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Use Scenario Planning to Prepare for an Uncertain Energy Future

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Initiatives: [CIO Leadership of Innovation, Disruptive Trends and Emerging Practices](#)

Rapidly growing demand for energy – and consequential environmental impacts – is creating global disruptions for every industry. Executive leaders should use the future of energy scenario to anticipate, prepare and navigate a complex and volatile future.

Overview

Key Findings

- As developing countries make economic progress, their growing energy needs place substantial pressure on global energy markets and environmental conditions. Economic incentives do not reflect the total societal cost of increasing energy production on the environment skewing near-term investments.
- Energy availability and cost are, directly or indirectly, fundamental factors that determine the viability of every business in every industry. Most companies are not aware of how much exposure they have to disruptions coming from energy markets.
- Energy markets are at an inflection point. Growing demand, lack of “game-changing” technologies and unreliable investment incentives make the future of energy hard to predict.
- Data and digital technologies, if used in novel ways, may be a large factor in shaping future energy scenarios. Most executive leaders have not yet connected their digital strategies with the underlying risks from energy disruption.

Recommendations

Executive leaders involved in designing an adaptive strategy to prepare for the impact of energy disruption on their organization should:

- Use scenario planning to prepare for an uncertain energy future and interpret changes in a wide range of forces (social, technological, economic, environmental and political) to anticipate energy disruptions in a timely manner.
- Analyze their organization's exposure to energy disruption by using four scenarios to identify which uncertainties present the greatest risks and opportunities to their business model and investment portfolio.
- Strengthen their organization's readiness for the future by asking the right questions to challenge conventional thinking, reviewing the impact of energy scenarios on their organization's business model and keeping their IT operating model in sync with current requirements.

Analysis

This research is adapted from [Succeeding in a World Where the Future of Energy Disrupts Everything](#), which guides the CIOs to prepare for an uncertain energy future by scenario planning.

According to the International Energy Agency (IEA), the energy demand is projected to grow 15% from 2020 through 2030. ¹ Over the same period, the energy-related CO₂ emissions are forecast to grow by approximately 11%. ¹

Beyond 2050, industry experts' forecasts over the last few years diverge significantly. Some anticipate sustained growth, some predict negative growth and others forecast initial growth then decline. ¹ These ranges of uncertainty make it impossible for companies to plan specific strategies to cope with their exposure to energy market disruptions.

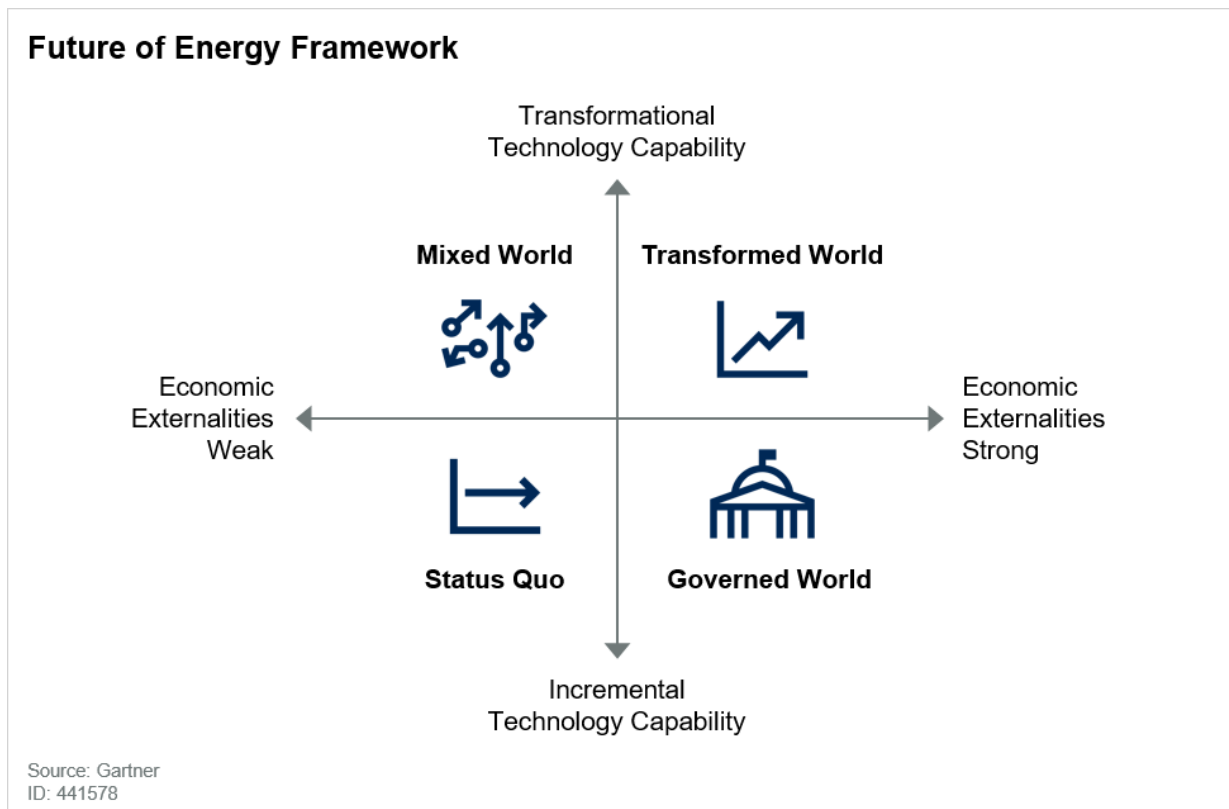
Also, since the COVID-19 outbreak, long-term energy forecasts have grown less clear. It is for this reason that Gartner created the planning scenarios in this research. Because when leaders face extreme uncertainty, traditional planning approaches do not always work. Scenarios help leaders come up with a variety of potential outcomes rather than a single-point, static forecast based on assumptions.

Four Future of Energy Scenarios

In April 2019, we gathered a multidisciplinary team to address energy uncertainty, create a framework and build a set of scenarios that describes the future of energy across all industries. Scenario methodology looks at a wide range of current and emerging political, social, economic and other forces that will significantly influence the future, and enables enterprises to identify big forces that may affect future outcomes.

The future of energy scenario framework is based on two forces: **economic externalities** – indirect economic factors that shape energy costs and investment incentives, such as the consequences of energy production on the environment, taxes and subsidies; and **technology capabilities** – state-of-the-art capabilities for creating, distributing and consuming energy, including proven means and new inventions. The intersection of these two forces provides us with four unique possible scenarios (see Figure 1).

Figure 1. Future of Energy Framework



Each scenario identified in the future of energy framework explores the following characteristics:

- **Business Context:** Technology state, business model, investment posture and other factors
- **Business Mindset:** Operational excellence, bimodal, preferred player or growth
- **How to Win in This Scenario:** Advice for companies that want to (or must) remain or enter – and succeed – in a specific scenario

It also represents a plausible outcome that helps executive leaders identify how they feel about the future today. Executive leaders should share it with their cross-functional peers and the board to achieve a common vision.

Scenario A: Status Quo World

Companies in this scenario are trying to hang on to what they have, putting up barriers to keep out new market entrants. Most of their opportunities are created by other peoples' money – mainly governments. Status quo companies tend to be predictable, reliable, have achieved economies of scale, and concentrate on cost-efficiency and operational excellence. There is a strong focus on risk management, and they typically will not invest in something that may undermine their main revenue streams. They will respond to things they have to – such as natural disasters and regulations. Nobody's business model will be disrupted or significantly changed in this scenario (see Table 1).

Table 1: Scenario A: Status Quo World

<i>Business Context:</i> <i>Mostly Stable</i>	<i>Business Mindset:</i> <i>Operational Excellence</i>	<i>How to Win in This Scenario</i>
<ul style="list-style-type: none"> ■ No one has a technology advantage ■ Subsidies and taxes are inconsistent and transient ■ There is minimal threat from new business models 	<ul style="list-style-type: none"> ■ They worry about harmful regulations ■ There are minimal large investments ■ They use minimal digital – primarily to optimize performance 	<p>Winners in this scenario are really just survivors – mixing strong core business operation optimization with preemptive regulatory management. Their goal is to protect the current business model by avoiding damage from policy changes. There are no long-term winning strategies in this scenario, but to survive organizations must:</p> <ul style="list-style-type: none"> ■ Protect capital investment ■ Prioritize cost-efficiency ■ Manage regulatory issues preemptively

Source: Gartner (August 2021)

We believe this scenario may not be sustainable in the long term. A catastrophic event (or series of events) could destroy a status quo company. For example, a California utility that faced bankruptcy due to environmental disasters and regulatory fines. Or, a sudden change in energy policy and knee-jerk regulation as experienced in Japan and Germany following the Fukushima Daiichi nuclear reactor incident.

Scenario B: Mixed World

In this scenario, there are some technological breakthroughs (such as scalable and affordable storage) that could enhance revenue or improve cost-efficiencies by addressing environmental impact. But the subsidies may be too weak to offset any technology-driven gains or enable technology to scale. Companies may be able to mix traditional and digital business models in this scenario, to open up new regions or domains (wind or solar, for example) or leverage platform business models to enable peer-to-peer energy exchanges on a limited scale. But the main purpose of digital here is to add value for the new technology (see Table 2).

Table 2: Scenario B: Mixed World

(Enlarged table in Appendix)

Business Context: <i>Balancing</i> ↓	Business Mindset: <i>Bimodal</i> ↓	How to Win in This Scenario ↓
<ul style="list-style-type: none"> ■ Game-changing technologies exist ■ Investment incentives are weak or inconsistent ■ Old and new business models coexist 	<ul style="list-style-type: none"> ■ They focus on selective regions or energy domains ■ They will pour legacy cash flow into attractive new markets ■ They use digitally primarily to enable a bimodal business model 	<p>Winners in this scenario are organizations capable of sustaining traditional business operations in most regions while also investing heavily in new technology in regions with favorable economics. They also must balance regulatory and operating priorities. To succeed in this scenario, organizations must possess:</p> <ul style="list-style-type: none"> ■ Market savvy techniques to identify the most attractive markets ■ Ability to invest at scale in diverse regions ■ Multiple, mixed strategies and operations

Source: Gartner (August 2021)

This scenario is more of a free-for-all that favors aggressive incumbents, well-capitalized new entrants and those with deep pockets who can invest in a breakthrough innovation. If Mixed World incumbents cannot compete, they will be pushed out of the marketplace. However, these companies tend to have more diversified asset portfolios, are agile and thus can scale more quickly than those in other scenarios and have a higher risk tolerance.

Scenario C: Governed World

In this scenario, the “customer” is really the regulator or policymaker. A breakthrough technology hasn’t emerged yet. So rather than focusing on technology innovation and consequent business process transformation, companies rely on government subsidies and accept regulatory constraints to set up business directions. In fact, policymakers-regulators often try to force certain activities through taxation, incentives, cap and trade, tariffs and other government programs. Politicians can “pick winners” by regulating pricing emission controls and other parameters (see Table 3).

Table 3: Scenario C: Governed World

<i>Business Context: Adaptability</i> ↓	<i>Business Mindset: Preferred Player</i> ↓	<i>How to Win in This Scenario</i> ↓
<ul style="list-style-type: none"> ■ Market prices fully reflect true value ■ Transformation is shaped by regulations, not innovation ■ Existing business models adapt as needed 	<ul style="list-style-type: none"> ■ Regulator relations and strategy are top priorities ■ Sweat assets are often used to avoid risky investments ■ They use digital for reliability, agility and adaptability 	<p>Winners in this scenario are experts at extracting additional incremental value from existing assets and deferring large investments whose ROI depends on volatile regulations; for example, solar subsidies. They also have plenty of regulatory acumen to influence energy policy. Those who best anticipate changes and adjust operating models accordingly will win. To succeed they must:</p> <ul style="list-style-type: none"> ■ Balance regulatory and operating priorities ■ Avoid getting entrenched in rigid assets or markets ■ Find ways to create nonregulated revenue

Source: Gartner (August 2021)

In this scenario, economic externalities may vary by market/region but the government guarantees investments. Governed World companies make sure that they will not be adversely affected by externality variations or regulatory intervention. For example, if they are told to close down their coal plants, they will expect to get a financial incentive in return. They will do business in any space; for example, electric vehicles, as long as they are receiving subsidies to do so. They cannot afford to embrace any particular technology, market or product because the government may force them out or incentivize them to do something else. As a result, they adopt technology more slowly and more incrementally.

Scenario D: Transformed World

Companies in the Transformed World scenario benefit from strong capital availability, transformational technology breakthroughs and emerging new business models (see Table 4). Technology advancements such as hyper-low-cost photovoltaic generation, IoT-based demand management and large-scale electricity storage, for example, will change the nature of energy markets. Instead of supply-centric (generation, distribution and consumption), the Transformed World scenario will be customer-centric: How do we give customers the products and services they want and need, and how do we create value from these products and services?

Table 4: Scenario D: Transformed World

Business Context: Aggressive	Business Mindset: Growth	How to Win in This Scenario
<ul style="list-style-type: none"> ■ Unprecedented business opportunity ■ Investment drives transformation ■ New business models dominate 	<ul style="list-style-type: none"> ■ They collaborate with customers on new products and services ■ They create partnerships to expand rapidly ■ Digital is used to create new disruptive value streams 	<p>Winners in this scenario need an aggressive entrepreneurial culture and leaders who constantly pursue new opportunities. They will make massive investments and need collaborative partnerships with co-innovators and large-scale execution players. Winners experiment to learn and unlock economic value from game-changing technologies. To win, organizations must:</p> <ul style="list-style-type: none"> ■ Build new digital business platforms to scale ■ Develop a global ecosystem for growth ■ Create innovative new business models

Source: Gartner (August 2021)

These companies focus on figuring out how to buy, sell, invest and manage all of this in a way that delivers customer value. In this scenario, technology (or technologies) has shown extreme success and the government is setting up pathways for the technology to scale up. Companies that have this technology will be very successful, since the role of digital is to truly disrupt and create new value streams.

How to Use These Scenarios to Prepare for the Future

The scenarios in this research provide a rich narrative; however, they should be viewed as the *starting point* for executive leaders to anticipate change and develop practical strategies for navigating through this complex and volatile period. Each scenario has very distinct requirements around how data and digital technologies will play. This means that executive leaders' priorities will vary depending upon which scenario unfolds:

- **Status Quo World Scenario:** Use minimal digital to optimize performance.
- **Mixed World Scenario:** Use digital to enable a bimodal business model.
- **Governed World Scenario:** Use digital for reliability, agility and adaptability.
- **Transformed World Scenario:** Use digital to create new disruptive value streams.

It is virtually impossible for an executive leader to prepare for all four of these divergent scenarios at the same time. To avoid having their enterprises pulled apart by inconsistent responses to the evolution of energy scenarios, they must focus on three priorities:

- **Ask the right questions to raise awareness:** Identify opportunities, risks and unknown factors by asking questions. For example, do customers want your product in the new world? Will climate change considerations destroy your business model, create new business model opportunities or both? How will energy policies affect your customers and employees?
- **Use scenarios to review the business model:** Scenario risks and unknowns will lead to fundamentally different business models. Understand what areas of the business need to respond. Engaging your direct reports and cross-functional leaders to identify the most appropriate future scenario can help provide context to develop, refine and revise the model, or even develop new ones and strategies, based on business goals.
- **Let scenarios define change in the operating model:** Organize changes to your business's operating model to stay in sync with scenario development. Scenarios are also useful for synchronizing the enterprise's operating model with business models. While business models show *what* needs to be done, the operating model shows *how* things get done. Bimodal operation will be a key core competency for achieving future success, but if the operating model does not change, the enterprise business model and strategy development will not come to fruition.

Executive leaders should play a significant role in identifying a “desired state” for any given “Future of Energy” scenario and align the operating model with it, as appropriate. Above all, they must confirm that their operating model supports current mission-critical priorities, while ensuring that it evolves to fit future scenarios.

Evidence

¹ [Global Energy Demand and CO2 Emissions Trends in the Stated Policies Scenario, 2019-2030](#), International Energy Agency.

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[Top 10 Trends Driving the Utility Industry in 2021](#)

[Succeeding in a World Where the Future of Energy Disrupts Everything](#)

[Industry Insights: 2021 Oil and Gas Top Trends](#)

[Urgent Action Needed: Energy Markets Are Changing Faster Than Energy Companies](#)

[How Energy Executives Can Get Ahead of Environmental Risks With Strong Greenhouse Gas Commitments](#)

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Table 2: Scenario B: Mixed World

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Table 3: Scenario C: Governed World

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Source: Gartner (August 2021)

Table 4: Scenario D: Transformed World

<i>Business Context: Aggressive</i> ↓	<i>Business Mindset: Growth</i> ↓	<i>How to Win in This Scenario</i> ↓
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Source: Gartner (August 2021)

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