

# Scenario Thinking: Planning for the Futures You Want (and the Futures You Just Might Get)

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For major multinational corporations that are heavily invested in the way things are now, there is no simple recipe for thinking about futures in which their businesses, and the factors that drive those businesses, will radically change. Even though everyone knows that we are living in a world of rapid, accelerating change, too many companies are planning for a future of „more of the same, more or less.“ They are anticipating linear, if galloping, change along current paths, when they might be better off preparing for the unexpected: major discontinuities.

What is more, many companies have recently focused on sustaining competitiveness through improving operational effectiveness and cutting costs. Often, they've succeeded brilliantly. But in the process, senior leadership has run the risk of developing a bunker mentality. Their intense focus on protecting what they have today and what they need next quarter has drained energy from the task of envisioning the future and growing their businesses.

Scenario thinking offers a way to engage senior leadership in challenging familiar assumptions and helping their organizations prepare for, and prevail in, a future in which the rules of competition have been rewritten. Stimulating as scenario-building is, the stories companies can create about the future are not the end of the process. The final goal is to help companies create value for customers, shareholders, employees, and communities (local, regional, national, and supranational) in ways that will be durable in different possible futures.

In this article, we look at what scenario thinking is and how to use it in a dynamic process for envisioning growth in a range of possible futures. To put some limits on the factors we consider, and to make the issues more vivid, we concentrate on scenarios for energy companies. However, we believe scenario thinking is vitally important across the spectrum of industries in this era of accelerated change. Moreover, because of energy's central role in industrial and economic activity, the outcomes of energy industry scenario thinking have wide significance.

## Why Scenario Thinking?

Looking forward, it isn't difficult to believe that the world economy is at the beginning of a long period of growth based on the rapid introduction of new technologies and the opening of new markets. But, as the last 20 years have shown in the energy industry, the future has a way of taking unexpected forms. The industry has moved from the supply constraints, price shocks, and political problems of the 1970s to the demand slump of the 1980s, only to find itself, in the late 1990s, with a worldwide economy that is far more robust than many expected a decade ago. But nothing lasts forever. Further political changes – in the Mideast, in the former Soviet Union, in East Asia – could significantly alter business conditions for the energy industry. Technological innovation, driven by prosperity, may introduce major changes in the competitive structure of the market. And pressure for industrial and economic activity to meet the goals of sustainable development (development in harmony with the earth's ability to sustain life) may increase. This is especially likely if trigger events such as major environmental disasters or confirmed changes in the world's climate galvanize public opinion.

Furthermore, the energy business *must* change – if not in 25 years, then in 50 or 100, as geological sources of oil and gas are depleted. No one expects the oil industry to prepare for this change any sooner than necessary. But in an industry familiar with long planning cycles and complex ventures that take 15, 20, or 25 years to reach the active production stage, the planning horizon at which oil is no longer the prime support of petroleum companies' business is not so far away.

Scenario thinking can help companies prepare for the inevitable major changes on the far horizon, and also for unexpected shifts that could happen sooner if political, environmental, or technological factors take an unexpected turn. Often in visioning processes, companies stand in the present looking forward. By standing in the future, or in several futures, companies can ask, „What did we do to get here?“ and begin identifying the high-leverage actions that will pull them forward.

Scenario thinking is not new to the energy industry. The approach was pioneered for the oil business by Pierre Wack of Royal Dutch/Shell in the early 1970s. Wack based his work on the scenario development thinking of the futurist Herman Kahn. The results of Wack's work helped Shell take steps that would not compromise its competitiveness if the future followed current trends and would protect competitiveness if a radically less stable future unfolded – which, because of OPEC, is what happened in the 1970s.

Business history is, in part, the history of companies that anticipated major, paradigm-shattering shifts. Recent examples include the growth of Enron and the merger of Pharmacia and Upjohn. Enron moved early to seize the opportunity presented by the deregulation of the power business. The success of Enron's first venture in Teeside,

U.K., established a model the company successfully adapted and transplanted to other parts of the world, such as India, where market conditions are tougher. Pharmacia and Upjohn realized early on that worldwide coverage and much greater research resources are now critical to the success of pharmaceutical companies. Their merger gave them that coverage, as well as research capabilities on a much greater scale than either company had on its own.

### Scenario Thinking: The Process

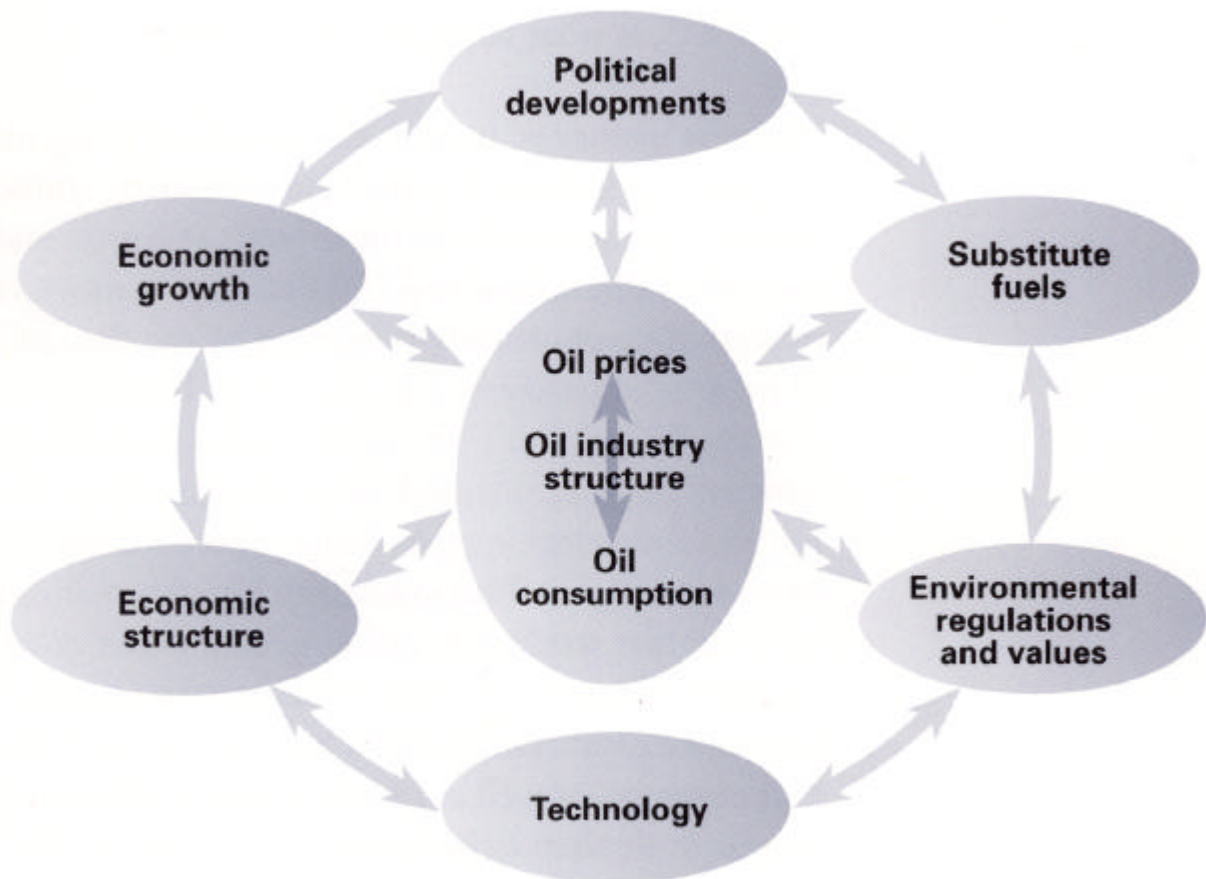
We consider scenario thinking a tool for augmenting the process by which major organizations refresh their business vision, sharpen their competitive edge, and adapt in a business climate that rarely rewards complacency. Today's marketplace is simply too volatile for any company to place its long-term bets on a single picture of the future.

The energy market is especially complex and depends on a family of factors bound together in nonlinear, matrixed, cause-and-effect relationships (Exhibit I).<sup>1</sup> Among systems theorists, it would be viewed as a „chaotic system,“ with the result that:

- Very minor changes can have major effects
- The more nonlinear internal relations in the system become, the more unpredictable the system becomes
- Periods of system stability are inevitably short-lived

### Exhibit 1

Portrait of an Unstable System: Factors Influencing the Energy Industry

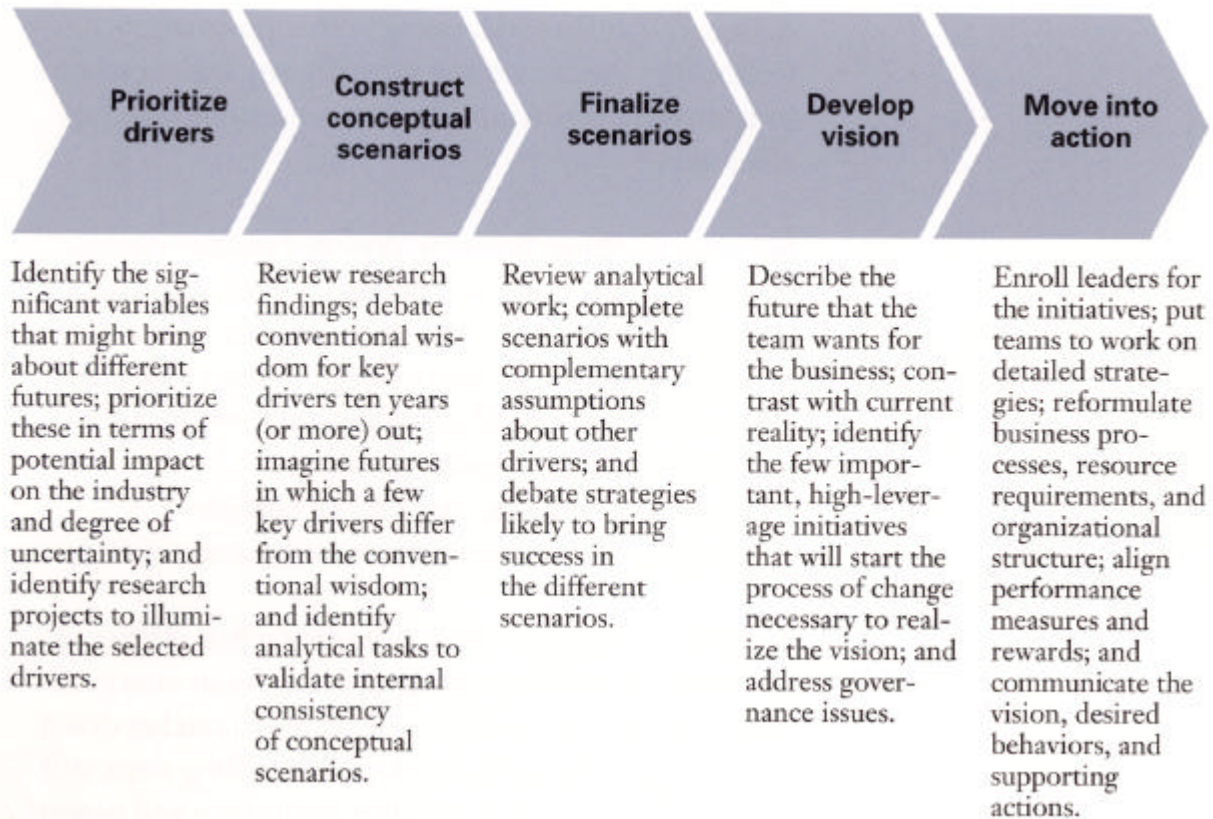


From this, readers might conclude that if the energy industry operates in such a high degree of uncertainty, one vision of the future is as good as another. We would counter, however, that the energy industry is itself a major force in world economics, with the resources and ability not only to bet on certain futures, but also to take steps to encourage those futures to happen. In the same way, in the environmental sphere, thinkers such as Paul Hawken now argue that industry and capitalism shouldn't be seen as the potential victims of an environmentally friendly future. In fact, they are the agents most likely to create that future – or not. To a large extent, it's industry's call.

Exhibit 2 depicts a simple, five-stage process for developing scenarios and vision. Scenarios have most impact when senior executives who wish to broaden their thinking are fully engaged in their development. The process can be organized around workshops that bring senior leadership together with experts within key areas and facilitators to support productive outcomes.

## Exhibit 2

### A Process for Developing Scenarios and Vision



The first step in scenario thinking is to prioritize drivers – to define the forces determining the future of the business. For the energy industry, and for most others, these forces will always include technologies, societal values (including environmental issues and goals), and political developments.

**Technological Factors.** Clearly, technological change can rapidly alter both the making of products and what products companies make. Energy companies have already experienced what electronics, including sophisticated new geophysical imaging techniques, can do for exploration. On the customer side, where the bulk of demand comes from automotive transport, quantum leaps in fuel efficiency could radically alter the market. For example, fuel-cell technology, which Arthur D. Little is addressing with a proprietary technology for converting virtually any hydrocarbon to hydrogen, could quickly increase automobile fuel efficiency.

Scenario thinking, however, does not require companies to identify and track each potentially relevant technological development. It does require that companies:

- Understand the pressure points in their value chains where technological change could turn their competitive situation upside down
- Map futures leading from those changes
- Integrate the results in their visions and action plans

Assume, for example, that automotive fuel efficiency will increase tenfold, sooner or later. As an energy executive, what would be your plan? To ratchet down petroleum finding and development, lifting costs still further? To move into retailing natural gas and power?

To leverage your commercial real estate – corner locations at intersections worldwide – to support new kinds of services and convenience? As another example, consider that the chemical industry might shift from

hydrocarbon-based agricultural products to bioengineered seeds and other forms of yield enhancement and pest control. How will you adapt as agriculture reduces its use of petrochemicals?

**Societal Values.** As values change, business also changes. For example, in the past, companies operating in developing countries could trust that they had the right balance between the economic benefits of oil extraction and the environmental costs. Now international advocacy groups work closely with local community interests to obtain a worldwide hearing on oil companies' environmental practices and records. Regardless of the validity of the initial publicity on these issues, energy companies recognize that failure to maintain an excellent – and defensible – environmental record could weaken competitive strength and shareholder value.

How does a company inject that kind of learning about societal values into the scenario planning process? By thinking about the drivers of change in values. These include:

- Continually improving worldwide communications
- Demographic forces

Improving communications means that companies can expect hot social issues and trigger events to influence opinion worldwide much faster than in the past. Companies can't guess all the issues, but they can ask hard questions about how well they are prepared for dramatic shifts in the standards by which the public judges their conduct.

Demographic forces include continued population growth, improved living standards, and an older, healthier population. These forces will shift demand for existing products to new markets (in Asia, for example). More broadly, nobody really knows how – or whether – the planet can sustain the 10 billion people expected here by the year 2030. Energy companies need to imagine what these numbers mean for transport, power generation, and other market areas. Do environmental issues become more urgent or less so in such a world?

**Political Changes.** Since oil from the Middle East became important to world commerce in the 1950s, thinking about politics and energy has often focused on future developments in this region. The collapse of the Soviet Union, the emergence of democratic regimes in many parts of the world, and economic growth in Asia have totally changed the geopolitical picture for the energy industry, which is in the forefront in developing opportunities in many of the places where old political barriers have melted away.

At the same time, the current drive to reduce trade barriers across regions and among major players has tended to erode the traditional power of sovereign nations. Companies today are examining how their current opportunities will mature and where new opportunities will surface in an atmosphere of unprecedented uncertainty. Their scenarios should make the most of this uncertainty, prompting what-if questions about specific regions opening more or being closed off, about new forms of relationships to trade regions and other supranational entities, and about how their traditional role as economic ambassadors in developing regions can and should evolve.

### Some Futures You Might Just Get

To give a sense of how scenarios fuel creative thinking about very different futures, we provide three examples of highly plausible futures for which industry participants might start preparing now. These scenarios, set in the year 2025, weave together the potential impacts of changes in technology, social values, and the political realm. As you read these scenarios, bear in mind that each arises out of choices about specific drivers. In a specific scenario exercise, research and analysis helps support the validity of assumptions about key drivers and the internal consistency of each scenario.

Also keep in mind that the truth could be stranger and less predictable than any of these fictions. An executive with a major multinational appliance company recently described to us a moment from a session he held with managers to jump-start their thinking about environmental issues. He gave them four fictional scenarios and an all-too-true environmental story drawn from the *Wall Street Journal*. Which did the managers find hardest to believe? The story from the *Journal*!

**Scenario 1: Glory Days** The first quarter century of the new millennium has seen a massive expansion of the global economy, stimulated by a pace of technological change that has rivaled the mid-19th century's industrial revolution. As a result, living standards have improved dramatically worldwide, with a sharp reduction in the gap between rich and poor regions.

The technological engines of growth have been those into which massive funds were poured toward the end of the previous millennium. Information and telecommunications technologies continue to produce new and exciting products. The world is wired together through Iridium and other satellite networks. The cost of computing power continues to decline while computing capability has taken a quantum leap, thanks to the successful integration of neural networks with conventional microchips. Medical advances abound. Pharmaceuticals and gene repairers can be custom created to attack instantly, supported by new cloning technologies that have taken flexible manufacturing to unforeseen levels.

New materials and technologies have steadily reduced the energy intensity of the global economy, and global energy demand seems to have peaked. The transfer of aerospace technologies to land transport has resulted in lighter, stronger vehicles. Smart highways are regulating traffic flow and preventing energy-wasting traffic jams. Hybrid vehicles with a turbine and flywheel that power small electric motors are now affordable and are gaining ground on conventional internal combustion engines. Demand is growing in urban areas for the new reformer power plants that convert hydrocarbons to hydrogen, eliminating emissions.

As predicted, convergence between the old electric and gas industries has extended to a whole array of household services. Companies have learned to create substantial brand value based on high service levels and tailored pricing and credit schemes for product packages including: gas, electric, and water service; cable and satellite broadcasting; credit, debit, and banking services; and fixed and mobile telecommunications, Internet programming, and personal computing.

These really are the Glory Days.

**Scenario 2: Leaner and Greener.** As we look back over the first 25 years of the new millennium, it is easy to overemphasize the difficulties and understate the accomplishments. Preemptive moves have stabilized and reversed total worldwide emissions of all materials affecting air and water quality, and economic growth has continued, though admittedly with some hiccups. Most significant has been the ongoing reduction in the powers of national governments and the rise in the importance of global networks and local pressure groups. Corporations that initially relished the lowering of national regulations must now work with a wide variety of global and local groups to craft uniform standards in order to keep the costs of compliance manageable.

A grassroots movement to encourage sustainable development and bring the full environmental cost of growth to light has led to a major shift in tax policy, first in Europe, then in the United States, and now in the increasingly mature economies of Asia and Latin America. Adoption of limits on carbon and other emissions has been accepted as the price of entry to the senior global economic and political forums. Carbon and consumption taxes have changed incentives for industry and consumers and redirected market priorities.

The tax restructuring has caused some economic pain. Economic slowdowns struck several countries that did not offset the new tax revenues with cuts in other taxes. Those that made the new taxes revenue-neutral still needed to finance substantial bail-outs of companies and regions dependent on coal extraction and use. The oil industry has been through another slump, as high prices at the point of consumption have depressed demand (as intended) and lowered the commodity value. Losses in oil and refining revenues, however, have been partially offset by increases in natural gas revenues. Natural gas has become a tremendous growth business, and advances in liquefaction technology and massive investments in inter-regional pipeline grids have made it a major global commodity.

Nations dependent on oil revenues have been hard hit. While the natural gas boom has helped a little, the taxable commodity value of natural gas is small compared to its transportation costs. The losses in oil revenues from lower volumes and lower prices, as producers competed among themselves for the diminished volumes, have been devastating. Ultimately, development in Africa and in the Middle East has been set back at least a generation, until new political institutions can emerge.

Fortunately, technology-based sectors of global and national economies have continued to flourish, slowed only by a reduction in consumer spending power as interest rates have remained high to finance the economic restructuring. Driven by the high consumer cost of hydrocarbon energy, large intellectual and financial resources have been mobilized to extend the reach of renewable energy sources and capture all the energy efficiencies allowed by thermodynamics. Materials are stronger and lighter. People telecommute whenever possible. Buildings and vehicles are becoming extraordinarily fuel efficient.

Though some may feel we have hampered prosperity by moving too fast to reduce carbon consumption and resource waste, others are proud and relieved that the world has arrested and reversed the trends they worried were taking the planet toward catastrophe.

Now that we're leaner and greener, what's next?

**Scenario 3: Deja Vu All Over Again.** Twenty-five years into the new millennium, the political stability, low energy prices, and sustained economic growth of the mid-1990s have given way to new waves of cyclical instability that make the 1970s look easy to manage. In a fragmented, unstable world, the breakdown of global economic cooperation has led to intensive efforts and improvements in some areas and a slowing of technological and economic progress elsewhere. Environmental progress, too, is fragmented, as priorities in developed countries differ from those in Asia's new economic powerhouses. With doors closed on reserves that looked promising in the 1990s, the energy industry is focusing on better extraction technologies and alternative energy sources.

Oil prices shot up and stayed up for several years, provoking a predictable response in all the developed countries. Intellectual and financial resources immediately focused on resolving the supply/demand imbalance. Oil exploration and development activity in known basins skyrocketed, with the attendant inflation in the prices of all the inputs to the process: land, tubular products, oil rigs, drilling mud, seismic acquisition, and logging. Wind, hydro, tidal, and solar power systems all moved to fast-track development. Vast shale oil resources were finally commercialized in an environmentally acceptable way. Clean coal technologies were perfected. Latin America and the Pacific Rim countries moved rapidly to establish inter-regional natural gas transmission systems. On the demand side, proliferating inventions that incorporate all the advances in microprocessors and materials of the previous generation led to greater energy efficiency.

The result has been predictable. Environmentalists bemoan the resurgence in coal and shale oil use, but for many people, jobs and prosperity remain the top priority, and air and water quality continues to improve.

We now find ourselves in another era of global economic growth based on a less-energy-intensive structure, supplied by a new set of conventional and nonconventional oil and gas resources, particularly in Latin America and Russia, available again at what seems to be the long-term equilibrium price level.

And yet, new storm clouds may be rolling in. Low oil prices seem to be discouraging further development of clean coal and shale oil projects. The rate of improvement in fuel efficiency has flattened out. Oil demand is on the rise again, and the Middle East is still in turmoil. These cycles are proving extraordinarily difficult to manage.

It could be „deja vu all over again“ – again.

### **From Scenarios to Vision and Action**

Once scenarios are created, they serve as a vital part of a visioning process in which managers imagine themselves in various successful futures and work back to the present to figure out how they got there. This process can help to jolt managers out of near-term performance tinkering and into true planning.

Each company's vision is as unique as its culture and heritage. As an example, we offer the following generic vision in hope that it may reflect some aspects of specific companies' visions:

*We will be a leader in the creation, sale, and support of superb products that reshape markets, and our business will be focused on providing growing value for all of our stakeholders, including our shareholders, customers, employees, and suppliers, and the communities, regions, and countries in which we operate.*

For companies to guarantee sustained progress toward a vision of this kind, we see three areas of excellence as critical to creating value in the future. Companies will need to become increasingly adept at harvesting technological innovations that support each link in the business value chain. They will need to excel at developing, managing, and retaining the knowledge and people that are the core of their business strength. And they will need to discover more efficient ways to ensure that their processes – and products – create value without diminishing the earth's capacity to sustain life. More specifically, we see certain actions as critical to strategic positioning and the rapid creation of value:

**Strengthening Technology Networks.** Technology is critical to major surges in value creation. Good management and cost control can take your company only so far – probably not far enough when stakeholders are expecting consistent 15 percent growth in earnings, and some companies have found ways, in mature industries, to double their growth in five years. *Yet* the pace of technological change and the cost of research and development are driving companies to rethink how much „owned“ knowledge they need in-house. A strong network can be the key for many companies to access *the* technology they require ahead of the field and bring it into their process and product development rapidly and cost-effectively. The technology network, appropriately energized and focused, can enable the realization of a clear corporate vision by creating an array of growth options.

**Building Bridges to Communities.** The evolution of environmental issues has taught the chemical industry the value of real communication, not image management, with environmental stakeholders. Leading companies fully understand today that environmental lapses can seriously erode company value. Moreover, lack of understanding can fuel mistrust and interfere with the chance of communicating on any level, and the World Wide Web and as-yet-unknown media have the potential to drive matters to a crisis far faster than in the past. Companies that can identify and work with nongovernmental organizations on meaningful initiatives that build credibility and business value will be in a better position to weather shifts in societal values. And they owe it to themselves to rethink their approach to communication in a world in which communication media are changing so fast.

**Building a Portfolio of Bold Initiatives.** Finally, just as companies need vision and strategy that address a range of challenging scenarios, they need not just one bold initiative, but a portfolio of bold initiatives with options that will mature at different times. Portfolios do not mean diversification. Each initiative needs to be cogently and strongly related to a company's essential reason for being, its purpose and vision. In industries such as the energy industry, where debt is low, companies have the power to act like options traders and exercise options when the time is ripe. But they can do that only if the options have first been created. Exercising options requires a high tolerance for risk – an essential element of success in a volatile future. It also gives companies the ability to change rapidly and cost-effectively when required.

Scenarios and vision are about more than options for ensuring survival and alternative strategies. Executed correctly, the process should help restore passion and creativity to the strategic thinking of companies that have hammered out governance and process issues in a long period of downsizing. That passion, backed by analytical excellence and pragmatism, can help companies break through growth barriers and make their own futures.

<sup>1</sup> „*Planning for Chaos: A Scenario Approach to the Oil Market*,“ Prism, Second Quarter 1990.

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