would go awry.

Scenario planning, on the other hand, was done by mapping out a range of future directions by assessing a number of alternative views. By recognizing that the future was uncertain and not static and, scenario planning considered possible permutations of the current trends that provided a more dynamic view of the future.

Dr Khong said that forecasts could be reasonably accurate as long as one understood their limitations. Scenario planning could complement and make-up for the shortfalls of forecasting.

Dr Khong highlighted the dismal track record of the experts when it came to forecasting the future, as reported by Philip Tetlock. This was understandable because what we inferred from our observations were influenced by past knowledge and experiences which resulted in different perspectives. Therefore, a critical part of the scenario planning process involved collecting a wide range of inputs from different people other than the commonly accepted expert forecasts.

Classification of driving forces

Use of the STEEP (Social, Technological, Economic, Environment, Political) framework was helpful for scenario planners to draw out connections between different zones of knowledge. They also had to be selective about the variables that would shape the future. Critical uncertainties, variables with the greatest impact and highest uncertainty, would determine the range of the scenarios. Predetermined trends, high impact but low uncertainty variables, were unlikely to vary significantly in any of the scenarios. For example, in the global scenarios developed by Shell in 1997, a change of regime in Indonesia was mooted as a predetermined element which was later validated when Soeharto resigned from office in May 1998.

Plotting the scenarios

There were four methods for crafting scenarios.

- 1) The inductive approach involved step-by-step combining of data or individual plot elements which allowed a storyline to emerge. A framework was not imposed at the onset.
- 2) The deductive method was done by inferring an overall framework to start with, such as constructing a 2 x 2 matrix based on the two most critical uncertainties.
- 3) The normative approach started off with a desired vision of the future before working backwards to see if and how this might grow out of the current state.
- 4) The incremental approach involved the team agreeing on “the official future” and then looking for alternatives that could deviate from that path.

Features of a good scenario and devising strategies from scenarios

A good scenario should be plausible, memorable, internally consistent and recognizable from signals in the present state. It should also explain clearly how one gets from the present to the future. It should also challenge our assumptions about the business. Dr Khong added that although scenarios were unable to provide answers to all our questions, they clarified and made risks more transparent. While they were unable to formulate strategies, they tested the resilience of strategies in different scenarios. He felt that the success of a scenario exercise was measured by its ability to alert management to possible surprises in the next five to ten years, as well as goad managers to do things differently. So far, Dr Khong surmised that Shell had been relatively successful, particularly in the former outcome. He said that the scenarios team worked closely with the strategy team and that the most important element of scenario planning was its communication and subsequent conversations with people.

Shell scenarios

Shell has conducted scenario exercises of varying time lengths. In addition to doing global scenarios, the bulk of their work was on focused scenario exercises that examined short-term trends of about 6 months. Country studies typically had a longer time horizon. Long term studies exploring new ideas were those which usually looked 20 to 40 years ahead.

Summary

Scenario planning was fundamentally a challenging process that identified threats and opportunities. It allowed us to adjust our existing strategies to make them more robust. It also made decision making more transparent and enhanced communication within the organisation through the process of translating scenarios into strategies.

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2) Shell Global Scenarios and Implications for the Energy Industry

Shell Global Scenarios

Dr Khong outlined the Shell Global Scenarios to 2025 which were shaped by three key drivers:

- Efficiency — Market incentives
- Social cohesion — The force of community
- Security — Coercion, regulation

All societies aspired to achieving the three objectives even though Shell stressed that it was difficult to achieve all of them completely and simultaneously. Therefore, trade-offs were typical (see Figure 1 for a diagrammatic representation of the three archetypes). Dr Snowden highlighted the implications for the energy industry for two of the scenarios below.

a) Low Trust Globalisation: “Carrots and Sticks”

In this scenario, strong states used both market incentives and coercive measures to achieve their goals. They maintained security by intrusive checks and controls. Some trust between nations was eroded as it was a legalistic “prove it to me” world. The economy was tempered as countries implemented some protectionist measures and took on divergent initiatives to address global concerns.

Implications for the energy industry

Economic growth was moderate. As much as energy demands continued to grow, due to regulatory checks and balances creating trade barriers, economic growth was slower than expected. In order to achieve energy security, governments worldwide sought to diversify energy sources by forming strategic relationships and exploring renewables. However, due to the low level of trust between nations, the optimum level of investment in energy infrastructure was not achieved. National oil companies played a significant role in implementing government policies with market discipline. Within the transport sector, opportunities driven by the availability of indigenous resources such as biofuels were

pursued to seek alternative transportation fuels. Coal also dominated the power market as they were viewed as an indigenous and robust fuel source.

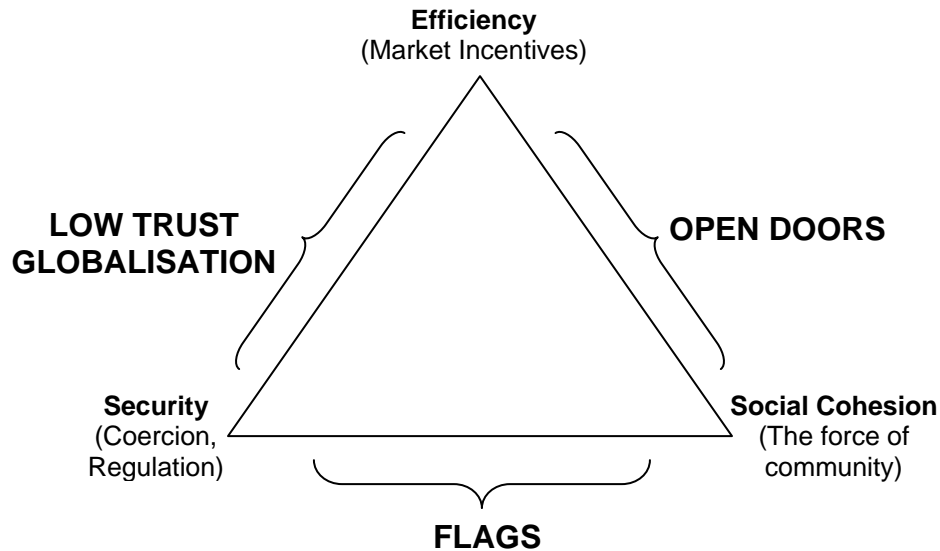


Figure 1. Shell's Trilemma Triangle and the "two wins, one loss" zones.

b) Open Doors: "Incentives & Bridges"

In this scenario, there was increasing dialogue between countries. States acted through incentives and projection of soft power. It was a pragmatic "Know Me" world. International institutions were inclusive and markets were highly competitive. There was high economic growth in a globalised world where governments worked together.

Implications for the energy industry

Because there was a high level of trust and engagement, countries worked together to manage energy supply and demand. Global energy markets were allowed to develop and people expected to have access to energy and being able to choose based on price. There was a rapid expansion of LNG and pipeline gas. The playing field was levelled as national oil companies found themselves having to compete on equal terms with international oil companies. Carbon became a global commodity as pollution costs were internalized. Efficiency within the transport sector took precedence over diversity of sources, which led to the lowered cost and increasing acceptance of hybrid vehicles. "Clean coal" was popular and new environmental friendly technologies such as carbon sequestration were adopted. As society called for solutions, costs of renewables fell rapidly with technological development. Government became an enabler rather than an enforcer, resulting in self-regulated industries. Industries made concerted efforts to deliver on promises so as to protect their reputations.

c) Flags

Globalisation was rejected, and there was a low level of trust between nations. The global landscape was dominated by rhetoric but little action. Resistance to American universalism was rampant, with governments distracting their citizens from domestic

issues by focusing on external threats and dangers. Populist and nationalistic policies continued to shape society.

Key energy trends in the future

Dr Snowdon then went on to describe the immutables in this energy debate. He pointed out that conventional supplies would struggle to keep pace with accelerating global energy demands and climate stresses. He cited the growing energy demand as a predetermined element especially for the developing countries over the next 20 years. Fossil fuels would continue to feature highly in the energy mix, with oil remaining dominant in the transport sector. However, conventional oil and gas sources would become harder to extract, leading to increased extraction costs. It is likely that diesel uptake would increase alongside improvements in energy efficiency. Adoption of renewables would probably increase, while coal uptake remained high. Because growth would depend on the built-up of urban areas, we could reasonably estimate energy demands by forecasting population growth. He said that there were no silver bullets to increase energy supply. However, there was an urgent need for advances in technology to extract the most value out of fossil-based fuels.

Energy ladder

Dr Snowdon also highlighted the relationship between GDP per capita and energy demand per capita. As countries transformed from manufacturing to service industries, their energy demands per person grew steadily before reaching a plateau. Different countries levelled off at different energy demand levels depending on their technological efficiency. For developing countries, the technologies they chose to adopt would affect their final energy plateau.

Challenges ahead

Dr Snowdon believed that the world would need to rely on a spectrum of energy sources to meet energy demands in the future. Seeing that we would continue to be dependent on fossil fuels, we should find ways to advance technologies such as carbon capture and storage and to improve energy efficiency. To maintain energy security and protect the environment, governments would need to set frameworks to encourage investments in the right options. However, when making decisions on energy mix, we would have to realise that the rate of technological change was tied to the lifetime of capital stock and equipment. The impact of decisions made today would take a very long time to filter down to the ground. Looking ahead, states would have to act collectively to tackle energy challenges while citizens may have to revise their expectations to cope with rising energy prices. This would require continuous dialogue and engagement among all stakeholders.

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3) Question & answer session

On the issue of sovereign nations fighting to lay claim on energy resources, Dr Snowdon felt that this was a challenge that could be best addressed by consensus and peaceful resolution among all stakeholders. With regards to the US and China stepping forward to front the energy challenge, Dr Khong suggested that a coalition of ten of the biggest producers and consumers with a common agenda would be more effective in advancing

the global debate. Dr Snowden added that merging regional initiatives would also be effective in motivating other countries. Alternatively, a global market system could be implemented, and countries given incentives to participate.

When asked how Shell identified wildcards, Dr Snowden replied that low-probability events would be fed into the scenarios to determine their effects. Those events which significantly disrupted the scenarios were then chosen as wildcards. Dr Khong added that wildcards had to be capable of disrupting trends. Therefore, an event in which the building blocks leading up to it were already in place did not qualify as a wildcard. He cited the collapse of the Berlin wall as a high impact element which was commonly mistaken for a wildcard.

On the qualities needed of scenario planners, Dr Snowden felt that it was important to have a mix of people from the organisation who had either breadth or depth of knowledge, together with external resource persons who could bring fresh perspectives. Dr Khong said that it was important for the members to be able to think beyond the boundaries of their own discipline and to think “out of the box.”
